Appendix D: Summary of CBP partnership feedback received and responses from extended comment period

The initial report was posted January 14, 2019 and distributed to relevant CBP partnership groups (WQGIT, WTWG, AgWG, STAC, CAC, LGAC). Due to a lapse in federal appropriations at that time, the panel's webinar and meeting to present their recommendations was rescheduled for February 26. The comment period was extended to March 12.

The only feedback received during the comment period was from Pat Gleason (EPA, Region 3), with a question regarding tracking of research needs that is not specific to this panel and being explored offline among CBP staff. No other written feedback or requests for extension of the comment period were submitted to the panel. Jeremy Hanson (Virginia Tech) notified WQGIT, WTWG and AgWG co-chairs and coordinators that he received no feedback and that the report would be brought to the AgWG for a decision at its March 21 meeting.

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
Pat Gleason, EPA Region 3, March 11 email	page 40 identifies future research and management needs; will there be any follow-up regarding these recommendations?	This is a broader question that other new panels will also encounter. The broader partnership is working on its science needs and prioritization via the STAR team. CBP staff is exploring how to sync panels' recommendations into that partnership prioritization process moving forward.	
Ken Staver, 3/21 AgWG	Should irrigated and non-irrigated lands be classified as different land uses?	The panel was not charged with investigating this possible approach for simulating irrigation, as the land uses in the Phase 6 Watershed Model are set. As indicated in the report, more research is needed, but the AgWG could consider irrigation as a land use layer in future iterations of the model.	https://www.chesapeakebay.net/what/event/agriculture_workgroup_conference_call_march_2019
Chris Brosch, 3/21 AgWG	My suggestion is to thank the panel for their work and DE has no opposition about more research being needed. What it came down to was there was no data capture or data difference captured. The University of Delaware is interested in pursuing this research. We can sunset the panel and revisit it when there is more conclusive research.	Under the BMP Protocol, the panel is not dismissed until the partnership finalizes the report.	BMP Protocol, page 14
Ibid	This expert panel did not take into consideration fruit and vegetable crops at all. We agree that we'd like to thank the panel, but don't want to close the book on this.	Tim Sexton, Panel Chair, updated the AgWG in June 2017 about the panel's choice to focus their efforts on corn. The reasons for this focus are mentioned on page 12 of the report. Panels are empowered to focus their efforts based on available data and literature, and all available information supported a focused review for applicable systems (center-pivot) and crops (corn).	https://www.chesapeakebay.net/what/event/agriculture_workgroup_conference_call_june_2017
Ibid	I think the report closes the door in a modeling context. If we approve the report, we approve the research. The corn research was done in extreme drought and wet years, but it does not address the average year.	The BMP Protcol allows the partnership to revisit practices when new data or research is available, and the AgWG has discretion to set its priorities for future BMP panels. Therefore, no panel recommendations report ever closes the door to future BMP assessments or model changes.	

Appendix E: Delaware feedback and panel responses received April 2019

At the March 21st AgWG meeting the Delaware member objected to aspects of the report and the AgWG offered him more time to provide written feedback on the report. The subsequent written feedback was submitted to the Panel Chair, Coordinator and AgWG leadership on April 15, 2019. Per the BMP Protocol, the Panel Chair and Coordinator reviewed the feedback on the panel's behalf and determined which issues were of a substantive nature, thus necessitating response and agreement from the full panel.

The panel wishes to point out that written feedback in this Appendix was not submitted during an extended comment period of nearly 60 days and no objections to the recommendations report were raised in advance of the March 21st AgWG meeting where a decision for approval was requested. The panel acknowledges that preparation of the Phase III draft Watershed Implementation Plans (WIPs) was a driving priority for jurisdictional staff during the review period established for this report. However, the panel also wishes to emphasize that the Chesapeake Bay Program partnership has protocols in place to allow panels and partnership groups to spend their time and resources effectively and build consensus constructively.

The following table compiles feedback provided by Delaware on April 15th alongside panel responses.

Summary of recurring comments and panel responses

There were many individual comments provided by Delaware, but a number of recurring comments emerged, paraphrased below with the general response from the panel. Individual instances of these comments may warrant slightly different responses, and the table below provides that information as appropriate.

Recurring Comment #1: Edits for clarity or substance.

Response #1: The panel will consider minor clarifying edits on a piecemeal basis, but will not accept inserted/revised text that is not adequately cited/supported, or any edits that change the substance of the panel's reasoning or conclusions.

