Message

From: Coy, Murphey (Richard) [coy.richard@epa.gov]
Sent: 4/2/2020 6:41:27 PM
To: OPP BEAD BAB [OPP_BEAD_BAB@epa.gov]
Subject: Rounding Rules and Future Discussions/Adoption?

BABers,

Below I copied the recent email from Mark regarding proposed changes to rounding rules and the presentation of data in our reports. Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Hello BEAD,

There are some changes to the presentation and citation of some usage statistics that SIAB has been working on that everyone should be aware. In an effort to improve the consistency and appropriate interpretation of usage statistics, we are applying the rounding rules that have been used for SLUAs for years to all of our usage statistics. Some data must be rounded in order to protect proprietary data*. It is also important to encourage appropriate interpretation of these values. They are estimates and we want to convey the appropriate level of precision for the data.

SIAB has established 'rounding rules' below, which we use across documents for consistency. We encourage others to apply the same rounding rules to usage data.

ROUNDING OF VALUES**

1. **Pounds AI applied, Base Acres Treated, and Total Acres Treated**
   If the estimated value is less than 500, then that value is labeled <500. Estimated values between 500 & <1,000,000 are rounded to 1 place value. Estimated values of 1,000,000 or greater are rounded to the hundred thousands' place value. (Examples: 478 would be reported as "<500"; 43,873 would be reported as "40,000"; 47,873,901 would be reported as "47,900,000").
2. **PCT**
   PCT values are rounded up to the nearest multiple of 5. Values less than 1 are reported as "<1." Values less than 2.5 are reported as "<2.5."(Examples: 31 would be reported as 35; 84 would be reported as 85).

   * Our contract with Kynetec USA Inc. stipulates that we round values, such as Pounds AI Applied, PCT, BAT, TAT, etc... Kynetec data, even if rounded, must also not be associated with an individual year, which is resolved by averaging over multiple years or presenting a maximum or minimum value associated with a range of years.

   ** Rounding rules have not been developed for all usage statistics (e.g., % applied by air and average application rate). In these cases, best professional judgement should be applied.

REFERENCE/CITATION CHANGES:
Kynetec data may now be cited by name (*i.e.,* no more AMRD). The study (i.e., data) may be cited as "Kynetec YEAR" or "The AgroTrak Study from Kynetec USA, Inc. YEAR" in the body of the document. The appropriate reference is:

Kynetec USA, Inc. 2019. "The AgroTrak® Study from Kynetec USA, Inc." Database Subset: 1998-2018.

When we receive the new data in the Fall, the citation will update to "Kynetec USA, Inc. 2020. "The AgroTrak® Study from Kynetec USA, Inc." Database Subset: 1998-2019."

If you have any questions about these changes, please let me know.

Regards,
Mark

R. Murphey Coy, Ph.D.
Entomologist
Biological and Economic Analysis Division
Office of Pesticide Programs
US Environmental Protection Agency
(703) 347-0434

Message

From: Eckel, William [Eckel.William@epa.gov]
Sent: 7/1/2020 2:16:00 PM
To: Negron-Encarnacion, Ideliz [Negron-Encarnacion.Ideliz@epa.gov]; Matuszko, Jan [Matuszko.Jan@epa.gov]; Nesci, Kimberly [Nesci.Kimberly@epa.gov]; Echeverria, Marietta [Echeverria.Marietta@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Anderson, Neil [Anderson.Neil@epa.gov]; Spatz, Dana [Spatz.Dana@epa.gov]; Kyle, Lee [Kyle.Lee@epa.gov]; Thurman, Nelson [Thurman.Nelson@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Young, Dirk [young.dirk@epa.gov]; Corbin, Mark [Corbin.Mark@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Bohaty, Rochelle [Bohaty.Rochelle@epa.gov]; Crowley, Matthew [Crowley.Matthew@epa.gov]; Waterworth, Rebeccah [Waterworth.Rebeccah@epa.gov]
Subject: RE: PWC Scenarios & PCA/PCT Weekly DD Update - 6/23/2020 Notes
Attachments: PCA_PCT_QAPP_070120.docx

Hello all!

Here is the QAPP for the PCA-PCT project with all comments addressed. If it looks OK, I will produce a final, clean copy.

Thanks for your patience,

Bill

From: Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Sent: Tuesday, June 30, 2020 5:30 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: RE: PWC Scenarios & PCA/PCT Weekly DD Update - 6/23/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update
June 30, 2020
Attendees: Mark C. , Bill, Matt, Rebeccah, Rochelle, Monisha, Mark S., Nelson, Lee, Dana, Johnathan, Jan, Claire, Kimberly and Ideliz

1. Updates on your DW project
   - PCA/PCT – no other updates than those included below.
   - PWC scenarios - Wrapping up on the scenario for deciduous orchard. The scenario for CA vegetables is moving forward.
   - Chlorpyrifos - Draft DWA will be send to the review panel. The framework document will be updated as necessary.

2. Documentation for docket - status update
   - We will aim to include the documents in the docket by the end of August. The documents for chlorpyrifos will be finalized and included in the chlorpyrifos docket by September 21.

- PCA/PCT - QAPP, working with Matt to get comments addressed. White paper method documents, Josh will begin this week and will have an update on two weeks to be ready for review by teams.
- PWC scenarios - QAPP, feedback received from Jan. Methods document, sent out to EFEDs team, Lee will review it next week and the timeline was updated to allow time for Dirk to come back and address comments before sending to BEAD for review.
- Ex. 5 Deliberative Process (DP)
- Updates to the schedule were included below.

PWC Scenarios Documents	Primary Person Responsible	EFED & BEAD Team Review Start Date	EFED & BEAD IO Review Start Date
QAPP	Dirk Young	29-May-20	15-Jun-20
Response to Comments	Nelson Thurman	15-Jun-20	1-Jul-20
Methods Document	Dirk Young	8-Jul-20	1-Aug-20
Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman	8-Jul-20	1-Aug-20

BEAD Team: Monisha Kaul, Johnathan Becker, Rebeccah Waterworth. BEAD IO: Kimberly Nesci and Neil Anderson.

PCA/PCT Documents	Primary Person Responsible	EFED & BEAD Team Review Start Date	EFED & BEAD IO Review Start Date
QAPP	Bill Eckel	26-May-20	15-Jun-20
Response to Comments	Bill Eckel	15-Jun-20	1-Jul-20
White Paper	Josh Antoline	15-Jul-20	1-Aug-20

BEAD Team Contact: Mark Suarez. BEAD IO: Kimberly Nesci and Neil Anderson.

3. Presentations at the Environmental Modeling Public Meeting (EMPM)
   - Outreach to USDA scientists that have worked with us and may be interested in presenting.
     - Jan reached out to Sheryl Kunickis (USDA) who indicated that she doesn't know anybody interested in presenting but many of them will be joining virtually.
     - Further outreach to individual scientists was not considered necessary by the DW teams.
   - Note that 5 min for questions will be added to the time of your presentation
   - Updates on projects outside of the DW team can be provided
   - EMPM presentations and presenters:
     - PWC Scenarios – 3 presentations
       - Overview of New PWC Scenario Development – Nelson Thurman
       - Automating process for new scenario inputs – James (Trip) Hook
       - Methods for generating new PWC scenarios – Dirk Young
     - PCA/PCT Team - 1 presentation

        - Percent Crop Area (PCA) and Percent Crop Treated (PCT) for Higher Tier Drinking Water Assessment (DWA) Refinements - Josh Antoline
            - PCA/PCT presentation - Kimberly asked to include taking points on BEAD contribution and indicate that Claire will address questions on at the end of presentation.
    - BEAD teams - 1 presentation
        - PWC scenario work presented by Monisha Kaul. The title of the presentation will be sent tomorrow.
    - Framework Team - two updates
        - SAP Response to Comments (Verbal update; 5 min) - Jessica Joyce
        - Updates to the framework document (Presentation; 10 min) - Rochelle Bohaty

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From: Negron-Encarnacion, Ideliz
Sent: Tuesday, June 23, 2020 6:24 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/23/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update
June 23, 2020
Attendees: Mark C., Monisha, Mark S., Dana, Matt C., Jonathan, Rebeccah, Bill, Jan, Marietta, Claire, Neil and Nelson.

1. PCA/PCT Status
    - Meeting with HED (Mike, David and Don):
        - The need for engagement of the risk managers on how to do spatially refined DW assessments was emphasized.
        - No major concerns on spatially distinct assessments.
        - Discussion on the DWLOC concept and where in their process the DWLOC may not change. Ex. 5 Deliberative Process (DP)
        - Ex. 5 Deliberative Process (DP)
    - Documentation for the docket:
        - Case study - no need to prepare a separate document, chlorpyrifos will become the case study.
        - QAPP - PCA/PCT automation part to be integrated in the QAPP. Matt will provide comments on the QAPP soon. Feedback from EISB will be incorporated as well.
        - RTC - Monica will format the RTC.
        - White paper - Josh will begin next week.
    - Implementation update: Suggestions from Rochelle were received. Ex. 5 Deliberative Process (DP)
      Ex. 5 Deliberative Process (DP)

2. PWC Scenarios Status
    - Implementation update - Only scenario left in the trellis group is hops. Working with agricultural extension folks.
    - Documentation for the docket:
        - QAPP - received feedback from Jan.
        - RTC and methods document - sent to the team for review.

3. Documentation for docket - Request from Jan to explain the rationale when making a statement, not only point to the policy.

PWC Scenarios Documents	Primary Person Responsible	EFED & BEAD Team Review Start Date	EFED & BEAD IO Review Start Date
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Response to Comments	Nelson Thurman	15-Jun-20	1-Jul-20
Methods Document	Dirk Young	15-Jun-20	1-Aug-20
Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman	8-Jul-20	1-Aug-20

BEAD Team: Monisha Kaul, Johnathan Becker, Rebeccah Waterworth. BEAD IO: Kimberly Nesci and Neil Anderson.

PCA/PCT Documents	Primary Person Responsible	EFED & BEAD Team Review Start Date	EFED & BEAD IO Review Start Date
QAPP	Bill Eckel	26-May-20	15-Jun-20
Response to Comments	Bill Eckel	15-Jun-20	1-Jul-20
White Paper	Josh Antoline	1-Jul-20	1-Aug-20

BEAD Team Contact: Mark Suarez. BEAD IO: Kimberly Nesci and Neil Anderson.

4. Presentations at the Environmental Modeling Public Meeting (EMPM) - August 5, 2020
   - Updates on presentations:
     - PCA/PCT Team - 1 presentation that may be joint with BEAD
     - BEAD teams - will further discuss, 2 presentations so far
   - Updates on briefing to Ed Messina: Jan reached out to discuss if Ed wants to get more familiar with the methodologies. Jan will walk him through the methodologies in the next general and schedule follow up meetings if needed. The team doesn't need to do anything else.
   - Review schedule we discussed last week is provided below. Note that the EMPM needs a bio from the presenters.

EMPM Review/Task Schedule (if OPP IO Review is not needed)

Dates	Activities
June 30	Let Jan and Ideliz know if you are planning to present.
July 10	Send slide deck to team reviewers (EFED and/or BEAD as necessary) requesting feedback by **July 16**.*
July 14	Send final abstract and short bio to EMPM Team and let them know if you need more or less than 25 min to present. The team will read your bio as an introduction to your presentation.
July 22	Send slide deck to EFED and BEAD IO requesting feedback by **July 27.***
July 30	Send slide deck to the EMPM Team.

From: Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Sent: Tuesday, June 16, 2020 3:39 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil

<Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/16/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update
June 16, 2020
Attendees: Jan, Mark S., Dana, Rebeccah, Bill, Marietta, Kimberly, Mark C., Monisha, Nelson, Neil and Ideliz.

- PCA/PCT Briefing to HED: Meeting to brief David Miller and Mike Metzger on Thursday on what has been done for chlorpyrifos, and how they may use the analyses obtained by these new methodologies. DWLOC is used to streamline the process, i.e. narrow down the number of scenarios for which a time series is provided. DWLOC may be further used in the analyses if the estimate considers all routes of exposure applicable to the registered use of the pesticide.

- Status of running PWC scenarios: Running deciduous orchard and trellis (grape). Quality control being done and working on the growing degree days.

- Documentation for docket (Both Teams)
  - QAPP
    - Teams are incorporating reviewers' comments and will send to EFED IO and BEAD IO this week.
    - PCA/PCT: QAPP was reviewed by Kurt.
    - PWC Scenarios: QAPP was reviewed by Denise Rice. Trip will be the interim lead on the PWC Scenarios QAPP while Dirk is on leave.
  - RTC
    - PCA/PCT: Bill is addressing comments provided by BEAD and getting clarification on GIS issues.
    - PWC Scenarios: Nelson sent the RTC for team review, please provide comments if you haven't.
  - PWC scenarios "methods document" – will be sent for team review this week.
  - EFED IO and BEAD IO – will receive QAPP this week. The RTCs will be received by July 1.
  - If necessary, discussion on major comments can be raised in the weekly EFED/BEAD team meetings. Please, let Jan and Ideliz know.

- Presentations at the Environmental Modeling Public Meeting (EMPM) - August 5, 2020
  - Updates on presentations from PCA/PCT team and BEAD teams working on both DW projects: Teams are in the planning phase and will provide updates at a later time.
  - Kimberly agree with the proposal for review of presentations: Please send your presentation to EFED IO and BEAD IO. Depending on the content of the presentations, these may need to be primarily reviewed by one of the divisions, giving the other division the opportunity to review.
  - Need of OPP IO review - Jan indicated that OPP IO review is needed if the material to be presented has not been made publicly available yet. For those presentations, please plan to have team and IO review completed before June 14 and plan to send the presentation slides to OPP IO by June 14. Ideliz can prepare a schedule if that would help.

- Rebeccah and Monisha's presentation on the methods may include new content and may need OPP IO review.
- Mark S. presentation on the PCA/PCT methods may include content previously presented for ESA. A joint presentation with EFED may be considered.

- Marietta recommended to verify if Ed is interested in a briefing. Jan is going to reach out to Ed.
- The proposed review schedule for presentations that do not need OPP IO review is below. Please let Jan and Ideliz know if you have concerns or comments with the proposed schedule.

EMPM Review/Task Schedule (if OPP IO Review is not needed)

Dates	Activities
June 30	Let Jan and Ideliz know if you are planning to present.
July 10	Send slide deck to team reviewers (EFED and/or BEAD as necessary) requesting feedback by **July 16**.*
July 14	Send final abstract to EMPM Team and let them know if you need more or less than 25 min to present.
July 22	Send slide deck to EFED and BEAD IO requesting feedback by **July 27.***
July 30	Send slide deck to the EMPM Team.

* Major comments could be discussed during the weekly meeting.

From: "Negron-Encarnacion, Ideliz" <Negron-Encarnacion.Ideliz@epa.gov>
Date: Wednesday, June 10, 2020 at 11:49 AM
To: "Matuszko, Jan" <Matuszko.Jan@epa.gov>, "Nesci, Kimberly" <Nesci.Kimberly@epa.gov>, "Echeverria, Marietta" <Echeverria.Marietta@epa.gov>, "Anderson, Brian" <Anderson.Brian@epa.gov>, "Anderson, Neil" <Anderson.Neil@epa.gov>, "Spatz, Dana" <Spatz.Dana@epa.gov>, "Kyle, Lee" <Kyle.Lee@epa.gov>, "Thurman, Nelson" <Thurman.Nelson@epa.gov>, "Kaul, Monisha" <Kaul.Monisha@epa.gov>, "Suarez, Mark" <Suarez.Mark@epa.gov>, "Young, Dirk" <young.dirk@epa.gov>, "Corbin, Mark" <Corbin.Mark@epa.gov>, "Becker, Jonathan" <Becker.Jonathan@epa.gov>, "Eckel, William" <Eckel.William@epa.gov>, "Paisley-Jones, Claire" <Paisley-Jones.Claire@epa.gov>, "Bohaty, Rochelle" <Bohaty.Rochelle@epa.gov>, "Crowley, Matthew" <Crowley.Matthew@epa.gov>, "Waterworth, Rebeccah" <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/9/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

June 9, 2020

Attendees: Matt C., Lee, Mark S., Dana, Mark C., Neil, Jonathan, Jan, Claire, Rebeccah, Monisha, Dirk, Bill, Marietta, Nelson and Ideliz.

1. PCA/PCT Update

- Automation tools status – Update on PCT Tables for Chlorpyrifos team and QA of Tool.
  - Jen and Summathy have been working on this with Rochelle.
  - PCT tables are with the chlorpyrifos team. All the tools were provided.
  - Miscellaneous All Ag issue of negative values was resolved.
  - Rochelle is drafting an email to the team to discuss a few observations while running the tool.

    - QA of the tool was completed by Josh. Rochelle is looking at implementation aspects while running the tool.
- Mark Corbin set a meeting for next week to engage HED in the new PCA/PCT methodologies and their implementation.

2. PWC Scenarios Status Update

- Implementation update: resolution of approach for implementing in CPY and beyond.
    - Concluded that the long-term average concentrations will be used to determine the scenarios to be selected based on their vulnerability.
    - Use of a single Koc scenario rather than three (low, intermediate and high Koc). The scenario to select depends on the Koc. These will be selected based on Kocs <100, 100-3000, >3000.
- Status of running chlorpyrifos scenarios – The team has everything that they need.
- Status of running scenarios – All the scenarios have been generated with the exception of the deciduous orchard scenario. Inputs are being established for this scenario, e.g. growing degree dates.

3. Documentation for docket (Publicly available: EPA-HQ-OPP-2020-0279)

- QAPP
    - Team review ends this week
    - Send to EFED and BEAD IOs next Monday June 15
- RTC update
    - Send for team review next Monday June 15
    - No need of a cover page with signatures
- PWC scenarios "methods document"
    - Send for team review Monday June 15

Note that all documentation is on time or advanced in the schedule. Thank you!

4. Presentations at the Environmental Modeling Public Meeting (EMPM) - "Drinking Water Assessment Improvements for Surface Water Exposure", August 5, 2020.

Coordinators: Zoe Ruge and Michael Wagman

Topics: (1) New scenario development for PWC; (2) New methodology for incorporating PCA into refined drinking water assessments; (3) New methodology for incorporating PCT into refined drinking water assessments; (4) Automation tools developed for applying new methodologies; (5) The drinking water assessment framework.

Presentations:

- We are aiming to have a good balance of presentations between the PCA/PCT and PWC Scenarios projects.
- PCA/PCT team and Framework team will be presenting. Please, let us know how many presentations per team.
- PWC Scenario team has planned 3 presentations: Overview of New PWC Scenario Development; Methods for generating new PWC scenarios; Automating process for new scenario inputs.
- BEAD - Rebecca and Mark are considering presenting. Documents that are not finalized can be presented with a focus on methodology.

Tasks/Timeline:

- No need to have an abstract ready by July 3. This is a requirement for other teams. Abstracts can be made available at a later time.
- EMPM team will be assuming 25 minutes per presentation, with time for questions at the end. Let the organizers know sometime in July if more or less time is needed.
- Agenda will be finalized late in July.
- Provide slide deck to Zoe and Michael one week in advance (July 29).
- Internal review and approval are coordinated by the presenter.
- A review timeline will be prepared.

Level of Review: Depending on the content of the presentations, these may need to be primarily reviewed by either EFED IO or BEAD IO, giving the other division the opportunity to review. OPP may need to review the presentations as well. EFED IO would like to see the slide decks by July 15.

From: "Negron-Encarnacion, Ideliz" <Negron-Encarnacion.Ideliz@epa.gov>
Date: Tuesday, June 2, 2020 at 7:52 PM
To: "Matuszko, Jan" <Matuszko.Jan@epa.gov>, "Nesci, Kimberly" <Nesci.Kimberly@epa.gov>, "Echeverria, Marietta" <Echeverria.Marietta@epa.gov>, "Anderson, Brian" <Anderson.Brian@epa.gov>, "Anderson, Neil" <Anderson.Neil@epa.gov>, "Spatz, Dana" <Spatz.Dana@epa.gov>, "Kyle, Lee" <Kyle.Lee@epa.gov>, "Thurman, Nelson" <Thurman.Nelson@epa.gov>, "Kaul, Monisha" <Kaul.Monisha@epa.gov>, "Suarez, Mark" <Suarez.Mark@epa.gov>, "Young, Dirk" <young.dirk@epa.gov>, "Corbin, Mark" <Corbin.Mark@epa.gov>, "Becker, Jonathan" <Becker.Jonathan@epa.gov>, "Eckel, William" <Eckel.William@epa.gov>, "Paisley-Jones, Claire" <Paisley-Jones.Claire@epa.gov>, "Bohaty, Rochelle" <Bohaty.Rochelle@epa.gov>, "Crowley, Matthew" <Crowley.Matthew@epa.gov>, "Waterworth, Rebeccah" <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/2/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

June 2, 2020

Attendees: Jonathan, Bill, Matt C., Lee, Mark S, Dirk, Kimberly, Nelson, Jan, Monisha, Dana and Rochelle

1. PCA/PCT Update
    - Automation tools status - EISB is working to provide the PCT tables to Rochelle and Dana. Aiming for today.
    - Progress on plan for discussions with HED on output - The meeting is being setup
    - Documentation: status of QAPP - Sent by Bill to EFED and BEAD reviewers

2. PWC Scenarios Status Update Lee, Nelson and Dirk

- Implementation update: resolution of approach for implementing in CPY and beyond
    - Team put together a short paper recommending the use of three scenarios (high erosion, high runoff and combined) in the modeling, and the use of the overall concentration to choose the scenarios representing the 90th percentile.
    - The team will meet with Jan and Marietta on Tuesday afternoon to discuss this and the next steps.
- Status of running scenarios - The chlorpyrifos team has everything but need a decision on the scenarios.
- Documentation: status of QAPP - In EFED internal review

3. Documentation for the docket
    - Review by BEAD:
        - All documents except the RTC - These documents have been previously reviewed by the teams and have been updated to include new work. When sending these documents for review, please copy BEAD's team but no need to wait for their review.
        - RTC - This document will be new for everybody. BEAD will provide feedback. It was noted that comments on the PCA/PCT project are mainly germane to BEAD.
    - After the meeting supporting documentation for the RTC document including a brief summary of public comments and other work previously done was compiled and shared by Elyssa.

Notes from May 26, 2020 were modified below to include updated schedule/review tables.

From: Negron-Encarnacion, Ideliz
Sent: Tuesday, May 26, 2020 5:20 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/26/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 26, 2020

Attendees: Bill, Marietta, Jan, Neil, Mark C., Monisha, Matt C., Lee, Ideliz, Claire, Dana, Nelson, Dirk, Kimberly, Nelson, Jonathan, Rochelle

1. PCA/PCT Update

- Automation tools status
  - PCA/PCT Automation – This tool is already available for use. Minor adjustments will be made to adjust the EDWCs for miscellaneous uses.
  - Aggregation tool – This tool allows multiple model runs. QA of tool by ERB 3 will begin.
- Progress on plan for discussions with HED on output – Ready to engage HED, coordination through Don Wilbur. A meeting will be set with HED branch chiefs to describe the project and potentially discuss how to consider time series if we these are established by HUC.
- Documentation for docket
  - Comments on list of reviewers & timeline:
    - White paper and case study will be available by August 1
    - Clarified that the SOP is internal and it doesn't have to be reviewed with other documents
    - A path forward is available and Josh will be the primary person responsible for the white paper and case study of the PCA/PCT project
  - QAPP review begins this week – DRAFT circulating with the team.

Document	Primary Person Responsible	EFED Reviewers	BEAD Reviewers	Team Review Start Date	EFED IO Review Start Date	Concurrent BEAD IO Review
QAPP	Bill Eckel	Kurt Pluntke, Bill Eckel, and Rochelle Bohaty	Mark Suarez	26-May-20	15-Jun-20	
Response to Comments	Bill Eckel	To be determined		15-Jun-20	1-Jul-20	
White Paper	Josh Antoline			1-Jul-20	1-Aug-20	Kimberly Nesci and Neil Anderson
Case Study	Josh Antoline			8-Jul-20	1-Aug-20	

2. PWC Scenarios Status Update

- Status of generating the scenarios
  - Team decided that cancer (overall concentration) will be used to define the 90th percentile.
  - Implementation Plan – Team will discuss Tuesday afternoon what is useful for scientists. Implementation targeted by September.
    - Improve batch run runs to make them useful in risk assessment
    - Plan will be presented to the PFTTT
    - Email everybody on the outcome of the discussions of the implementation plan after today's meeting
- Status of running chlorpyrifos scenarios - Team will discuss Tuesday afternoon to make sure that it's in good shape.

- Documentation for docket
    - Comments on list of reviewers
    - QAPP review begins this week

Document	Primary Person Responsible	EFED Reviewers	BEAD Reviewers	Team Review Start Date	EFED IO Review Start Date	Concurrent BEAD IO Review
QAPP	Dirk Young	Kurt Pluntke, Lee Kyle, Dirk Young, Nelson Thurman, and Trip Hook	Monisha Kaul, Johnathan Becker, Rebeccah Waterworth	29-May-20	15-Jun-20	
Response to Comments	Nelson Thurman	Lee Kyle, Dirk Young, Nelson Thurman, and Trip Hook		15-Jun-20	1-Jul-20	
Methods Document	Dirk Young			15-Jun-20	1-Aug-20	Kimberly Nesci and Neil Anderson
Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman			8-Jul-20	1-Aug-20	

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, May 19, 2020 2:58 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/19/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 19, 2020

Attendees: Neil, Bill, Mark C., Monisha, Lee, Jan, Ideliz, Claire, Dana, Nelson, Rebeccah, Dirk, Kimberly, Nelson, Jonathan, Rochelle, Matt C., Mark S., Elyssa

1. PCA/PCT Update
    - Automation tools status
        - PCA/PCT Automation – with Rochelle
            - Negative PCA issue is close to resolution – still some issues with rice
        - Aggregation tool – with Rochelle
    - Progress on plan for discussions with HED on output

- Plan is close to complete – can initiate soon
- Mark will talk to Jan about timing and outreach plan

- Final documentation for docket – review timeline proposal:
  - Intent of the schedule below is to space out deliverables and to set target dates without micromanaging the entire review process
  - Team review step includes manager (Mark C.) and BEAD team members (Mark S. and Claire) for all documents
  - BEAD IO (Kimberly and Neil) will review only the White Paper and Case Study (not the QAPP or RTC), subsequent or concurrent to the EFED IO review

PCA/PCT DOCUMENTS

Document	**Primary Person Responsible**	**Team Review Start Date**	**EFED IO Review Start Date**
QAPP	Bill Eckel	May 26, 2020	June 15, 2020
Response to Comments	Bill Eckel	June 15, 2020	July 1, 2020
White Paper	Josh Antoline (pending manager approval)	July 1, 2020	August 1, 2020
Case Study	Josh Antoline (pending manager approval)	July 8, 2020	August 1, 2020

2. PWC Scenarios Status Update
   a. Status of generating the scenarios
      i. The chlorpyrifos team has all the scenarios they need, but the teams have been discussing the definition of a "final" scenario
      ii. Chlorpyrifos is using a 21-day average concentration at HED's request, which is not part of the scenario selection and rankings.
      iii. We need a clear definition of "90th percentile" – the 90th percentile selection is for the specific chemical parameters run in the scenario generation process and it will not be exactly the same across different chemical parameters or timeframes.
      iv. If possible, trying to simplify the scenario selections for acute, chronic, and cancer (may not need all 3)
      v. Will impact chlorpyrifos and beyond; should discuss with the whole division. We need a manageable and practical approach for EFED.
   b. Status of running chlorpyrifos scenarios
      i. Rochelle is currently running the scenarios
         1. 1200 runs (12 crops), each run takes about 30 seconds
         2. Ok for chlorpyrifos, but need to simplify and clarify for wider EFED implementation

ii. Remaining question is on how to characterize the values

1. Ranking system applied to 1-day and 365-day averages, not 21-day – probably close but needs to be accurately described

2. Need to be clear about the definition of 90th percentile and what that means

c. Final documentation for docket – review timeline proposal:

i. Intent of the schedule below is to space out deliverables and to set target dates without micromanaging the entire review process

ii. Team review step includes manager (Lee) and BEAD team members (Jonathan, Rebeccah, Monisha) for all documents

iii. BEAD IO (Kimberly and Neil) will review only the Methods and Inputs/Creating New Scenarios documents (not the QAPP or RTC), subsequent or concurrent to the EFED IO review

iv. Note that the chlorpyrifos documents will also be going to EFED IO for review on August 1.

v. Dirk will be on extended leave after June 15

SCENARIOS DOCUMENTS

Document	**Primary Person Responsible**	**Team Review Start Date**	**EFED IO Review Start Date**
QAPP	Dirk Young	~~May 26, 2020~~ May 29, 2020	June 15, 2020
Response to Comments	Nelson Thurman	June 15, 2020	July 1, 2020
Methods Document	Dirk Young	~~July 1, 2020~~ June 15, 2020	August 1, 2020
Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman	July 8, 2020	August 1, 2020

From: Arnold, Elyssa
Sent: Tuesday, May 12, 2020 1:31 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/12/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 12, 2020

Attendees: Neil, Jan, Kimberly Lee, Mark C., Mark S., Dana, Rochelle, Bill, Nelson, Rebeccah, Dirk, Monisha, Jonathan, Elyssa

1. PCA/PCT Update
    - Automation tools status
        - PCA/PCT Automation – Negative PCA values
            - Issues were with double cropping and rice, now close to a solution
            - Will be able to use the miscellaneous ag calculation and will document the issues and solutions
            - Will be resolved for use in chlorpyrifos DWA
        - Aggregation tool
            - Josh has finished his QA, will send on to Rochelle for her to test
    - Progress on plan for discussions with HED on output
        - Jan sent additional comments to Mark
    - Data from WSDA?
        - Yes, Rochelle got it last week and sent it to the project team including BEAD
        - Have not reviewed the data yet
    - Documentation for docket
        - White Paper & Case Study
        - Response to Comments
        - QAPP – have made progress on the QAPP
        - For next week – team to share proposed timeline and assignments for documentation revisions.
            - All drafts complete by early August for DD review.

2. PWC Scenarios Status Update
    a. Status of generating the scenarios
        i. Delivered all Tier 1 scenarios except for soybean
            1. Complete: Cotton, Hay, Orchard, Row and Field Crops, Spring Wheat
            2. Soybean just needs to go through the ranking process
            3. Dana set up a meeting later today for the chlorpyrifos team to ask questions about the completed scenarios

ii. Scenarios still in progress:

1. Market vegetables – were missing some regions so re-running in batch runs and hope to have done end of this week or beginning of next week

2. Winter Wheat – still need to run Koc of 10,000

3. Still work to do on the orchard dates – Trip is working on the growing degree day model

b. Documentation for docket

i. Documents provided for peer review

1. Methods Document

2. Inputs Document

a. Including spreadsheets

b. Anything we sent to CLA during the comment period

3. Creating New Scenarios Document

a. May be combined with the Inputs Document

ii. Response to Comments

iii. QAPP

iv. For next week – team to share proposed timeline and assignments for documentation revisions.

1. All drafts complete by early August for DD review.

c. Everything requested from BEAD has been delivered – thank you!!

From: Arnold, Elyssa
Sent: Tuesday, May 05, 2020 3:57 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/5/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 5, 2020

Attendees: Bill, Nelson, Kimberly, Neil, Marietta, Dana, Dirk, Jonathan, Rebeccah, Jan, Matt, Mark S., Mark C., Monisha, Lee, Claire, Rochelle, Elyssa

1. PCA/PCT Update

- Automation tools status
    - Negative PCA values – issue appeared in miscellaneous agriculture calculation
        - Majority are under 5%, so may be rounding errors
        - Others may be due to double cropping, working on an approach to address that
        - Need a resolution in the next week or so to keep chlorpyrifos on track
        - Team is meeting tomorrow to discuss
    - Aggregation tool – one QA issue, will fix and deliver to chlorpyrifos team at the end of this week
- Plan for discussions with HED on output
    - Mark is addressing Jan's comments on the draft – will get it back to her this week
- Data from WSDA? – not yet

2. PWC Scenarios Status Update
    - Feedback from Rick
        - Positive feedback, he supports high benefit crop plan
    - Plan for chlorpyrifos high benefit crops
        - EISB confirmed that existing scenarios with new weather data (asparagus, orchards) have already been QA'd
        - BAB confirmed that they will provide application rate and timing data for asparagus (MI) and strawberries (OR) by May 11
    - Status of generating the Tier 1 scenarios
        - Soybeans, hay, evergreen orchards (citrus), row and field crops, cotton
            - Ranking and selection process is complete
            - Generating final versions formatted to run in PWC
            - Dirk wants to do a QC – 48 hours
        - Winter wheat is next – batch runs complete, Nelson is doing a final check and will hand off to Trip for scenario selection
        - Batch runs on market vegetables (strawberry) started this morning
    - Status of crop dates for deciduous orchards
        - BEAD delivered their information for the growing degree model on Friday
            - In draft, memo will be finalized over the next month or so (data will not change, just possibly the wording)
            - EFED has all of the information needed to proceed
        - Trip has pulled together the dates and has a model ready to test
        - Will work on the deciduous orchards scenario after the current set are complete

3. EMPM – non-EPA speaker suggestions?
    - Peer reviewers – will not reach out to them, but they could self-nominate if they have work they want to present
    - Workshop? (CLA request)
        - Will not hold a workshop, but will give more detailed presentations and provide an opportunity for questions
            - Detail on process to build scenarios, but not to help others run the code
        - Could include a demonstration/example, but need to consider network limitations
            - Screenshots rather than live demonstration
        - Don't want to overcommit the time of the team while they are working to complete all of the documentation
    - Other presentation topics: overview of projects (current briefing package), more detail on implementation, PCA/PCT automation and aggregation tools

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From: Arnold, Elyssa
Sent: Tuesday, April 28, 2020 2:13 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/28/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 28, 2020

Attendees: Mark C., Bill, Nelson, Dana, Mark S., Jonathan, Marietta, Rebeccah, Dirk, Monisha, Rochelle, Kimberly, Lee, Jan, Neil, Matt Crowley, Claire, Elyssa

1. PCA/PCT Update
    - Automation tools
        - Question on some of the watersheds with negative PCA values associated with rice and turf
            - Meeting tomorrow with Rochelle and EISB to talk about this
        - Time series aggregation tool is in QA with Josh and Sumathy
    - Plan for discussions with HED on output

- Jan sent comments to Mark
    - Need to clarify what we are going to give HED and what they can do with it
    - First need to figure out in EFED what makes the most sense
    - Clarify the outreach needs – public outreach beyond EMPM? (ACS probably not happening this year), need for OGC to weigh in?

- WSDA meeting follow-up
    - Still working on getting us the data
    - Data is in Access
    - Need to see the data before determining if/how it can be used

2. PWC Scenarios Status Update

- Plan for chlorpyrifos high benefit crops
    - Asparagus (MI)
        - Use existing scenario with new weather data
        - BEAD will provide application rate and timing by May 11
    - Orchard crops – Apples, Peaches, Cherries
        - Use existing scenario with new weather data
        - Use application rate and timing from previous DWA
    - Strawberries (OR)
        - New scenario will be created by May 11
        - BEAD will provide application rate and timing by May 11 (OR only)
    - Oranges (CA) & Sugar beets (MN and ND)
        - Tier 1 scenarios
    - Lee will check whether we still need to QA existing scenarios with new weather data
    - BAB will discuss any concerns with this plan and will get back to us this afternoon
    - Marietta and Jan will discuss with Rick tomorrow at 4:00
- Status of generating the Tier 1 scenarios
    - Finished runs for cotton, spring wheat, row and field crops (sugar beets), and evergreen orchards
        - Scenario selection process is running now and should be complete today
    - Hay (alfalfa) – run is complete but needs a QA check before scenario selection
    - Soybeans and winter wheat – still running and should be complete by the end of the week – scenario selection by Monday

- Market vegetables (strawberries) – Nelson is doing a final check on the dates for consistency and will start the runs, on target for May 11

- Status of crop dates for non-priority crops
  - Deciduous orchards – in review with Jonathan, should be complete by the end of the week

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From: Arnold, Elyssa
Sent: Tuesday, April 21, 2020 4:10 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/21/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 21, 2020

Attendees: Neil, Jonathan, Derek Berwald, Mark C., Matt Crowley, Monisha, Lee, Nikhil, Jan, Nelson, Dana, Rebeccah, Dirk, Marietta, Rochelle, Kimberly, Bill, Elyssa

1. PWC Scenarios Status Update
   - Remote access to 5th lab computer
     - Yes, all 5 are now working
   - Sampling %
     - Mel analyzed 15%, 25%, and 35%; higher % = decreased CV
     - Tried to run 100% but was not feasible timewise
     - Currently planning to use 35%
     - EECs are the same within 2 sig figs regardless of the % (but CVs decrease)
   - Status of generating the Tier 1 scenarios? Update timeline
     - Original timeline:
       - PWC Scenario batch runs – Begin early April to mid April 2020
       - PWC Scenario Ranking/Selection – Early April to mid April 2020
       - Roll out in phases as completed – final delivery mid April 2020
     - Currently ~2 weeks behind from that schedule – deliver Tier 1 scenarios by April 30

- Time required per crop is between a couple days and a week. Trip is currently mapping out what to run when on what computer.
- By the end of today will start running all Tier 1 priority scenarios across the 5 computers.
- Will start getting output by the end of next week to send to chlorpyrifos team

- Input from Alex re: crops
  - Briefed Alex on the chlorpyrifos schedule on Thursday last week
  - Alex would like our DWA to include not just crops that are important to the registrant but also to the users (even if we are just doing a proof of concept DWA)
  - BEAD looked into that question and provided the following preliminary list of uses that are important to the grower community (high benefit)
    - **Preliminary** list:
      - Apples – deciduous orchards scenario
      - Asparagus (MI) – unique scenario
      - Cherries (MI) – deciduous orchards scenario
      - Oranges (CA)* – **Tier 1 citrus scenario**
      - Peaches (southeast) – deciduous orchards scenario
      - Sugar beets (MN and ND) – **Tier 1 sugar beet scenario**
      - Strawberries (OR) – market vegetable scenario
    - *Rick and Alex agreed to de-prioritize CA due to state restrictions
    - Providing details for all high benefit crops would take BEAD 5 weeks
      - Inputs for PWC: App dates and timing, rate distributions, max and avg rates
      - BEAD provide a time estimate for a subset of these (just strawberries?)
      - Dana and Rochelle: What would we assume without any new info from BEAD on these?
    - Nelson to estimate dates for completion of non-Tier 1 scenarios
      - Could also use old scenarios to evaluate high benefit crops that are not in Tier 1
  - We do not have to add in all the high benefit crops now, but need to scope it out. It's possible that the 2 already covered by the Tier 1 scenarios will be sufficient.

- Status of Crop dates for non-priority crops
  - Still QAing vegetable dates

For questions above, send Elyssa responses by Thursday 10:00 in preparation for the EFED/BEAD general at 1pm.

From: Arnold, Elyssa
Sent: Tuesday, April 14, 2020 1:57 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/13/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 13, 2020

Attendees: Jonathan, Mark C., Bill, Lee, Nelson, Rebeccah, Dirk, Dana, Neil, Jan, Marietta, Rochelle, Kimberly, Mark S., Monisha, Claire, Elyssa

1. PCA/PCT Project Status Update
   - Status of tools
     - Jen and Sumathy are integrating the last pieces of usage data from the SUUM report
     - Some quirky PCA numbers showing up – working out the details and will do some manual checks
     - Aggregation tool – behind because of Andrew's hardware issues, expect it to be ready for testing next week. If Andrew continues to have issues then Chuck can back him up.
   - Plan for discussions with HED on output
     - Bill and Mark are working on the proposal for presenting data (see last week's notes for details)
     - When that is ready Mark will reach out to Don Wilbur, probably next week
   - WSDA meeting (2:00 today)
     - Will find out what data they are able to provide

2. PWC Scenarios Status Update
   - Remote access to lab computers
     - Still just have 4 computers working. Not crucial to get the 5th computer but would be useful.
     - There is someone from EISD in the building this week who could help – Lee will follow up
   - Crop dates
     - No update from EFED
     - BEAD is on track, senior scientist review April 23

- Status of generating the Tier 1 scenarios
    - Did a couple runs, working out bugs
- Sampling %
    - Mel is working with Trip to resolve an issue
    - Data analysis is done but not written up
    - 25% sampling looks like it will work

From: Arnold, Elyssa
Sent: Tuesday, April 07, 2020 4:13 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/7/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 7, 2020

Attendees: Marietta, Steve, Monisha, Lee, Jan, Nelson, Claire, Dana, Rebeccah, Dirk, Neil, Jonathan, Bill, Elyssa

1. PCA/PCT Project Status Update
    - Status of tools
        - Automation tool: Jen doing QA on Sumathy's tool but otherwise done
        - Aggregation tool (update from Chuck and Andrew post-meeting): expect to be ready for testing end of next week (4/17)
    - Plan for discussions with HED on output
        - Bill and Mark discussed the following output structure:
            - List of HUC2 regions that pass on PCA alone
            - List of HUC2 regions that pass based on PCA+PCT together
            - If any remaining HUC2s did not pass, report 90th percentile of the watersheds in the region and provide time series (or point estimates) to HED

        - Bill found discussion of the origin of the 90th percentile assumption in SAP documents from 1998 and 1999 on index reservoir and PCA. Not sure whether the SAP commented on that, but don't think that we were asking for comment on it.
    - Will need to set up meetings with HED to discuss this – timing?

- Rochelle set up a meeting with the Washington State Dept of Ag next week to talk about their usage data
    - Rochelle has asked about alternative dates and times to accommodate BEAD (Mark S. is out this week)
    - Should meet internally before talking to them

2. PWC Scenarios Status Update

- Remote access to lab computers
    - We now have access to 4 of the 5 computers
        - Trip has a request in to EISD to get the 5th computer working. If he doesn't have success by tomorrow Jan will elevate the issue.
    - Currently getting the weather files transferred to the computers (takes about 15 hours)
- Crop dates
    - Status of tier 1 crop dates
        - Crop dates for all tier 1 crops and other crop-related inputs for all crops were completed last week (Thursday, 4/2)
        - Also have several Tier 2 crops done (corn, other grains/corn, small grains) and will be ready to go as we finish the Tier 1 crops
        - The 2 vegetable scenarios are close to wrapping up for dates and should be done late next week
    - BEAD help on crop dates for deciduous orchards and small trellised fruit – timing
        - 3 people in BAB working on this, target is to deliver April 30 with senior review prior to that
- Status of generating the Tier 1 scenarios
    - Dates and inputs are all ready to go
        - Trip will start generating scenarios today
        - A few fields we will need to check
        - Scenarios will be done by the end of the week
        - Batch runs should start next week – these take multiple days – will go a few days past April 15
            - Can deliver to chlorpyrifos team as they are completed

- Sampling % update
    - Mel has the corn scenarios for 3 NHD regions (4, 5, and 7) for one Koc (1). Trip has post-processed them to assign percentiles.
    - Mel hopes to have the sample test completed by Wed, Apr 8
    - Sampling % will impact time needed to generate the scenarios. Nelson will update us with the final determination.

3. DD feedback from briefing – any follow up?
    - No additional follow up; primary concern from other divisions is the implementation
    - Marietta and Jan will talk to Rick at their next general and see if he wants a briefing too or just the slides
    - Documentation for 90th percentile decision
        - Incorporate directly into final documentation for scenarios
        - Don't need to go into too much detail but can use the sources that Bill found from the 1998/1999 SAP presentations

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From: Arnold, Elyssa
Sent: Tuesday, March 31, 2020 1:32 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/31/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 31, 2020

Attendees: Neil, Jonathan, Mark C., Marietta, Bill, Lee, Nelson, Kimberly, Dana, Rebeccah, Dirk, Monisha, Claire, Rebeccah, Matt C., Jan, Elyssa

1. PCA/PCT Project Status Update
    - Still some work to do on the time series aggregation tool (Andrew was having VPN issues) – goal for completion is still mid-April
    - Working on QAPP and other documentation
    - Mark will check in with Rochelle on Sumathy's tool – looks like things are in good shape

2. PWC Scenarios Status Update

- Remote access to lab computers
    - Now have access to 3 of the 5 lab computers thanks to ITRMD
    - Need EISD to take out the card readers on the other 2 computers
        - If this can't happen, will we be ok with the 3 we have?
    - Trip just got wifi adapters delivered to his house and he will bring them by the office for EISD to install
    - Melissa was able to access the results of her runs to evaluate the sampling %s – need to resolve this question before the batch runs begin
        - Lee and Nelson will talk to her and get back to us
- Tier 1 crop dates
    - Nelson provided Trip with the completed Tier 1 crop dates and he is reviewing the format now
    - Team will have the 2 vegetable scenarios wrapped up soon (quicker than expected)
    - Then just the deciduous orchard and small trellised fruit will be left to complete
- Generating the Tier 1 scenarios
    - Nelson still needs to update the formats of some of the other crop inputs, he is working with Trip on that
    - Had to add a couple flags for special cases and tweak code accordingly, but all substantive work is complete
    - Still plan to start generating the scenarios this week
- BEAD help on crop dates for deciduous orchards and small trellised fruit
    - Rebeccah asked for clarification on crop groups
        - Deciduous orchard – include both tree fruit and tree nut?
            - Yes
        - Small trellised fruit – just grapes?
            - Grapes are the critical crop, but we will also need to include caneberry and blueberry
            - If you find information on caneberry and blueberry while searching, please flag that too
            - Caneberry and blueberry are concentrated in a handful of states, so it may be quicker to go through the extensions for those and EFED can do that work
    - Timing
        - Rebeccah is also working on application timing for chlorpyrifos for the list of Tier 1 and 2 crops from Corteva. Will there be any additional crops?

- We need to circle back with PRD on that. Only Tier 1 for September, but not clear on what will be left for chlorpyrifos after HED's SAP. BEAD is meeting with PRD on this issue tomorrow (Dana invited).

- Rebeccah will talk to Monisha and Jonathan and will confirm how quickly the crop date work can be done; will bring in at least one other BEAD team member.
    - Monisha will get back to us later this week

From: Arnold, Elyssa
Sent: Tuesday, March 24, 2020 3:34 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <nesci.kimberly@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: Bohaty, Rochelle (Bohaty.Rochelle@epa.gov) <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/24/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 24, 2020

Attendees: Marietta, Neil, Dana, Lee, Mark C., Matt, Jan, Kimberly, Claire, Mark S., Jonathan, Bill, Elyssa, Monisha, Nelson

PCA/PCT Project Status Update

- Rochelle tested Sumathy's tool with a couple HUC2s using PCT data and EDWCs from a previous assessment – worked pretty well
- Upper vs. uniform distribution makes a big difference in the results (% of watersheds passing)
- Mark C. is meeting with Chuck and Andrew today to talk about the aggregation tool next steps
- Peer review comment on including spray drift in the adjusted EDWCs – Mark will circle back with Chuck on the response
- Next steps will be to distill all the data into something easily understandable
    - Matrix of 9 options (min, avg, max PCT x lower, uniform, upper distribution) – this will be a policy question
    - For chlorpyrifos, we are just doing a DWLOC comparison so this is not an imminent problem
    - Preference in public and peer review comments for the uniform distribution

PWC Project Status Update

- Good progress on Tier 1 priority crops for chlorpyrifos
- Crop Dates
    - 1 thing outstanding from Rick S. – will have by midweek
    - Dates should be done by end of this week
- Can then hand off to Trip to generate the Tier 1 scenarios starting next week and start batch runs in PWC
- Challenge in accessing lab GIS computers remotely
    - Lee will reach out to Delores, her staff may be able to help
- Jan and Marietta spoke to Rick K. last week about the scenarios distribution
    - Rick wants us to stick with 90% to be consistent with historical approach – no rationale for changing that at this time, especially for chlorpyrifos
    - Will convey this at the DD briefing next week

What we need to complete scenarios by the summer (see attachment)

- Dates – deciduous orchards and small trellised fruit – would like **BEAD** assistance (Rebeccah)
    - Deciduous orchards – help to identify which crop stages relate to beginning canopy and maximum canopy
    - Small trellised fruit (grape) – help to identify bud break or bud burst as proxy for start of canopy
    - EFED can automate first freeze and growing degree dates
    - Deadline: end of April – Monisha will confirm whether this is doable for BEAD
- 25% sampling approach – need remote access to GIS lab computers to complete this analysis
    - This is needed for all scenarios, including Tier 1 chlorpyrifos crops
- General crop groups – finalized per BEAD's recommendations
    - Only change is for "other grains" – BEAD said to group with spring wheat, which works except for in the southeast where other grains are more likely to be fall planted and line up better with winter wheat
    - Nelson is cleaning up the list and will send a copy this afternoon

Elyssa will add Rebeccah to these meetings

From: Arnold, Elyssa
Sent: Tuesday, March 17, 2020 4:34 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <nesci.kimberly@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Johnson, Hope <Johnson.Hope@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-

Jones.Claire@epa.gov>
Cc: Bohaty, Rochelle (Bohaty.Rochelle@epa.gov) <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/17/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 17, 2020

Attendees: Neil, Mark C., Matt, Marietta, Bill, Monisha, Lee, Kimberly, Claire, Dana, Mark S., Nelson, Jonathan, Rochelle, Dirk, Bill, Jan, Elyssa

1. **Current status of each project:**
   a. Short term fixes based on peer review and public comments
   b. CPY status and tentative delivery dates (Tier 1 approach for scenarios)

Scenarios

- Tier 1 chlorpyrifos scenarios
  - Will have final scenarios for Tier 1 chlorpyrifos crops by April 15
  - Confirmed Tier 1 crops with Bruce ~a month ago
  - Wheat, soy, cotton, citrus, sugarbeet, alfalfa (hay scenario)
  - Still working on hay dates, aim to have those complete by this time next week
  - Updating standard default ag practices and curve numbers – will send table out to the team today. Team meeting tomorrow to make decisions on the c factor. By next week should have those inputs ready to converge with crop dates and put scenarios into batch runs.
- Remaining scenarios
  - After Tier 1 scenarios start the batch process will work on others – corn, sorghum/millet/small grains, vegetables, deciduous orchards – complete by summer
  - Dates – met with Rebeccah last week and walked through the process – would like some help from BEAD on finishing the deciduous orchards dates based on what Rebeccah has already done, the rest EFED can do using BEAD's methods
  - Working to automate some of the process; already automated the freeze date determination
- DWA work on Tier 2 crops for chlorpyrifos will be later (~Oct, but need to confirm the date)

PCA/PCT

- Sumathy sent updated info on the automation tool this morning
- Rochelle is testing it with chlorpyrifos this week
- Andrew is working on time series aggregation tool this week

- Chuck and Jen are out this week

2. **Any challenges due to teleworking?**

- Lab computers – setting them up to work remotely (not all online yet)
- At some point someone will have to come in to load some things on to the computers
- Mel was doing some test runs but the computers went to sleep before finishing – need to use a mouse jiggler
    - Mel doing runs to test the 25% sampling rate

3. **High level discussion of Documentation and RTC general approach and timeframe (May-August)**

- Documents to go out on a separate docket concurrent with chlorpyrifos assessment (Sept 21):
    - Documents previously released for comment will be revised and reviewed up to the DD level
        - Expect more changes to the PCA/PCT White Paper than to Scenarios documents
    - QAPPs
    - Response to comments (public and peer review) – summaries grouped by similar comments
- More detailed SOPs for EFED scientists will be completed separately

4. **EMPM**

- Plan to focus EMPM on DW projects
- High level – what we did, how to use the tools, longer term plans and challenges
- Workshop (as requested by CLA)
- Currently thinking July, prior to chlorpyrifos coming out (if global pandemic allows)
    - Could consider doing it virtually

5. **Anyone have an ask of anyone else to tee-up for future conversations?**

a. Next week: Discuss what we need to complete all scenarios by the summer

- Jonathan – General question about level of refinement for any chemical that doesn't pass screening level: We usually look at typical vs. maximum application rates, should we also refine number of apps, intervals, and distribution of rates?
    - Yes, EFED wants and uses all of those but we don't want to put an undue burden on BEAD

- Do we need a checklist?
- See framework document as a starting point -> attached (see Section 5.0)
- Could include an EMPM talk about what goes into the higher tier assessments
- This question is not directly related to the scenarios or PCA/PCT projects (Note – this could be a good topic to raise at the PFTTT)

Message

From: Negron-Encarnacion, Ideliz [Negron-Encarnacion.Ideliz@epa.gov]
Sent: 6/30/2020 9:29:56 PM
To: Matuszko, Jan [Matuszko.Jan@epa.gov]; Nesci, Kimberly [Nesci.Kimberly@epa.gov]; Echeverria, Marietta [Echeverria.Marietta@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Anderson, Neil [Anderson.Neil@epa.gov]; Spatz, Dana [Spatz.Dana@epa.gov]; Kyle, Lee [Kyle.Lee@epa.gov]; Thurman, Nelson [Thurman.Nelson@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Young, Dirk [young.dirk@epa.gov]; Corbin, Mark [Corbin.Mark@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Eckel, William [Eckel.William@epa.gov]; Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Bohaty, Rochelle [Bohaty.Rochelle@epa.gov]; Crowley, Matthew [Crowley.Matthew@epa.gov]; Waterworth, Rebeccah [Waterworth.Rebeccah@epa.gov]
Subject: RE: PWC Scenarios & PCA/PCT Weekly DD Update - 6/23/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update
June 30, 2020
Attendees: Mark C. , Bill, Matt, Rebeccah, Rochelle, Monisha, Mark S., Nelson, Lee, Dana, Johnathan, Jan, Claire, Kimberly and Ideliz

1. Updates on your DW project
   - PCA/PCT – no other updates than those included below.
   - PWC scenarios - Wrapping up on the scenario for deciduous orchard. The scenario for CA vegetables is moving forward.
   - Chlorpyrifos - Draft DWA will be send to the review panel. The framework document will be updated as necessary.

2. Documentation for docket - status update
   - We will aim to include the documents in the docket by the end of August. The documents for chlorpyrifos will be finalized and included in the chlorpyrifos docket by September 21.
   - PCA/PCT - QAPP, working with Matt to get comments addressed. White paper method documents, Josh will begin this week and will have an update on two weeks to be ready for review by teams.
   - PWC scenarios - QAPP, feedback received from Jan. Methods document, sent out to EFEDs team, Lee will review it next week and the timeline was updated to allow time for Dirk to come back and address comments before sending to BEAD for review.
   - Response to Comments -
     - The PCA/PCT and PWC scenario teams have different approaches/format for the RTC. The PCA/PCT RTC will be modified to make it more similar to the PWC Scenario RTC.
     - Jan indicated to not be too concerned about format. Differentiation between public and peer-review comments is important.
     - Nelson will be sending the RTC to Jan this week.
     - Ideliz will merge and format the RTC for the PCA/PCT project and send to the team tomorrow or next Monday.
   - Updates to the schedule were included below.

PWC Scenarios Documents	Primary Person Responsible	EFED & BEAD Team Review Start Date	EFED & BEAD IO Review Start Date
QAPP	Dirk Young	29-May-20	15-Jun-20
Response to Comments	Nelson Thurman	15-Jun-20	1-Jul-20
Methods Document	Dirk Young	8-Jul-20	1-Aug-20

Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman	8-Jul-20	1-Aug-20

BEAD Team: Monisha Kaul, Johnathan Becker, Rebeccah Waterworth. BEAD IO: Kimberly Nesci and Neil Anderson.

PCA/PCT Documents	Primary Person Responsible	EFED & BEAD Team Review Start Date	EFED & BEAD IO Review Start Date
QAPP	Bill Eckel	26-May-20	15-Jun-20
Response to Comments	Bill Eckel	15-Jun-20	1-Jul-20
White Paper	Josh Antoline	15-Jul-20	1-Aug-20

BEAD Team Contact: Mark Suarez. BEAD IO: Kimberly Nesci and Neil Anderson.

3. Presentations at the Environmental Modeling Public Meeting (EMPM)
    - Outreach to USDA scientists that have worked with us and may be interested in presenting.
        - Jan reached out to Sheryl Kunickis (USDA) who indicated that she doesn't know anybody interested in presenting but many of them will be joining virtually.
        - Further outreach to individual scientists was not considered necessary by the DW teams.
    - Note that 5 min for questions will be added to the time of your presentation
    - Updates on projects outside of the DW team can be provided
    - EMPM presentations and presenters:
        - PWC Scenarios – 3 presentations
            - Overview of New PWC Scenario Development – Nelson Thurman
            - Automating process for new scenario inputs – James (Trip) Hook
            - Methods for generating new PWC scenarios – Dirk Young
        - PCA/PCT Team - 1 presentation
            - Percent Crop Area (PCA) and Percent Crop Treated (PCT) for Higher Tier Drinking Water Assessment (DWA) Refinements - Josh Antoline
                - PCA/PCT presentation - Kimberly asked to include taking points on BEAD contribution and indicate that Claire will address questions on at the end of presentation.
        - BEAD teams - 1 presentation
            - PWC scenario work presented by Monisha Kaul. The title of the presentation will be sent tomorrow.
        - Framework Team - two updates
            - SAP Response to Comments (Verbal update; 5 min) - Jessica Joyce
            - Updates to the framework document (Presentation; 10 min) - Rochelle Bohaty

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From: Negron-Encarnacion, Ideliz
Sent: Tuesday, June 23, 2020 6:24 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/23/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update
June 23, 2020
Attendees: Mark C., Monisha, Mark S., Dana, Matt C., Jonathan, Rebeccah, Bill, Jan, Marietta, Claire, Neil and Nelson.

1. PCA/PCT Status
   - Meeting with HED (Mike, David and Don):
     - The need for engagement of the risk managers on how to do spatially refined DW assessments was emphasized.
     - No major concerns on spatially distinct assessments.
     - Discussion on the DWLOC concept and where in their process the DWLOC may not change. A better idea of the DWLOC will likely be available by the time the PCA/PCT analysis is needed.
     - Mark will send a summary around.
   - Documentation for the docket:
     - Case study - no need to prepare a separate document, chlorpyrifos will become the case study.
     - QAPP - PCA/PCT automation part to be integrated in the QAPP. Matt will provide comments on the QAPP soon. Feedback from EISB will be incorporated as well.
     - RTC - Monica will format the RTC.
     - White paper - Josh will begin next week.
   - Implementation update: Suggestions from Rochelle were received. A tool in phyton code will be evaluated to improve the speed of the aggregation of the time series.

2. PWC Scenarios Status
   - Implementation update - Only scenario left in the trellis group is hops. Working with agricultural extension folks.
   - Documentation for the docket:
     - QAPP - received feedback from Jan.
     - RTC and methods document - sent to the team for review.

3. Documentation for docket - Request from Jan to explain the rationale when making a statement, not only point to the policy.

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BEAD Team: Monisha Kaul, Johnathan Becker, Rebeccah Waterworth. BEAD IO: Kimberly Nesci and Neil Anderson.

PCA/PCT Documents	Primary Person Responsible	EFED & BEAD Team Review Start Date	EFED & BEAD IO Review Start Date
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Response to Comments	Bill Eckel	15-Jun-20	1-Jul-20
White Paper	Josh Antoline	1-Jul-20	1-Aug-20

BEAD Team Contact: Mark Suarez. BEAD IO: Kimberly Nesci and Neil Anderson.

4. Presentations at the Environmental Modeling Public Meeting (EMPM) - August 5, 2020
    - Updates on presentations:
        - PCA/PCT Team - 1 presentation that may be joint with BEAD
        - BEAD teams - will further discuss, 2 presentations so far
    - Updates on briefing to Ed Messina: Jan reached out to discuss if Ed wants to get more familiar with the methodologies. Jan will walk him through the methodologies in the next general and schedule follow up meetings if needed. The team doesn't need to do anything else.
    - Review schedule we discussed last week is provided below. Note that the EMPM needs a bio from the presenters.

EMPM Review/Task Schedule (if OPP IO Review is not needed)

Dates	Activities
June 30	Let Jan and Ideliz know if you are planning to present.
July 10	Send slide deck to team reviewers (EFED and/or BEAD as necessary) requesting feedback by **July 16**.*
July 14	Send final abstract and short bio to EMPM Team and let them know if you need more or less than 25 min to present. The team will read your bio as an introduction to your presentation.
July 22	Send slide deck to EFED and BEAD IO requesting feedback by **July 27.***
July 30	Send slide deck to the EMPM Team.

From: Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Sent: Tuesday, June 16, 2020 3:39 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/16/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update
June 16, 2020
Attendees: Jan, Mark S., Dana, Rebeccah, Bill, Marietta, Kimberly, Mark C., Monisha, Nelson, Neil and Ideliz.

- PCA/PCT Briefing to HED: Meeting to brief David Miller and Mike Metzger on Thursday on what has been done for chlorpyrifos, and how they may use the analyses obtained by these new methodologies. DWLOC is used to streamline the process, i.e. narrow down the number of scenarios for which a time series is provided. DWLOC may be further used in the analyses if the estimate considers all routes of exposure applicable to the registered use of the pesticide.

- Status of running PWC scenarios: Running deciduous orchard and trellis (grape). Quality control being done and working on the growing degree days.

- Documentation for docket (Both Teams)
  - QAPP
    - Teams are incorporating reviewers' comments and will send to EFED IO and BEAD IO this week.
    - PCA/PCT: QAPP was reviewed by Kurt.
    - PWC Scenarios: QAPP was reviewed by Denise Rice. Trip will be the interim lead on the PWC Scenarios QAPP while Dirk is on leave.
  - RTC
    - PCA/PCT: Bill is addressing comments provided by BEAD and getting clarification on GIS issues.
    - PWC Scenarios: Nelson sent the RTC for team review, please provide comments if you haven't.
  - PWC scenarios "methods document" – will be sent for team review this week.
  - EFED IO and BEAD IO – will receive QAPP this week. The RTCs will be received by July 1.
  - If necessary, discussion on major comments can be raised in the weekly EFED/BEAD team meetings. Please, let Jan and Ideliz know.

- Presentations at the Environmental Modeling Public Meeting (EMPM) - August 5, 2020
  - Updates on presentations from PCA/PCT team and BEAD teams working on both DW projects: Teams are in the planning phase and will provide updates at a later time.
  - Kimberly agree with the proposal for review of presentations: Please send your presentation to EFED IO and BEAD IO. Depending on the content of the presentations, these may need to be primarily reviewed by one of the divisions, giving the other division the opportunity to review.
  - Need of OPP IO review - Jan indicated that OPP IO review is needed if the material to be presented has not been made publicly available yet. For those presentations, please plan to have team and IO review completed before June 14 and plan to send the presentation slides to OPP IO by June 14. Ideliz can prepare a schedule if that would help.
    - Rebeccah and Monisha's presentation on the methods may include new content and may need OPP IO review.
    - Mark S. presentation on the PCA/PCT methods may include content previously presented for ESA. A joint presentation with EFED may be considered.
  - Marietta recommended to verify if Ed is interested in a briefing. Jan is going to reach out to Ed.
  - The proposed review schedule for presentations that do not need OPP IO review is below. Please let Jan and Ideliz know if you have concerns or comments with the proposed schedule.

EMPM Review/Task Schedule (if OPP IO Review is not needed)

Dates	Activities
June 30	Let Jan and Ideliz know if you are planning to present.
July 10	Send slide deck to team reviewers (EFED and/or BEAD as necessary) requesting feedback by **July 16**.*
July 14	Send final abstract to EMPM Team and let them know if you need more or less than 25 min to present.
July 22	Send slide deck to EFED and BEAD IO requesting feedback by **July 27.***
July 30	Send slide deck to the EMPM Team.

* Major comments could be discussed during the weekly meeting.

From: "Negron-Encarnacion, Ideliz" <Negron-Encarnacion.Ideliz@epa.gov>
Date: Wednesday, June 10, 2020 at 11:49 AM
To: "Matuszko, Jan" <Matuszko.Jan@epa.gov>, "Nesci, Kimberly" <Nesci.Kimberly@epa.gov>, "Echeverria, Marietta" <Echeverria.Marietta@epa.gov>, "Anderson, Brian" <Anderson.Brian@epa.gov>, "Anderson, Neil" <Anderson.Neil@epa.gov>, "Spatz, Dana" <Spatz.Dana@epa.gov>, "Kyle, Lee" <Kyle.Lee@epa.gov>, "Thurman, Nelson" <Thurman.Nelson@epa.gov>, "Kaul, Monisha" <Kaul.Monisha@epa.gov>, "Suarez, Mark" <Suarez.Mark@epa.gov>, "Young, Dirk" <young.dirk@epa.gov>, "Corbin, Mark" <Corbin.Mark@epa.gov>, "Becker, Jonathan" <Becker.Jonathan@epa.gov>, "Eckel, William" <Eckel.William@epa.gov>, "Paisley-Jones, Claire" <Paisley-Jones.Claire@epa.gov>, "Bohaty, Rochelle" <Bohaty.Rochelle@epa.gov>, "Crowley, Matthew" <Crowley.Matthew@epa.gov>, "Waterworth, Rebeccah" <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/9/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

June 9, 2020

Attendees: Matt C., Lee, Mark S., Dana, Mark C., Neil, Jonathan, Jan, Claire, Rebeccah, Monisha, Dirk, Bill, Marietta, Nelson and Ideliz.

1. PCA/PCT Update

- Automation tools status – Update on PCT Tables for Chlorpyrifos team and QA of Tool.
    - Jen and Summathy have been working on this with Rochelle.
    - PCT tables are with the chlorpyrifos team. All the tools were provided.
    - Miscellaneous All Ag issue of negative values was resolved.
    - Rochelle is drafting an email to the team to discuss a few observations while running the tool.
    - QA of the tool was completed by Josh. Rochelle is looking at implementation aspects while running the tool.
- Mark Corbin set a meeting for next week to engage HED in the new PCA/PCT methodologies and their implementation.

2. PWC Scenarios Status Update

- Implementation update: resolution of approach for implementing in CPY and beyond.
    - Concluded that the long-term average concentrations will be used to determine the scenarios to be selected based on their vulnerability.
    - Use of a single Koc scenario rather than three (low, intermediate and high Koc). The scenario to select depends on the Koc. These will be selected based on Kocs <100, 100-3000, >3000.
- Status of running chlorpyrifos scenarios – The team has everything that they need.
- Status of running scenarios – All the scenarios have been generated with the exception of the deciduous orchard scenario. Inputs are being established for this scenario, e.g. growing degree dates.

3. Documentation for docket (Publicly available: EPA-HQ-OPP-2020-0279)

- QAPP
    - Team review ends this week
    - Send to EFED and BEAD IOs next Monday June 15
- RTC update
    - Send for team review next Monday June 15

    - No need of a cover page with signatures
- PWC scenarios "methods document"
    - Send for team review Monday June 15

Note that all documentation is on time or advanced in the schedule. Thank you!

4. Presentations at the Environmental Modeling Public Meeting (EMPM) - "Drinking Water Assessment Improvements for Surface Water Exposure", August 5, 2020.

Coordinators: Zoe Ruge and Michael Wagman

Topics: (1) New scenario development for PWC; (2) New methodology for incorporating PCA into refined drinking water assessments; (3) New methodology for incorporating PCT into refined drinking water assessments; (4) Automation tools developed for applying new methodologies; (5) The drinking water assessment framework.

Presentations:

- We are aiming to have a good balance of presentations between the PCA/PCT and PWC Scenarios projects.
- PCA/PCT team and Framework team will be presenting. Please, let us know how many presentations per team.
- PWC Scenario team has planned 3 presentations: Overview of New PWC Scenario Development; Methods for generating new PWC scenarios; Automating process for new scenario inputs.
- BEAD - Rebecca and Mark are considering presenting. Documents that are not finalized can be presented with a focus on methodology.

Tasks/Timeline:

- No need to have an abstract ready by July 3. This is a requirement for other teams. Abstracts can be made available at a later time.
- EMPM team will be assuming 25 minutes per presentation, with time for questions at the end. Let the organizers know sometime in July if more or less time is needed.
- Agenda will be finalized late in July.
- Provide slide deck to Zoe and Michael one week in advance (July 29).
- Internal review and approval are coordinated by the presenter.
- A review timeline will be prepared.

Level of Review: Depending on the content of the presentations, these may need to be primarily reviewed by either EFED IO or BEAD IO, giving the other division the opportunity to review. OPP may need to review the presentations as well. EFED IO would like to see the slide decks by July 15.

From: "Negron-Encarnacion, Ideliz" <Negron-Encarnacion.Ideliz@epa.gov>
Date: Tuesday, June 2, 2020 at 7:52 PM
To: "Matuszko, Jan" <Matuszko.Jan@epa.gov>, "Nesci, Kimberly" <Nesci.Kimberly@epa.gov>, "Echeverria, Marietta" <Echeverria.Marietta@epa.gov>, "Anderson, Brian" <Anderson.Brian@epa.gov>, "Anderson, Neil" <Anderson.Neil@epa.gov>, "Spatz, Dana" <Spatz.Dana@epa.gov>, "Kyle, Lee" <Kyle.Lee@epa.gov>, "Thurman, Nelson" <Thurman.Nelson@epa.gov>, "Kaul, Monisha" <Kaul.Monisha@epa.gov>, "Suarez, Mark" <Suarez.Mark@epa.gov>, "Young, Dirk" <young.dirk@epa.gov>, "Corbin, Mark" <Corbin.Mark@epa.gov>, "Becker, Jonathan" <Becker.Jonathan@epa.gov>, "Eckel, William" <Eckel.William@epa.gov>, "Paisley-Jones, Claire" <Paisley-Jones.Claire@epa.gov>, "Bohaty, Rochelle" <Bohaty.Rochelle@epa.gov>, "Crowley, Matthew" <Crowley.Matthew@epa.gov>, "Waterworth, Rebeccah" <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/2/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

June 2, 2020

Attendees: Jonathan, Bill, Matt C., Lee, Mark S, Dirk, Kimberly, Nelson, Jan, Monisha, Dana and Rochelle

1. PCA/PCT Update
    - Automation tools status - EISB is working to provide the PCT tables to Rochelle and Dana. Aiming for today.
    - Progress on plan for discussions with HED on output - The meeting is being setup
    - Documentation: status of QAPP - Sent by Bill to EFED and BEAD reviewers

2. PWC Scenarios Status Update Lee, Nelson and Dirk
    - Implementation update: resolution of approach for implementing in CPY and beyond
        - Team put together a short paper recommending the use of three scenarios (high erosion, high runoff and combined) in the modeling, and the use of the overall concentration to choose the scenarios representing the 90th percentile.
        - The team will meet with Jan and Marietta on Tuesday afternoon to discuss this and the next steps.
    - Status of running scenarios - The chlorpyrifos team has everything but need a decision on the scenarios.
    - Documentation: status of QAPP - In EFED internal review

3. Documentation for the docket
    - Review by BEAD:
        - All documents except the RTC - These documents have been previously reviewed by the teams and have been updated to include new work. When sending these documents for review, please copy BEAD's team but no need to wait for their review.
        - RTC - This document will be new for everybody. BEAD will provide feedback. It was noted that comments on the PCA/PCT project are mainly germane to BEAD.

- After the meeting supporting documentation for the RTC document including a brief summary of public comments and other work previously done was compiled and shared by Elyssa.

Notes from May 26, 2020 were modified below to include updated schedule/review tables.

From: Negron-Encarnacion, Ideliz
Sent: Tuesday, May 26, 2020 5:20 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/26/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 26, 2020

Attendees: Bill, Marietta, Jan, Neil, Mark C., Monisha, Matt C., Lee, Ideliz, Claire, Dana, Nelson, Dirk, Kimberly, Nelson, Jonathan, Rochelle

1. PCA/PCT Update
    - Automation tools status
        - PCA/PCT Automation – This tool is already available for use. Minor adjustments will be made to adjust the EDWCs for miscellaneous uses.
        - Aggregation tool – This tool allows multiple model runs. QA of tool by ERB 3 will begin.
    - Progress on plan for discussions with HED on output – Ready to engage HED, coordination through Don Wilbur. A meeting will be set with HED branch chiefs to describe the project and potentially discuss how to consider time series if we these are established by HUC.
    - Documentation for docket
        - Comments on list of reviewers & timeline:
            - White paper and case study will be available by August 1
            - Clarified that the SOP is internal and it doesn't have to be reviewed with other documents
            - A path forward is available and Josh will be the primary person responsible for the white paper and case study of the PCA/PCT project
        - QAPP review begins this week – DRAFT circulating with the team.