Recurring Comment #2: DE expects that a modeling exercise be undertaken either by this expert panel or by a new expert panel before a final report be approved without an efficiency estimate. This effort is endorsed by the BMP EP Protocol and there is no justification in this report why such an exploration was not attempted by this panel.

Response #2: The panel agrees that future modeling analysis should be done to supplement future research and improve our understanding of nutrient leaching and transport. However, this panel strongly disagrees that it is the appropriate forum for such analysis. The panel report documents the panel's thought process and logic for its existing conclusion and it will not consider such additional analysis on its own. The panel stands behind its conclusion and furthermore does not have available time or resources to continue such work that it undertook starting in 2016. The panel disagrees with the commenter and feels that the report, as written, appropriately justifies its conclusions. Furthermore, a

new panel cannot be considered until the partnership finalizes the current report and releases the current panel for the completion of its charge.

Recurring Comment #3: Studies of irrigation in the Midwest or other regions have limited applicability in the CBW or the Delmarva; should not be included or considered in the report or the panel's conclusions.

Response #3: The panel acknowledges the limitations of the available research studies throughout the report. The panel will not remove sections or statements that summarize such studies because this information serves as useful documentation for future expert panels or research efforts.

Recurring Comment #4: The panel should recommend a nitrogen efficiency for cropland irrigation based on estimates of improved nitrogen use efficiency (NUE); the panel confused or did not fully account for NUE.

Response #4: The panel considered data from Virginia Tech field trials presented by Wade Thomason (p. 25; Figure 8). There was not sufficient data for the panel to define an overall nitrogen efficiency based solely on changes in NUE of corn.

Recurring Comment #5: Various edits/comments pertaining to section summarizing University of Delaware study (Shober et al., 2018).

Response #5: The panel appreciates the suggested edits from the study author (Amy Shober) and will incorporate these cumulative edits in its revised draft.

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
Following comments were provided in writing by Delaware on April 15, 2019.			
DE Letter, 4/15/19	The report both dismisses (p16) and embellishes (pp16-25) the relevance of mid-west research studies as a proxy for CBW effects for irrigation. As the report states, the ubiquity of irrigation in the mid-west limits the applicability of the results to our region and systematically limits the comparison to dryland production, which for the CBW is a baseline condition. These papers, rather than be categorically summarized and cited, should merely be referenced as the independent variables are insufficiently similar to CBW to influence the report's findings, again stated on page 16 of the report.	The panel worked to summarize available information. Given the panel's recommendations for future research needs, it was important to document information even if obtained from studies in other regions. This section will be kept as-is.	
DE Letter, 4/15/19	The term of baseline conditions are used interchangeably to refer to regional agriculture status quo, model conditions without a BMP, irrigation system parameterization and soil moisture/background N levels.	The panel acknowledges that terms like "baseline condition" are used with variable meanings, especially in CBP technical documents and discussions that span modeling and real-world considerations. The panel feels that its usage of "baseline conditions" is appropriate when viewed in context of the respective statements, but we will consider editing specific instances for clarity.	
DE Letter, 4/15/19	The report should diligently list for all studies whether antecedent groundwater (used as irrigation) nitrate was measured, reported or corrected for when considering the nutrient use efficiency of irrigated crops compared to dryland acreage. Also reported consistently should be the method by which irrigation rates were determined.	In the cases when studies did account for this, it was noted in the report.	
DE Letter, 4/15/19	The final version of this report, perhaps inadvertently, largely ignores the other major pathway for nutrient loss, overland flow. This component should be carefully considered and added as a parameter for rating irrigation. Improper sprinkler irrigation can promote overland loss according to newly cited research	The panel focused primarily on nutrient losses below the root zone (the primary pathway for N loss), as other BMP panels have done for cropland BMPs. The panel chair reached out to irrigation experts for research on overland flow related to irrigation, but could not find anything that would affect the panel's existing conclusions. Anecdotal information indicates that	