Document	Primary Person Responsible	EFED Reviewers	BEAD Reviewers	Team Review Start Date	EFED IO Review Start Date	Concurrent BEAD IO Review
QAPP	Bill Eckel	Kurt Pluntke, Bill Eckel, and Rochelle Bohaty	Mark Suarez	26-May-20	15-Jun-20	
Response to Comments	Bill Eckel	To be determined		15-Jun-20	1-Jul-20	
White Paper	Josh Antoline			1-Jul-20	1-Aug-20	Kimberly Nesci and Neil Anderson
Case Study	Josh Antoline			8-Jul-20	1-Aug-20	

2. PWC Scenarios Status Update
   - Status of generating the scenarios
     - Team decided that cancer (overall concentration) will be used to define the 90th percentile.
     - Implementation Plan – Team will discuss Tuesday afternoon what is useful for scientists. Implementation targeted by September.
       - Improve batch run runs to make them useful in risk assessment
       - Plan will be presented to the PFTTT
       - Email everybody on the outcome of the discussions of the implementation plan after today's meeting
   - Status of running chlorpyrifos scenarios - Team will discuss Tuesday afternoon to make sure that it's in good shape.
   - Documentation for docket
     - Comments on list of reviewers
     - QAPP review begins this week

Document	Primary Person Responsible	EFED Reviewers	BEAD Reviewers	Team Review Start Date	EFED IO Review Start Date	Concurrent BEAD IO Review
QAPP	Dirk Young	Kurt Pluntke, Lee Kyle, Dirk Young, Nelson Thurman, and Trip Hook	Monisha Kaul, Johnathan Becker, Rebeccah Waterworth	29-May-20	15-Jun-20	
Response to Comments	Nelson Thurman	Lee Kyle, Dirk Young, Nelson Thurman, and Trip Hook		15-Jun-20	1-Jul-20	
Methods Document	Dirk Young			15-Jun-20	1-Aug-20	Kimberly Nesci and Neil Anderson
Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman			8-Jul-20	1-Aug-20	

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, May 19, 2020 2:58 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/19/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 19, 2020

Attendees: Neil, Bill, Mark C., Monisha, Lee, Jan, Ideliz, Claire, Dana, Nelson, Rebeccah, Dirk, Kimberly, Nelson, Jonathan, Rochelle, Matt C., Mark S., Elyssa

1. PCA/PCT Update
    - Automation tools status
        - PCA/PCT Automation – with Rochelle
            - Negative PCA issue is close to resolution – still some issues with rice
        - Aggregation tool – with Rochelle
    - Progress on plan for discussions with HED on output
        - Plan is close to complete – can initiate soon
        - Mark will talk to Jan about timing and outreach plan
    - Final documentation for docket – review timeline proposal:
        - Intent of the schedule below is to space out deliverables and to set target dates without micromanaging the entire review process
        - Team review step includes manager (Mark C.) and BEAD team members (Mark S. and Claire) for all documents
        - BEAD IO (Kimberly and Neil) will review only the White Paper and Case Study (not the QAPP or RTC), subsequent or concurrent to the EFED IO review

PCA/PCT DOCUMENTS

Document	Primary Person Responsible	Team Review Start Date	EFED IO Review Start Date
QAPP	Bill Eckel	May 26, 2020	June 15, 2020

Response to Comments	Bill Eckel	June 15, 2020	July 1, 2020
White Paper	Josh Antoline (pending manager approval)	July 1, 2020	August 1, 2020
Case Study	Josh Antoline (pending manager approval)	July 8, 2020	August 1, 2020

2. PWC Scenarios Status Update
    a. Status of generating the scenarios
        i. The chlorpyrifos team has all the scenarios they need, but the teams have been discussing the definition of a "final" scenario
        ii. Chlorpyrifos is using a 21-day average concentration at HED's request, which is not part of the scenario selection and rankings.
        iii. We need a clear definition of "90th percentile" – the 90th percentile selection is for the specific chemical parameters run in the scenario generation process and it will not be exactly the same across different chemical parameters or timeframes.
        iv. If possible, trying to simplify the scenario selections for acute, chronic, and cancer (may not need all 3)
        v. Will impact chlorpyrifos and beyond; should discuss with the whole division. We need a manageable and practical approach for EFED.
    b. Status of running chlorpyrifos scenarios
        i. Rochelle is currently running the scenarios
            1. 1200 runs (12 crops), each run takes about 30 seconds
            2. Ok for chlorpyrifos, but need to simplify and clarify for wider EFED implementation
        ii. Remaining question is on how to characterize the values
            1. Ranking system applied to 1-day and 365-day averages, not 21-day – probably close but needs to be accurately described
            2. Need to be clear about the definition of 90th percentile and what that means
    c. Final documentation for docket – review timeline proposal:
        i. Intent of the schedule below is to space out deliverables and to set target dates without micromanaging the entire review process
        ii. Team review step includes manager (Lee) and BEAD team members (Jonathan, Rebeccah, Monisha) for all documents
        iii. BEAD IO (Kimberly and Neil) will review only the Methods and Inputs/Creating New Scenarios documents (not the QAPP or RTC), subsequent or concurrent to the EFED IO review
        iv. Note that the chlorpyrifos documents will also be going to EFED IO for review on August 1.
        v. Dirk will be on extended leave after June 15

SCENARIOS DOCUMENTS

Document	Primary Person Responsible	Team Review Start Date	EFED IO Review Start Date
QAPP	Dirk Young	~~May 26, 2020~~ May 29, 2020	June 15, 2020
Response to Comments	Nelson Thurman	June 15, 2020	July 1, 2020
Methods Document	Dirk Young	~~July 1, 2020~~ June 15, 2020	August 1, 2020
Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman	July 8, 2020	August 1, 2020

From: Arnold, Elyssa
Sent: Tuesday, May 12, 2020 1:31 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/12/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 12, 2020

Attendees: Neil, Jan, Kimberly Lee, Mark C., Mark S., Dana, Rochelle, Bill, Nelson, Rebeccah, Dirk, Monisha, Jonathan, Elyssa

1. PCA/PCT Update
    - Automation tools status
        - PCA/PCT Automation – Negative PCA values
            - Issues were with double cropping and rice, now close to a solution
            - Will be able to use the miscellaneous ag calculation and will document the issues and solutions
            - Will be resolved for use in chlorpyrifos DWA
        - Aggregation tool

        - Josh has finished his QA, will send on to Rochelle for her to test
- Progress on plan for discussions with HED on output
    - Jan sent additional comments to Mark
- Data from WSDA?
    - Yes, Rochelle got it last week and sent it to the project team including BEAD
    - Have not reviewed the data yet
- Documentation for docket
    - White Paper & Case Study
    - Response to Comments
    - QAPP – have made progress on the QAPP
    - For next week – team to share proposed timeline and assignments for documentation revisions.
        - All drafts complete by early August for DD review.

2. PWC Scenarios Status Update
    a. Status of generating the scenarios
        i. Delivered all Tier 1 scenarios except for soybean
            1. Complete: Cotton, Hay, Orchard, Row and Field Crops, Spring Wheat
            2. Soybean just needs to go through the ranking process
            3. Dana set up a meeting later today for the chlorpyrifos team to ask questions about the completed scenarios
        ii. Scenarios still in progress:
            1. Market vegetables – were missing some regions so re-running in batch runs and hope to have done end of this week or beginning of next week
            2. Winter Wheat – still need to run Koc of 10,000
            3. Still work to do on the orchard dates – Trip is working on the growing degree day model
    b. Documentation for docket
        i. Documents provided for peer review
            1. Methods Document
            2. Inputs Document
                a. Including spreadsheets
                b. Anything we sent to CLA during the comment period
            3. Creating New Scenarios Document
                a. May be combined with the Inputs Document

ii. Response to Comments

iii. QAPP

iv. For next week – team to share proposed timeline and assignments for documentation revisions.

1. All drafts complete by early August for DD review.

c. Everything requested from BEAD has been delivered – thank you!!

From: Arnold, Elyssa
Sent: Tuesday, May 05, 2020 3:57 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/5/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 5, 2020

Attendees: Bill, Nelson, Kimberly, Neil, Marietta, Dana, Dirk, Jonathan, Rebeccah, Jan, Matt, Mark S., Mark C., Monisha, Lee, Claire, Rochelle, Elyssa

1. PCA/PCT Update
   - Automation tools status
     - Negative PCA values – issue appeared in miscellaneous agriculture calculation
       - Majority are under 5%, so may be rounding errors
       - Others may be due to double cropping, working on an approach to address that
       - Need a resolution in the next week or so to keep chlorpyrifos on track
       - Team is meeting tomorrow to discuss
     - Aggregation tool – one QA issue, will fix and deliver to chlorpyrifos team at the end of this week
   - Plan for discussions with HED on output
     - Mark is addressing Jan's comments on the draft – will get it back to her this week
   - Data from WSDA? – not yet

2. PWC Scenarios Status Update

- Feedback from Rick
    - Positive feedback, he supports high benefit crop plan
- Plan for chlorpyrifos high benefit crops
    - EISB confirmed that existing scenarios with new weather data (asparagus, orchards) have already been QA'd
    - BAB confirmed that they will provide application rate and timing data for asparagus (MI) and strawberries (OR) by May 11
- Status of generating the Tier 1 scenarios
    - Soybeans, hay, evergreen orchards (citrus), row and field crops, cotton
        - Ranking and selection process is complete
        - Generating final versions formatted to run in PWC
        - Dirk wants to do a QC – 48 hours
    - Winter wheat is next – batch runs complete, Nelson is doing a final check and will hand off to Trip for scenario selection
    - Batch runs on market vegetables (strawberry) started this morning
- Status of crop dates for deciduous orchards
    - BEAD delivered their information for the growing degree model on Friday
        - In draft, memo will be finalized over the next month or so (data will not change, just possibly the wording)
        - EFED has all of the information needed to proceed
    - Trip has pulled together the dates and has a model ready to test
    - Will work on the deciduous orchards scenario after the current set are complete

3. EMPM – non-EPA speaker suggestions?

- Peer reviewers – will not reach out to them, but they could self-nominate if they have work they want to present
- Workshop? (CLA request)
    - Will not hold a workshop, but will give more detailed presentations and provide an opportunity for questions
        - Detail on process to build scenarios, but not to help others run the code
    - Could include a demonstration/example, but need to consider network limitations
        - Screenshots rather than live demonstration
    - Don't want to overcommit the time of the team while they are working to complete all of the documentation

- Other presentation topics: overview of projects (current briefing package), more detail on implementation, PCA/PCT automation and aggregation tools

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From: Arnold, Elyssa
Sent: Tuesday, April 28, 2020 2:13 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/28/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 28, 2020

Attendees: Mark C., Bill, Nelson, Dana, Mark S., Jonathan, Marietta, Rebeccah, Dirk, Monisha, Rochelle, Kimberly, Lee, Jan, Neil, Matt Crowley, Claire, Elyssa

1. PCA/PCT Update
    - Automation tools
        - Question on some of the watersheds with negative PCA values associated with rice and turf
            - Meeting tomorrow with Rochelle and EISB to talk about this
        - Time series aggregation tool is in QA with Josh and Sumathy
    - Plan for discussions with HED on output
        - Jan sent comments to Mark
            - Need to clarify what we are going to give HED and what they can do with it
            - First need to figure out in EFED what makes the most sense
            - Clarify the outreach needs – public outreach beyond EMPM? (ACS probably not happening this year), need for OGC to weigh in?
    - WSDA meeting follow-up
        - Still working on getting us the data
        - Data is in Access
        - Need to see the data before determining if/how it can be used

2. PWC Scenarios Status Update

- Plan for chlorpyrifos high benefit crops
    - Asparagus (MI)
        - Use existing scenario with new weather data
        - BEAD will provide application rate and timing by May 11
    - Orchard crops – Apples, Peaches, Cherries
        - Use existing scenario with new weather data
        - Use application rate and timing from previous DWA
    - Strawberries (OR)
        - New scenario will be created by May 11
        - BEAD will provide application rate and timing by May 11 (OR only)
    - Oranges (CA) & Sugar beets (MN and ND)
        - Tier 1 scenarios
    - Lee will check whether we still need to QA existing scenarios with new weather data
    - BAB will discuss any concerns with this plan and will get back to us this afternoon
    - Marietta and Jan will discuss with Rick tomorrow at 4:00
- Status of generating the Tier 1 scenarios
    - Finished runs for cotton, spring wheat, row and field crops (sugar beets), and evergreen orchards
        - Scenario selection process is running now and should be complete today
    - Hay (alfalfa) – run is complete but needs a QA check before scenario selection
    - Soybeans and winter wheat – still running and should be complete by the end of the week – scenario selection by Monday
    - Market vegetables (strawberries) – Nelson is doing a final check on the dates for consistency and will start the runs, on target for May 11
- Status of crop dates for non-priority crops
    - Deciduous orchards – in review with Jonathan, should be complete by the end of the week

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From: Arnold, Elyssa
Sent: Tuesday, April 21, 2020 4:10 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>;

Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/21/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 21, 2020

Attendees: Neil, Jonathan, Derek Berwald, Mark C., Matt Crowley, Monisha, Lee, Nikhil, Jan, Nelson, Dana, Rebeccah, Dirk, Marietta, Rochelle, Kimberly, Bill, Elyssa

1. PWC Scenarios Status Update
   - Remote access to 5th lab computer
     - Yes, all 5 are now working
   - Sampling %
     - Mel analyzed 15%, 25%, and 35%; higher % = decreased CV
     - Tried to run 100% but was not feasible timewise
     - Currently planning to use 35%
     - EECs are the same within 2 sig figs regardless of the % (but CVs decrease)
   - Status of generating the Tier 1 scenarios? Update timeline
     - Original timeline:
       - PWC Scenario batch runs – Begin early April to mid April 2020
       - PWC Scenario Ranking/Selection – Early April to mid April 2020
       - Roll out in phases as completed – final delivery mid April 2020
     - Currently ~2 weeks behind from that schedule – deliver Tier 1 scenarios by April 30
     - Time required per crop is between a couple days and a week. Trip is currently mapping out what to run when on what computer.
     - By the end of today will start running all Tier 1 priority scenarios across the 5 computers.
     - Will start getting output by the end of next week to send to chlorpyrifos team
   - Input from Alex re: crops
     - Briefed Alex on the chlorpyrifos schedule on Thursday last week
     - Alex would like our DWA to include not just crops that are important to the registrant but also to the users (even if we are just doing a proof of concept DWA)
     - BEAD looked into that question and provided the following preliminary list of uses that are important to the grower community (high benefit)
       - **Preliminary** list:
         - Apples – deciduous orchards scenario

- Asparagus (MI) – unique scenario
- Cherries (MI) – deciduous orchards scenario
- Oranges (CA)* – **Tier 1 citrus scenario**
- Peaches (southeast) – deciduous orchards scenario
- Sugar beets (MN and ND) – **Tier 1 sugar beet scenario**
- Strawberries (OR) – market vegetable scenario

▪ *Rick and Alex agreed to de-prioritize CA due to state restrictions

▪ Providing details for all high benefit crops would take BEAD 5 weeks

- Inputs for PWC: App dates and timing, rate distributions, max and avg rates
- BEAD provide a time estimate for a subset of these (just strawberries?)
- Dana and Rochelle: What would we assume without any new info from BEAD on these?

▪ Nelson to estimate dates for completion of non-Tier 1 scenarios

- Could also use old scenarios to evaluate high benefit crops that are not in Tier 1

o We do not have to add in all the high benefit crops now, but need to scope it out. It's possible that the 2 already covered by the Tier 1 scenarios will be sufficient.

- Status of Crop dates for non-priority crops

o Still QAing vegetable dates

For questions above, send Elyssa responses by Thursday 10:00 in preparation for the EFED/BEAD general at 1pm.

From: Arnold, Elyssa
Sent: Tuesday, April 14, 2020 1:57 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/13/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 13, 2020

Attendees: Jonathan, Mark C., Bill, Lee, Nelson, Rebeccah, Dirk, Dana, Neil, Jan, Marietta, Rochelle, Kimberly, Mark S., Monisha, Claire, Elyssa

1. PCA/PCT Project Status Update
   - Status of tools
     - Jen and Sumathy are integrating the last pieces of usage data from the SUUM report
     - Some quirky PCA numbers showing up – working out the details and will do some manual checks
     - Aggregation tool – behind because of Andrew's hardware issues, expect it to be ready for testing next week. If Andrew continues to have issues then Chuck can back him up.
   - Plan for discussions with HED on output
     - Bill and Mark are working on the proposal for presenting data (see last week's notes for details)
     - When that is ready Mark will reach out to Don Wilbur, probably next week
   - WSDA meeting (2:00 today)
     - Will find out what data they are able to provide

2. PWC Scenarios Status Update
   - Remote access to lab computers
     - Still just have 4 computers working. Not crucial to get the 5th computer but would be useful.
     - There is someone from EISD in the building this week who could help – Lee will follow up
   - Crop dates
     - No update from EFED
     - BEAD is on track, senior scientist review April 23
   - Status of generating the Tier 1 scenarios
     - Did a couple runs, working out bugs
   - Sampling %
     - Mel is working with Trip to resolve an issue
     - Data analysis is done but not written up
     - 25% sampling looks like it will work

From: Arnold, Elyssa
Sent: Tuesday, April 07, 2020 4:13 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil

<Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/7/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 7, 2020

Attendees: Marietta, Steve, Monisha, Lee, Jan, Nelson, Claire, Dana, Rebeccah, Dirk, Neil, Jonathan, Bill, Elyssa

1. PCA/PCT Project Status Update
   - Status of tools
     - Automation tool: Jen doing QA on Sumathy's tool but otherwise done
     - Aggregation tool (update from Chuck and Andrew post-meeting): expect to be ready for testing end of next week (4/17)
   - Plan for discussions with HED on output
     - Bill and Mark discussed the following output structure:
       - List of HUC2 regions that pass on PCA alone
       - List of HUC2 regions that pass based on PCA+PCT together
       - If any remaining HUC2s did not pass, report 90th percentile of the watersheds in the region and provide time series (or point estimates) to HED
       - Bill found discussion of the origin of the 90th percentile assumption in SAP documents from 1998 and 1999 on index reservoir and PCA. Not sure whether the SAP commented on that, but don't think that we were asking for comment on it.
     - Will need to set up meetings with HED to discuss this – timing?
   - Rochelle set up a meeting with the Washington State Dept of Ag next week to talk about their usage data
     - Rochelle has asked about alternative dates and times to accommodate BEAD (Mark S. is out this week)
     - Should meet internally before talking to them
2. PWC Scenarios Status Update
   - Remote access to lab computers

- We now have access to 4 of the 5 computers
    - Trip has a request in to EISD to get the 5th computer working. If he doesn't have success by tomorrow Jan will elevate the issue.
- Currently getting the weather files transferred to the computers (takes about 15 hours)

- Crop dates
    - Status of tier 1 crop dates
        - Crop dates for all tier 1 crops and other crop-related inputs for all crops were completed last week (Thursday, 4/2)
        - Also have several Tier 2 crops done (corn, other grains/corn, small grains) and will be ready to go as we finish the Tier 1 crops
        - The 2 vegetable scenarios are close to wrapping up for dates and should be done late next week
    - BEAD help on crop dates for deciduous orchards and small trellised fruit – timing
        - 3 people in BAB working on this, target is to deliver April 30 with senior review prior to that
- Status of generating the Tier 1 scenarios
    - Dates and inputs are all ready to go
        - Trip will start generating scenarios today
        - A few fields we will need to check
        - Scenarios will be done by the end of the week
        - Batch runs should start next week – these take multiple days – will go a few days past April 15
            - Can deliver to chlorpyrifos team as they are completed
- Sampling % update
    - Mel has the corn scenarios for 3 NHD regions (4, 5, and 7) for one Koc (1). Trip has post-processed them to assign percentiles.
    - Mel hopes to have the sample test completed by Wed, Apr 8
    - Sampling % will impact time needed to generate the scenarios. Nelson will update us with the final determination.

3. DD feedback from briefing – any follow up?
    - No additional follow up; primary concern from other divisions is the implementation
    - Marietta and Jan will talk to Rick at their next general and see if he wants a briefing too or just the slides
    - Documentation for 90th percentile decision
        - Incorporate directly into final documentation for scenarios

- Don't need to go into too much detail but can use the sources that Bill found from the 1998/1999 SAP presentations

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From: Arnold, Elyssa
Sent: Tuesday, March 31, 2020 1:32 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/31/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 31, 2020

Attendees: Neil, Jonathan, Mark C., Marietta, Bill, Lee, Nelson, Kimberly, Dana, Rebeccah, Dirk, Monisha, Claire, Rebeccah, Matt C., Jan, Elyssa

1. PCA/PCT Project Status Update
   - Still some work to do on the time series aggregation tool (Andrew was having VPN issues) – goal for completion is still mid-April
   - Working on QAPP and other documentation
   - Mark will check in with Rochelle on Sumathy's tool – looks like things are in good shape

2. PWC Scenarios Status Update
   - Remote access to lab computers
     - Now have access to 3 of the 5 lab computers thanks to ITRMD
     - Need EISD to take out the card readers on the other 2 computers
       - If this can't happen, will we be ok with the 3 we have?
     - Trip just got wifi adapters delivered to his house and he will bring them by the office for EISD to install
     - Melissa was able to access the results of her runs to evaluate the sampling %s – need to resolve this question before the batch runs begin
       - Lee and Nelson will talk to her and get back to us
   - Tier 1 crop dates
     - Nelson provided Trip with the completed Tier 1 crop dates and he is reviewing the format now

- Team will have the 2 vegetable scenarios wrapped up soon (quicker than expected)
- Then just the deciduous orchard and small trellised fruit will be left to complete

- Generating the Tier 1 scenarios
  - Nelson still needs to update the formats of some of the other crop inputs, he is working with Trip on that
  - Had to add a couple flags for special cases and tweak code accordingly, but all substantive work is complete
  - Still plan to start generating the scenarios this week
- BEAD help on crop dates for deciduous orchards and small trellised fruit
  - Rebeccah asked for clarification on crop groups
    - Deciduous orchard – include both tree fruit and tree nut?
      - Yes
    - Small trellised fruit – just grapes?
      - Grapes are the critical crop, but we will also need to include caneberry and blueberry
      - If you find information on caneberry and blueberry while searching, please flag that too
      - Caneberry and blueberry are concentrated in a handful of states, so it may be quicker to go through the extensions for those and EFED can do that work
  - Timing
    - Rebeccah is also working on application timing for chlorpyrifos for the list of Tier 1 and 2 crops from Corteva. Will there be any additional crops?
      - We need to circle back with PRD on that. Only Tier 1 for September, but not clear on what will be left for chlorpyrifos after HED's SAP. BEAD is meeting with PRD on this issue tomorrow (Dana invited).
    - Rebeccah will talk to Monisha and Jonathan and will confirm how quickly the crop date work can be done; will bring in at least one other BEAD team member.
      - Monisha will get back to us later this week

From: Arnold, Elyssa
Sent: Tuesday, March 24, 2020 3:34 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <nesci.kimberly@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: Bohaty, Rochelle (Bohaty.Rochelle@epa.gov) <Bohaty.Rochelle@epa.gov>; Crowley, Matthew

<Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/24/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 24, 2020

Attendees: Marietta, Neil, Dana, Lee, Mark C., Matt, Jan, Kimberly, Claire, Mark S., Jonathan, Bill, Elyssa, Monisha, Nelson

PCA/PCT Project Status Update

- Rochelle tested Sumathy's tool with a couple HUC2s using PCT data and EDWCs from a previous assessment – worked pretty well
- Upper vs. uniform distribution makes a big difference in the results (% of watersheds passing)
- Mark C. is meeting with Chuck and Andrew today to talk about the aggregation tool next steps
- Peer review comment on including spray drift in the adjusted EDWCs – Mark will circle back with Chuck on the response
- Next steps will be to distill all the data into something easily understandable
    - Matrix of 9 options (min, avg, max PCT x lower, uniform, upper distribution) – this will be a policy question
    - For chlorpyrifos, we are just doing a DWLOC comparison so this is not an imminent problem
    - Preference in public and peer review comments for the uniform distribution

PWC Project Status Update

- Good progress on Tier 1 priority crops for chlorpyrifos
- Crop Dates
    - 1 thing outstanding from Rick S. – will have by midweek
    - Dates should be done by end of this week
- Can then hand off to Trip to generate the Tier 1 scenarios starting next week and start batch runs in PWC
- Challenge in accessing lab GIS computers remotely
    - Lee will reach out to Delores, her staff may be able to help
- Jan and Marietta spoke to Rick K. last week about the scenarios distribution
    - Rick wants us to stick with 90% to be consistent with historical approach – no rationale for changing that at this time, especially for chlorpyrifos
    - Will convey this at the DD briefing next week

What we need to complete scenarios by the summer (see attachment)

- Dates – deciduous orchards and small trellised fruit – would like **BEAD** assistance (Rebeccah)
    - Deciduous orchards – help to identify which crop stages relate to beginning canopy and maximum canopy
    - Small trellised fruit (grape) – help to identify bud break or bud burst as proxy for start of canopy
    - EFED can automate first freeze and growing degree dates
    - Deadline: end of April – Monisha will confirm whether this is doable for BEAD
- 25% sampling approach – need remote access to GIS lab computers to complete this analysis
    - This is needed for all scenarios, including Tier 1 chlorpyrifos crops
- General crop groups – finalized per BEAD's recommendations
    - Only change is for "other grains" – BEAD said to group with spring wheat, which works except for in the southeast where other grains are more likely to be fall planted and line up better with winter wheat
    - Nelson is cleaning up the list and will send a copy this afternoon

Elyssa will add Rebeccah to these meetings

From: Arnold, Elyssa
Sent: Tuesday, March 17, 2020 4:34 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <nesci.kimberly@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Johnson, Hope <Johnson.Hope@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: Bohaty, Rochelle (Bohaty.Rochelle@epa.gov) <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/17/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 17, 2020

Attendees: Neil, Mark C., Matt, Marietta, Bill, Monisha, Lee, Kimberly, Claire, Dana, Mark S., Nelson, Jonathan, Rochelle, Dirk, Bill, Jan, Elyssa

1. **Current status of each project:**
    a. Short term fixes based on peer review and public comments
    b. CPY status and tentative delivery dates (Tier 1 approach for scenarios)

Scenarios

- Tier 1 chlorpyrifos scenarios
    - Will have final scenarios for Tier 1 chlorpyrifos crops by April 15
    - Confirmed Tier 1 crops with Bruce ~a month ago
    - Wheat, soy, cotton, citrus, sugarbeet, alfalfa (hay scenario)
    - Still working on hay dates, aim to have those complete by this time next week
    - Updating standard default ag practices and curve numbers – will send table out to the team today. Team meeting tomorrow to make decisions on the c factor. By next week should have those inputs ready to converge with crop dates and put scenarios into batch runs.
- Remaining scenarios
    - After Tier 1 scenarios start the batch process will work on others – corn, sorghum/millet/small grains, vegetables, deciduous orchards – complete by summer
    - Dates – met with Rebeccah last week and walked through the process – would like some help from BEAD on finishing the deciduous orchards dates based on what Rebeccah has already done, the rest EFED can do using BEAD's methods
    - Working to automate some of the process; already automated the freeze date determination
- DWA work on Tier 2 crops for chlorpyrifos will be later (~Oct, but need to confirm the date)

PCA/PCT

- Sumathy sent updated info on the automation tool this morning
- Rochelle is testing it with chlorpyrifos this week
- Andrew is working on time series aggregation tool this week
- Chuck and Jen are out this week

2. Any challenges due to teleworking?

- Lab computers – setting them up to work remotely (not all online yet)
- At some point someone will have to come in to load some things on to the computers
- Mel was doing some test runs but the computers went to sleep before finishing – need to use a mouse jiggler
    - Mel doing runs to test the 25% sampling rate

3. High level discussion of Documentation and RTC general approach and timeframe (May-August)

- Documents to go out on a separate docket concurrent with chlorpyrifos assessment (Sept 21):
    - Documents previously released for comment will be revised and reviewed up to the DD level
        - Expect more changes to the PCA/PCT White Paper than to Scenarios documents
    - QAPPs
    - Response to comments (public and peer review) – summaries grouped by similar comments
- More detailed SOPs for EFED scientists will be completed separately

4. EMPM

- Plan to focus EMPM on DW projects
- High level – what we did, how to use the tools, longer term plans and challenges
- Workshop (as requested by CLA)
- Currently thinking July, prior to chlorpyrifos coming out (if global pandemic allows)
    - Could consider doing it virtually

5. Anyone have an ask of anyone else to tee-up for future conversations?

a. Next week: Discuss what we need to complete all scenarios by the summer

- Jonathan – General question about level of refinement for any chemical that doesn't pass screening level: We usually look at typical vs. maximum application rates, should we also refine number of apps, intervals, and distribution of rates?
    - Yes, EFED wants and uses all of those but we don't want to put an undue burden on BEAD
    - Do we need a checklist?
    - See framework document as a starting point -> attached (see Section 5.0)
    - Could include an EMPM talk about what goes into the higher tier assessments
    - This question is not directly related to the scenarios or PCA/PCT projects (Note – this could be a good topic to raise at the PFTTT)

Message

From: English, LisaRenee [English.LisaRenee@epa.gov]
Sent: 3/7/2019 7:29:26 PM
To: Lee, Andrew [Lee.Andrew@epa.gov]; Chism, William [Chism.Bill@epa.gov]; Wyatt, TJ [Wyatt.Tj@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]
Subject: RE: Draft benefits slide

Hey Bill,
The last bullet point (on draft slide) reads:

- Use of coarse or coarser droplet sizes is not expected to have significant impact as trifluralin is typically applied early in the season.

Do you think this is supposed to read..... typically soil incorporated..... ? or..... Does it have something to do with reduced volatility in cold weather ? ..... or something else ?

BEAD did not look at time of application, and I don't understand why early season applications would make a difference in droplet size. But if it does, please explain.

Thanks
-LR

From: Lee, Andrew
Sent: Thursday, March 07, 2019 11:03 AM
To: Chism, William <Chism.Bill@epa.gov>; English, LisaRenee <English.LisaRenee@epa.gov>
Subject: RE: Draft trifluralin PID for review

It seems reasonable to me, too.

Thanks,
Andy

From: Chism, William
Sent: Thursday, March 07, 2019 10:51 AM
To: English, LisaRenee <English.LisaRenee@epa.gov>; Lee, Andrew <Lee.Andrew@epa.gov>
Subject: RE: Draft trifluralin PID for review

Hi Andy and LisaRenee
This seems reasonable to me. What do you think?
Bill

Bill Chism
Senior Biologist
Biological and Economic Analysis Division
U.S. EPA/Office of Pesticide Programs
(703) 308-8136
chism.bill@epa.gov

From: Biggio, Patricia
Sent: Thursday, March 07, 2019 10:24 AM
To: Shelat, Shalu <Shelat.Shalu@epa.gov>; VanAlstine, Julie <VanAlstine.Julie@epa.gov>; Yang, Yung <Yang.Yung@epa.gov>; Ertman, AWillis <Ertman.AWillis@epa.gov>; Orrick, Greg <Orrick.Greg@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Wente, Stephen <Wente.Stephen@epa.gov>; Khan, Faruque <Khan.Faruque@epa.gov>; Chism, William <Chism.Bill@epa.gov>; English, LisaRenee <English.LisaRenee@epa.gov>; Lee, Andrew <Lee.Andrew@epa.gov>
Cc: Akerman, Gregory <Akerman.Gregory@epa.gov>; Sankula, Sujatha <Sankula.Sujatha@epa.gov>; Blankinship, Amy <Blankinship.Amy@epa.gov>; Myers, Tom <Myers.Tom@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: RE: Draft trifluralin PID for review

Hi All,

We are also preparing slides for chemical program review. Below and attached is a draft of the trifluralin slide, we are asking for comments/edits on the slide by Tuesday, 3/12. If you have any questions, please let me know.

Thank you again,
Trish

Benefits, Alternatives, and Impacts

- Trifluralin is a preemergence herbicide with selective and residual control of susceptible grass and broadleaf weed species.
- The high percent crop treated in many field and vegetable cropping systems may indicate that trifluralin provides cost-effective control of important weeds.
- Trifluralin is one of only two Group 3 herbicides registered for use in many field and vegetable crops and specialty crops.
- Mitigation is not expected to significantly impact users and growers as many labels already include similar language.
- Use of coarse or coarser droplet sizes is not expected to have significant impact as trifluralin is typically applied early in the season.

Proposed Risk Management Decision

- For aerial applications, do not apply when wind speeds exceed 15 mph at the application site.
- If the wind speed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- For aerial applications, nozzle height must not be more than 10 feet above the ground or crop canopy.
- For ground applications, nozzle height must not be more than 4 feet above the ground or crop canopy.
- Coarse, or coarser droplets
- Herbicide resistance management language

Status

- The PID is currently under team review and OGC review.

From: Biggio, Patricia
Sent: Wednesday, March 6, 2019 1:09 PM
To: Shelat, Shalu <Shelat.Shalu@epa.gov>; VanAlstine, Julie <VanAlstine.Julie@epa.gov>; Yang, Yung <Yang.Yung@epa.gov>; Ertman, AWillis <Ertman.AWillis@epa.gov>; Orrick, Greg <Orrick.Greg@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Wente, Stephen <Wente.Stephen@epa.gov>; Khan, Faruque <Khan.Faruque@epa.gov>; Chism, William <Chism.Bill@epa.gov>; English, LisaRenee <English.LisaRenee@epa.gov>; Lee, Andrew <Lee.Andrew@epa.gov>
Cc: Akerman, Gregory <Akerman.Gregory@epa.gov>; Sankula, Sujatha <Sankula.Sujatha@epa.gov>; Blankinship, Amy

<Blankinship.Amy@epa.gov>; Myers, Tom <Myers.Tom@epa.gov>; Timothy Kiely <Kiely.Timothy@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: Draft trifluralin PID for review

Hello Trifluralin Team,

Here is the link to the draft trifluralin PID on SharePoint:
https://usepa.sharepoint.com/:f:/r/sites/ocspp_Work/pesticideregistrationreview/Schedules/Trifluralin?csf=1&e=1eoVjh

One item of note, some guidance from the PID template was intentionally let in Appendix C. It will be removed before finalization, but I wanted to keep it there for reference regarding ESA and trifluralin. Please review and provide comments by COB Wednesday, March 13. If you have any questions, please let me know.

Thank you,
Trish

Patricia Biggio
Chemical Review Manager
Pesticide Re-evaluation Division
Office of Pesticide Programs, EPA
Phone: 703-347-0547
biggio.patricia@epa.gov

NOTICE: This communication may contain privileged or other confidential information. If you are not the intended recipient, or believe you have received this communication in error, please delete the copy you received, and do not print, copy, retransmit, disseminate, or otherwise use the information. Thank you.

Message

From: Villanueva, Philip [Villanueva.Philip@epa.gov]
Sent: 3/7/2019 5:43:38 PM
To: Suarez, Mark [Suarez.Mark@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]
Subject: FW: do you have the SAP docs for the 2002 usage/PCT sap - i think you did some forecasting work on that??? do you have the resulting SAP doc?
Attachments: ES_eval_presentation_final.ppt; SAP Papers.zip

FYI – I shared these with Brian Anderson earlier today.

From: Villanueva, Philip
Sent: Thursday, March 07, 2019 11:04 AM
To: Anderson, Brian <Anderson.Brian@epa.gov>
Subject: RE: do you have the SAP docs for the 2002 usage/PCT sap - i think you did some forecasting work on that??? do you have the resulting SAP doc?

I'm really surprised the documents can't be downloaded from the website even though it list them.

https://www.regulations.gov/docketBrowser?rpp=50&po=0&D=EPA-HQ-OPP-2002-0228

Anyways, to the best of my knowledge, the zip file contains all the documents I sent to the SAP. I can probably hunt down the SAP report and questions if you want those. For the SAP, we did a limited comparison of 17 pesticide-crop combinations. Attached is a follow up analysis, post-SAP where we looked at nearly 1300 of them. The bottom line was that it was hard to outdo forecasting that next year is the same as this year. Hope this helps. Let me know if you want to sit down and talk.

From: Anderson, Brian
Sent: Thursday, March 07, 2019 9:25 AM
To: Villanueva, Philip <Villanueva.Philip@epa.gov>
Subject: RE: do you have the SAP docs for the 2002 usage/PCT sap - i think you did some forecasting work on that??? do you have the resulting SAP doc?

We couldn't find the materials on the website – we are getting a comment on the ESA methods about future use – and

Ex. 5 Deliberative Process (DP)

Thanks Phil!

Brian

From: Villanueva, Philip
Sent: Thursday, March 7, 2019 9:23 AM
To: Anderson, Brian <Anderson.Brian@epa.gov>
Subject: RE: do you have the SAP docs for the 2002 usage/PCT sap - i think you did some forecasting work on that??? do you have the resulting SAP doc?

Wow, that's 17 years ago! I can probably get them from the SAP website. We only forecasted PCT. Using various univariate models (i.e., no predictor variables), we found that a simple "blind man" forecast (i.e., next year will be the same as this year) performed just as well as more sophisticated models that accounted for potential trends.

From: Anderson, Brian
Sent: Thursday, March 07, 2019 9:16 AM
To: Villanueva, Philip <Villanueva.Philip@epa.gov>
Subject: do you have the SAP docs for the 2002 usage/PCT sap - i think you did some forecasting work on that??? do you have the resulting SAP doc?

Message

From: Kyle, Lee [Kyle.Lee@epa.gov]
Sent: 8/22/2019 5:03:33 PM
To: Kaul, Monisha [Kaul.Monisha@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]
CC: Thurman, Nelson [Thurman.Nelson@epa.gov]
Subject: RE: Need your help developing initial crop-related inputs for field scenarios
Attachments: Chlorpyrofos Critical Crop Matrix.xlsx; Field and Watershed Input Parameters 08-16-19 clean.docx

Hi Monisha and Jonathan,

- Attached is the crop matrix spreadsheet I mentioned
- Jonathan, please review the curve number table (Table 1) in the Input Parameters document. We developed the groupings based largely on curve number
- You've both been invited to the DD briefing on the 4th. I'll ask them about finding another day since you'll be out next week
- I'll talk to Jan about inviting you to the USDA briefing on the 17th

Jonathan, as you suggested we will ask USDA if the groupings are sufficient for the purposes of the modeling effort, in addition to asking them to enter the planting dates.

Thanks!

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:33 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

Kimberly just informed me you'll be out all next week. If it's okay with you, Nelson and I can work with your staff/Jonathan on much of this next week.

I scheduled a quick check in with you tomorrow at noon.

Best,

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

The PWC scenarios project you helped us with last year is one of three drinking water projects that OPP needs to complete in time to be used in next year's chlorpyrifos risk assessment.

We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general groups can be made in future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

Marietta and Kimberly have tasked us with presenting our initial inputs to them on September 4th. This will help us prepare for a meeting we've got scheduled with USDA on the 17th. I wanted to give you a heads up on this, and can follow up with details next week.

Lee

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, August 20, 2019 3:51 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/20

Drinking Water Projects Meeting Notes – Action items
August 20, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson, Lee

Contractor Peer Review

- Jan talked to Brian Katz, confirmed that we will use a single vehicle. They are ready to go, just waiting on us.
- Performance Work Statement for PCT/PCA was reviewed by Josh, Bill, Nelson, Lee, Claire (?)
    - Mark will clean up (address Nelson's comments) and send to Anna tomorrow for review by noon on Friday (gave Anna a heads up already).
    - Marietta can review it on Friday afternoon and then Lee can send to LaTangila.
    - Mark or Lee will combine the PCA/PCT and Scenarios documents before sending to Marietta.

Scenarios

- Nelson sent Input Parameters document to Jan on Friday.
    - Jan will review by the first week in September (Nelson is at ACS next week)
- Methods document – still on schedule
    - Demo of batch runs to PFTTT on Wednesday
- Scenario grouping for chlorpyrifos
    - Nelson and Dirk are going to focus on uses/management factors that result in different pest management approaches
- Jan scheduled an EFED/BEAD DD briefing for 9/4
- Lee and Nelson will send something to Monisha this week to prepare her for the briefing

PCA/PCT

- Have been focusing on the contract document
- Will share the white paper outline by the end of next week for early feedback
- Will need a case study/example – chlorpyrifos – one HUC? – might have a start from what Rochelle has already done

Monitoring

- Team met with Anna this morning to work on refining the questions
  - Adding a question on the case study challenges
  - Removing redundancies
- White paper, case studies, framework, and SOP to OSCP for the docket next week.
  - Marietta wants to see a draft of the questions before signing the transmittal memo.
- Next week will work on finalizing the questions (Rochelle will be back)
  - Send Marietta the questions to share with Rick
  - Update Alex on the questions prior to posting

USDA Briefing – Sept 17

- Outline
  - Intro/purpose of briefing slide
  - 3 projects (in AA briefing – slides attached)
  - Monitoring: 2-3 slides
    - Conclusions slide from AA briefing
    - Timeline
  - PCA/PCT: ~10 slides
    - Can use material from peer review document
    - PCA – 4-5 slides from previous briefings (Karen presented to PFTTT on TPTH – check if that assessment is public yet)
    - PCT – Kris has ESA slides we can modify
      - Industry has submitted comments for ESA PCT approach – contracted with Stone for malathion case study to get below state level – CLA presented to us (Mark S. was there). Marietta will send around CLA's comments.
      - Input we need from USDA – have something similar we prepared for BEAD to pull from
  - Scenarios: ~10 slides
    - Use same slides as previous briefings (EMPM?) to explain the concept
    - Input we need from USDA
- Aim to get Marietta draft slides by 9/3 for her general with Rick on 9/4 (if not possible then Marietta can use an outline)
- Elyssa will pull the slides together into one presentation
- Clean up slides and sen[illegible]
- Send asks for scenarios [illegible] Need to write up the spreadsheet process clearly for their feedback – Lee and Nel[illegible]ether someone else can help on this.

Ex. 6 Personal Privacy (PP)

Next week – [illegible]
about the co[illegible]

Ex. 6 Personal Privacy (PP)

From: Arnold, Elyssa
Sent: Monday, August 12, 2019 3:56 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/12

Drinking Water Projects Meeting Notes – Action items
August 12, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson

Contractor Peer Review

- Mark updated the draft of the contractor statement of work from Lee with the PCA/PCT details – added to PCA/PCT folder on ERB6 SharePoint site
- Clarified that there will be 2 separate reviews on 2 timelines with one Task Order to minimize process and overhead
- Need to review the charge questions (these are fairly general right now) and expertise
- This week – review by Josh, Nelson, Claire (will discuss at PCA/PCT meeting tomorrow)
- Next week – review by Anna and Lee (both out this week)
- Jan will follow up on Lee's email to LaTangila with Brian Katz to highlight our priorities

Scenarios

- Input Parameters document – Team comments were due on Friday, Nelson will clean it up this week and send it to Jan for review
- Methods document – describes how inputs are processed and scenarios selected, what was done and why
    - Sept 19: First part will describe the methods, currently being written
    - Oct 15: Will include examples for corn and wheat – including generation and running of the scenarios
        - Previous runs for corn had curve numbers read backwards, currently fixing and testing
        - Corn will be done before wheat
- Overall Executive Summary needed in plain language
- Chlorpyrifos scenarios – Nelson sent an edited version of Rochelle's list before the meeting with the status for each crop/scenario (one typo – grapes will be separate from orchards)
    - Scenario Grouping (e.g., generic orchard, vineyard, vegetable) – will be charge questions for peer review; we will also ask for input from USDA
        - BEAD input – Lee will talk to Monisha next week and send her the list of scenarios. We will have a DD briefing with Kimberly before the USDA meeting to make sure EFED and BEAD are on the same page. Jan will get a DD briefing on the calendar first week in Sept.
    - Planting dates
        - Perennials
            - Rick had a generic proposal
            - Another idea – can we use bud or beginning bloom as a proxy for "emergence"?
            - Need to get USDA input
        - Annuals
            - Need USDA input on the method for filling in planting dates for state/crop combinations not covered in the Planting and Harvesting Guides (Rick's method – has been shared with BEAD)
            - USDA could do additional work on this beyond the top 16 (e.g., vegetables) instead of PFTTT. Scenarios could be ready to process within a couple weeks after getting the dates. Could be ready for Rochelle to run 1-2 months after getting dates.
        - Nelson will continue working on the SOP for dates, will work with Rick. Need to add context for why the dates are important (big impact on model output). Rick's document is ~30 pages. Goal is to share with USDA at the briefing in Sept.
        - First week of Sept – Marietta will call Sheryl with a heads up about the ask to help fill in the planting dates
- Processing scenarios – will do continually as dates are complete
    - Lee met with CCOE about using contractor computing power – will get an update when he is back in the office

PCA/PCT

- Got the 2012-2016 chlorpyrifos PCT data from BEAD – they don't think that an update will add a lot of value
- White paper outline is drafted
    - This week – will discuss with the team tomorrow and then finalize the outline
    - Next week – will start to drop in text
- Be prepared to address issues quickly (e.g., non-ag)

- Prioritize questions for USDA and scenarios that will impact chlorpyrifos

USDA Briefing

- Marietta has emailed Sheryl with the potential dates and has not gotten a response yet
- Rick wants to see the slides in advance, but does not need us to brief him first

---

From: Arnold, Elyssa
Sent: Monday, August 05, 2019 4:02 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>
Subject: RE: Drinking Water Assessment Update - meeting notes

Drinking Water Projects Meeting Notes – Action items
August 5, 2019

Contractor Peer Review

- Lee will send latest draft of the contractor statement of work to Mark
- Mark will add the PCT/PCA sections and charge questions into that document with the possible goal of having 1 task order rather than 2
- Mark will have a first draft to share by next week's meeting, 8/12
- Need to be aware of possible end of fiscal year delays in the contracting office in Cincinnati
- Jan will talk to Brian Katz to make sure he is aware of our priorities

Scenarios

- Input Parameters document will be completed this week
- Methods White Paper – current dates are below, but may need to tighten these up to allow for internal review time of up to 2 months depending on document length
    - Sept 19 framework complete (all parts except results)
    - Oct 15 entire paper complete – not including internal review
- Need to initiate project with Rick to add dates for perennials
- Peer review planned by end of February, then expect at least a month for re-runs
- Will need management briefings to decide which centile to use
- For next week, 8/12 – Lee will get a plan in place for prioritizing the chlorpyrifos scenarios (Nelson can report back next week when Lee is out)
- Lee will talk to LaTangila about a contractor for processing the scenarios
    - Stone or Waterborne may be options – Lee can call them and ask if they are reachable on any EPA contracts

PCA/PCT

- Mark C. will check in with Mark S. on getting the 2012-2016 chlorpyrifos PCT data
- Will also ask about whether they plan on an updated SUUM per Marietta's conversation with Kimberly
- Holding weekly project meetings every Tuesday

USDA Briefing

- Marietta will talk to Rick about the briefing tomorrow at their general before emailing Sheryl, we may need to brief Rick first
- Everyone should have their asks for USDA ready by the last week in August
    - For PCT – USDA input on non-ag data sources

Chlorpyrifos Critical Crop Matrix (from Rochelle)
Alfalfa
Corn
Cotton
Citrus
Soybean
Sugar beet
Wheat
Grapes
Mint
Onion
Apples (dormant)
Cherries
Peach
Sunflower
Sweet Potato
Pecans
Sorghum
Brassica
Asparagus
Peanut

*HUC-02 region 18 is not a priority based on proposed cancelation; otherwises all would be highlighted
Highlighted cells indicate need for additional refinement based on 10x
Highlighted cells overlap reasonable well with high usage (lb)
Highlighted cells overlap well with regions of the country with high PCA
Analysis based on typical (or applications rates needed) and 1 application; conculation with BEAD and corteva June 2019

Priority Ranking	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
1			x					x				x	x		x			
1			x									x	x		x			x
1	x	x	x	x	x	x	x	x	x	x	x	x						
1				x			x		x	x							x	x
1		x	x	x	x		x	x	x	x	x	x	x				x	x
2	x	x	x	x	x	x	x			x	x	x	x	x	x		x	x
2					x												x	x
2	x		x						x								x	x
2	x	x	x	x	x	x	x			x	x	x	x	x	x		x	x
2	x	x		x	x	x	x							x		x	x	x
2	x	x	x	x	x	x	x				x	x	x	x			x	x
2		x	x				x		x	x	x	x	x	x				x
2			x					x				x						x
2			x			x				x	x	x	x		x			x
2		x	x				x	x		x	x	x	x		x			
B(1)		x	x	x	x	x	x	x		x	x	x	x		x			x
B(1)				x														
B(1)			x															

CDL general crop group	Label Group
Perennial	Nongrass Animal Feeds (18)
Corn	Cereal Grains (15B)
Cotton	Oilseed (20C)
Citrus	Citrus Fruits (10-10)
Soybean	Legumes (6)
Other row crops	Veg., Root and Tuber (1A)
Wheat	Cereal Grains (15A)
Grapes	Berries/ Small Fruit (13-07F)
Vegetables	Herbs (25A)
Vegetables	Veg., Bulb (3-07A)
Orchards (other)	Pome Fruit (11-10)
Orchards (other)	Stone Fruit (12-12A)
Orchards (other)	Stone Fruit (12-12B)
Other row crops	Oilseed (20B)
Vegetables	Veg., Root and Tuber (1D)
Orchards (other)	Tree Nuts (14-12)
Other grains	Cereal Grains (15B)
Vegetables	Veg., Brassica (5-16)
Vegetables	Veg., Stem and Stalk (22A)
Other row crops	not listed

Green shades: ready to run for PFTTT
Orange shade: perennial crop dates, need to fill in missing dates
Pale orange: generic orchard or vineyard: need to derive quivalent crop dates
Generic vegetable scenario: need to fill crop dates, multiple seasons/yr

Status
Perennial/UPHD field
Top 16
Top 16
Perennial/UPHD fruit
Top 16
Top 16
Top 16
Perennial/UPHD fruit
No UPHD dates
UPHD_Veg
Perennial/UPHD fruit
Perennial/UPHD fruit
Perennial/UPHD fruit
Top 16
No UPHD dates
Perennial/UPHD fruit
Top 16
Mix UPHD_Veg, no dates
UPHD_Veg
Top 16

Next Steps

Go with default P/H dates; fill in dates w/ same approach Rick used for Top 16
Ready to run (all HUC regions) - we need to do this 1st to illustrate ranking
Ready to run
Generic orchard/citrus: need to address equivalent crop dates
Ready to run
Dates are ready; proceed as row crop (even though also fits vegetables)
Ready to run - 2nd on list for scoping
Generic vineyard: need to address equivalent crop dates
Generic vegetable scenario: need to fill crop dates, multiple seasons/yr
Generic vegetable scenario: need to fill crop dates, multiple seasons/yr
Generic orchard: need to address equivalent crop dates
Generic orchard: need to address equivalent crop dates
Generic orchard: need to address equivalent crop dates
Ready to run - need to decide whether this will be a generic row crop scenario
Generic vegetable scenario: need to fill crop dates, multiple seasons/yr
Generic orchard: need to address equivalent crop dates
Generic grains scenario (decide whether to split corn/sorghum and wheat/small grains)
Generic vegetable scenario: need to fill crop dates, multiple seasons/yr
Generic vegetable scenario: need to fill crop dates, multiple seasons/yr
Ready to run - need to decide whether this will be a generic row crop scenario

Estimating Field and Watershed Parameters Used in USEPA's Office of Pesticide Programs Aquatic Exposure Models – The Pesticide Water Calculator (PWC)/Pesticide Root Zone Model (PRZM) and Spatial Aquatic Model (SAM)

Commented [NT1]: Plus whatever else we need for a cover sheet.

U.S. Environmental Protection Agency
Office of Pesticide Programs

Revised 8/16/19

ED_004856A_00000526-00001

Contents

[TOC \o "1-3" \h \z \u]

Acronyms and Abbreviations

Abbreviation	Description
CDL	Cropland Data Layer, provided by USDA NASS
EFED	USEPA OPP Environmental Fate and Effects Division
ESRL	NOAA Earth System Research Laboratory
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
HUC/HUC2	Hydrologic Unit Code
MUSS/MUSLE	Modified Universal Soil Loss Equation
NASS	USDA National Agricultural Statistics Service
NCEP/NCAR	National Centers for Environmental Prediction and Atmospheric Research
NOAA	National Oceanic and Atmospheric Administration
NRCS	USDA Natural Resources Conservation Service
OPP	USEPA Office of Pesticide Programs
ORD	USEPA Office of Research and Development
PRZM / PRZM5	Pesticide Root Zone Model / version 5 (the current version)
PWC	Pesticide Water Calculator, the interface that combines PRZM5 and VVWM
SAM	Spatial Aquatic Model
SSURGO	Soil Survey Geographic database, the geospatial soil dataset developed by the USDA Natural Resources Conservation Service
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USLE	Universal Soil Loss Equation
VVWM	Variable Volume Water Model

NOTE: Appendix C lists the individual field scenario input parameter acronyms and names, along with definitions.

1. Introduction: Field Scenario Inputs for PWC and SAM

As a part of the requirements for pesticide registration and registration review, the U.S. Environmental Protection Agency, Office of Pesticide Programs (USEPA OPP) conducts aquatic exposure assessments to determine whether pesticides that are applied according to label directions can result in water concentrations that may adversely impact human health or aquatic organisms. To do this for the hundreds of registration and registration review actions each year, USEPA OPP estimates pesticide concentrations in water using models that account for a combination of soil, weather, hydrology, and management/use conditions that are expected to impact the potential for pesticides to move into water.

These models – the Pesticide Water Calculator (PWC) and the Spatial Aquatic Model (SAM) (USEPA OPP, 2015) – use field, watershed, and waterbody properties to simulate environmental conditions. In PWC, both field and waterbody parameters define an environmental *scenario* (Figure 1). In PWC, the Pesticide Root Zone Model (PRZM5) (Young and Fry, 2016) simulates pesticide fate and transport in the field, delivering pesticide loads to both surface water bodies and ground water aquifers. In this guidance, *scenario* refers to the combination of field and waterbody parameters that describe the combined environment of the field and the waterbody simulated in PWC. The term *field scenario* refers to the parameters that specifically describe the field used in PRZM5. SAM simulates a combination of field scenarios that makes up a watershed that drains into a waterbody.

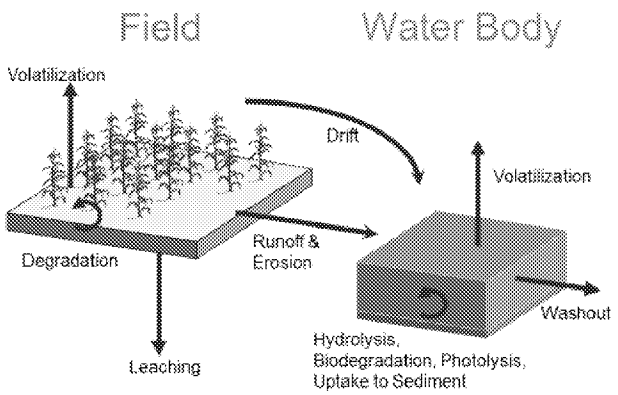

Figure [SEQ Figure * ARABIC]. Conceptualization of an environmental scenario for surface water assessments in the PWC. The scenario includes both a field and a waterbody. The *field scenario* refers only to the field inputs.

Field scenarios describe the physical environment where a pesticide may be used – typically the combination of weather, soil, landscape/watershed, and land use/management factors that

impact the fate and transport of pesticides applied in the field. These field parameters are derived similarly for both PWC and SAM. Differences in final processing and use – for example, SAM aggregates soil horizons into 4 distinct layers while PWC uses the horizons as specified in the data source – are identified in the input parameter descriptions and associated addendums.

PWC uses a single field scenario to represent an entire contributing area (watershed) for the crop/use area. The mass of pesticide from this single use area is loaded into a fixed water body. SAM accounts for the contributions of multiple soil-land cover-weather combinations as they occur together on the landscape. Thus, runoff, erosion, and pesticide transport are based on the aggregated contributions of fields in the watershed. Pesticide loading occurs in a range of water bodies – from ponds, lakes, and reservoirs to streams and rivers – reflecting both the actual proportions of use area within the watershed and the time of travel differences in larger watersheds.

This guidance document updates the Parameter Estimation chapter from the PRZM5 manual (Young and Fry, 2016) and the Data Inputs chapter and associated appendices from the Scientific Advisory Panel (SAP) materials on SAM (USEPA OPP, 2015). The data sources for the inputs have been updated to reflect the most recently-available data and practices. Section 2 describes the primary data sources used for inputs and Section 3 describes how the field scenario combinations are created from these data sources. Section 4 describes the field scenario inputs used in the models, along with the data sources and any additional calculations needed to derive the inputs.

2. Primary Data Sources

Field scenarios represent a combination of soil, land cover, and weather conditions. This section describes the primary data sources used to generate the scenario input parameter matrix. The matrix includes inputs for each combination of individual soil map units, land cover classes/years, and weather station grids.

a. Soil Data

Soil-related inputs are derived from the USDA's Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO) database (USDA NRCS SSS, 2018). The SSURGO database contains a wealth of information about soils on the landscape, stored and presented both spatially and in multiple tables. Soil are grouped according to similarities in properties, depicted as map units in SSURGO. Each map unit describes soils that have unique properties and interpretations for use. Each map unit may contain one or more components (individual soils or non-soils such as rock outcrops) that are likely to occur together within a map unit (Figure 2). Within each component, soil properties vary with depth. Differences in properties with depth are grouped by soil horizons (Figure 2). This document describes what inputs are needed to simulate pesticide fate and transport from fields and where the inputs are found. To avoid misunderstandings related to soil properties and map scale, the reader should consult USDA NRCS's resources on soil surveys and SSURGO (USDA NRCS SSS, 2018).

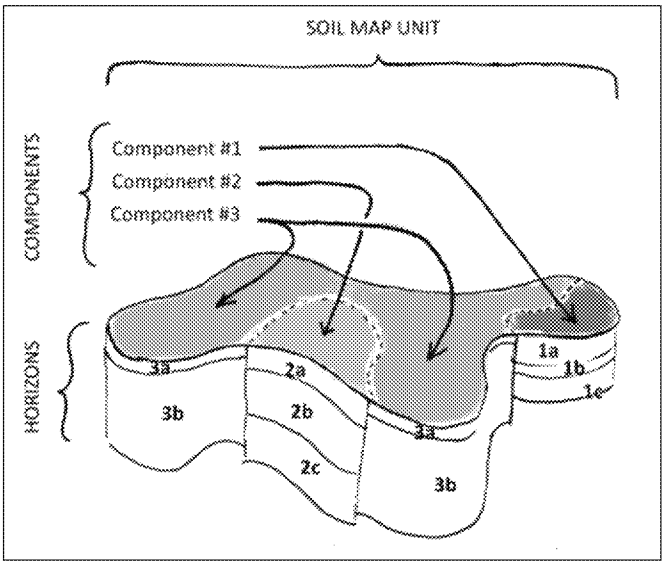

Figure [SEQ Figure * ARABIC]: Illustration of a single soil map unit composed of 3 individual soil components. Each component has multiple soil horizons. The USDA NRCS SSURGO dataset contains data for the soil map unit, individual components within the map unit, and horizons for each component.

Data specific to the map unit are stored in SSURGO in the muaggatt table. Data on individual components within the map unit are stored in the component table. Data on individual horizons within each component are stored in the chorizon table. Addendum A cross-references the soil inputs used in PWC and SAM with the SSURGO table where these data are stored.

Soil inputs for each map unit are representative of the major component comprising the greatest percentage of the map unit. However, if that component is missing data required for model inputs, then the highest-percentage component with soil data is selected. When one or more major components make up an equal percentage of the map unit, the more runoff-prone component is used, according to hydrologic soil group in order: D > C > B > A.

The SSURGO database includes non-soil map units, such as quarries, landfills, rock outcrops, and unspecified developed land, that do not contain data. These non-soil map units are not used in PWC field scenarios. For SAM, default runoff curve numbers (99) are used for these map units to account for runoff contributions within the watershed. Neither model simulates pesticide transport from non-soil map units.

Soil and landscape inputs derived from SSURGO use a representative value that is a central tendency (mean or median) of the reported range in soil properties. While a single

representative number doesn't capture the range in properties, it is expected to be value-neutral in terms of impact on concentration estimates. Modifications to soil data are described in the Scenario Input Parameters section.

b. Crop/Land Cover Data

No single national dataset exists to supply all the crop/management-related inputs. Defaults are identified for initial development and will be replaced as state and/or regional crop data are developed.

USDA National Agricultural Statistics Service's (NASS) Cropland Data Layer (CDL) provides spatial distributions of numerous crops using satellite imagery, remote sensing, and data training with independent crop data (USDA NASS, 2013-2017). The CDL provides the land cover footprint for collecting crop-related data and determining the general crop cover class (Addendum B) used for scenarios. USEPA OPP uses the most recent five years of CDL to capture representative cropping patterns and to take advantage of improvements in land cover estimation methods.

The CDL provides the most detailed spatial resolution for various crops and crop groups at the national level. Key areas of uncertainty include (a) the relative accuracy of the CDL in identifying actual crops, which is covered in detail in their accuracy assessments, (b) generic land cover classes used for crops that, individually, have poor accuracy in CDL, and (c) year-to-year variation in crop cover. Addendum B lists the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff or erosion – general crop groups still provide viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers.

In addition to land cover type, which is used to derive runoff curve numbers, other crop-related inputs include crop growth stages (both to provide a reference point for pesticide applications and to estimate canopy cover change over time), crop-specific properties for canopy cover and intercept (for rainfall and pesticide applications), depth of water extraction (for irrigation), and erosion-related inputs (for sediment transport).

The FIFRA SAP (2015) recommended using empirical data in the short term and plant growth models in the longer term for crop growth stages. However, empirical data collected in USDA crop progress reports are incomplete in time and location. Estimation of crop stages using models remains a longer-term goal. For now, USEPA OPP used available USDA publications to obtain key agricultural crop stage dates – active planting and harvesting dates for field crops (USDA NASS, 2010) and vegetables (USDA NASS, 2007) and blooming and harvesting dates for fruits and tree nuts (USDA NASS, 2006). These date ranges represent variations in time over individual states.

The remaining crop-related parameters come from a variety of sources cited in Section 4.

c. Weather Data

Weather data come from publicly-available, gridded meteorological datasets that provide daily weather data – precipitation, temperature, wind speed, solar radiation, and potential evapotranspiration – at uniform spatial resolution across the country. This dataset was developed from the Unified Gauge-Based Analysis of Daily Precipitation from the Climate Prediction Center (CPC) (NOAA ESRL, 2014) and Reanalysis Data from the National Centers for Environmental Prediction (NCEP). Fry et al (2016) describe the data processing and quality assurance steps taken to derive the weather data.

The NCEP Reanalysis data are available as points at 2.5° x 2.5° degree (latitude/longitude) grid resolution; the CPC precipitation data are at 0.25° x 0.25° degree US grid resolution. To combine the data, grids (Theissen polygons) were drawn around each datapoint in GIS and the datasets were resampled at the finer grid resolution of the CPC data (0.25° x 0.25°).

Commented [NT2]: Still a little wonky, but it's a key part of how we constructed the spatial data layer.

Additional weather-related parameters – snowmelt factor, rainfall distribution, and depth of evapotranspiration – are based on descriptions and maps provided in the PRZM3 (Carousel et al, 2005) and PRZM5 (Young and Fry, 2016) manuals. The maps for these data sources were digitized into GIS and combined with the 0.25° x 0.25° grids using a spatial overlay.

3. Creating Field Scenarios from Spatial Datasets

USEPA OPP identified all possible soil-land cover-weather combinations for the conterminous 48 U.S. states by overlaying soil map units from USDA's Soil Survey Geographic (SSURGO) database, the latest five years of land cover/crop groups from the USDA's Cropland Data Layer (CDL), and meteorological files/weather station grids generated from NOAA data (Figure 3). Field scenario input data are extracted for each of these spatial scenario combinations and the resulting data matrix contains all the necessary input parameters for each soil-land cover-weather grid combination. Because of the size of the national data sets and the volume of data generated – millions of separate combinations – the data extraction and calculation process has been automated using Python code (scripts). These scripts are managed and hosted in the GitHub version control system, in a public repository within USEPA's GitHub account. The code is written as simply and cleanly as possible for clarity and brief execution times, and the GitHub repository and the code itself contain markup and documentation to explain the operations in the scripts. The code and documentation are available through the GitHub site or upon request from USEPA OPP EFED.

Commented [NT3]: Trip's code documentation can either be a stand-alone reference, as done here, or another addendum to this document.

The three spatial data sets (SSURGO, CDL, Weather Grids) are overlaid in GIS to generate a spatial index. The input datasets are joined to the spatial index and subsequently collated into scenarios (Figure 3).

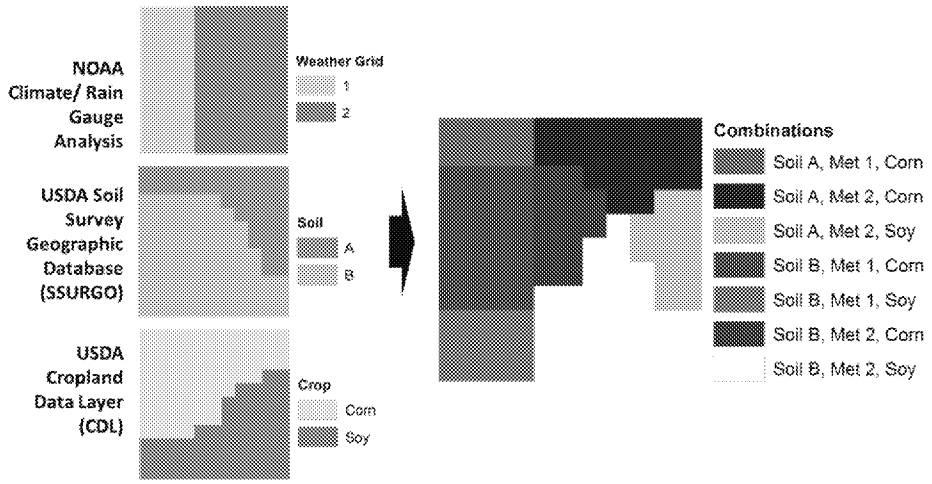

Figure [SEQ Figure * ARABIC]: Scenario combinations are built from the overlap of primary spatial data layers - weather grids (NOAA), soils (SSURGO), and land cover (CDL).

The script **overlay_raster.py** generates a spatial index from the overlay of spatial rasters (grids) for the (1) SSURGO map unit ID, (2) Cropland Data Layer crop ID, and (3) weather grid ID. The raster datasets are first converted to a 30-meter cell size (30 x 30 m grid). The gridded SSURGO datasets are disseminated by state at a 10-meter resolution, so a spatial merge and resampling is performed on these layers in ArcGIS prior to the overlay. The Python script uses the Esri ArcPy module to Combine the input raster datasets. The resulting raster dataset and attribute table contains three identifiers (index fields) for each pixel in the contiguous United States – soil map unit ID (*mukey*), CDL crop ID (*cdl*), and weather grid ID (*weather_grid*) – and an area field containing the spatial extent of each unique combination. The attribute table, named the *combinations* table in the code, constitutes the spatial index from which the scenarios are built.

The script **scenarios_and_recipes.py** aggregates combinations for all years by common index field values. This aggregation also combines the values of the area field for grouped combinations. In order to account for double-cropped classes in the CDL (e.g., CDL class 26 – Winter Wheat/Soybeans), combinations with a double-cropped CDL crop ID are duplicated. Each of the duplicated combinations is assigned a *cdl_alias* using the CDL crop ID for each of the constituent crops. For example, a single combination where cdl = 26 would be duplicated, with one of the duplicates assigned *cdl_alias* of 24 (winter wheat), and the other a *cdl_alias* of 5 (soybeans). Both rows would retain a cdl value of 26. This *cdl_alias* is used as an indexing field for most crop-linked parameters. Another index field, *state*, is created from a one-to-one relationship with soil map unit ID.

The resulting field scenario combinations have 5 index fields: *cdl*, *weather_grid*, *mukey*, *cdl_alias*, and *state*. Field scenarios are created by joining tabular datasets indexed by one or more scenario ID values to the *combinations* table generated by the raster overlay. Section 4 describes the specific field scenario inputs and data sources.

Once the scenarios are fully populated, a quality control check is performed to identify and remove scenarios with invalid values. The table **fields_and_qc.csv** contains the name of each field, along with a set of QC parameters: range min/max, general min/max, range_flag, general_flag, and blank flag. These parameters are used to generate flags based on whether the values in each field are missing, fall out of range, or fall out of a more conservative 'general' range. The value of the flag represents the severity of the error. Scenarios in which any field has a flag of 2 or higher are removed from the scenarios table. A separate output file provides the flags for each scenario and field and another file provides the number of scenarios marked for removal by a flag of 2 or higher for each field.

The script writes the resulting valid scenarios table to a file (**r[region]_parent.csv**). This table contains the matrix of field scenario inputs used to either generate standard scenarios for PWC or the full scenario matrix for SAM.

4. Scenario Input Parameters

This section describes the field scenario input parameters used in PWC and in SAM, organized by primary data source. The descriptions and parameter estimation guidance are adapted from documentation for PRZM 5 (Young and Fry, 2016) and SAM (USEPA OPP, 2015). Addendum C summarizes the parameter names, data sources, extraction and derivation methods, and relationships with other input parameters. The field scenarios are identified by a unique scenario identification (scenario_id), which is a combination of the 2-letter state name, SSURGO soil map unit key (soil_id), the weather grid designation (weather_grid), and the cropland data layer category (cdl).

a. Soil and Landscape Inputs for the Soil Map Unit

The runoff curve number is a major soil/landscape input affecting runoff. The curve number is largely dependent upon the hydrologic soil group associated with the major soil map unit and general land cover types (Table 1). The predominant agricultural treatment practice and hydrologic condition also impacts curve number selection.

Soil erodibility (usle_k) and slope steepness/length (usel_ls) describe intrinsic factors that affect the amount or erosion/sediment that can occur. These factors may be important for chemicals that have a high affinity to sorb to soil.

Hydrologic Soil Group (*hydro_group*)

Although not a direct input into PWC or SAM, the hydrologic soil group and land cover are used to determine the runoff curve number. It reflects the general runoff characteristics of the soil based on its hydraulic conductivity and depth to drainage-restrictive layers. Designations range

from A (lowest runoff potential) through D (highest runoff potential). The runoff curve number is based on the dominant (major) hydrologic soil group (HYDGRPDCD in the muaggatt table) for the map unit. If that designation is not available, the hydrologic soil group of the major component with data is used (Addendum C).

Some wet soils have dual hydrologic groups (e.g., A/D, B/D, C/D). In their natural (undrained) state, these soils behave as hydrologic group D because they are saturated at or near the surface and have little capacity to accommodate additional water from precipitation. If drained, the soil's capacity to hold rainfall water increases and the less runoff-prone hydrologic group designation is used (USDA NRCS, 2007). For curve number determination with dual hydrologic groups, assume the first designation when the soil is associated with cultivated cropland; use the D designation for non-agricultural land classes.

Runoff curve numbers (*cn_cov, cn_fal*)

Runoff curve numbers are based on hydrologic soil group and land cover class. Curve numbers represent runoff conditions under full crop canopy (*cn_cov*) and post-harvest (*cn_fal*) conditions. The default condition for *cn_fal* assumes fair to good hydrologic condition and contour cropping with crop residue left on the surface after harvest. The cover types used for curve number determination (USDA NRCS 2004, 2008) are more general than either the individual CDL cover classes or the general cover classes (Addendum B). Table 1 shows the curve numbers used for scenario development. Addendum D describes how curve numbers are determined from the original USDA NRCS (2004, 2008) tables.

Table [SEQ Table * ARABIC] - Curve Numbers for Cover Type-Hydrologic Soil Group (HSG) Combinations based on USDA NRCS (2004, 2008).

Cover Type	Treatment or Practice	Hydrologic Condition	Crop cover	HSG A	HSG B	HSG C	HSG D
Fallow	Bare Soil	---		77	86	91	94
Row crops	C + CR	Good	Cover	64	74	81	85
			Residue	74	83	88	90
Small grain	C + CR	Good	Cover	60	72	80	83
			Residue	74	83	88	90
Close-seeded legumes/rotation meadow	C	Good	Cover	55	69	78	83
			Residue	74	83	88	90
Pasture, grassland, range		Fair		49	69	79	84
Meadow - continuous grass, protected from grazing		---		30	58	71	78
Brush - brush-weed-grass		Fair		35	56	70	77
Woods - grass combination (orchards)		Fair		43	65	76	82
Woods		Fair		36	60	73	79

Cover Type	Treatment or Practice	Hydrologic Condition	Crop cover	HSG A	HSG B	HSG C	HSG D
Developed Open Space	>75% grass cover	Good		39	61	74	80
Residential (developed-low)	1/3 ac lots	30% impervious		57	72	81	86
Residential (developed-medium)	1/8 ac lots or less	65% impervious		77	85	90	92
Urban (developed high)	Commercial, business	85% impervious		89	92	94	95

Soil Erodibility (K) Factor (*usle_k*)

The K factor, an indicator of the inherent susceptibility of the soil to water erosion, is used in the all versions of the universal soil loss equation (USLE) to estimate erosion loss. Each soil horizon in SSURGO has a K factor (KWFACT in the chorizon table in SSURGO). Because the topmost layer is most exposed to runoff, the K factor for the surface layer is used. If the K factor is absent for the surface layer, the K factor for the next layer is used.