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
	presented in these comments and some measure was taken to better incorporate this concept in the marked up report.	nutrient loss by overland flow is magnified when irrigation is not managed based on soil moisture or weather forecasts.	
DE Letter, 4/15/19	The report's scientific literature review mixes approaches for assessing nitrogen benefits on irrigation. Nitrogen use efficiency (NUE) is a proxy for the reduced leaching or overland flow of nitrogen, and measured soil nitrate below the root zone is an acceptable direct measure for leaching loss. These approaches for effectively measuring an irrigation treatment would rarely if ever be mixed and the report should consider them separately. The comingling of approaches may have resulted in confusion when searching for effectiveness because no study reviewed had both.	See Response #4	
DE Letter, 4/15/19	Additionally, Delaware would like to reiterate, commensurate with the BMP Expert Panel review protocol, modeling exercises can be used to justify the benefit of a BMP where peer-reviewed or unpublished data fail to provide a reliable estimate. The CBPO submitted version of this report states that there was not sufficient science-based evidence to indicate a reduction (p16). While we believe there is this evidence, as presented in this letter, further simple model experimentation calculating N savings as prevented loss of N from drought induced underperformance in cropland under regional nutrient management can be cited as evidence for an efficiency so long as it is weighted less than other local, science-based research. Delaware expects that this effort be undertaken	See Response #2	

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
	either by this expert panel or by a new expert panel before a final report be approved without an efficiency estimate. This effort is endorsed by the BMP EP Protocol and there is no justification in this report why such an exploration was not attempted by this panel.		
DE Letter, 4/15/19	Degree-earning research is recommended by Delaware reviewers as references to be subsequently and natively added to this report. The suggested 15% nitrogen efficiency, justified by Soroka (2015), has been added in a red-line review of the report, but the Panel is the only body empowered to dictate a summary of the newly provided research in the appropriate sections of the report.	The panel thanks Delaware for providing the thesis paper. However, the panel firmly rejects the suggested 15% nitrogen efficiency value. This value, derived from analysis of 35 years of corn variety trials at the University of Delaware, suggest that rainfed plots are "80 and 85% as efficient as irrigated plots in converting applied N to grain yield." The panel considered NUE as described in the Virginia Tech sub-section of the "Recent Irrigation Research in the Chesapeake Bay Watershed" section. The panel's best professional judgment led them to conclude that a nitrogen efficiency cannot be determined at this time.	
DE Letter, 4/15/19	Included as an attachment to this letter is an itemized summary of comments from the two named reviewers to facilitate the Expert Panel's response. Delaware hopes concurrence of the suggested changes can be accommodated by the expert panel and is dually supportive of on-going research to continue to justify the water quality benefits and limitations of this practice. The comments, suggestions and concerns raised in these documents shall in no way diminish the effort of the Expert Panel convened to tackle this scientific question.	The comments are summarized below in this table alongside responses. The panel thanks Delaware for its extensive review and feedback, but under the BMP Protocol is empowered to reject or disagree with suggested revisions to the report. If the Partnership wishes to include changes over the objection of the expert panelists, the BMP Protocol provides for that option. The panel stands behind its conclusions and recommendations as written and with the acceptable minor changes acknowledged within this table.	
The following is a list of summarized comments, as attached to DE letter on 4/15/19. Please note that page numbers noted in Delaware's letter (lefthand column here) refer to document page numbers under "full markup" view of their provided Word file in track-changes, submitted along with the letter, and thus the page numbers do not correspond to available drafts. CB = Chris Brosch, AS = Amy Shober			
Page 3 CB:	Various edits for clarity and substance.	Altogether these changes would fundamentally alter the conclusions of the panel and expand its scope to include	Executive Summary, i-iii

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
		a recommended change to the interim BMP. The interim BMP is the purview of the AgWG The panel wishes to keep the text as-is.	
	Various edits for clarity and substance.	See Response #1	Executive Summary, i-iii
Pages 7-9 CB:	Rewrote Key terms, definitions and concepts section.	Relocation of the section does not add clarity; will be kept as-is.	From pp12-14 to before background/Charge section on p1
Page 12 CB:	Formatting No reference cited Where is the mention of dryland as a baseline condition? It appears as though baseline conditions, as a term, is being misapplied here. The baseline condition in the model is dryland acres, and as the preamble indicates, just for corn. Is the point here that elements of the irrigation system for which credit be given need to be constrained based on certain criteria? If so, this should be articulated and examples be given.	The targeted language (p. 3 of amended report) here was adapted directly from the Charge (Appendix B) that was approved by the AgWG in April 2015. The Panel will not edit the language in this section beyond basic clarifying changes such as verb tense.	Appendix B, pages 44-49 in January version of report
Page 13 CB:	Text insert	Since the panel was given a URL to the report (Shober et al. 2018, first listed on p. 4 of amended report) we were under the impression it was considered to be published. Please provide a new link.	https://cpb-us-w2.wpmucdn.com/sites.udel.edu/dist/f/4339/files/2016/06/DNREC_IRRIGATION_FINAL_REPORT_SHOBER-v12dgd.pdf
Page 14 CB:	Text insert Shouldn't some context about why DE, MD and non-CBW NY be given here? I would say it is fair to assume soil type and vegetable crops are what cause these three states to float up to the top among those in the Bay.	The inserted language is not necessary, nor is it accurate, as spray irrigation systems are simulated in the Model. Panel prefers this paragraph as written (p. 5 of amended report).	
Page 15 CB:	Formatting.	As-written formatting was intentional and will be kept as-is.	
Pages 18-20 CB:	Deleted former Key terms, definitions and concepts section.	Relocation of the section does not add clarity; will be kept as-is.	

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
Page 21 CB:	Where does this threshold come from? Consider striking. The true limitation is research not "available" acres.	Tim Sexton discussed this issue (p.12 of amended report) with the AgWG in June 2017.	https://www.chesapeakebay.net/what/event/agriculture_workgroup_conference_call_june_2017
Page 21 CB:	What is the purpose of this statement? It is in reference to the SOW related to the design of irrigation systems? Certainly the emphasis is on water quality and nutrients from sprinkler irrigation. Is this type of irrigation not specific enough to be the litmus test for applicable literature?	Removed allusion to engineering design for clarity. Intent of original statement was that among the research available on irrigated cropland, a very small percentage addresses water quality and nutrients in a meaningful way (p. 12 of amended report)	
Page 21 CB:	Various edits for clarity and substance.	See Response #1	
Page 22 CB:	Various edits for clarity and substance.	See Response #1	
Page 22 CB:	This paragraph starts describing the means for calculating an efficiency and then changes to describing difficulty identifying measured leaching. These are disparate strategies for scientifically detecting a difference in N transport from cropland.	Fine as written.	
Page 22 CB:	DE expects that this effort be undertaken either by this expert panel or by a new expert panel before a final report be approved without an efficiency estimate. This effort is endorsed by the BMP EP Protocol and there is no justification in this report why such an exploration was not attempted by this panel.	See Response #2	
Page 22 AS:	Cited in this report? Or available in the literature?	The panel prefers the end of this paragraph as written, so this comment is not applicable.	
Page 22 AS:	Or could be because they over irrigated or applied too much fertilizer?	The panel will not speculate on this point and will keep the sentence as-is.	
Page 23 CB:	Consider Soroka thesis and cited Sims' papers for this section. They should have been considered.	A summary of Soroka (2016) and Sims et al (2012) have been added to the report.	

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
Page 23 CB:	DE would submit that the Hana dissertation be cited here with the benefits to leaching measured in his modeling study.	A summary of Hanna (2006) has been added to the report.	
Page 23 CB:	Various edits for clarity and substance.	See Response #1	
	Various edits for clarity and substance.	See Response #1	
Page 24 CB:	1. Not identified as Nebraska research; 2. Implied to be Delmarva research with parenthetical uncited claim; 3. study compares treatments of insufficient irrigation to over-irrigation and this treatment scheme does not support the claim; 4. is not relevant to CBW without a dryland pseudo-control. In this study grain yield and N uptake were not significantly affected. This is not applicable research to the Delmarva or the SOW of this report.	See Response #3 Removed reference to commonplace practice on Delmarva to resolve any perception of the Hergert (1986) being a study of that region (p. 15 of amended report)	
Page 24 AS:	James Adkins had a SARE project where they evaluated a lot of irrigation systems on Delmarva. I believe he reported that systems typically applied 85% of what farmers thought they were applying. So unless they have their system checked, they likely apply less water than they thought. That doesn't mean that they don't still over irrigate, but it's a point you can make.	SARE report statement added to Findings section.	
Pages 24-28 CB:	This summary and several that follow are well noted in their applicability! Unfortunately, like Hergert, the relevance is extremely limited to Delmarva and should not be considered due to a lack of dryland baseline or control.	The panel prefers to keep this within the narrative, as it provides useful context and information that will prove valuable for future efforts as part of this document.	pp15-18 in original report, from lines above Figure 2 to the start of Water Use Efficiency section
Pages 28-29 CB:	This does not contribute to measuring the benefit of irrigation management as a BMP and should be considered as an Appendix since it was not considered in the SOW.	See Response #3 Water Use Efficiency section (p. 18 start of amended report)	