Slope, Slope length, and USLE Slope Length/Steepness (LS) Factor (*usle_ls*)

Slope represents the area-weighted average gradient for the soil map unit in SSURGO (SLOPEGRADWTA in the muaggatt table). **Slope length** is the average slope length for the major component in the map unit (SLOPLENUSLE_R in the component table). If no value is available for the slope length, a default length of 300 feet, which represents the maximum representative slope length value in SSURGO, is used.

Slope and slope length go into determining the Universal Soil Loss Equation (USLE) **Slope Length/Steepness (LS) Factor** (usle_ls) which, along with the K factor, reflects the intrinsic erodibility of the map unit.

The USLE Slope Length/Steepness (LS) factor is derived by equation [1], from Wischmeier and Smith (1978):

[1] $LS = (\lambda/72.6)^M * \{65.41 \sin^2\Theta + 4.56 \sin \Theta + 0.065)$

where

λ = slope length, feet

Θ = angle of slope (converted from % slope)

M = adjustment factor (0.5 if slope is >5%; 0.4 for slopes of 3.5-4.5%; 0.3 on slopes of 1-3%, and 0.2 for slopes <1%)

b. Soil Inputs Derived from Horizon Data

SSURGO reports organic matter content, bulk density, field capacity, wilting point, sand and clay contents, and soil pH values for each soil horizon. The impact of these soil properties on

pesticide fate and transport vary with pesticide properties, but are less than the impact of rainfall and curve number. Properties of the surface soil layer, which includes the zone from which runoff extracts chemicals, have the largest impact. Organic carbon content impacts sorption for high K_{oc} pesticides; field capacity, wilting point, and bulk density impact water storage capacity.

Soil components in SSURGO may have data for up to 14 different horizons. The current version of PRZM in PWC can accommodate up to 8 horizons. Because SAM is focused on surface water runoff rather than leaching to groundwater, properties for the surface horizon are the most critical for estimating pesticide transport and properties for the subsurface horizons have been aggregated in depth-weighted layers, as described in Addendum F. The # symbol in the input parameter names below refer to the horizon, numbered consecutively from surface to subsurface.

SSURGO reports a high, low, and representative value for each input. Soil inputs in the field scenario are based on the representative value.

Number of horizons (n_horizon)

PRZM uses the number of horizons to set the number of soil layers with inputs in the model. This parameter refers to the number of horizons with inputs for bulk density, soil organic content, and water capacity. Those horizons with missing data, usually lower-most horizons that describe weathered rock or thin leaf-litter surface horizons, are not included in the model routines.

Horizon thickness (thickness_#)

Horizon thickness is the representative value for the total thickness of the individual horizon (HZTHK_R in the chorizon table) in centimeters (cm). Thickness defines the extent through which water and any associated chemical moves downward through the soil by leaching.

Bulk density (*bd_#*)

Soil bulk density (mass per unit volume of soil) is used in chemical transport equations to estimate total soil porosity and soil moisture content. The bulk density for each layer is the representative value for soil bulk density at one-third bar moisture content (DBTHIRDBAR_R in the chorizon table).

Soil organic carbon content (*orgC_#*)

SSURGO reports soil organic matter (OM_R in the chorizon table) as a percent for each layer. This conversion from organic matter to organic carbon assumes soil organic matter contains approximately 58% carbon (USDA NRCS, 2009):

[2] Soil orgC = OM / 1.724

Water content at field capacity (*fc_#*) and wilting point (*wp_#*)

Field capacity is approximated using the water content of the soil at 1/3-bar pressure (WTHIRDBAR_R in the chorizon table). Wilting point is approximated by the water content of

the soil at 15 bars pressure (WFIFTEENBAR_R in the chorizon table). These values are used to characterize the water storage capacity of the soil: field capacity approximates the maximum water storage capacity (the amount of water retained after large pores have drained) while wilting point approximates the minimum water content at which plants can draw water from the soil. Values are reported as percentages in SSURGO that must be divided by 100 to convert to cm^3/cm^3.

Sand (*sand_#*) and Clay (*clay_#*) content

The percent of sand (SANDTOTAL_R in the chorizon table) and clay (CLAYTOTAL_R) determine the texture class of the soil. Sand is used as an input for the soil temperature routine in PWC. Sand and clay are included as criteria in the general soil grouping classes for SAM (Addendum F).

Soil pH (*ph_#*)

The soil pH value (relative acidity or alkalinity of the soil) is not a current input in PWC or SAM. It could, however, be used to select the appropriate hydrolysis rate for pesticides in which the predominant route of dissipation is pH-dependent hydrolysis. Soil pH values measured in a 1:1 soil:water slurry (PH1TO1H2O_R in the chorizon table) are used for the scenario matrix.

c. Crop/Plant Milestone/Growth Dates

Crop planting, growth, and harvesting dates are used to estimate crop emergence and the timing and duration of canopy growth and to provide a framework that can be used to estimate the timing and duration of pesticide applications. These vary across the country based on weather and vary from year to year with annual differences in temperature and rainfall. The crop stages have a greater impact on model outputs when used for estimating timing of pesticide applications than for estimating canopy growth and resulting crop intercept of rainfall and pesticide applications.

USEPA OPP used USDA reports on usual planting and harvest dates (USDA NASS, 2006, 2007, and 2010) to estimate crop growth dates. The usual (time in which 5 to 95 percent of the crop is planted or harvested) and most active (time in which 15 to 85 percent of the crop is planted or harvested) ranges in dates for planting, harvest, and, in some instances, bloom, from the USDA publications define the possible dates for a given crop in a given state.

Crop-related inputs are initially being developed for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage (Addendum B). The number crops with specific inputs may expand if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

Addendum E provides more detail on the methods used to derive the crop milestone dates, including steps for estimating missing dates. The file *Crop Dates*.xlsx contains the resulting crop dates, along with documentation for the dates.

Commented [NT4]: This table is too big and has too many worksheets used to derive dates to be included as an addendum in Word.

Planting dates (*plant_begin, plant_end, plant_date*)

The beginning plant date (*plant_begin*) is the either the first date in the "Most active" planting dates in USDA NASS (2006, 2007, and 2010) or, if a most active range is not provided, the "Begin" date for planting. The ending plant date (*plant_end*) is either the last date in the "Most active" planting dates in USDA NASS (2006, 2007, and 2010) or, if a most active range is not provided, the "End" date for planting. These dates, reported as month-day in the USDA publications, are converted to Julian days (1 to 365). In PWC, a single plant date (*plant_date*) is derived from the midpoint of *plant_begin* and *plant_end*. In SAM, the full range is used.

Harvest dates (*harvest_begin, harvest_end, harvest_date*)

The beginning harvest date (*harvest_begin*) is the either the first date in the "Most active" harvesting dates in USDA NASS (2006, 2007, and 2010) or, if a most active range is not provided, the "Begin" date for harvesting. The ending harvesting date (harvest_*end*) is either the last date in the "Most active" harvesting dates in USDA NASS (2006, 2007, and 2010) or, if a most active range is not provided, the "End" date for harvesting. These dates, reported as month-day in the USDA publications, are converted to Julian days (1 to 365). In PWC, a single harvest date (harvest_*date*) is derived from the midpoint of *harvest_begin* and *harvest_end*. In SAM, the full range is used.

Blooming dates (*bloom_begin, bloom_end*)

USDA includes the usual blooming dates (the period of time in which most orchards come into full bloom) for fruit and nut trees (USDA NASS, 2006). For pesticides that may be applied during bloom, the reported beginning date for bloom sets the start of the pesticide application window in SAM and the range in blooming dates defines the length of the pesticide application window in SAM.

Emergence dates (*emergence_begin, emergence_end, emergence_date*)

In the absence of published sources on timing to **emergence** of a crop, beginning and ending emergence dates are estimated by adding 7 days to the corresponding planting dates for the crop in the state. The emergence date is used to simulate the beginning of canopy cover for a crop. In PWC, a single emergence date (*emergence_date*) is derived from the midpoint of *emergence_begin* and *emergence_end*. In SAM, the full range is used.

Maximum canopy cover dates (*maxcover_begin, maxcover_end, maxcover_date*)

In the absence of data, the timing to **maximum canopy cover** is estimated as the midpoint between emergence and harvest. This represents the maximum capacity of the crop to intercept rainfall and pesticide applied above canopy. Crop growth in PWC and SAM assume the canopy coverage and root depth increase proportionally with time from emergence data to full canopy coverage. In PWC, a single date (*maxcover_date*) is derived from the midpoint of *maxcover_begin* and *maxcover_end*. In SAM, the full range is used.

Commented [NT5]: Request for peer review and/or USDA feedback: These two milestone dates are estimated from planting and harvest dates. We would appreciate any recommendations for better methods of estimating or available datasets with these milestone dates.

Annual crops with missing milestone dates

In some instances, the crop will occur in a state, but not in sufficient acreage for a reported date range (USDA NASS, 2006, 2007, and 2010). For these crops, dates are estimated by first identifying the nearest neighbor state which had data for the given crop, favoring states that were similar in latitude. If more than one neighboring state shares the same plant hardiness zone, then dates for the state with the greatest acreage (based on the latest USDA NASS Census of Agriculture) is used. Addendum E describes the methods used to estimate missing dates.

Commented [TN6]: Request for peer review feedback

Milestone dates for perennial crops

Commented [NT7]: Request for peer and/or USDA review feedback

Non-annual/perennial crops usually do not have reported planting dates in USDA NASS (2006, 2007, 2010). These include alfalfa and grass hay, pasture, orchards, and some berries/fruits and vegetables. Emergence, full canopy cover, and harvest (loss of foliage cover) are used to set canopy and root growth model routines (for rain/pesticide interception and evapotranspiration) and to define the times of crop cover and crop removal for runoff curve numbers. The current default practice for PWC scenarios is to set emergence at day 1 and harvest at day 365, using a single curve number (*cn_cov*) for the entire year. This assumes canopy cover is consistent throughout the year.

An alternative approach would be to tie canopy and root growth to the beginning and end of the growing season based on the timing of the timing of the last and first killing frost, respectively. Canopy cover differences can be linked to reported harvest dates – in the case of hay crops, multiple harvests may occur – or, for deciduous orchards, the timing of leaf bud to leaf fall. USEPA OPP is currently collecting publications and data to better define significant crop milestone dates for use in modeling.

Crops with multiple growing seasons in a year

Commented [TN8]: Request for peer review and/or USDA feedback: This section includes a rough outline of how we might address crops with multiple growing seasons in a year, based on usual planting/harvest dates in the USDA publications. We are open to alternative approaches.

Some crops, particularly vegetables, in a given state may have multiple growing seasons in a year. These show up in the USDA planting/harvesting reports with distinct planting and harvest dates. In some instances, some vegetable crops have up to four seasons in a year. The current approach, outlined in Addendum E, is to develop a generic vegetable scenario that has options for up to four growing seasons in a year (spring, summer, fall, winter). In states in which only a single growing season occurs, only the first growing season will be active. In states with more than one growing season in a year, the additional seasons would be activated. These scenarios are still in development.

d. Other Crop-Specific Inputs

Many of the crop-related factors described below are based on guidance in PRZM 3 (Carousel et al, 2005) or PRZM 5 (Young and Fry, 2016) manuals. These crop inputs, along with the supporting data used to derive the inputs, can be found in the file *Crop Input Data.xlsx*.

Commented [NT9]: This is way too big to convert to tables/addendums/ other attachments to this document.

Crop intercept (*crop_intercept*)

Crop intercept is the maximum rainfall interception storage of the crop (cm). This parameter estimates the amount of rainfall that is intercepted by a fully developed plant canopy and

retained on the plant surface. The PRZM3 manual (Carousel et al, 2005) provided a range of 0.1 to 0.3 cm for a dense crop canopy. USDA NRCS (2016) noted up to 0.1 inch (0.25 cm) can be temporarily intercepted and stored on plant foliage.

Maximum canopy cover (*max_cover*)

The maximum areal crop coverage (or ground cover), as a percentage of the surface, sets the magnitude of the maximum cover value. As a crop grows, its ground cover increases and captures proportionally more pesticide from above canopy applications. Similarly, rainfall storage capacity increases. For most crops, the maximum coverage will be on the order of 80% to 100% (Carousel et al, 2005; Young and Fry, 2016).

Maximum active rooting depth (*root_depth*)

The maximum active rooting depth refers to the depth to which plant roots draw water from the soil. This is used in estimating soil depletion of water from plant uptake for estimating irrigation needs and soil moisture content over time. The USDA National Engineering Handbook provides ranges in depth to which roots of mature crops will extract water from deep, well-drained soils (USDA NRCS, 1997 and 2016). The *root_depth* input for the crop in PWC and SAM is the average of the depths reported in Table 3-4 of NEH 652 Irrigation Guide (USDA NRCS, 1997) and Table 11-3 of NEH 632 Sprinkler Irrigation Guide (USDA NRCS, 2016).

The SSURGO database reports maximum rooting depths (ROOTZNEMC in the valu_fy2018.gdb in SSURGO) for soils that have a root- or drainage-restrictive layer in the soil. If the maximum active rooting depth for the crop is greater than the depth of the maximum soil root zone depth, the rooting depth for the crop is truncated at 0.5 cm less than the soil depth for that crop-soil map unit combination.

In PWC/PRZM, the maximum active rooting depth must be less than the total soil depth. If the maximum rooting depth for the crop equals the total soil depth, subtract 0.5 cm from the plant root depth.

USLE practice (P) factor (*usle_p*)

The P factor in the Universal Soil Loss Equation estimates the impact of agricultural practices on erosion. Values range from 0.10 (extensive practices) to 1.0 (no supporting practices). Specific values in Table 2 are based on Table 5.6 from Carousel et al, 2005, which are based on values in Wischmeier and Smith (1978). The default practice assumes cultivation along contour (C).

Table [SEQ Table * ARABIC]: USLE P Values for Selected Agricultural Practices and Slope Ranges (from Table 5.6, Carousel et al, 2005, adapted from Wischmeier and Smith, 1978)

Practice	Slope, percent				
	1 – 2	2 – 7	7 – 12	12 – 18	18 – 24
Contouring (C), Default for field scenarios	0.60	0.50	0.60	0.80	0.90
No support practice	1.0	1.0	1.0	1.0	1.0
Contour Strip Cropping (CP)	0.30-0.60	0.25-0.50	0.30-0.60	0.40-0.80	0.40-0.90
Contour Listing or Ridge (CL)	0.30	0.25	0.30	0.40	0.45

USLE cover management (C) factor (usle_*c_cov, usle_c_fal*)

The C factor in the Universal Soil Loss Equation estimates the impact of crop cover management practices on erosion. Values for USLEC range from 0.001 (well managed) to 1.0 (fallow or tilled condition). Table 5.7 in the PRZM3 manual (Carousel et al, 2005) is based on crop, management, and rotation practices, which can vary greatly with crops. The USLEC factors in the file *Crop Input Data.xlsx* represent the high and low range for the crop, based on data provided to USEPA OPP by USDA in 2000.

Commented [NT10]: This is way too big to convert to tables/addendums/ other attachments to this document.

Commented [TN11]: Request from peer review and/or USDA: We'd appreciate any recommendations for representative C factors for crop cover and for residue/previous cover that could be applied nationally or regionally.

e. Irrigation Inputs

The need for including irrigation in model simulations depends on a combination of crop water needs, rainfall amounts and timing, and the capability of the soil to retain water and supply the crop. When the irrigation routine is triggered (based on the irrigation type parameter), the allowable moisture depletion parameter indicated when irrigation occurs based on soil moisture content. The irrigation rate specifies the maximum daily amount of irrigation water that is applied. This amount, dictated by soil properties (i.e., curve number), is set to minimize losses of irrigation water by runoff.

The file *Irrigation Input Data by Crop and State.xlsx* contains irrigation inputs by crop and state, along with the supporting data used to derive the inputs.

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Irrigation type (*irrigation_type*)

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Irrigation type triggers the irrigation routine in PWC/PRZM and SAM. The dominant type of irrigation can be simplified based on how water is applied:

Type 0 = no irrigation

Type 1 = Over canopy (*over*) is applied above the crop canopy, such as with pivot or spray booms. Irrigation applied over canopy will include crop intercept and hold-up of applied water.

Type 2 = Below canopy (*under*) is applied below the crop canopy, such as with furrow or flood irrigation. No crop intercept occurs.

USEPA OPP used the 2013 Farm and Ranch Irrigation Survey (USDA NASS, 2014) to determine the appropriate irrigation type. Irrigation is included in the scenario when more than 40% of the crop acreage in the state is irrigated. Over canopy irrigation is used when the majority of the crop acreage in the state is irrigated using pressure or sprinkler systems. Under canopy irrigation is used when the majority of the crop acreage in the state is treated with gravity or low-flow irrigation systems.

Commented [NT14]: Trip – it looks like you changed this from a string input to a number. If I follow correctly, 3 refers to 'over canopy' and 2 refers to 'under canopy', but it would be good for you to confirm that and revise the bullets as needed.

Allowable moisture depletion (*depletion_allowed*)

This is the fraction of the available water capacity at which irrigation is triggered. This fraction will depend upon the soil moisture holding characteristics, the type of crop planted, and regional agricultural practices. The allowable depletion fraction should range between 0.0 (irrigation begins when soil moisture is depleted to the wilting point) and 0.6 (irrigation is applied at 60 percent of the available water capacity). USDA NRCS (1997, 2016) provide

recommended allowable soil depletion (as a percent of available water capacity) for select crops at different growth stages. USEPA OPP used the minimum depletion fraction as an irrigation trigger. A default depletion of 0.5 was used for crops not included in the irrigation guide.

Leaching fraction (*leaching_frac*)

This refers to the fraction of water added by irrigation that is allowed to leach below the root zone, usually to reduce salt build-up from evaporation losses. This factor represents a fraction of the amount of water required to meet the soil water deficit. Without information, a default value of 0.1 is used, indicating that 10% more water is used than that required to meet the water deficit.

f. Daily Weather Inputs

Each weather station contains historical daily weather data – precipitation, temperature, wind speed, solar radiation, and potential evapotranspiration – collected from NOAA. Fry et al (2016) describe the collection, processing, and QA/QC of these inputs. Each station is linked to scenarios spatially by a uniform (0.25° x 0.25° latitude/longitude) grid around the station point. Weather data for each station includes month-day-year dates.

Daily precipitation (*precipitation*)

Daily precipitation, in cm, comes from the NOAA Climate Prediction Center (CPC) Unified Rain Gauge Analysis. Precipitation in the CPC dataset is converted from mm/day to cm/day.

Daily mean air temperature (*temperature*)

The daily mean air temperature at 2 meters above the surface is converted to degrees Celsius by subtracting 273.15 from the original Kelvin values reported in the NOAA NCEP/NCAR Reanalysis dataset.

Daily evapotranspiration (*et*)

Daily evapotranspiration, in cm, is not directly available in the NOAA data. The calculation, described in Fry et al (2016), uses the Hargreaves-Samani method (FAO, 1998; Hargreaves and Samani, 1985; Lu et al., 2005).

Daily wind speed (*windspeed*)

The wind speed as calculated by (Fry et al, 2016) represents the speed at 10 m above the surface, in cm/s

Daily solar radiation flux (*solarradiation*)

The daily downward solar radiation flux, MJ m^{-2} day^{-1}, is used to calculate daily evapotranspiration (see ET equation above and Fry et al, 2016).

g. Other Climate Factors

Additional climate factors describing rainfall distribution, snowmelt, and soil evaporation losses are based on guidance in Young and Fry (2016). These inputs are linked to the scenarios by a spatial overlay with the weather station grids and are stored in the file *Weather Inputs.xlsx.*

Rainfall distribution (*ireg*)

The NRCS rainfall distribution region (Young and Fry, 2016, adapted from USDA NRCS, 1986) for the time period from May 1 to September 15, is used in the time of concentration calculation of peak flow. Figure 4 shows the approximate geographic range for the four distribution regions. A rainfall region (1, 2, 3, or 4) is assigned to each weather station grid.

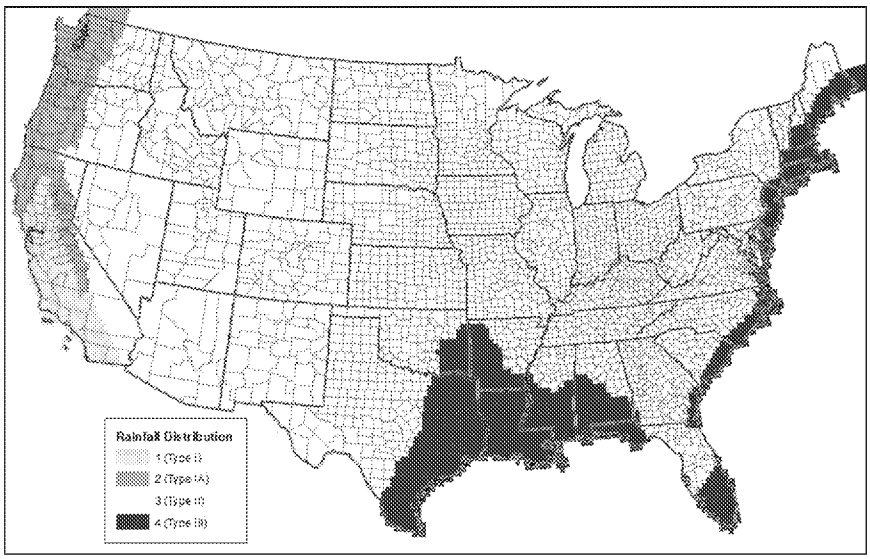

Figure [SEQ Figure * ARABIC]: Approximate geographic boundaries for NRCS rainfall distributions, adapted from USDA NRCS (1986) and linked to weather station grids.

Annual soil evaporation loss (*anetd*)

This value, representing soil evaporation moisture loss during a fallow dormant period, outside of the growing season. It accounts for reduced level of moisture loss through evaporation. For soils with limited drainage, set ANETD to 10 cm. Values for free drainage soils are shown in Figure 5 is based on Figure 3.1 in Young and Fry (2016). The midpoint value of the range is assigned to the corresponding weather station grid using a spatial overlap with the map in Young and Fry (2016). Note that this figure in Young and Fry (2016) has not been traced to an original data source, and thus its origin is uncertain.

Commented [YD15]: We might want to see if peer reviewers can track this down

Commented [NT16R15]: That's one reason for the peer review. We refer to inputs with only secondary documentation in charge question 2, although we didn't specifically list this one.

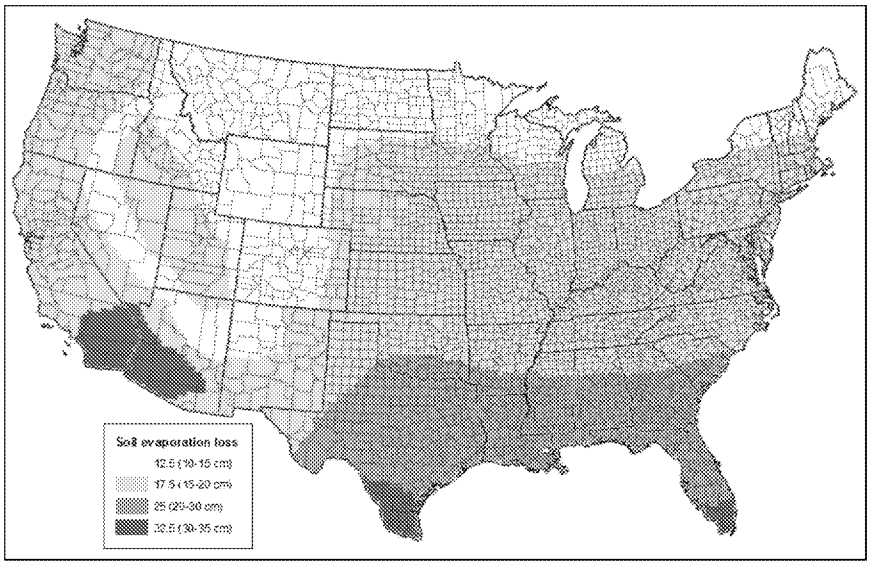

Figure [SEQ Figure * ARABIC]: Approximation of soil evaporation losses under fallow conditions, based on Figure 3.1 of Young and Fry (2016), linked to weather station grids.

Snowmelt factor (*sfac*) <u>Snowmelt Factor (cm/°C/day)</u>

This is the amount of accumulated snow that melts per °C above 0°C. Use 0.274, which is the default value recommended by USDA (2004) when no other information is available. References for more specific values can be found in USDA (2004).

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Addendum A: Soil Input Fields Extracted from SSURGO

Soil data in the gridded version of SSURGO (gSSURGO) are in geodatabases that must be joined to the spatial grids by keys (USDA NRCS SSS, 2018). Addendum C lists the soil input fields extracted from SSURGO, with steps to derive SAM and PWC inputs. Section 4 and Addendum C describe how the field scenario inputs are derived from the SSURGO fields.

Table [SEQ Table * ARABIC] - Soil Input Fields Extracted from SSURGO

SSURGO Field	SSURGO Table	SSURGO Field Name	PWC/SAM Input Name	Application
mukey	muaggatt, component	Mapunit Key	soil_id	Link muaggatt, component tables in SSURGO; used to create scenario ID
muname	muaggatt	Mapunit Name	Used to identify soil for PWC field scenarios	QA to identify type of missing map units, PWC scenario name
slopegradwta	muaggatt	Slope gradient, weighted average for map unit (%)	slope	Slope input
hydgrpdcd	muaggatt	Hydrologic Soil Group, dominant for mukey	hydro_group	Soil input used to derive runoff curve number
cokey	component, chorizon	Component Key	cokey	Link component, chorizon tables; used in QA
comppct_r	component	Component % – Representative Value	not in final scenario inputs	% of component in map unit: sort major components
majcompflag	component	Major Component flag	not in final scenario inputs	Identify major components in the map unit (flag = Yes)
hydgrp	component	Hydrologic Soil Group for the component	hydro_group (alternate)	Alternate hydrologic soil group input if hydgrpdcd is missing
slope_r	component	Slope Gradient – Representative Value	slope (alternate)	Alternate slope input if slopegradwta is missing
sloplenusle_r	component	Slope Length USLE – Representative Value	slope_length	Soil input to determine USLE LS value (along with slope)
hzdept_r	chorizon	Top Depth – Representative Value	not in final scenario inputs	Sort horizon inputs by depth
hzthk_r	chorizon	Thickness of horizon – Representative Value	thickness_#	Horizon input; depth-weighted calculations for SAM
sandtotal_r	chorizon	Total Sand – Representative Value	sand_#	Horizon input (for volatility), soil grouping parameter
claytotal_r	chorizon	Total Clay – Representative Value	clay_#	Horizon input (for volatility), soil grouping parameter
om_r	chorizon	OM – Representative Value	orgC = om_r/1.724	Derive horizon input for organic C
dbthirdbar_r	chorizon	Db 0.33 bar H2O [bulk density] – Representative Value	bd_#	Horizon input for bulk density (BD)
wthirdbar_r	chorizon	0.33 bar H2O [field capacity] – Representative Value	fc_#	Horizon input for field capacity (FC)
wfifteenbar_r	chorizon	15 bar H2O [wilting point] – Representative Value	wp_#	Horizon input for wilting point (WP)
kwfact	chorizon	K-Factor Whole Soil	usle_k	Soil input (uppermost layer) for soil erodibility

SSURGO Field	SSURGO Table	SSURGO Field Name	PWC/SAM Input Name	Application
ph1to1h2o_r	chorizon	pH H2O – Representative Value	ph_#	Future horizon input (for pH-dependent hydrolysis)
rootznemc	valu_fy2018 .gdb	Maximum depth of the root zone (cm) for the major component, based on soil properties	not in final scenario inputs	Used, in conjunction with crop rooting depth to define root_depth

Addendum B: Land Cover Classes and General Crop Groups from CDL

Accuracy assessments by USDA NASS on a state-by-state basis show that the CDL is relatively accurate (90% or greater) for major commodity crops, such as corn, soybeans, wheat, and cotton, which are grown over extensive contiguous areas, and for which the USDA has independent data for training and quality assurance analysis[1]. However, a high frequency of error for other crops suggests that CDL may not be suitable for representing minor crops such those in the vegetables class. To address this, USEPA OPP aggregated minor crops into broader crop groupings to reduce the level of uncertainty in spatial footprints in individual crops.

The general land cover class groupings (with numeric designation in parentheses) used in scenario development are:

Corn (10): Corn and double-cropped classes with corn in the rotation.

Cotton (20): Cotton and double-cropped classes with cotton in the rotation.

Rice (30): Cultivated rice.

Soybeans (40): Soybeans and double-cropped classes with soybeans in the rotation.

Durum (22), Spring (23), and Winter (24) Wheat: Durum, spring, and winter wheat classes, along with those double-cropped classes with wheat in the rotation.

Vegetables (60) and ground fruit (61): This pulls together the individual vegetable crops, which have low accuracy rates in CDL. It also includes ground fruit which, while using different cultivation patterns, aren't well distinguished from surrounding vegetable (or other) classes.

Grapes (71): Grapes/vineyards, originally grouped as "Orchards and Vineyards", but separated after evaluating the most recent accuracy assessments for grapes and orchards.

Citrus (72): Oranges and other citrus, originally grouped as "Orchards and Vineyards", but separated after evaluating the most recent accuracy assessments for grapes and orchards.

Other orchards (70): This includes all nut and fruit trees and other tree orchards that could not be reasonably distinguished due to a relatively high error rate. A number of orchard areas are often misidentified as pasture, grassland or pasture (presumably the grass lanes between tree rows contribute more to the optical signal than do the trees), shrubland, or forest.

Other grains (80): This includes all small grain crops other than wheat.

Other row crops (90): Sunflower, peanuts, tobacco, sugar beets, and hops that could not be reasonably distinguished due to a relatively high error rate.

Other crops (100): CDL classes – other crops, aquaculture, idle cropland – that don't fit in the above groups. These are of minor extent in CDL.

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[1] Metadata that include error analysis are available for download at https://www.nass.usda.gov/Research_and_Science/Cropland/metadata/meta.php .

Pasture/hay/forage (110): This includes specific hay crops, such as alfalfa, clover, and vetch, and general pasture, hay, and forage classes. It also includes grassland, which may include pasture land in some parts of the country.

Open (121), Low (122), Medium (123), and High (124) Intensity Developed categories were kept separate because the intensity differences can be used to estimate turf area and relative impervious surface area and curve number determination also depends on intensity of development.

Forest (140): This merges deciduous, evergreen, and mixed forest classes, along with more generic forest classes.

Shrubland (160).

Water (180) includes all water body types identified in CDL.

Woody (190) and herbaceous (195) wetlands were kept as separate groups because of differences in curve number determinations.

Miscellaneous lands (200) include other land classes that don't fit in any of the above groupings. These are of minor extent in CDL.

Table 4 lists the individual CDL class values and names, as reported in the yearly cropland data layer spatial data. The general crop groups are described above. The curve number cover class is used in combination with hydrologic soil groups to determine curve number (Addendum D). The FIFRA label crop group will be used to link pesticide label specifications to the SAM scenarios through the user interface.

Table [SEQ Table * ARABIC] - Crosswalk between CDL Classes and General Land Cover Classes Used for SAM.

CDL Value	CDL Category (name)	General CDL Class (number)	Curve Number Cover Class	CFR Label Crop Group (USEPA, 2018)
1	Corn	Corn (10)	Row Crop	Cereal Grains (15B)
2	Cotton	Cotton (20)	Row Crop	Oilseed (20C)
3	Rice	Rice (30)	Small Grain	Cereal Grains (15C)
4	Sorghum	Other grains (80)	Small Grain	Cereal Grains (15B)
5	Soybeans	Soybeans (40)	Row Crop	Legumes (6)
6	Sunflower	Other row crops (90)	Row Crop	Oilseed (20B)
10	Peanuts	Other row crops (90)	Row Crop	not listed
11	Tobacco	Other row crops (90)	Row Crop	not listed
12	Sweet Corn	Vegetables (60)	Row Crop	Cereal Grains (15B)
13	Pop or Orn Corn	Vegetables (60)	Row Crop	Cereal Grains (15B)
14	Mint	Vegetables (60)	Row Crop	Herbs and Spices (25)
21	Barley	Other grains (80)	Small Grain	Cereal Grains (15A)
22	Durum Wheat	Wheat, Durum (22)	Small Grain	Cereal Grains (15A)
23	Spring Wheat	Wheat, Spring (23)	Small Grain	Cereal Grains (15A)
24	Winter Wheat	Wheat, Winter (24)	Small Grain	Cereal Grains (15A)

CDL Value	CDL Category (name)	General CDL Class (number)	Curve Number Cover Class	CFR Label Crop Group (USEPA, 2018)
25	Other Small Grains	Other grains (80)	Small Grain	Cereal Grains (15A)
26	Dbl Crop WinWht/ Soybeans	Wheat (24) / Soybeans (40)	Small Grain / Row Crop	Cereal Grains (15A) / Legumes (6)
27	Rye	Other grains (80)	Small Grain	Cereal Grains (15A)
28	Oats	Other grains (80)	Small Grain	Cereal Grains (15A)
29	Millet	Other grains (80)	Small Grain	Cereal Grains (15B)
30	Speltz	Other grains (80)	Small Grain	Cereal Grains (15A)
31	Canola	Other grains (80)	Small Grain	Oilseed (20A)
32	Flaxseed	Other grains (80)	Small Grain	Oilseed (20A)
33	Safflower	Other grains (80)	Small Grain	Oilseed (20B)
34	Rape Seed	Other grains (80)	Small Grain	Oilseed (20A)
35	Mustard	Vegetables (60)	Row Crop	Vegetables, Brassica Leafy (4-16B)
36	Alfalfa	Pasture/hay/forage (110)	Close-seeded legumes	Nongrass Animal Feeds (18)
37	Other Hay/Non Alfalfa	Pasture/hay/forage (110)	Pasture, grass, range	Nongrass Animal Feeds (17)
38	Camelina	Other grains (80)	Small Grain	Oilseed (20A)
39	Buckwheat	Other grains (80)	Small Grain	Cereal Grains (15A)
41	Sugarbeets	Other row crops	Row Crop	Vegetables, Root and Tuber (1A)
42	Dry Beans	Vegetables (60)	Row Crop	Vegetables, Legume (6C)
43	Potatoes	Vegetables (60)	Row Crop	Vegetables, Root and Tuber (1C)
44	Other Crops	Other crops (100)	Row Crop	Mixed
45	Sugarcane	Other grains (80)	Small Grain	not listed
46	Sweet Potatoes	Vegetables (60)	Row Crop	Vegetables, Root and Tuber (1D)
47	Misc Vegs & Fruits	Vegetables (60)	Row Crop	Mixed
48	Watermelons	Vegetables (60)	Row Crop	Vegetables, Cucurbit (9A)
49	Onions	Vegetables (60)	Row Crop	Vegetables, Bulb (3-07A)
50	Cucumbers	Vegetables (60)	Row Crop	Vegetables, Cucurbit (9B)
51	Chick Peas	Vegetables (60)	Row Crop	Vegetables, Legume (6C)
52	Lentils	Vegetables (60)	Row Crop	Vegetables, Legume (6C)
53	Peas	Vegetables (60)	Row Crop	Vegetables, Legume (6A, 6B, 6C)
54	Tomatoes	Vegetables (60)	Row Crop	Vegetables, Fruiting (8-10A)
55	Caneberries	Ground fruit (61)	Row Crop	Berries and Small Fruit (13-07A)
56	Hops	Other row crops (90)	Row Crop	not listed
57	Herbs	Vegetables (60)	Row Crop	Herbs and Spices (19)
58	Clover/Wildflowers	Other crops (100)	Close-seeded legumes	Nongrass Animal Feeds (18)
59	Sod/Grass Seed	Other crops (100)	Pasture, grass, range	not listed
60	Switchgrass	Pasture/hay/forage (110)	Pasture, grass, range	Nongrass Animal Feeds (17)
61	Fallow/Idle Cropland	Other crops (100)	Fallow	not listed