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
	Additionally, the studies cited are all of poor applicability to the Delmarva conditions.		
Page 28 AS:	See my note earlier that James' work suggests that most growers are applying less water than they think. This might be the most relevant of the reviewed studies in this section	SARE report statement added to Findings section.	
Page 29 CB:	Soroka thesis should be considered to be summarized here as well.	The Soroka thesis, written with guidance from members of this panel, has been added as a reference in the "Recent irrigation in the Chesapeake Bay watershed section." The panel supports yield consistency as one of the clear benefits of a well-managed crop irrigation system. The charge of the panel was to consider water quality benefits of irrigation. See statement, "Unfortunately, research considering yield consistency is usually geared towards maximum yield and profit, without consideration of water quality, resulting in a lack of hard evidence to affirm water quality benefits associated with improved yield consistency."	
Page 29 AS:	To some extent the Sims and Leathers (2012) report also discusses yield consistency. I think Alex elaborated on it though . Both of these reports have cited literature that may be relevant. See section 1.4.4 in the Soroka thesis (Irrigation Effects on Corn Yields and NUE)	Improved yield consistency with irrigation is acknowledged in the report. A reference to this report can be included as part of the literature review but will not impact the final recommendation of this panel. The Soroka thesis, written with guidance from members of this panel, has been added as a reference in the "Recent irrigation in the Chesapeake Bay watershed section." The panel supports yield consistency as one of the clear benefits of a well-managed crop irrigation system. The charge of the panel was to consider water quality benefits of irrigation. See statement, "Unfortunately, research considering yield consistency is usually geared towards maximum yield and profit, without consideration of water quality, resulting in a lack of hard evidence to affirm water quality benefits associated with improved yield consistency."	

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
Page 29 AS:	MD variety trial data may also show some of the same yield stabilizing trends that we saw in DE. I think Jason Wight is the one you should talk to get data from them, if you want it. I couldn't find information quickly on their website.	Improved yield consistency with irrigation is acknowledged in the report. A reference to this data can be included as part of the literature review if found, but will not impact the final recommendation of this panel.	
Page 31 AS:	So I don't really follow the logic here. We still apply on a "per acre" basis, with the rate based on the yield goal (i.e., a crop with 150 bu/ac yield goal would receive 150 lb N/ac). MN uses the maximum return to N approach, which factors in economics and yield response across regional field trials. So yield is indirectly included here, as regionally, soils and yields are expected to be somewhat similar.	The statement is referring to a specific study's methods and its applicability to common practice in the Mid-Atlantic coastal plain. It is not referencing the MN approach to N fertilizer recommendations. In Delmarva 150 bu corn/ac gets 150# N; 280 bu corn/ac gets 280# N – NOT 150# N because N application is based on expected yield. Revised text: Across both full and minimal irrigation plots, N was applied at the same rate, regardless of expected yield differences across irrigation treatments (p. 21 of amended report)	
Page 31 AS:	But they did see improvements in yield with the higher irrigation rates? Was this the 33%? This section is confusing and is lacking in the detail that would be relevant. What was the residual soil N follow corn with high irrigation vs dryland?	In response to Shober comment: This Schlegel et al. (2016) study was confounded with a separate 2016 study with the same lead author comparing yield and WUE between continuous corn and corn in rotation that is not cited in this report (outside of panel scope). Corrections made. (p.21 of amended report)	
Page 31 CB:	Replacement wording.	Panel is fine with language as written.	
Page 31 CB:	This evidence needs to be converted to common units with the Nebraska research to be compared in this way. As presented this is apples and oranges.	The range of groundwater nitrate concentrations is given for both cases. The difference in irrigation rates between the regions is acknowledged. This is fine as written (p.22 of amended report).	
Page 31 AS:	I disagree with this statement. This is only true if the 40 lbs of N was all applied at a time that the crop can utilize N. Later in the season, N	This is a conclusion of the referenced study (Ferguson et al., 1991), not the panel's, so we will not change this language (p.22-23 of amended report)	

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
	applications will not contribute to yield. Would reducing N application by 40 lbs result in not enough N during the period of rapid N uptake?		
Page 33 CB:	Various edits for clarity and substance.	See Response #1	
Page 33 CB:	Surely these studies can be grouped with the NUE, WUE, yield consistency and Water quality sections in the preceding review for consistency and placed in such a way to emphasize their relevance. So much of the synthesis of other research should be pulled out or recompiled in an appendix.	As with Responses #1-3, the panel will consider minor clarifying changes but stands behind its reasoning and conclusions. Additionally, the report is already shorter than other panel reports so the panel is not compelled to relegate any of the documented information into another appendix. (comment refers to *Recent irrigation research in the Chesapeake Bay watershed* section, p. 23 in amended report)	
Page 33 CB:	Additionally, the Soroka thesis, cited Sims papers and Hana dissertation would fit in this section were it to remain.	Summaries of these papers have been added to the *Recent irrigation research in the Chesapeake Bay watershed* section of the report.	
Page 33 AS:	Various edits for clarity and substance.	See Response #1.	
Page 33 AS:	Sims and Leathers (2012) report show trends in weather from 1970 to 2011.	A reference to Sims et al (2012) has been added so interested readers can refer to their report for the information.	
Page 33 AS:	For the different irrigation treatments, they all got sidedress applications, I believe. In season application was applied as none, sidedress, or fertigation for the N fertilizer trials. There are two studies. N rate was only varied for irrigated treatments. The non irrigated control and the irrigated N treatments that can be compared only received manure and starter P or no N.	See Response #5	
Page 33 AS:	I think I would move this back where it was.	See Response #5	
Page 34 AS:	2016 data was not identified in my report. It was there, but I didn't state "in 2016" explicitly. I need to revise and update the report. I also converted to English units if that helps anyone.	See Response #5	

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
Page 34 AS:	I had to make significant changes here. I revisited the report and realized that the writing was not clear. Upon reviewing my statistics, it was clear that our work was misrepresented in the original report text. What was missing was the fact that irrigation improved NUE in 2 of 4 years when compared with the non-irrigated control.	See Response #5	
Page 34 AS:	All plots had relatively low ef values and high UAN. Irrigation sometime resulted in higher ef and lower UAN. Never was the amount of N subject to losses significantly lower in the non-irrigated control compared to irrigation treatments. As such, claiming that 40% or more of the N available to crops under irrigated conditions IGNORES the fact that the same was true under non-irrigated conditions. And sometimes the nonirrigated conditions was WORSE than then irrigated treatments.	See Response #5	
Page 34 AS:	I also took out the discussion of the N rates. This was a completely different study (part of the main project, but different objectives). Irrigation vs. non-irrigation was only evaluated under 1 N rate. I don't know how I missed this the first time around.	See Response #5	
Page 34 AS:	This is not a valid statement. There was an error in translation from my data file to the report and the values were backward. First of all, you can not know if the results are statistically different because there was no replication.	The indicated language is removed in the revised draft, per the suggested edits.	
Page 35 AS:	This was moved below.	The panel appreciates these clarifying edits.	
Page 36 AS:	Chris' original comment. "Amy, please confirm this re-write. It appears as though the interpretation they made does not match your	The panel appreciates the edits and changes and is happy to accept all cumulative changes, as the revisions are from the author of the research in question. These	

Date/annotation	Comment or suggested change	Response	Link or other reference if applicable
	subsequent explanation to me, so I made the text match my understanding." I found an error in my report and therefore I rewrote this section again, with your edits in mind.	edits have been "accepted" and do not appear as tracked changes. The panel acknowledges that these edits have no impact on its existing conclusions.	
Page 37 CB:	Was this measured and not found or not measured?	Not measured. Language clarified (p. 27 of amended report).	
Page 37 CB:	This evidence supports an efficiency. The SD difference of 18 could be considered the improved stability and translate to a commensurate NUE improvement. This estimation should be performed on the CP measurements and those measurements should be presented if possible.	The panel disagrees in light of the reasons and available information described in the report. The panel stands behind its conclusion that there is not adequate evidence at this time for a nitrogen efficiency and wants to emphasize the future research needs. Added language regarding residual soil N pools (p. 27 of amended report).	
Pages 43-44 CB:	Formatting, various edits for clarity and substance.	See Response #1	
Page 45 CB:	Outside scope. Panel should assume NM and proper irrigation management because, like NM, proper management of water is a cost savings to the farmer. No economic reports were summarized.	It is well within the panel's scope to consider qualifying conditions or factors pertaining to nutrients applied or managed on an irrigated field as this directly relates to possible nutrient loss from the irrigated field system. Furthermore, a qualifying condition or implementation of a BMP must be documented or verified in some manner and is never assumed simply by virtue of its economic or other benefits to the producer or implementer. We have added language describing findings of the SARE report mentioned by the commenters above (p. 36 of amended report)	https://projects.sare.org/project-reports/lne12-314/
Page 45 CB:	Formatting, various edits for clarity and substance.	See Response #1	
Page 45 CB:	Various edits for clarity and substance.	See Response #1	