CDL Value	CDL Category (name)	General CDL Class (number)	Curve Number Cover Class	CFR Label Crop Group (USEPA, 2018)
62	Pasture/Grass	Pasture/hay/forage (110)	Pasture, grass, range	Nongrass Animal Feeds (17)
63	Forest	Forest (140)	Woods	
64	Shrubland	Shrubland (160)	Brush-weed-grass	
65	Barren	Miscellaneous land (200)	Fallow	
66	Cherries	Other Orchards (70)	Woods-grass	Stone Fruit (12-12A)
67	Peaches	Other Orchards (70)	Woods-grass	Stone Fruit (12-12B)
68	Apples	Other Orchards (70)	Woods-grass	Pome Fruit (11-10')
69	Grapes	Grapes (71)	Woods-grass	Berries and Small Fruit (13-07F)
70	Christmas Trees	Other trees (75)	Woods-grass	
71	Other Tree Crops	Other Orchards (70)	Woods-grass	Mixed
72	Citrus	Citrus (72)	Woods-grass	Citrus Fruits (10-10A)
73	unidentified	Miscellaneous land (200)	Fallow	
74	Pecans	Other Orchards (70)	Woods-grass	Tree Nuts (14-12)
75	Almonds	Other Orchards (70)	Woods-grass	Tree Nuts (14-12)
76	Walnuts	Other Orchards (70)	Woods-grass	Tree Nuts (14-12)
77	Pears	Other Orchards (70)	Woods-grass	Pome Fruit (11-10')
81	Clouds/No Data	Miscellaneous land (200)	Fallow	
82	Developed	Developed-med (123)	Residential-1/8 ac	
83	Water	Water (180)	na	
87	Wetlands	Wetlands -herbaceous (195)	Meadow	
88	Nonag/Undefined	Miscellaneous land (200)	Fallow	
92	Aquaculture	Other crops (100)	na	
111	Open Water	Water (180)	na	
112	Perennial Ice/Snow	Miscellaneous land (200)	Fallow	
121	Developed/Open Space	Developed-open (121)	Developed open space	
122	Developed/Low Intensity	Developed-low (122)	Residential-1/3 ac	
123	Developed/Med Intens.	Developed-med (123)	Residential-1/8 ac	
124	Developed/High Intens.	Developed-high (124)	Urban	
131	Barren	Miscellaneous land (200)	Fallow	
141	Deciduous Forest	Forest (140)	Woods	
142	Evergreen Forest	Forest (140)	Woods	
143	Mixed Forest	Forest (140)	Woods	
152	Shrubland	Shrubland (160)	Brush-weed-grass	
176	Grassland/Pasture	Pasture/hay/forage (110)	Pasture, grass, range	Nongrass Animal Feeds (17)

CDL Value	CDL Category (name)	General CDL Class (number)	Curve Number Cover Class	CFR Label Crop Group (USEPA, 2018)
190	Woody Wetlands	Wetlands-woods (190)	Woods	
195	Herbaceous Wetlands	Wetlands -herbaceous (195)	Meadow	
204	Pistachios	Other Orchards (70)	Woods-grass	Tree Nuts (14-12)
205	Triticale	Other grains (80)	Small Grain	Cereal Grains (15A)
206	Carrots	Vegetables (60)	Row Crop	Vegetables, Root and Tuber (1A)
207	Asparagus	Vegetables (60)	Row Crop	Vegetables, Stem and Stalk (22A)
208	Garlic	Vegetables (60)	Row Crop	Vegetables, Bulb (3-07A)
209	Cantaloupes	Vegetables (60)	Row Crop	Vegetables, Cucurbit (9A)
210	Prunes	Other Orchards (70)	Woods-grass	Stone Fruit (12-12C)
211	Olives	Other Orchards (70)	Woods-grass	Tropical fruit, edible peel (23A)
212	Oranges	Citrus (72)	Woods-grass	Citrus Fruits (10-10A)
213	Honeydew Melons	Vegetables (60)	Row Crop	Vegetables, Cucurbit (9A)
214	Broccoli	Vegetables (60)	Row Crop	Vegetables, Brassica (5-16')
216	Peppers	Vegetables (60)	Row Crop	Vegetables, Fruiting (8-10B, 8-10C)
217	Pomegranates	Other Orchards (70)	Woods-grass	Fruit (24B)
218	Nectarines	Other Orchards (70)	Woods-grass	Stone Fruit (12-12B)
219	Greens	Vegetables (60)	Row Crop	Vegetables, Leafy (4-16A)
220	Plums	Other Orchards (70)	Woods-grass	Stone Fruit (12-12C)
221	Strawberries	Ground fruit (61)	Row Crop	Berries and Small Fruit (13-07G)
222	Squash	Vegetables (60)	Row Crop	Vegetables, Cucurbit (9B)
223	Apricots	Other Orchards (70)	Woods-grass	Stone Fruit (12-12C)
224	Vetch	Pasture/hay/forage (110)	Close-seeded legumes	Nongrass Animal Feeds (18)
225	Dbl Crop WinWht/ Corn	Wheat (24) / Corn (10)	Small Grain/ Row Crop	Cereal Grains (15B / 15A)
226	Dbl Crop Oats/Corn	Other Grains (80) / Corn (10)	Small Grain/ Row Crop	Cereal Grains (15B / 15A)
227	Lettuce	Vegetables (60)	Row Crop	Vegetables, Leafy (4-16A)
229	Pumpkins	Vegetables (60)	Row Crop	Vegetables, Cucurbit (9B)
230	Dbl Crop Lettuce/ Durum Wht	Wheat/Vegetables	Small Grain/ Row Crop	Vegetables, Leafy (4-16A) / Cereal Grains (15A)
231	Dbl Crop Lettuce/ Cantaloupe	Vegetables (60)	Row Crop	Vegetables, Leafy (4-16A) / Vegetables, Cucurbit (9A)
232	Dbl Crop Lettuce/ Cotton	Vegetables (60) / Cotton (20)	Row Crop / Row Crop	Vegetables, Leafy (4-16A) / Oilseed (20C)
233	Dbl Crop Lettuce/ Barley	Vegetables (60)	Row Crop	Vegetables, Leafy (4-16A) / Cereal Grains (15A)
234	Dbl Crop Durum Wht/ Sorghum	Wheat (22) / Other Grains (80)	Small Grain / Small Grain	Cereal Grains (15A/15B)
235	Dbl Crop Barley/ Sorghum	Other grains (80) / Other grains (80)	Small Grain / Small Grain	Cereal Grains (15A/15B)
236	Dbl Crop WinWht/ Sorghum	Wheat (24) / Other Grains (80)	Small Grain / Small Grain	Cereal Grains (15A/15B)

CDL Value	CDL Category (name)	General CDL Class (number)	Curve Number Cover Class	CFR Label Crop Group (USEPA, 2018)
237	Dbl Crop Barley/Corn	Other Grains (80) / Corn (10)	Small Grain/ Row Crop	Cereal Grains (15A/ 15B)
238	Dbl Crop WinWht/ Cotton	Wheat (24) / Cotton (20)	Small Grain/ Row Crop	Cereal Grains (15A) / Oilseed (20C)
239	Dbl Crop Soybeans/ Cotton	Soybeans (40) / Cotton (20)	Row Crop / Row Crop	Legumes (6) / Oilseed (20C)
240	Dbl Crop Soybeans/Oats	Soybeans (40) / Other Grains (80)	Row Crop / Small Grain	Legumes (6) / Cereal Grains (15A)
241	Dbl Crop Corn/ Soybeans	Corn (10) / Soybeans (20)	Row Crop / Row Crop	Cereal Grains (15B) / Legumes (6)
242	Blueberries	Ground fruit (61)	Row Crop	Berries and Small Fruit (13-07B, 13-07G)
243	Cabbage	Vegetables (60)	Row Crop	Vegetables, Brassica (5-16')
244	Cauliflower	Vegetables (60)	Row Crop	Vegetables, Brassica (5-16')
245	Celery	Vegetables (60)	Row Crop	Vegetables, Stem and Stalk (22B)
246	Radishes	Vegetables (60)	Row Crop	Vegetables, Root and Tuber (1A)
247	Turnips	Vegetables (60)	Row Crop	Vegetables, Root and Tuber (1A)
248	Eggplants	Vegetables (60)	Row Crop	Vegetables, Fruiting (8-10B, 8-10C)
249	Gourds	Vegetables (60)	Row Crop	Vegetables, Cucurbit (9B)
250	Cranberries	Ground fruit (61)	Row Crop	Berries and Small Fruit (13-07H)
254	Dbl Crop Barley/Soybeans	Other Grains (80) / Soybeans (40)	Small Grain/ Row Crop	Cereal Grains (15A) / Legumes (6)

Addendum C: Primary Scenario Input Parameters

Tables 5 to 7 summarize the scenario input parameters that are derived for each soil /land cover/weather station combination. Parameters in **bold** are inputs for SAM and PWC; other parameters are used in deriving inputs, providing QA, or for future use. These tables do not include the scenario identification fields described in Section 3.

Table [SEQ Table * ARABIC] – Soil and Landscape Inputs used in PWC and SAM. Parameters in bold are direct inputs on both models.

Parameter Name	Parameter Description	Units / Range	Source	Extraction/ Derivation	Factor in Model Sensitivity	Relationships/ correlation
A. Soil and landscape inputs derived from the soil map unit						
hydro_group	**Hydrologic soil group**, used to determine curve number	Numeric, based on alpha designation: 1 (A), 2 (A/D), 3 (B), 4 (B/D), 5 (C), 6 (C/D), 7 (D)	SSURGO for Soil Map Unit: HYDGRPDCD (dominant HSG) from MUAGGATT; if missing, use HYDGRP from the COMPONENT table for the major component.	Converted to numeric values for processing. Slash groups (A/D, B/D, C/D) provide clues to tile drainage: if cultivated land, use left side; if not cultivated, use D.	**Primary:** Used in combination with land cover to determine runoff curve number	Based on hydraulic conductivity, depth to restrictive layers, which are influenced by soil texture, structure, organic matter content, bulk density, mineralogy
cn_cov cn_fal	**Runoff curve numbers** of antecedent moisture condition for crop cover and fallow/residue.	dimensionless whole number, less than 100	Hydrologic soil group from SSURGO, land use from CDL groups. Curve number guidance from USDA NRCS (2004, 2008).	Using HSG, general land cover groups, follow curve number guidance (Addendum D).	**Primary**: Determines the portion of rainfall that runs off the land, potentially carrying pesticides with it.	Based on hydrologic soil group, land cover type, and management practices
usle_k	**Universal soil loss equation K factor for soil erodibility** factor, whole-soil	dimensionless fraction, range from 0 to 0.64	SSURGO Soil Map Unit, joined to CHORIZON table through muaggatt, component tables: KWFACT for topmost horizon (hzdept_r = 0)	Extract kwfact (K factor, whole soil) for surface horizon of major component in chorizon table	**Varies**, depending on the sorption coefficient of the pesticide; greater impact expected with pesticides with high sorption coefficient.	Erodibility depends on soil texture, organic matter content, structure (how well soil particles aggregate), permeability (which is related to bulk density and soil structure)

Parameter Name	Parameter Description	Units / Range	Source	Extraction/ Derivation	Factor in Model Sensitivity	Relationships/ correlation
slope	Land slope, the average slope gradient for the soil mapping unit.	% Range from 0 to 100	SSURGO for Soil Map Unit: SLOPEGRADD (wtd. avg. slope) from muaggatt table	Weighted average % slope for the soil map unit (SLOPEGRADD) from SSURGO muaggatt table	**Secondary:** Used with slope length to estimate USLE LS (slope/length) factor.	Impacts soil erosion potential in combination with the slope length. The combined impact is characterized in the USLE LS factor below.
slope_length	Slope length used in USLE LS factor. Distance from point of origin of overland flow to the point where gradient decreases and deposition begins	feet	SSURGO component table: SLOPELENUS_R (linked to mapunit)	SLOPELENUS_R in component table; if no value is available for SLOPELENUS_R, use a default slope length of 300 feet (max. SLOPELENUS_R value in SSURGO)	**Secondary:** Used with slope to estimate USLE LS (slope/length) factor.	Correlation with slope gradient is weak. Impacts soil erosion potential in combination with the slope length. The combined impact is characterized in the USLE LS factor below.
usle_ls	Universal soil loss equation **(LS) length-slope topographic factor**	dimensionless fraction	Table 5.5 in PRZM3 manual (Carousel et al, 2005) provides value based on % slope, slope length	Derive from slope, slp_length, using equation from Wischmeier and Smith (1978): $LS = (\lambda/72.6)M * \{65.41 \sin 2\Theta + 4.56 \sin \Theta + 0.065)$ where λ = slope length, feet Θ = angle of slope M = adjustment factor (See Section 4)	**Varies:** Sensitivity analysis on soil erosion (RUSLE) model inputs is needed. Expected to have greater impact on high-Koc chemicals, but the extent has not been tested.	Derived from slope gradient, slope length parameters above.
root_zone_ max	Maximum depth of the root zone (cm) based on soil properties	cm	SSURGO value added data table (valu): rootznemc, available for the major component in each map unit	Serves as maximum depth of active root zone. Adjust maxrootdepth, anetd.	**Varies**, impact is on activating irrigation. Minimal except where irrigation occurs.	Potentially serves as cut-off depth for active root zone depth.
B. Soil inputs derived from horizon data						

Parameter Name	Parameter Description	Units / Range	Source	Extraction/ Derivation	Factor in Model Sensitivity	Relationships/ correlation
n_horizons	**Number of soil horizons** with input data	Count	SSURGO CHORIZON	Count the number of horizons within each component that have values for bd, orgC, fc, wp	**Minimal**, used for tracking number of horizon inputs	
thickness_#	**Thickness** of # horizon	cm	SSURGO CHORIZON table (linked to major component, map unit): HZTHK_R for each horizon	No further calculations	**Minimal**, used for accounting for thickness	
orgC_#	Percent **soil organic carbon (orgC)** for # horizon	% Organic soils >35% org. C; mineral soils less	SSURGO CHORIZON table (linked to major component, map unit): OM_R for each layer (chorizon)	Convert from percent organic matter to organic carbon using the equation: orgC=(OM_R)/1.724	**Primary**: With the pesticide sorption coefficient, determines how much pesticide is held (sorbed) to soil and how much is dissolved in water (available for runoff)	Impacts (directly or indirectly) density, water holding capacity, erodibility; with chemical Koc, impacts the amount of pesticide held on soil
bd_#	**Bulk density** for # horizon	g/cm^3 generally >1.00 (except for organic or volcanic soils), <2.00	SSURGO CHORIZON table (linked to major component, map unit): DBTHIRDBAR_R for each horizon	No further calculations	**Secondary:** Reflects relative porosity, water capacity. Because of narrow range in bulk density values, the impact of its uncertainty is lessened.	Related to soil texture (sand, silt, clay), structure, organic content. Influences soil permeability/ drainage, which influences hydrologic soil groups
fc_#	**Field capacity** for # horizon; the amount of water retained after large pores have drained (1/3 bar water content)	cm^3/cm^3 fraction <1.0; greater than wp	SSURGO CHORIZON table (linked to major component, map unit): WTHIRDBAR_R for each horizon	Divide by 100 to convert units from percent to cm^3/cm^3	**Secondary:** Combined with wilting point, influences water holding capacity of soil, which influences curve number, and the irrigation trigger.	Related to soil texture (sand, silt, clay), structure, bulk density, organic content.

Parameter Name	Parameter Description	Units / Range	Source	Extraction/ Derivation	Factor in Model Sensitivity	Relationships/ correlation
wp_#	**Wilting point** for # horizon; minimum water content at which plants cannot draw water from the soil (15 bar water content)	cm^3/cm^3 fraction <1.0; less than fc	SSURGO CHORIZON table (linked to major component, map unit): WFIFTEENBAR_R for each horizon	Divide by 100 to convert units from percent to cm^3/cm^3	**Secondary:** Affects irrigation trigger and curve number, but generally less influence than field capacity	Similar to field capacity
sand_#	**Percent sand (total)** for # horizon	% Range from >0 to <100	SSURGO CHORIZON table (linked to major component, map unit): SANDTOTAL_R for each horizon	No further calculations	**Secondary:** Affects temperature routine for volatility, if used. Indirect impact on water holding capacity of soil. Affects bulk density, total porosity, and movement of water in soil, K factor.	Varies with clay content; influences bulk density, field capacity, wilting point, total porosity, K factor values.
clay_#	Percent clay (total) for # horizon	% Range from >0 to <100	SSURGO CHORIZON table (linked to major component, map unit): CLAYTOTAL_R for each horizon	No further calculations	**Secondary:** Affects temperature routine volatility, if used. Indirect impact on water holding capacity of soil. Affects bulk density, total porosity, and movement of water in soil, K factor.	Varies with sand content; influences bulk density, field capacity, wilting point, total porosity, K factor values.
ph_#	pH of the soil, as measured in a 1:1 water: soil mixture, for # horizon	number (log units); most often in 4-10 range	SSURGO CHORIZON table (linked to major component, map unit): PH1TO1H2O_R for each horizon	No further calculations	**Not an input:** potential use in modeling for a pesticide prone to pH-dependent hydrolysis.	

Table [SEQ Table * ARABIC] – Crop-related inputs used in PWC and SAM. Parameters in bold are direct inputs in PWC.

Parameter name	Parameter Description	Units	Source	Extraction/ Derivation	Major Factor in Model Sensitivity?	Relationships/ correlation
Crop/plant factors that can be used to guide pesticide application window						
plant_begin (SAM)	Julian day for beginning of most active crop planting window	day number (julian)	USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	Beginning of most active planting date. Convert day/ month to Julian day.	Impact depends on timing of pesticide application; may be lessened using an application window rather than single date.	Vary from year to year based on weather (rain, temperature/ growing degree days), soil moisture content.
plant_end (SAM)	Julian day for last date of most active crop planting window	day number (julian)	USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	End of most active planting date. Convert day/ month to Julian day.	Impact depends on timing of pesticide application; may be lessened using an application window rather than single date.	Vary from year to year based on weather (rain, temperature/ growing degree days), soil moisture content.
plant_date (SAM)	Julian day for midpoint date of most active crop planting window	day number (julian)	USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	Midpoint between beginning and end of most active planting date. Convert day/ month to Julian day.	Impact depends on timing of pesticide application; may be lessened using an application window rather than single date.	Vary from year to year based on weather (rain, temperature/ growing degree days), soil moisture content.
harvest_begin (SAM)	Julian day for beginning of most active crop harvest window	day number (julian)	USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	Beginning of most active harvest date. Convert day/ month to Julian day.	Impact depends on timing of pesticide application.	Dictated by planting date, time to maturity for plant, weather conditions.
harvest_end (SAM)	Julian day for last date of most active crop harvest window	day number (julian)	USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	End of most active harvest date. Convert day/ month to Julian day.	Impact depends on timing of pesticide application.	Dictated by planting date, time to maturity for plant, weather conditions.
harvest_date (PWC)	Julian **day for midpoint date of most active crop harvest window**	day number (julian)	USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	Midpoint between beginning and end of most active harvest date. Convert day/ month to Julian day.	Impact depends on timing of pesticide application.	Dictated by planting date, time to maturity for plant, weather conditions.

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Parameter name	Parameter Description	Units	Source	Extraction/ Derivation	Major Factor in Model Sensitivity?	Relationships/ correlation
emergence_begin (SAM)	Julian day for beginning of crop emergence window	day number (julian)	Estimated from USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	Estimated from beginning planting date, in Julian days.	Impact depends on timing of pesticide application.	
emergence_end (SAM)	Julian day for end of crop emergence window	day number (julian)	Estimated from USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	Estimated from ending planting date, in Julian days.	Impact depends on timing of pesticide application.	
emergence_date (PWC)	Julian **day for midpoint of crop emergence window**	day number (julian)	Estimated from USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	Estimated from midpoint planting date, in Julian days.	Impact depends on timing of pesticide application.	
bloom_begin (SAM)	**Julian day for beginning of bloom window**, if relevant	day number (julian)	USDA Usual Planting and Harvesting Dates (2006, 2007, 2010) or Crop Profiles	Where available (primarily orchards, vegetables)	Impact depends on timing of pesticide application.	
bloom_end (SAM)	Julian day for end of bloom window, if relevant	day number (julian)	USDA Usual Planting and Harvesting Dates (2006, 2007, 2010) or Crop Profiles	Where available (primarily orchards, vegetables)	Impact depends on timing of pesticide application.	
maxcover_begin (SAM)	Julian day for beginning of maximum canopy cover window	day number (julian)	Estimated from USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	Estimated from beginning planting date, in Julian days.	Impact depends on timing of pesticide application.	
maxcover_end (SAM)	Julian day for end of maximum canopy cover window	day number (julian)	Estimated from USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	Estimated from ending planting date, in Julian days.	Impact depends on timing of pesticide application.	
maxcover_date (PWC)	Julian **day for midpoint of maximum canopy cover window**	day number (julian)	Estimated from USDA Usual Planting and Harvesting Dates (2006, 2007, 2010)	Estimated from midpiont planting date, in Julian days.	Impact depends on timing of pesticide application.	

Parameter name	Parameter Description	Units	Source	Extraction/ Derivation	Major Factor in Model Sensitivity?	Relationships/ correlation
Factors Used to Estimate Amount of Rainfall Reaching Ground from Canopy						
crop_intercept	**Maximum rainfall interception** storage of crop (cm)	cm	Table 5.4 in PRZM3 manual (Carousel et al, 2005) for major crops.	Link crop-related data to major crops in CDL general land cover classes	**Uncertain, expected small** in relation to curve number impacts.	Related to crop type.
max_cover	Maximum areal coverage of **canopy** (%)	%	Carousel et al (2005); Young and Fry (2016)	Link crop-related data to major crops in CDL general land cover classes	**Uncertain, expected small** in relation to curve number impacts.	Related to crop type. For most crops, 80-100% maximum.
Crop-specific Inputs for Irrigation						
root_depth	Maximum **active rooting depth** of crop (cm)	cm	Table 3-4 of NEH 652 Irrigation Guide (USDA NRCS, 1997) and Table 11-3 of NEH 632 Sprinkler Irrigation Guide (USDA NRCS, 2016)	Average of depths reported in tables; adjust by root_zone_ max (lesser depth); must be at least 0.5 cm less than soil depth	**Varies**, impact is on activating irrigation. Minimal except where irrigation occurs.	Related to crop, soil depth.
irrigation_fraction	Percent of crop area irrigated (area to be designated)	%	2013 Farm and Ranch Irrigation Survey (USDA NASS, 2014)	Table 35, Irrigation Survey (USDA NASS, 2014) – divide irrigated acres by total acres for crop	**Varies,** used to determine where irrigation will be simulated.	Irrigation is triggered when >40% of the crop acres in a state are irrigated.
irrigation_type	**Dominant irrigation type**	blank=none; over=over canopy (e.g., spray, pivot); under=below canopy (e.g., furrow, flood)	2013 Farm and Ranch Irrigation Survey (USDA NASS, 2014)	Table 36, Irrigation Survey (USDA NASS, 2014) – compare over canopy acres (pressure, sprinkler) to under canopy (gravity, low flow)		
depletion_allowed	**Fraction of water capacity depletion allowed by crop**	fraction	USDA NRCS National Engineering Handbook (USDA NRCS, 1997, 2016).	Minimum depletion fraction from NEH 652 Table 3-3 or NEH 623 Table 11-3; default of 0.5.		

Parameter name	Parameter Description	Units	Source	Extraction/ Derivation	Major Factor in Model Sensitivity?	Relationships/ correlation
leaching_frac	**Extra fraction of water added by irrigation for leaching**	fraction	USDA NRCS National Engineering Handbook (USDA NRCS, 1997, 2016).	Default of 0.1.		
Crop-specific factors affecting erosion						
usle_p	Universal soil loss **agricultural practices factor** (P value)	dimensionless fraction	Table 5.6 in PRZM3 manual (Carousel et al, 2005) provides value based on % slope, practice	Derive from slope, practice, using Table 4.	**Uncertain, pending sensitivity analysis.** Expected to have greater impact on high-Koc chemicals, but the extent has not been tested.	Derived from slope gradient, agricultural practice.
usle_c_cov c_fal	Universal soil loss **cover management factors** for fallow and crop cover (C value)	dimensionless fraction	Table 5.7 of the PRZM manual (Carousel et al, 2005), based on crop, management, rotation practices; Ag Handbook 703; RUSLE data tables	Link crop-related data to major crops in CDL general land cover classes. Begin with PRZM scenarios as defaults.	**Uncertain, pending sensitivity analysis.** Expected to have greater impact on high-Koc chemicals, but the extent has not been tested.	Unknown; related to crop type, cultivation practice.

Table [SEQ Table * ARABIC] – Weather inputs used in SAM.

Parameter in SAM code	Parameter Name / Description	Units	Source	Extraction/ Derivation	Major Factor in Model Sensitivity?	Relationships/ correlation
Each set of weather data are stored as a separate file identified by the WeatherID number						
month	Calendar month	mm	NOAA CPC Unified Rain Gauge Analysis (US) and NOAA NCEP/NCAR Reanalysis (Global)	See Fry et al, 2016		
day	Calendar day	dd				
year	Calendar year	yyyy				
precipitation	Precipitation, daily total	cm/day			**Major:** Precipitation in relation to timing of pesticide application is an important driver.	
ET	Evapotranspiration	cm/da				
Temperature	Air temperature at 2m	degrees (°) Celsius				
WindSpeed	wind speed at 10 m	cm/s				
SolarRadiation	Solar radiation flux at surface	La/day (S_L)				
Climate Factors Linked to Weather Station Grids						
sfac	**Snowmelt factor** (cm/C), used to calculate snowmelt rates in relation to temperature.	cm/C	Table 3.6 in PRZM5 manual (Young and Fry, 2014) gives range in SFAC related to forest covers.	Use 0.36 for crops, non-forested land covers; 0.16 for forest covers	**Uncertain, expected minimal.** Has not been evaluated.	
rainfall	**Rainfall distribution region** used to calculation time of concentration of peak flow	Value 1 to 4	Figure 3.3 in PRZM5 manual (Young and Fry, 2014), based on USDA TR-55.	IREG assigned to weather grids based on rainfall distribution map (Figure 5)	**Uncertain (TBD).** Broad regions across country.	
anted	Min. **depth from which evaporation is extracted** during fallow period (cm)	cm	10 cm for soil w/ limited drainage. Figure 3.1 in PRZM5 manual (Young and Fry, 2014) for free-drainage soils.	Assigned midpoint value from range in Figure 6 for each associated weather grid	**Uncertain, expected minimal.** Has not been evaluated. Influences curve number	

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Addendum D: Determining the Runoff Curve Number

Runoff curve numbers are based on hydrologic soil group, general land cover class, agricultural/land use practices, and general hydrologic condition (USDA NRCS 2004, 2008). Use the following steps to assign a curve number for both full canopy cover (*cn_cov*) and post-harvest (*cn_fal*) conditions:

1. Identify the hydrologic soil group (HSG) for the dominant component in the soil mapping unit. If the HSG is a combination (i.e., C/D, B/C), select the most runoff-prone hydrologic value (runoff vulnerability follows the order D > C > B > A).
2. Determine Curve Number Land Cover class from the crosswalk with USDA Cropland Data Layer (CDL) categories or general classes (Table 4 in Addendum B).
3. Determine the Curve Number under full canopy cover (*cn_cov*) using Table 8 below.
    a. Unless otherwise specified, assume crops are planted on contour with crop residue left after harvest (C+CR) for treatment practice in Table 8.
    b. Unless otherwise specified, assume good or fair hydrologic conditions.
    c. The curve number cover classes for the developed classes are based on the percent of impervious surface (50-75% grass cover for open; 30% impervious for low; 65% impervious for medium; 85% impervious for high).
4. Determine the curve number for fallow conditions (*cn_fal*)
    a. For the crop/agricultural land cover classes, use the curve numbers for the crop residue cover under fallow in Table 8.
    b. For the woods, meadow, brush, and developed/residential classes, use the same curve number as for the cn_ag

Table [SEQ Table * ARABIC] - Curve Number Guidance based on NRCS TR-55 Methodology (USDA NRCS, 2008).

Cover Type	Treatment or Practice	Hydrol. Cond.	HSG A	HSG B	HSG C	HSG D
Fallow	Bare Soil	---	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight Row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured and terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T + CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84

Cover Type	Treatment or Practice	Hydrol. Cond.	HSG A	HSG B	HSG C	HSG D
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T + CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80
Pasture, grassland, or range; continuous forage for grazing		Poor	68	79	86	89
		Fair	49	69	79	84
		Good	39	61	74	80
Meadow - continuous grass, protected from grazing; generally mowed for hay		---	30	58	71	78
Brush - brush-weed-grass mixture w/ brush as the major element		Poor	48	67	77	83
		Fair	35	56	70	77
		Good	30	48	65	73
Woods - grass combination (orchard or tree farm) (based on 50% woods, 50% grass)		Poor	57	73	82	86
		Fair	43	65	76	82
		Good	32	58	72	79
Woods		Poor	45	66	77	83
		Fair	36	60	73	79
		Good	30	55	70	77
Farmsteads - buildings, lanes, driveways, surrounding lots		----	59	74	82	86
Developed Open Space	<50% grass cover	Poor	68	79	86	89
	50 - 75% grass cover	Fair	49	69	79	84
	>75% grass cover	Good	39	61	74	80
Impervious: paved lots, roofs, driveways, etc			98	98	98	98
Streets & Roads	Paved curbs, storm sewers		98	98	98	98
	Paved, open ditches, incl ROW		83	89	92	93
	Gravel, incl ROW		76	85	89	91
	Dirt, incl ROW		72	82	87	89
Urban	Commercial, business	85% imperv	89	92	94	95
	Industrial	72% imperv	81	88	91	93
Residential	1/8 ac lots or less (townhouse)	65% imperv	77	85	90	92
	1/4 ac lots	38% imperv	61	75	83	87
	1/3 ac lots	30% imperv	57	72	81	86
	1/2 ac lots	25% imperv	54	70	80	85
	1 ac lots	20% imperv	51	68	79	84
	2 ac lots	12% imperv	46	65	77	82

Addendum E: Estimating Crop Milestone Dates

Both PWC (PRZM module) and SAM require crop emergence, maturity and harvest dates to characterize crop canopy and root growth. For annual field crops, USEPA OPP selected state-level "most active" planting and harvesting dates to parameterize the PRZM crop growth module (USDA NASS, 2010).

In some instances, the crop will occur in a state, but not in sufficient acreage to have a reported date range (USDA NASS, 2006, 2007, and 2010). To address these data gaps, USEPA OPP combined the USDA Cropland Data Layer, Census of Agriculture, and Usual Plant and Harvest Dates for Field Crops to estimate missing crop growth dates.

Data Sources

The USDA, NASS Cropland Data Layer (CDL) provides planted acreage estimates for major commodities and digital, crop-specific, 30-meter geo-referenced output products. Data were accessed through the USDA NASS Cropland internet portal (USDA NASS, 2010-2017).

The Census of Agriculture (CoA) is a complete count of U.S. farms and ranches and provides the only source of uniform, comprehensive and impartial agricultural data for every county in the nation. The CoA provides more crop-specific classifications and acreage resolution than CDL. Data were accessed through the USDA NASS Quick Stats internet portal (USDA NASS, 2012).

The USDA Field Crops: Usual Plant and Harvest Dates (UPHD) identifies state-level periods when annual crops are planted and harvested based on 20 years of crop progress data. Beginning dates indicate when planting or harvesting is about 5 percent complete and ending dates when operations are about 95 percent complete. The "most active" range indicates when between 15 and 85 percent of the crop is planted or harvested (USDA NASS, 2010).

For pesticide registration purposes and establishing residue tolerances, USEPA organizes agricultural commodities into crop groups, that are botanically and agronomically related. USEPA OPP accounted for the on-going multi-year joint project with NAFTA partners in Canada and Mexico to revise the existing crop groups in 40 CFR 180.41 (USEPA, 2018).

Estimating Surrogate Dates for Annual Field Crops

The CDL provides the spatial footprint for the field scenarios. The area of individual CDL categories and associated general land cover groups and CFR label groups (see Addendum B) are tallied by state to identify the occurrence of the crop/group in the state. This is combined with state-level acreage for each crop from the CoA and state-wide plant and harvest dates from the UPHD.

USEPA OPP used both the CDL and the CoA to confirm that the crop was present in the state. If the UPHD listed plant and harvest dates are used for that crop in that state, these dates were used to estimate crop milestone dates. If the UPHD listed no dates for the crop in a state where CDL and CoA confirm that it occurs, USEPA OPP estimated surrogate plant and harvest dates.

Where the UPHD were missing for some crops in some states, USEPA OPP used reported UPHD data for similar crops grown in the same state. When surrogate UPHD for a state were not available, EFED used same or similar crops of adjacent states with similar latitude. Crops with surrogates were identified and quantified by the number of acres. The dates and estimation methods are documented in the accompanying *Crop Dates.xlsx* file.

Commented [NT17]: Separate excel file with the detailed data tables (too many fields/entries to fit easily as a table here).

Estimating Dates for Double Cropping Categories

The CDL data includes double cropping categories. While USDA NASS focuses largely on summer crops, ground truthing identifies whether a single or double crop was planted in a given year. CDL captures the major crop rotations/patterns, but not winter fruits and vegetables (USDA NASS, 2010-2017). Since published UPHD for double crops were not reported. EFED retained the harvest dates of the second crop but used the harvest dates of the initial crop as the surrogate planting date for the unpublished second crop. The dates and estimation methods are documented in the accompanying *Crop Dates.xlsx* file.

Deriving Emergence, Maturity and Harvest Dates for Annual Field crops

The plant and harvest dates were used to derive the emergence, maturity and harvest dates. The average planting and harvest dates were calculated for each state. The date of emergence was estimated as 7 days after the average planting date for each state. The maturity was calculated as the midpoint between the average planting and harvest dates for each state.

Addendum F. Aggregating Soil Horizons and Map Units for SAM

For the Spatial Aquatic Model (SAM), USEPA OPP has made two modifications in the soil inputs are processed and stored in order to reduce computer processing and storage demands that would be needed for running national-scale risk assessments on a routine basis. These modifications, described below and presented to the 2015 FIFRA Scientific Advisory Panel for SAM (USEPA OPP, 2015), result in minimal impact on estimated pesticide concentrations in water. The SAP panel noted that, while the modifications are defensible and do not impact model outputs, USEPA should remain open to technological advances that may negate the need for condensing data in the future. USEPA OPP will revisit the need to make such modifications in the future.

Depth Weighting

The depths, thicknesses, and numbers of horizons may vary greatly among soil components and map units. For PWC use, data are collected for individual horizons, leaving a variable number of columns for each soil map unit, based on the number of horizons present. For SAM, four standardized layers of fixed depth intervals – 0-5, 5-20, 20-50, and 50-100 cm – are used for ease of processing millions of soil map unit inputs. Properties for the 0-5 cm layer are based on the surface horizon data in SSURGO. Properties for the remaining three layers are depth-weighted averages of the soil properties by horizon (see Figure 6 for illustration):

Commented [TN18]: This is an issue specific to SAM. During initial development for the 2015 SAP, aggregating subsurface properties into standard layers showed no impacts on model outputs. The "raw" scenario input matrix used to provide updated scenarios for PWC maintain the original horizon depths.

$$S_layer = \frac{\text{sum}(S_hor \times \text{thickness of horizon})}{\text{total thickness of layer}}$$

Where

S_layer = soil property (orgC, bd, fc, wp, s, c, ph) value calculated for the layers used for SAM inputs (0-5, 5-20, 20-50, 50-100 cm)

S_hor = soil property (orgC, bd, fc, wp, s, c, ph) value for the soil horizon identified by SSURGO

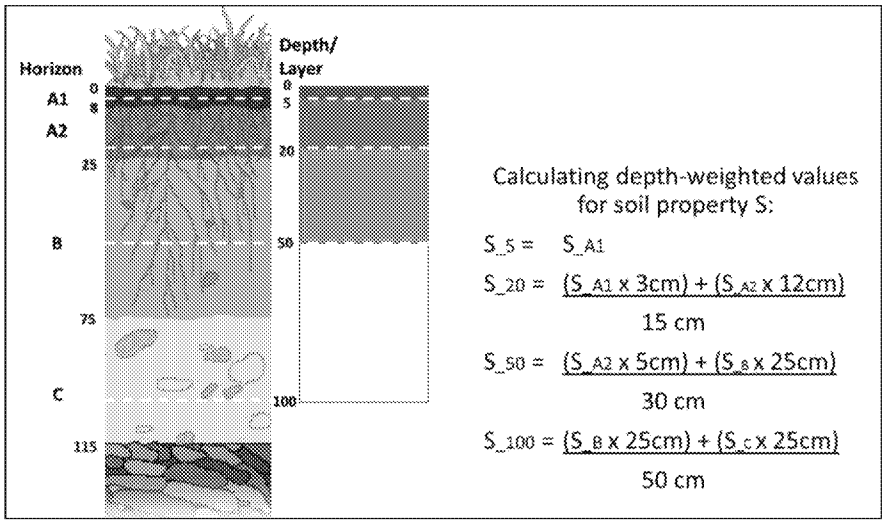

Figure [SEQ Figure * ARABIC]: Illustration for calculating depth-weighted values for soil horizon data, standardized to four layers (0-5, 5-20, 20-50, 50-100 cm).

Aggregating Soil Map Units

For the 2015 SAP, USEPA OPP (2015) explored grouping individual soil map units into classes based on USDA's soil water quality index (WQI) values for hydrologic soil group, slope, soil erodibility and surface organic matter content (Lal and McKinney, 2012). Initial analyses found no impacts on estimated pesticide concentrations for hydrologic soil groups and slope classes; no appreciable impacts for organic matter classes >2%, and limited impacts on high-sorbing pesticides for soil erodibility classes. While the SAP noted that the aggregated soil classes were a viable option for reducing the number of scenarios in a national model, they suggested that USEPA OPP reconsider those simplifying assumptions if the driving rationale is current storage/computational limitations (FIFRA SAP, 2015).

USEPA revisited the soil grouping classes/criteria, exploring the correlations/ relationships between independent soil variables (e.g., organic carbon content, sand, clay) in the 0-5 cm and 5-20 cm layers. Properties for the surface (0-5 cm) layer had the greatest impacts on runoff estimates. Correlations were evident between organic C content and bulk density and between clay and sand content and field capacity and wilting point. Table 14 shows the revised soil groupings, based on hydrologic soil group, slope, surface organic C content, sand, and clay content for the surface (0-5 cm) layer.

Commented [TN19]: Currently summarized in Soil Group Class Reanalysis.pptx, SoilGrpRanges_OH.xlsx, SoilGrpRanges_MO.xlsx – ultimately need to pull into a supporting document/appendix

Table [SEQ Table * ARABIC] - Soil Parameter Classes Used to Derive Aggregated Soil Groups.

Soil Parameter	No. Classes	Class Breaks (Aggregated Soil ID)
Hydrologic soil group	7	A, AD, B, BD, C, CD, D
Slope (%)	6	0-2 (sl1), 2-5 (sl2), 5-10 (sl3), 10-15 (sl4), 15-25 (sl5), >25 (sl6)
Organic C (%)	11	0-0.5 (o1), 0.5-1 (o2), 1-1.5 (o3), 1.5-2 (o4), 2-3 (o5), 3-4 (o6), 4-5 (o7), 5-6 (o8), 6-12 (o9), 12-20 (o10), >20 (o11)
Sand content (%)	10	0-10 (s1), 10-20 (s2), 20-30 (s3), 30-40 (s4), 40-50 (s5), 50-60 (s6), 60-70 (s7), 70-80 (s8), 80-90 (s9), 90-100 (s10)
Clay content (%)	10	0-5 (c1), 5-10 (c2), 10-15 (c3), 15-20 (c4), 20-25 (c5), 25-30 (c6), 30-40 (c7), 40-60 (c8), 60-80 (c9), 80-100 (c10)

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Message

From: Kaul, Monisha [Kaul.Monisha@epa.gov]
Sent: 8/22/2019 2:26:38 PM
To: Becker, Jonathan [Becker.Jonathan@epa.gov]
CC: Tindall, Kelly [tindall.kelly@epa.gov]
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Can you stop by for a minute to discuss? Thx.

From: Becker, Jonathan <Becker.Jonathan@epa.gov>
Sent: Thursday, August 22, 2019 7:33 AM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Tindall, Kelly <tindall.kelly@epa.gov>
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

I'd anticipate full time for Kelly and myself until September 4th. And by "full time" I really mean full time with zero BEAD work on top of the EFED work. Depending on the scope, we might need additional people to work on this as well.

Jonathan

From: Kaul, Monisha <Kaul.Monisha@epa.gov>
Sent: Wednesday, August 21, 2019 7:19 PM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Tindall, Kelly <tindall.kelly@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Jonathan,

Please take a look at Lee's emails below. Do you think we can use some of the ESA crop grouping work that you've done before? I am trying to gauge how much time you think this could take. I know that we've got reg review in full swing.

Thanks,

Monisha

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Wednesday, August 21, 2019 4:33 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

Kimberly just informed me you'll be out all next week. If it's okay with you, Nelson and I can work with your staff/Jonathan on much of this next week.

I scheduled a quick check in with you tomorrow at noon.

Best,

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

The PWC scenarios project you helped us with last year is one of three drinking water projects that OPP needs to complete in time to be used in next year's chlorpyrifos risk assessment.

We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general groups can be made in future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

Marietta and Kimberly have tasked us with presenting our initial inputs to them on September 4th. This will help us prepare for a meeting we've got scheduled with USDA on the 17th. I wanted to give you a heads up on this, and can follow up with details next week.

Lee

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, August 20, 2019 3:51 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/20

Drinking Water Projects Meeting Notes – Action items
August 20, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson, Lee

Contractor Peer Review

- Jan talked to Brian Katz, confirmed that we will use a single vehicle. They are ready to go, just waiting on us.
- Performance Work Statement for PCT/PCA was reviewed by Josh, Bill, Nelson, Lee, Claire (?)
    - Mark will clean up (address Nelson's comments) and send to Anna tomorrow for review by noon on Friday (gave Anna a heads up already).
    - Marietta can review it on Friday afternoon and then Lee can send to LaTangila.
    - Mark or Lee will combine the PCA/PCT and Scenarios documents before sending to Marietta.

Scenarios

- Nelson sent Input Parameters document to Jan on Friday.
  - Jan will review by the first week in September (Nelson is at ACS next week)
- Methods document – still on schedule
  - Demo of batch runs to PFTTT on Wednesday
- Scenario grouping for chlorpyrifos
  - Nelson and Dirk are going to focus on uses/management factors that result in different pest management approaches
- Jan scheduled an EFED/BEAD DD briefing for 9/4
- Lee and Nelson will send something to Monisha this week to prepare her for the briefing

PCA/PCT

- Have been focusing on the contract document
- Will share the white paper outline by the end of next week for early feedback

Ex. 5 Deliberative Process (DP)

Monitoring

- Team met with Anna this morning to work on refining the questions
  - Adding a question on the case study challenges
  - Removing redundancies
- White paper, case studies, framework, and SOP to OSCP for the docket next week.
  - Marietta wants to see a draft of the questions before signing the transmittal memo.
- Next week will work on finalizing the questions (Rochelle will be back)
  - Send Marietta the questions to share with Rick
  - Update Alex on the questions prior to posting

USDA Briefing – Sept 17

- Outline
  - Intro/purpose of briefing slide
  - 3 projects (in AA briefing – slides attached)
  - Monitoring: 2-3 slides
    - Conclusions slide from AA briefing
    - Timeline
  - PCA/PCT: ~10 slides
    - Can use material from peer review document
    - PCA – 4-5 slides from previous briefings (Karen presented to PFTTT on TPTH – check if that assessment is public yet)
    - PCT – Kris has ESA slides we can modify
      - Industry has submitted comments for ESA PCT approach – contracted with Stone for malathion case study to get below state level – CLA presented to us (Mark S. was there). Marietta will send around CLA's comments.
      - Input we need from USDA – have something similar we prepared for BEAD to pull from
  - Scenarios: ~10 slides
    - Use same slides as previous briefings (EMPM?) to explain the concept
    - Input we need from USDA
- Aim to get Marietta draft slides by 9/3 for her general with Rick on 9/4 (if not possible then Marietta can use an outline)
- Elyssa will pull the slides together into one presentation
- Clean up slides and send to USDA by 9/10
- Send asks for scenarios dates to USDA by 9/10 – Need to write up the spreadsheet process clearly for their feedback – Lee and Nelson will follow up on whether someone else can help on this.

Next week – Dana, Nelson, and Elyssa will be out. Jan will leave the meeting on the calendar for Lee and Mark to talk about the contractor document if needed.

From: Arnold, Elyssa
Sent: Monday, August 12, 2019 3:56 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/12

Drinking Water Projects Meeting Notes – Action items
August 12, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson

Contractor Peer Review

- Mark updated the draft of the contractor statement of work from Lee with the PCA/PCT details – added to PCA/PCT folder on ERB6 SharePoint site
- Clarified that there will be 2 separate reviews on 2 timelines with one Task Order to minimize process and overhead
- Need to review the charge questions (these are fairly general right now) and expertise
- This week – review by Josh, Nelson, Claire (will discuss at PCA/PCT meeting tomorrow)
- Next week – review by Anna and Lee (both out this week)
- Jan will follow up on Lee's email to LaTangila with Brian Katz to highlight our priorities

Scenarios

- Input Parameters document – Team comments were due on Friday, Nelson will clean it up this week and send it to Jan for review
- Methods document – describes how inputs are processed and scenarios selected, what was done and why
    - Sept 19: First part will describe the methods, currently being written
    - Oct 15: Will include examples for corn and wheat – including generation and running of the scenarios
        - Previous runs for corn had curve numbers read backwards, currently fixing and testing
        - Corn will be done before wheat
- Overall Executive Summary needed in plain language
- Chlorpyrifos scenarios – Nelson sent an edited version of Rochelle's list before the meeting with the status for each crop/scenario (one typo – grapes will be separate from orchards)
    - Scenario Grouping (e.g., generic orchard, vineyard, vegetable) – will be charge questions for peer review; we will also ask for input from USDA
        - BEAD input – Lee will talk to Monisha next week and send her the list of scenarios. We will have a DD briefing with Kimberly before the USDA meeting to make sure EFED and BEAD are on the same page. Jan will get a DD briefing on the calendar first week in Sept.
    - Planting dates
        - Perennials
            - Rick had a generic proposal
            - Another idea – can we use bud or beginning bloom as a proxy for "emergence"?
            - Need to get USDA input
        - Annuals
            - Need USDA input on the method for filling in planting dates for state/crop combinations not covered in the Planting and Harvesting Guides (Rick's method – has been shared with BEAD)

        - USDA could do additional work on this beyond the top 16 (e.g., vegetables) instead of PFTTT. Scenarios could be ready to process within a couple weeks after getting the dates. Could be ready for Rochelle to run 1-2 months after getting dates.
    - Nelson will continue working on the SOP for dates, will work with Rick. Need to add context for why the dates are important (big impact on model output). Rick's document is ~30 pages. Goal is to share with USDA at the briefing in Sept.
    - First week of Sept – Marietta will call Sheryl with a heads up about the ask to help fill in the planting dates
- Processing scenarios – will do continually as dates are complete
    - Lee met with CCOE about using contractor computing power – will get an update when he is back in the office

PCA/PCT

- Got the 2012-2016 chlorpyrifos PCT data from BEAD – they don't think that an update will add a lot of value
- White paper outline is drafted
    - This week – will discuss with the team tomorrow and then finalize the outline
    - Next week – will start to drop in text
- Be prepared to address issues quickly (e.g., non-ag)
- Prioritize questions for USDA and scenarios that will impact chlorpyrifos

USDA Briefing

- Marietta has emailed Sheryl with the potential dates and has not gotten a response yet
- Rick wants to see the slides in advance, but does not need us to brief him first

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From: Arnold, Elyssa
Sent: Monday, August 05, 2019 4:02 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>
Subject: RE: Drinking Water Assessment Update - meeting notes

Drinking Water Projects Meeting Notes – Action items
August 5, 2019

Contractor Peer Review

- Lee will send latest draft of the contractor statement of work to Mark
- Mark will add the PCT/PCA sections and charge questions into that document with the possible goal of having 1 task order rather than 2
- Mark will have a first draft to share by next week's meeting, 8/12
- Need to be aware of possible end of fiscal year delays in the contracting office in Cincinnati
- Jan will talk to Brian Katz to make sure he is aware of our priorities

Scenarios

- Input Parameters document will be completed this week
- Methods White Paper – current dates are below, but may need to tighten these up to allow for internal review time of up to 2 months depending on document length
    - Sept 19 framework complete (all parts except results)
    - Oct 15 entire paper complete – not including internal review
- Need to initiate project with Rick to add dates for perennials
- Peer review planned by end of February, then expect at least a month for re-runs
- Will need management briefings to decide which centile to use

- For next week, 8/12 – Lee will get a plan in place for prioritizing the chlorpyrifos scenarios (Nelson can report back next week when Lee is out)
- Lee will talk to LaTangila about a contractor for processing the scenarios
    - Stone or Waterborne may be options – Lee can call them and ask if they are reachable on any EPA contracts

PCA/PCT

- Mark C. will check in with Mark S. on getting the 2012-2016 chlorpyrifos PCT data
- Will also ask about whether they plan on an updated SUUM per Marietta's conversation with Kimberly
- Holding weekly project meetings every Tuesday

USDA Briefing

- Marietta will talk to Rick about the briefing tomorrow at their general before emailing Sheryl, we may need to brief Rick first
- Everyone should have their asks for USDA ready by the last week in August
    - For PCT – USDA input on non-ag data sources

Message

From: Tindall, Kelly [tindall.kelly@epa.gov]
Sent: 8/22/2019 11:36:32 AM
To: Becker, Jonathan [Becker.Jonathan@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Monisha,

I do not think that I can dedicate "full time" until Sept 4 if I will get the triazine memos finished before my CA tour.

Kelly

Kelly Tindall, Senior Biologist
Biological Analysis Branch
Biological and Economic Analysis Division
Office of Pesticide Programs
US Environmental Protection Agency
703-308-8188

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From: Becker, Jonathan <Becker.Jonathan@epa.gov>
Sent: Thursday, August 22, 2019 7:33 AM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Tindall, Kelly <tindall.kelly@epa.gov>
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

I'd anticipate full time for Kelly and myself until September 4th. And by "full time" I really mean full time with zero BEAD work on top of the EFED work. Depending on the scope, we might need additional people to work on this as well.

Jonathan

From: Kaul, Monisha <Kaul.Monisha@epa.gov>
Sent: Wednesday, August 21, 2019 7:19 PM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Tindall, Kelly <tindall.kelly@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Jonathan,

Please take a look at Lee's emails below. Do you think we can use some of the ESA crop grouping work that you've done before? I am trying to gauge how much time you think this could take. I know that we've got reg review in full swing.

Thanks,

Monisha

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Wednesday, August 21, 2019 4:33 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

Kimberly just informed me you'll be out all next week. If it's okay with you, Nelson and I can work with your staff/Jonathan on much of this next week.

I scheduled a quick check in with you tomorrow at noon.

Best,

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

The PWC scenarios project you helped us with last year is one of three drinking water projects that OPP needs to complete in time to be used in next year's chlorpyrifos risk assessment.

We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general groups can be made in future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

Marietta and Kimberly have tasked us with presenting our initial inputs to them on September 4th. This will help us prepare for a meeting we've got scheduled with USDA on the 17th. I wanted to give you a heads up on this, and can follow up with details next week.

Lee

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, August 20, 2019 3:51 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/20

Drinking Water Projects Meeting Notes – Action items
August 20, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson, Lee

Contractor Peer Review

- Jan talked to Brian Katz, confirmed that we will use a single vehicle. They are ready to go, just waiting on us.
- Performance Work Statement for PCT/PCA was reviewed by Josh, Bill, Nelson, Lee, Claire (?)
    - Mark will clean up (address Nelson's comments) and send to Anna tomorrow for review by noon on Friday (gave Anna a heads up already).
    - Marietta can review it on Friday afternoon and then Lee can send to LaTangila.
    - Mark or Lee will combine the PCA/PCT and Scenarios documents before sending to Marietta.

Scenarios

- Nelson sent Input Parameters document to Jan on Friday.
    - Jan will review by the first week in September (Nelson is at ACS next week)
- Methods document – still on schedule
    - Demo of batch runs to PFTTT on Wednesday
- Scenario grouping for chlorpyrifos
    - Nelson and Dirk are going to focus on uses/management factors that result in different pest management approaches
- Jan scheduled an EFED/BEAD DD briefing for 9/4
- Lee and Nelson will send something to Monisha this week to prepare her for the briefing

PCA/PCT

- Have been focusing on the contract document
- Will share the white paper outline by the end of next week for early feedback

Ex. 5 Deliberative Process (DP)

Monitoring

- Team met with Anna this morning to work on refining the questions
    - Adding a question on the case study challenges
    - Removing redundancies
- White paper, case studies, framework, and SOP to OSCP for the docket next week.
    - Marietta wants to see a draft of the questions before signing the transmittal memo.
- Next week will work on finalizing the questions (Rochelle will be back)
    - Send Marietta the questions to share with Rick
    - Update Alex on the questions prior to posting

USDA Briefing – Sept 17

- Outline
    - Intro/purpose of briefing slide
    - 3 projects (in AA briefing – slides attached)
    - Monitoring: 2-3 slides
        - Conclusions slide from AA briefing
        - Timeline
    - PCA/PCT: ~10 slides
        - Can use material from peer review document
        - PCA – 4-5 slides from previous briefings (Karen presented to PFTTT on TPTH – check if that assessment is public yet)
        - PCT – Kris has ESA slides we can modify

        - Industry has submitted comments for ESA PCT approach – contracted with Stone for malathion case study to get below state level – CLA presented to us (Mark S. was there). Marietta will send around CLA's comments.
        - Input we need from USDA – have something similar we prepared for BEAD to pull from
    - Scenarios: ~10 slides
        - Use same slides as previous briefings (EMPM?) to explain the concept
        - Input we need from USDA
- Aim to get Marietta draft slides by 9/3 for her general with Rick on 9/4 (if not possible then Marietta can use an outline)
- Elyssa will pull the slides together into one presentation
- Clean up slides and send to USDA by 9/10
- Send asks for scenarios dates to USDA by 9/10 – Need to write up the spreadsheet process clearly for their feedback – Lee and Nelson will follow up on whether someone else can help on this.

Next week – Dana, Nelson, and Elyssa will be out. Jan will leave the meeting on the calendar for Lee and Mark to talk about the contractor document if needed.

From: Arnold, Elyssa
Sent: Monday, August 12, 2019 3:56 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/12

Drinking Water Projects Meeting Notes – Action items
August 12, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson

Contractor Peer Review

- Mark updated the draft of the contractor statement of work from Lee with the PCA/PCT details – added to PCA/PCT folder on ERB6 SharePoint site
- Clarified that there will be 2 separate reviews on 2 timelines with one Task Order to minimize process and overhead
- Need to review the charge questions (these are fairly general right now) and expertise
- This week – review by Josh, Nelson, Claire (will discuss at PCA/PCT meeting tomorrow)
- Next week – review by Anna and Lee (both out this week)
- Jan will follow up on Lee's email to LaTangila with Brian Katz to highlight our priorities

Scenarios

- Input Parameters document – Team comments were due on Friday, Nelson will clean it up this week and send it to Jan for review
- Methods document – describes how inputs are processed and scenarios selected, what was done and why
    - Sept 19: First part will describe the methods, currently being written
    - Oct 15: Will include examples for corn and wheat – including generation and running of the scenarios
        - Previous runs for corn had curve numbers read backwards, currently fixing and testing
        - Corn will be done before wheat
- Overall Executive Summary needed in plain language
- Chlorpyrifos scenarios – Nelson sent an edited version of Rochelle's list before the meeting with the status for each crop/scenario (one typo – grapes will be separate from orchards)
    - Scenario Grouping (e.g., generic orchard, vineyard, vegetable) – will be charge questions for peer review; we will also ask for input from USDA

        - BEAD input – Lee will talk to Monisha next week and send her the list of scenarios. We will have a DD briefing with Kimberly before the USDA meeting to make sure EFED and BEAD are on the same page. Jan will get a DD briefing on the calendar first week in Sept.
    - Planting dates
        - Perennials
            - Rick had a generic proposal
            - Another idea – can we use bud or beginning bloom as a proxy for "emergence"?
            - Need to get USDA input
        - Annuals
            - Need USDA input on the method for filling in planting dates for state/crop combinations not covered in the Planting and Harvesting Guides (Rick's method – has been shared with BEAD)
            - USDA could do additional work on this beyond the top 16 (e.g., vegetables) instead of PFTTT. Scenarios could be ready to process within a couple weeks after getting the dates. Could be ready for Rochelle to run 1-2 months after getting dates.
        - Nelson will continue working on the SOP for dates, will work with Rick. Need to add context for why the dates are important (big impact on model output). Rick's document is ~30 pages. Goal is to share with USDA at the briefing in Sept.
        - First week of Sept – Marietta will call Sheryl with a heads up about the ask to help fill in the planting dates
- Processing scenarios – will do continually as dates are complete
    - Lee met with CCOE about using contractor computing power – will get an update when he is back in the office

PCA/PCT

- Got the 2012-2016 chlorpyrifos PCT data from BEAD – they don't think that an update will add a lot of value
- White paper outline is drafted
    - This week – will discuss with the team tomorrow and then finalize the outline
    - Next week – will start to drop in text
- Be prepared to address issues quickly (e.g., non-ag)
- Prioritize questions for USDA and scenarios that will impact chlorpyrifos

USDA Briefing

- Marietta has emailed Sheryl with the potential dates and has not gotten a response yet
- Rick wants to see the slides in advance, but does not need us to brief him first

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From: Arnold, Elyssa
Sent: Monday, August 05, 2019 4:02 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>
Subject: RE: Drinking Water Assessment Update - meeting notes

Drinking Water Projects Meeting Notes – Action items
August 5, 2019

Contractor Peer Review

- Lee will send latest draft of the contractor statement of work to Mark
- Mark will add the PCT/PCA sections and charge questions into that document with the possible goal of having 1 task order rather than 2
- Mark will have a first draft to share by next week's meeting, 8/12

- Need to be aware of possible end of fiscal year delays in the contracting office in Cincinnati
- Jan will talk to Brian Katz to make sure he is aware of our priorities

Scenarios

- Input Parameters document will be completed this week
- Methods White Paper – current dates are below, but may need to tighten these up to allow for internal review time of up to 2 months depending on document length
    - Sept 19 framework complete (all parts except results)
    - Oct 15 entire paper complete – not including internal review
- Need to initiate project with Rick to add dates for perennials
- Peer review planned by end of February, then expect at least a month for re-runs
- Will need management briefings to decide which centile to use
- For next week, 8/12 – Lee will get a plan in place for prioritizing the chlorpyrifos scenarios (Nelson can report back next week when Lee is out)
- Lee will talk to LaTangila about a contractor for processing the scenarios
    - Stone or Waterborne may be options – Lee can call them and ask if they are reachable on any EPA contracts

PCA/PCT

- Mark C. will check in with Mark S. on getting the 2012-2016 chlorpyrifos PCT data
- Will also ask about whether they plan on an updated SUUM per Marietta's conversation with Kimberly
- Holding weekly project meetings every Tuesday

USDA Briefing

- Marietta will talk to Rick about the briefing tomorrow at their general before emailing Sheryl, we may need to brief Rick first
- Everyone should have their asks for USDA ready by the last week in August
    - For PCT – USDA input on non-ag data sources

Message

From: Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]
Sent: 12/3/2018 9:58:30 PM
To: Lennartz, Steven [Lennartz.Steven@epa.gov]; Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Panger, Melissa [Panger.Melissa@epa.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Kyle, Lee [Kyle.Lee@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Sims, Diann [Sims.Diann@epa.gov]; Perry, Tracy [Perry.Tracy@epa.gov]; Garber, Kristina [Garber.Kristina@epa.gov]; Peck, Charles [Peck.Charles@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]
Subject: RE: ESA Usage workgroup folder updated with slides, etc.
Attachments: FL_Usage_181129SL.PPTX

Hi Steve, et al.,

I get what you're trying to show here (how all of the UDL layers are effected by the census and suum). I think that's a useful thing to have in our back pocket, but I'm afraid we might not have time to show all of these slides, or at least not in detail. I was thinking it might be good to include one of these examples in the main slide deck to make sure we get the point across of what we are doing with the census data.

My suggestion of the UDL to include would be the Other Grains UDL/Slide. This is BY FAR the best example of how we're

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

If we want to include or potentially include a demonstration of the entire process and how it all adds up to the final AA, I think that would be ok. However, I think we should re-order the slides to show the group UDLs before we show the UDLs from a single CDL/Crop. That way we can start with the biggest bang for our buck. The first example will almost certainly end up with the most talk time, and we'll probably end up breezing through a lot of the later slides, so it would make sense to start with what we think is the best example.

I included some other comments on the deck. Some are repetitive, and other than what I've said here mostly have to do with wording. See attached.

Thanks for sharing these for comments! I think we're really making progress, and these are some powerful graphics! A picture is worth 1000 words, right ☺

Claire

From: Lennartz, Steven
Sent: Thursday, November 29, 2018 12:04 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Panger, Melissa <Panger.Melissa@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>; Perry, Tracy <Perry.Tracy@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Subject: RE: ESA Usage workgroup folder updated with slides, etc.

Instead of updating the slides Colleen sent around, I've created a separate PPT for the action area adjustments. There were too many slides in its creation, but we can pick and choose which to use. The idea is to show the effect of the Census and SUUM information on the UDL's. Happy to present/clarify. Attached.

-Steve

From: Rossmeisl, Colleen
Sent: Tuesday, November 20, 2018 12:46 PM
To: Anderson, Brian <Anderson.Brian@epa.gov>; Panger, Melissa <Panger.Melissa@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>; Perry, Tracy <Perry.Tracy@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Lennartz, Steven <Lennartz.Steven@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Subject: ESA Usage workgroup folder updated with slides, etc.

Hi all –

I have taken a first pass at reworking the slides a little for a structured presentation. Please make any and all comments before next week's EPA usage meeting and we can discuss then. I also have included the proposal for application of usage data that I want to share with the Services next week, although I need to review some of the meeting minutes to update what might be additional agreement on some of the Non-Ag uses. Please also review for next week's meeting.

The link to the folder is here. Jen is adding Mark to the SharePoint group, and then everyone should have access. If you have any problems, let me or Jen know.

Thanks!
Colleen

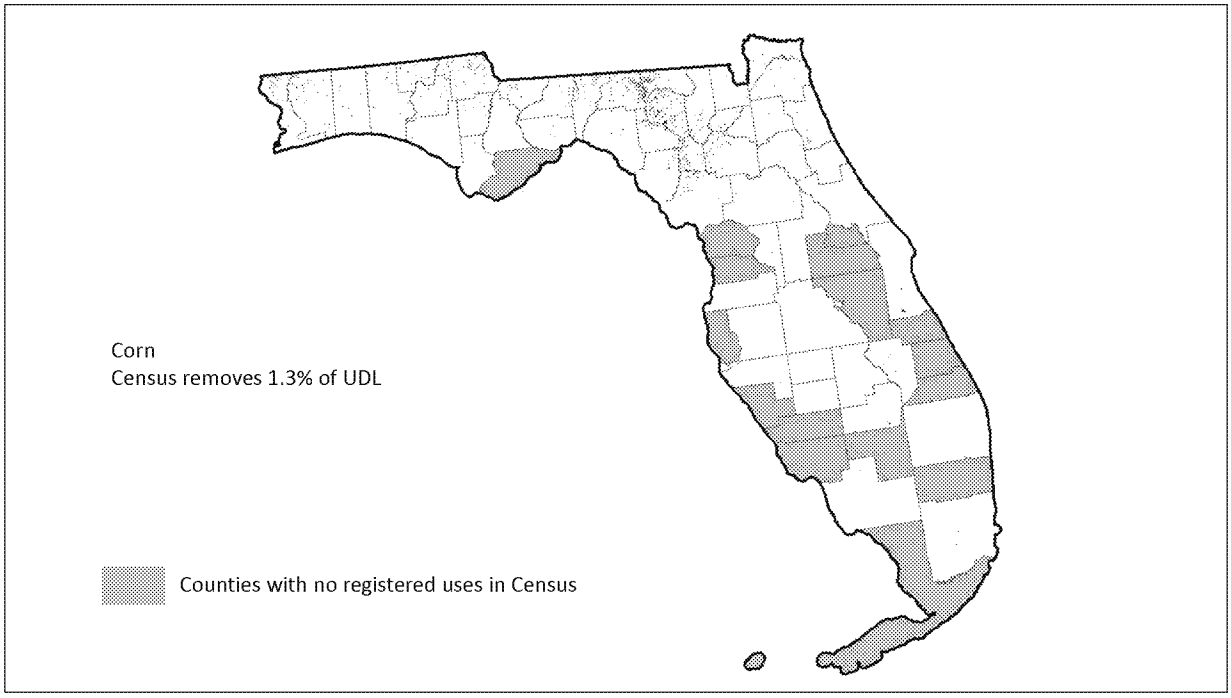
PS – Also in the folder is the FWS list of additional data sources with some notes from our meeting discussion on them, just for reference.

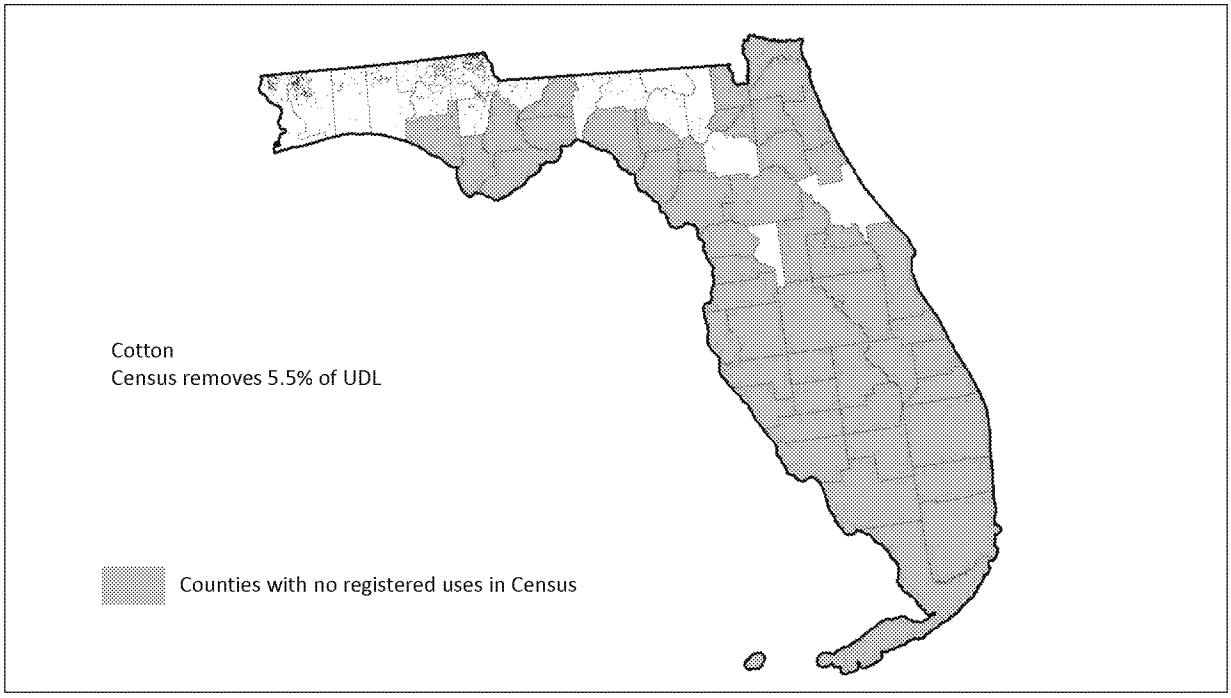
Applying Usage Information to Action Area

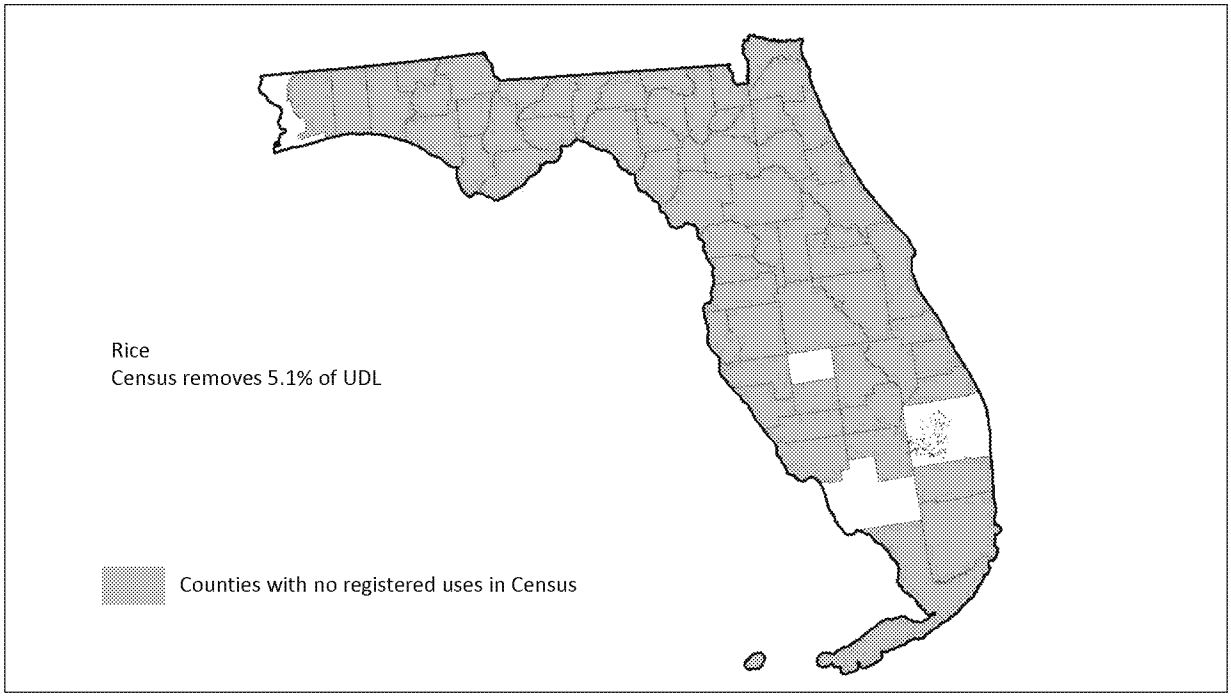
Florida Case Study

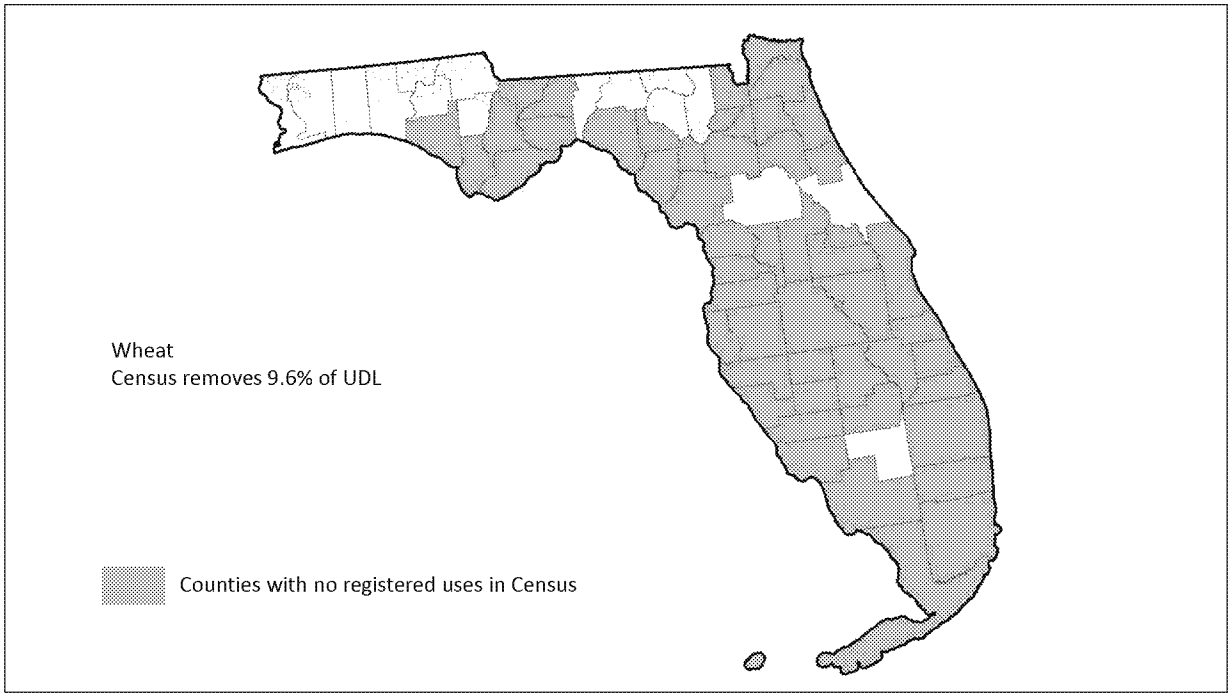
Census and SUUM effect on the Action Area

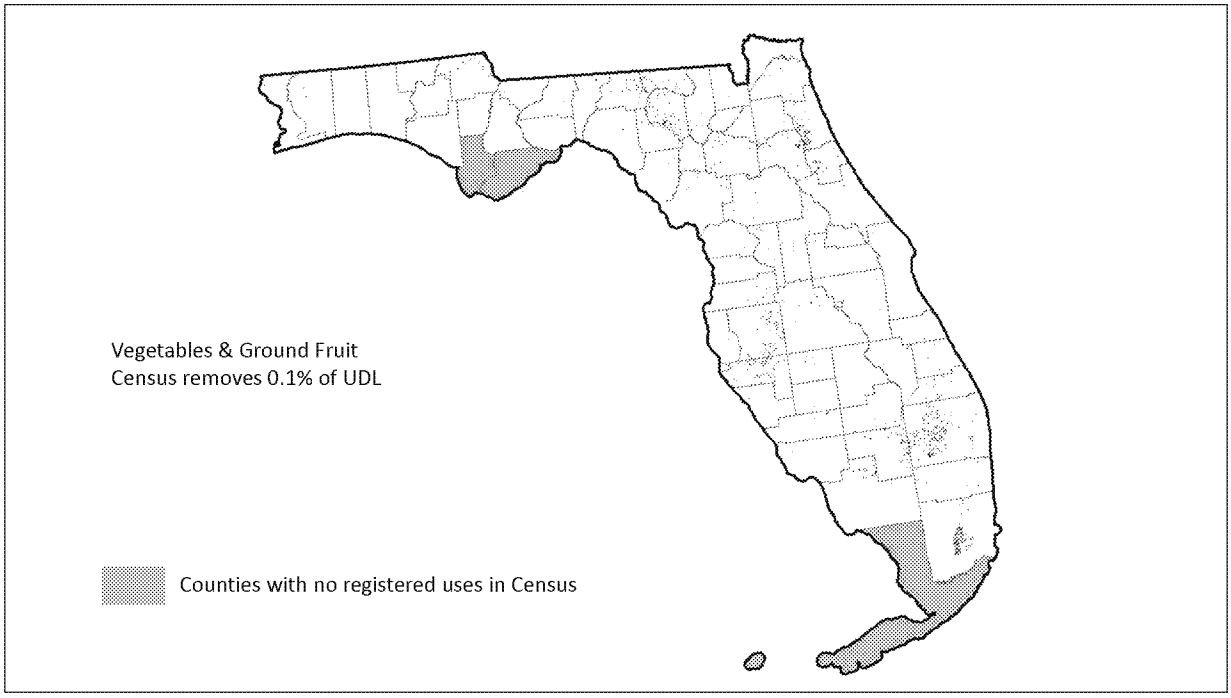
- Malathion has no registered uses in the Soybean and Other Crop UDL's
- The SUUM report for malathion usage in Florida
  - Cotton – *No Usage Reported in FL*
  - Dry Beans (Vegetables & Ground Fruit) *No Usage Reported*
    - *Other registered uses within this UDL were reported with usage in FL*
- *This analysis does not include drift*

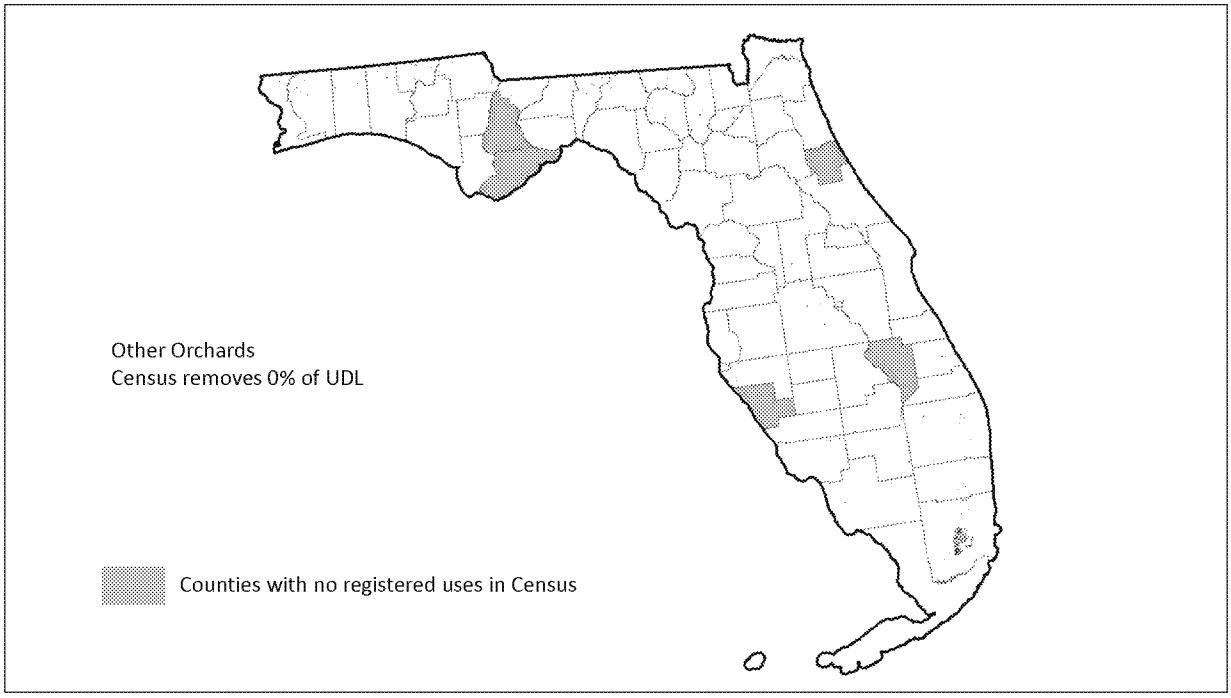

Corn
Census removes 1.3% of UDL
Counties with no registered uses in Census

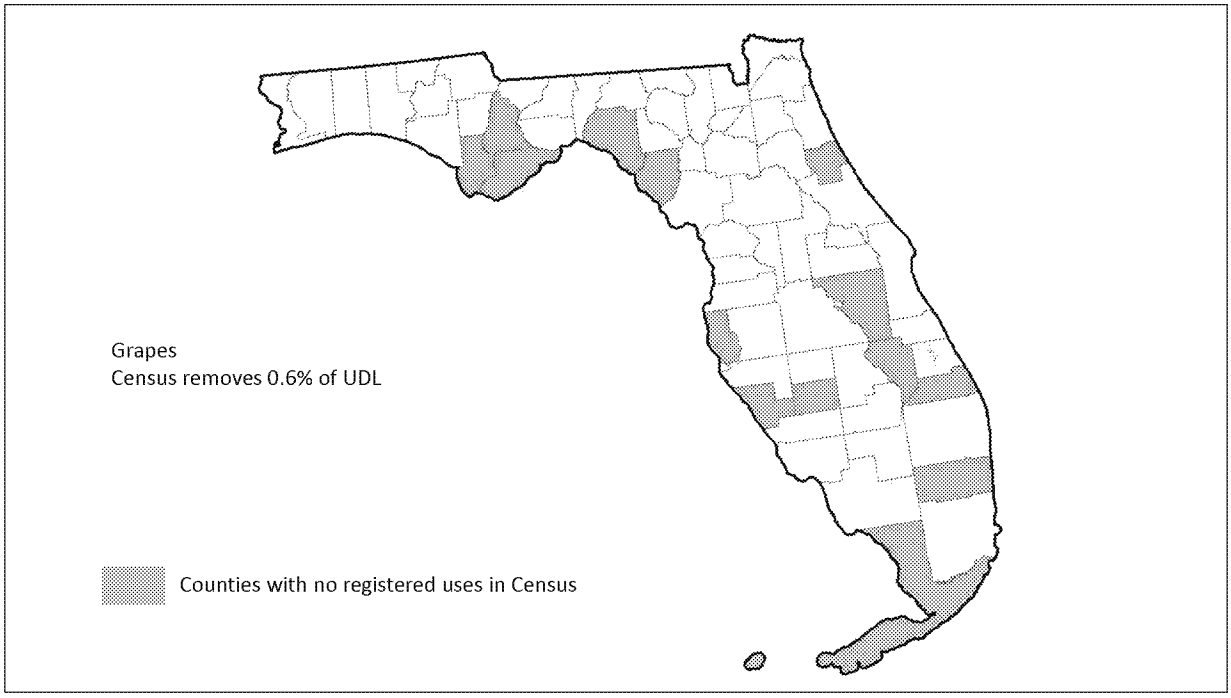

Cotton
Census removes 5.5% of UDL
Counties with no registered uses in Census

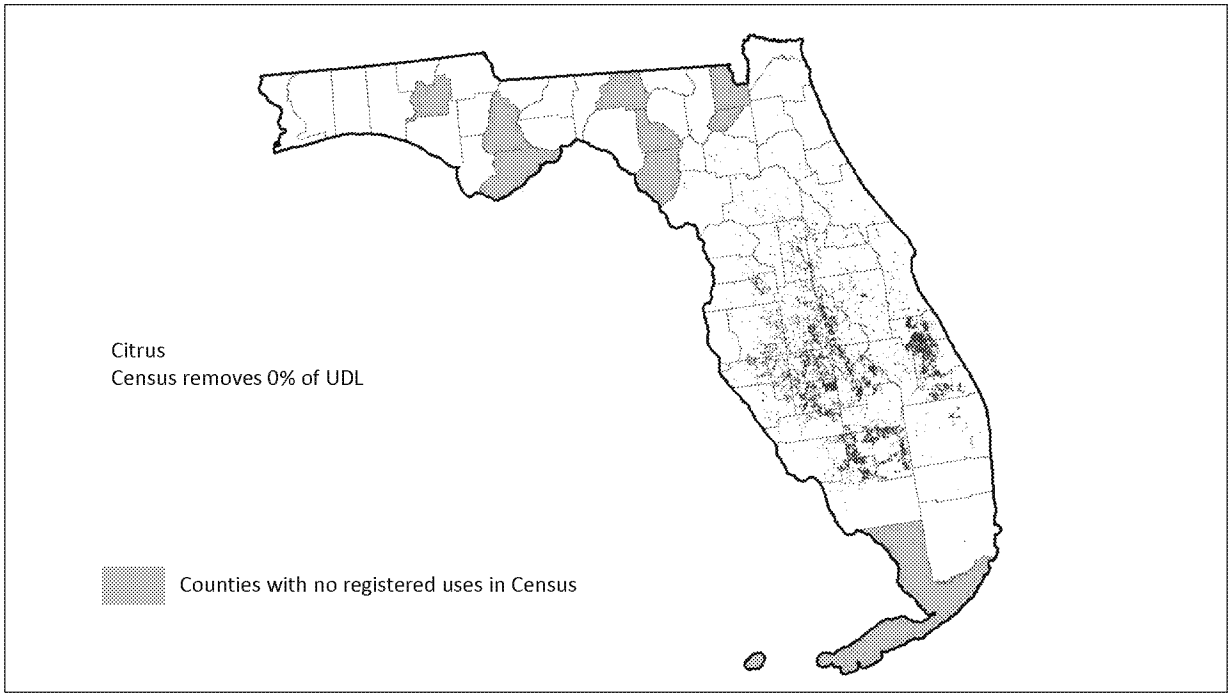

Rice
Census removes 5.1% of UDL
Counties with no registered uses in Census

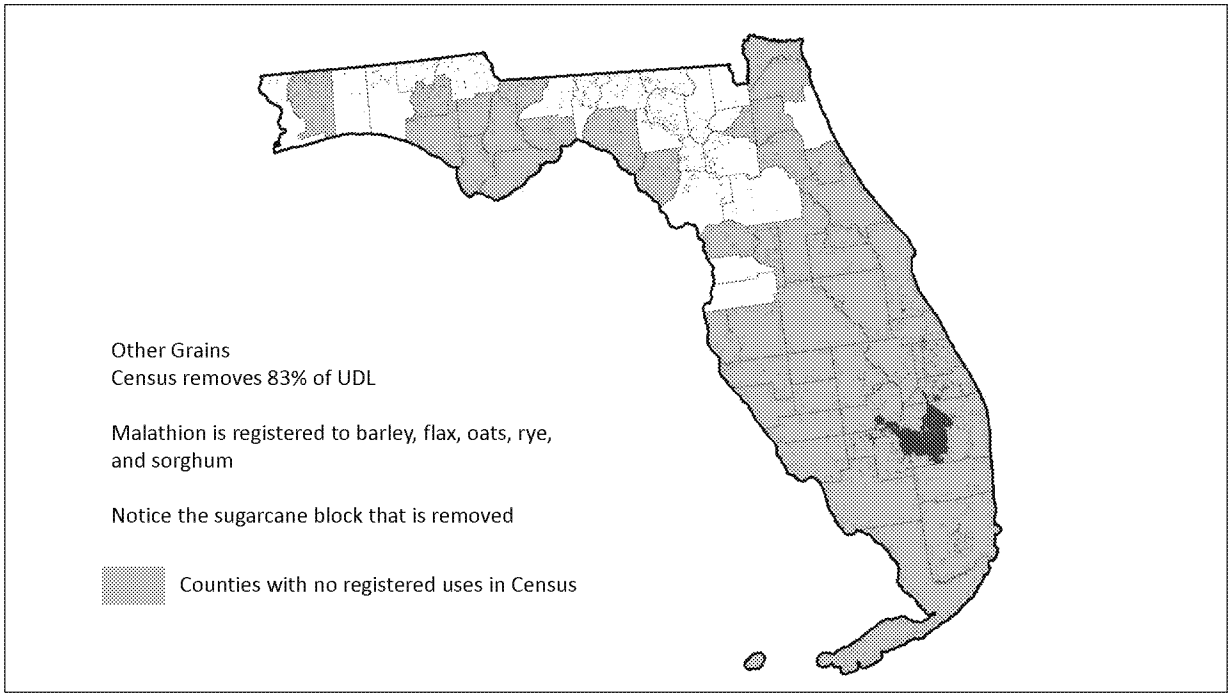

Wheat
Census removes 9.6% of UDL
Counties with no registered uses in Census

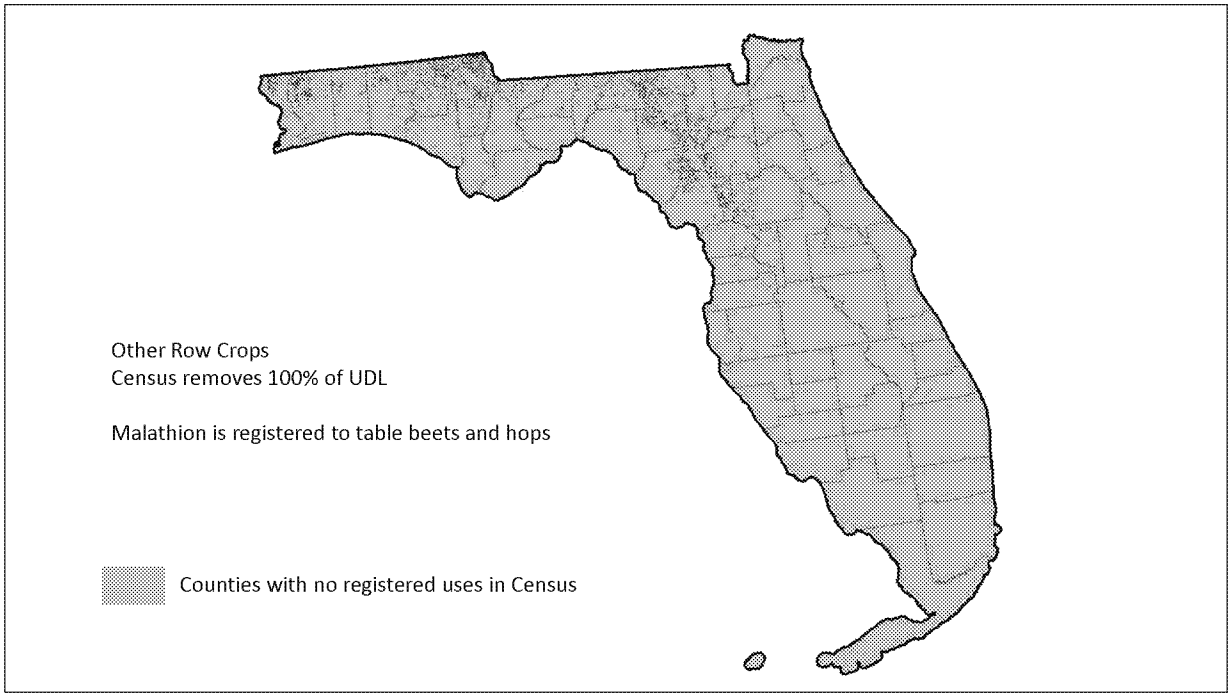

Vegetables & Ground Fruit
Census removes 0.1% of UDL
Counties with no registered uses in Census

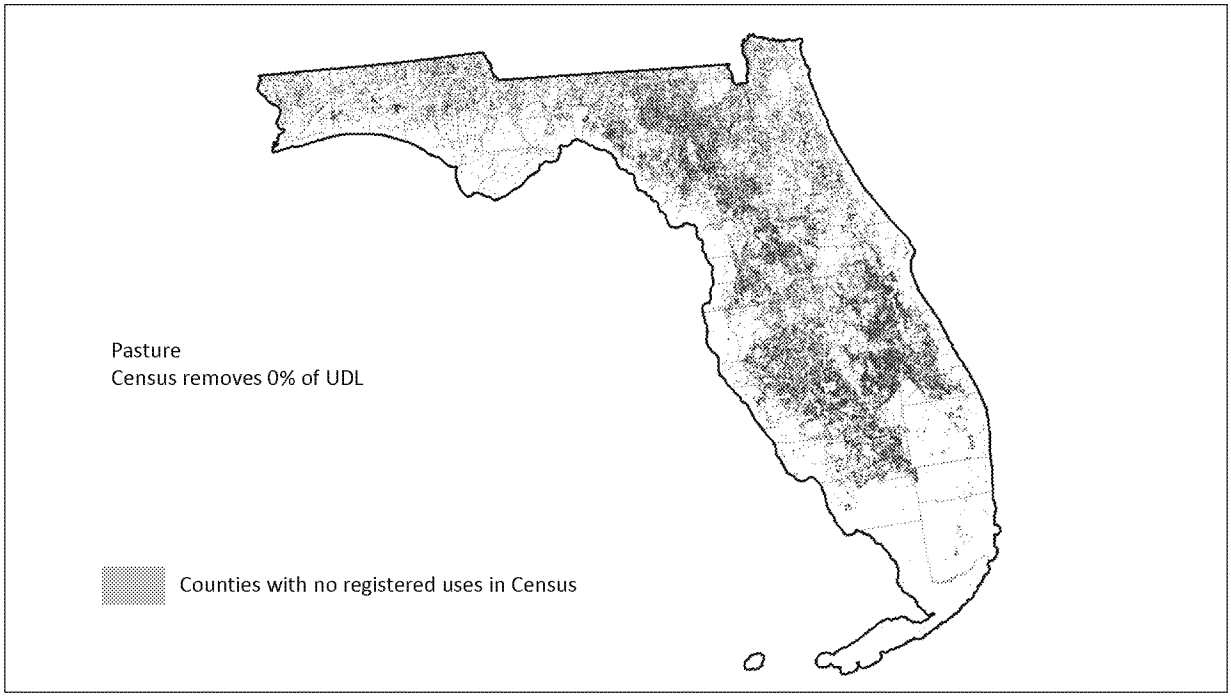

Other Orchards
Census removes 0% of UDL
Counties with no registered uses in Census

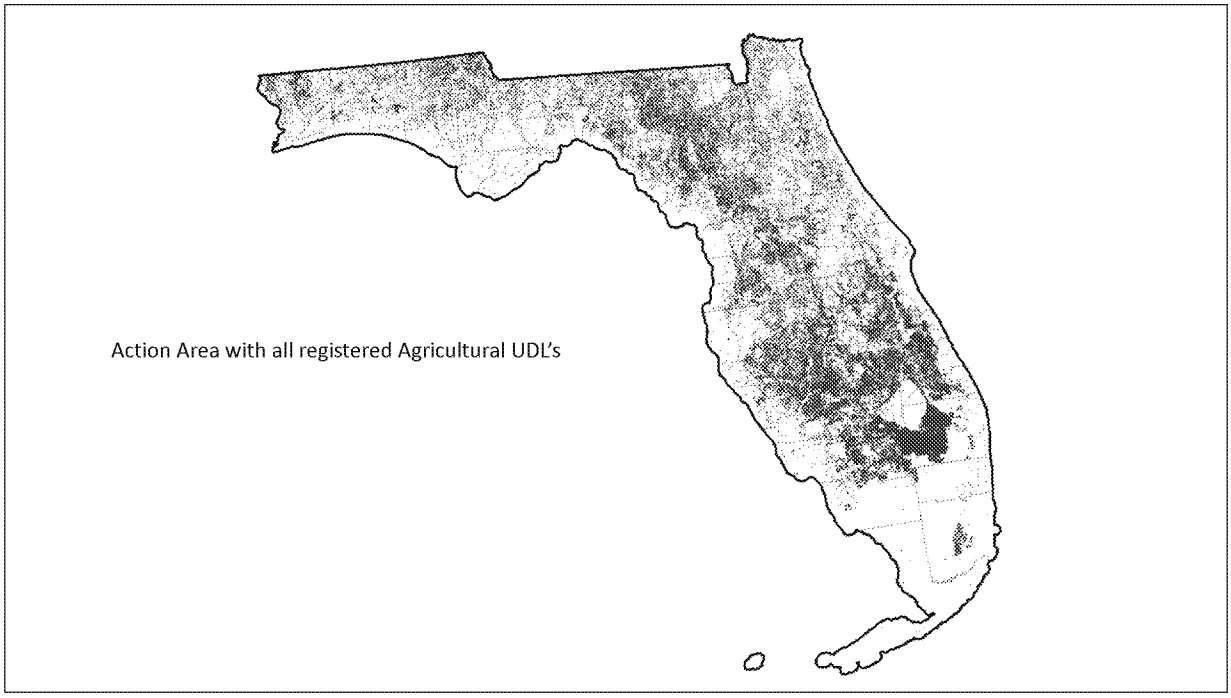

Grapes
Census removes 0.6% of UDL
Counties with no registered uses in Census

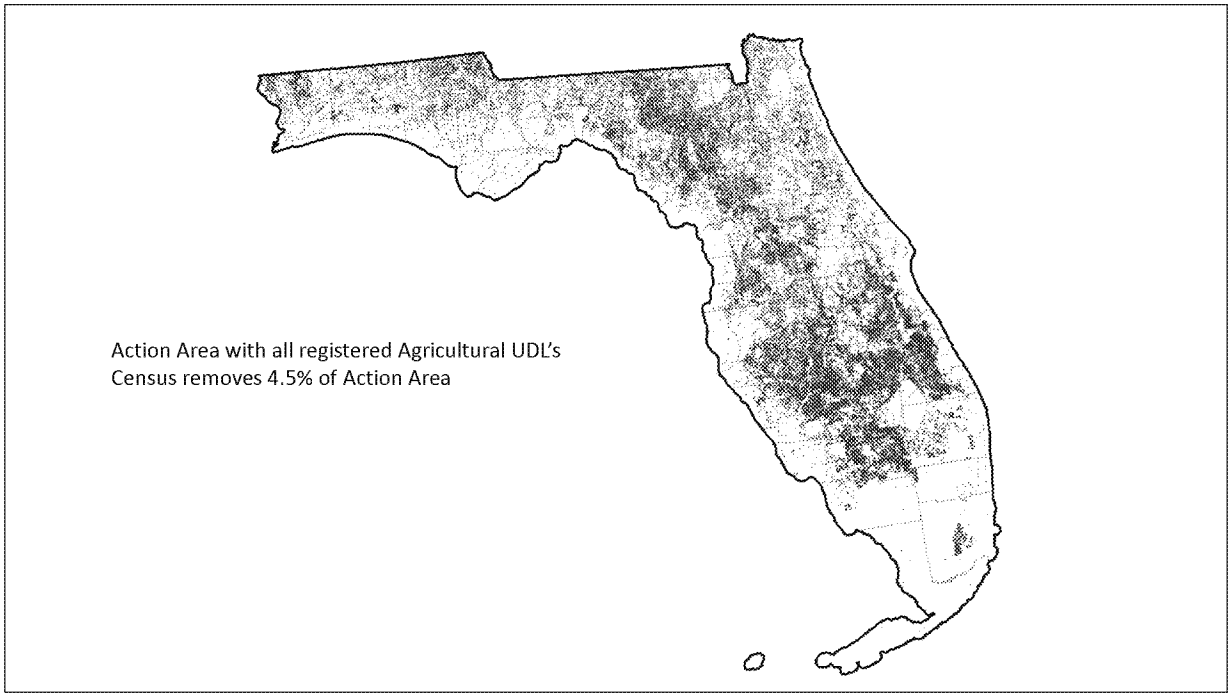

Citrus
Census removes 0% of UDL
Counties with no registered uses in Census

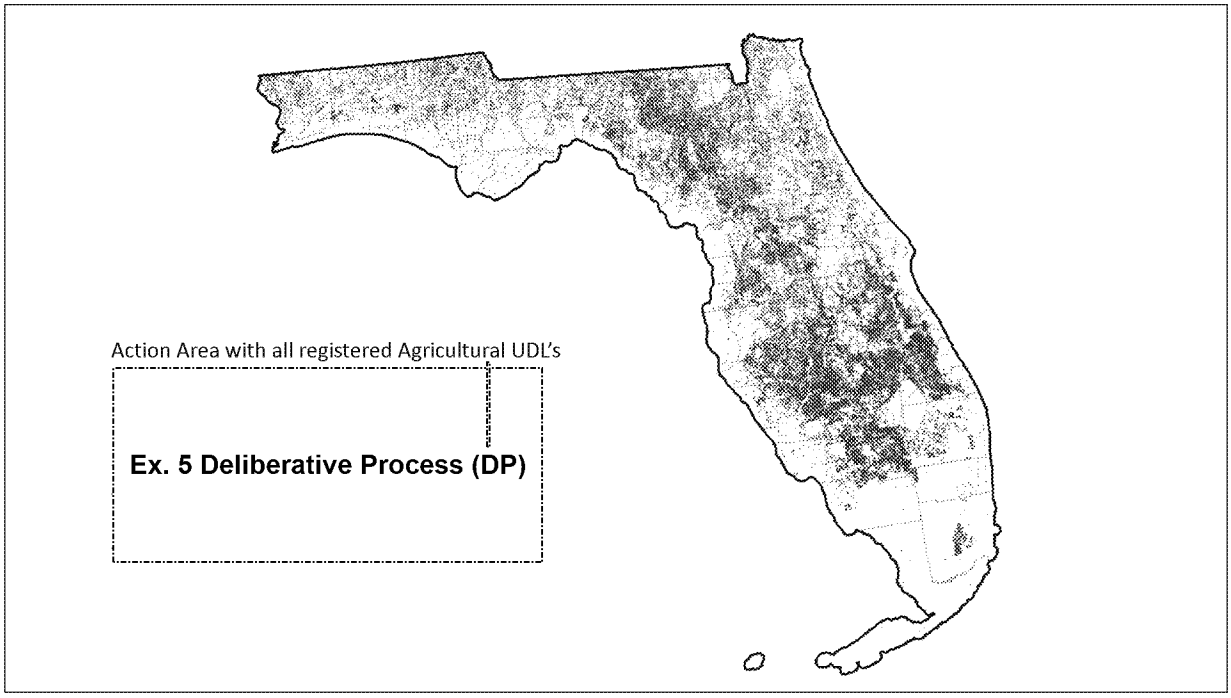

Other Grains
Census removes 83% of UDL
Malathion is registered to barley, flax, oats, rye, and sorghum
Notice the sugarcane block that is removed
Counties with no registered uses in Census


Other Row Crops
Census removes 100% of UDL
Malathion is registered to table beets and hops
Counties with no registered uses in Census


Pasture
Census removes 0% of UDL
Counties with no registered uses in Census


Action Area with all registered Agricultural UDL's


Action Area with all registered Agricultural UDL's
Census removes 4.5% of Action Area


Action Area with all registered Agricultural UDL's
Ex. 5 Deliberative Process (DP)

Message

From: Jones, Arnet [Jones.Arnet@epa.gov]
Sent: 5/31/2018 6:06:41 PM
To: Kaul, Monisha [Kaul.Monisha@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Chism, William [Chism.Bill@epa.gov]
Subject: RE: 2012-2016 Usage Summaries from the S Drive

I haven't seen anything else (yet) for PRP next wk. I'm out tomorrow and Monday, so TJ will distribute documents and assign leads if something comes in. I will finalize the agenda next Tuesday when I'm back in the office.

I don't know how you want to handle this, but pls make sure TJ gets a heads-up that it's coming. I'll say something to him as well, and hopefully Tim will mention it. We'll also need to invite a few others who aren't on PRP. Thx. Sj

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From: Kaul, Monisha
Sent: Thursday, May 31, 2018 12:55 PM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>; Jones, Arnet <Jones.Arnet@epa.gov>; Chism, William <Chism.Bill@epa.gov>
Subject: RE: 2012-2016 Usage Summaries from the S Drive

Thanks. I've gotten agreement from Tim and Diann to discuss this at PRP. Let's chat at the branch meeting today.

From: Becker, Jonathan
Sent: Thursday, May 31, 2018 12:54 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Jones, Arnet <Jones.Arnet@epa.gov>; Chism, William <Chism.Bill@epa.gov>
Subject: FW: 2012-2016 Usage Summaries from the S Drive

From: Paisley-Jones, Claire
Sent: Tuesday, May 29, 2018 4:13 PM
To: Sells, Dexter <Sells.Dexter@epa.gov>; Atwood, Donald <Atwood.Donald@epa.gov>; OPP BEAD EAB <OPP_BEAD_EAB@epa.gov>; OPP BEAD BAB <OPP_BEAD_BAB@epa.gov>; OPP BEAD SIAB <OPP_BEAD_SIAB@epa.gov>
Subject: RE: 2012-2016 Usage Summaries from the S Drive

This is why I suggested that this should go to PRP. We need to be doing things consistently. Neither method is inherently incorrect, but each has potentially very different implications.

Additionally, our assumption with Kynetec is that the absence of observed usage for a surveyed crop/pesticide type combination is just as valid of a data point as observed usage. This is why it's important to know when Kynetec picks up and drops crops/application types.

As you pointed out, usage can fluctuate quite a bit. This can have many reason, including varying pest pressures between years. If we call into question whether zeros are accurate or not, it also calls into question the accuracy of observed usage. We assume that the lack of observed usage means something, just as observed usage means something. We have confirmed this assumption in our discussions Kynetec. Furthermore, you can't "confirm" no usage or complete coverage of all usage with a survey. That's inherently not possible. The point of a survey is to estimate usage (or lack thereof) based on valid statistical procedure. There is inherently a level of uncertainty in all data, but especially survey data. We have as a program decided that the level of uncertainty in the Kynetec data is acceptable.

Ex. 5 Deliberative Process (DP)

included in your spreadsheet for LBS AI, BAT, TAT, CAG, etc.

You also have to think about how the data will be used, and whether being more conservative is appropriate. Keep in

Ex. 5 Deliberative Process (DP)

different outcomes. Additionally, the exposure models that use our PCT values already build in parameters to make the estimates more conservative. We want to make sure we aren't adding in additional conservatism where it's not necessary. If we do change the way we calculate the data the science divisions we need to let them know so that they can adjust their assumptions accordingly.

Again, this is why I suggested sending this table to PRP, as it will provide a venue to discuss these proposed changes. Everyone in BEAD should agree (or at least all agree to be consistent), not just EAB and SIAB, but also BAB (they have Kynetec licenses, and are users of Kynetec data, too).

Claire

From: Sells, Dexter
Sent: Tuesday, May 29, 2018 3:28 PM
To: Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Atwood, Donald <Atwood.Donald@epa.gov>; OPP BEAD EAB <OPP_BEAD_EAB@epa.gov>; OPP BEAD BAB <OPP_BEAD_BAB@epa.gov>; OPP BEAD SIAB <OPP_BEAD_SIAB@epa.gov>
Subject: RE: 2012-2016 Usage Summaries from the S Drive

Claire,

I agree that we should agree on one methodology when presenting the usage information to the other divisions. However, I do have an issue with the PCT calculations:

- Ex. 5 Deliberative Process (DP)
  - Appears to fluctuate a lot; in your example, PCT ranges from 11-0-26-0-0
  - Ex. 5 Deliberative Process (DP)
    - Ex. 4 CBI

Ex. 5 Deliberative Process (DP)

I would expect that there may be some mitigation proposals that may limit the annual application rate, thus LBS/BAT will come in handy.
Perhaps EAB and SIAB can provide a consensus (and formal) methodology.

Dexter

From: Paisley-Jones, Claire
Sent: Tuesday, May 29, 2018 14:41
To: Sells, Dexter <Sells.Dexter@epa.gov>; Atwood, Donald <Atwood.Donald@epa.gov>; OPP BEAD EAB <OPP_BEAD_EAB@epa.gov>; OPP BEAD BAB <OPP_BEAD_BAB@epa.gov>; OPP BEAD SIAB <OPP_BEAD_SIAB@epa.gov>
Subject: RE: 2012-2016 Usage Summaries from the S Drive

Hi Dexter et al.,

While I do see the 0s are included and thus the averages are calculated according to our general procedures, there are still some differences in your calculations, and how we generally calculate and report values.

Ex. 5 Deliberative Process (DP)

the same or very similar values, but occasionally this can give very different values (see examples below). Differences in these values are particularly common when there are years with no observed usage. For instance, the average of the

Ex. 5 Deliberative Process (DP)

get 19%. That makes a pretty big difference, with potentially very different risk implications. Again, one method is not inherently correct, but as Don mentioned it is important that we as a division are consistently reporting variables, and that we all have a common understanding of what those variable represent.

Ex. 4 CBI

In your table I also see two measures of rate. I'm also not clear when you'd report a rate as LBS/BAT, rather than LBS/TAT. If we are going to provide both values in a lookup table, we should discuss when each value should be used.

Since the calculated procedures used in your tool present a change to the methods BEAD has here to for used when presenting averaged data, it should probably be reviewed by PRP (and management). Consistency in BEAD data products is important, especially given the extra scrutiny we are now facing from other agencies with our ESA work.

Claire

From: Sells, Dexter
Sent: Tuesday, May 29, 2018 8:35 AM
To: Atwood, Donald <Atwood.Donald@epa.gov>; OPP BEAD EAB <OPP_BEAD_EAB@epa.gov>; OPP BEAD BAB <OPP_BEAD_BAB@epa.gov>; OPP BEAD SIAB <OPP_BEAD_SIAB@epa.gov>
Subject: RE: 2012-2016 Usage Summaries from the S Drive

Don,

Thank you for reviewing. Yes, I did use the average function, but I included years in which there were no recorded data, and Kynetec place a "0", therefore the method I used is the same as summing the last 5 years and diving by 5. You can verify by unhiding the columns between "AI" and the 5-year annual averages. I welcome any input. Thanks again.

Dexter

From: Atwood, Donald
Sent: Monday, May 28, 2018 14:16
To: Sells, Dexter <Sells.Dexter@epa.gov>; OPP BEAD EAB <OPP_BEAD_EAB@epa.gov>; OPP BEAD BAB <OPP_BEAD_BAB@epa.gov>; OPP BEAD SIAB <OPP_BEAD_SIAB@epa.gov>
Subject: Re: 2012-2016 Usage Summaries from the S Drive

Dexter, this is appreciated but it raises an issue that must be addressed at the Management level. You have used the average function of Excel which ignores years with no reported usage in determining the year range average. In the past, particularly for development of SUUM's, we have been using the range totals/5 to obtain the year range average. Both methods have limits and strengths. Of primary concern is whether the absence of data reflects actual non-use or does it reflect non-survey. This will determine if the data reported is an under or over estimate of actual usage. Only in the case of a full 5 years of data will the averages be the same.

Before we proceed further, Management and Sr. Scientists should weigh in on the calculation methodology to ensure consistency in the BEAD data products as we move forward.

Donald W. Atwood, PhD
Entomologist
Office of Pesticide Programs
Biological and Economic Analysis Divsion
Biological Analysis Branch
Environmental Protection Agency

email: atwood.donald@epa.gov
Phone: (703) 308-8088

From: Sells, Dexter
Sent: Friday, May 25, 2018 1:06 PM
To: OPP BEAD EAB; OPP BEAD BAB; OPP BEAD SIAB
Subject: 2012-2016 Usage Summaries from the S Drive

Hello everyone,

I thought that I could help the team by providing a quick shortcut to the general agricultural usage information we provide (from MRD). I have put together a couple of "quick" tables to use as a starting point. The data has not been completely cleaned up, as noticed by the differing values for crop area grown for each crop. I'll try to continue to update and clean up the CAG data, but it should be a good beginning point. Thanks.

Dexter

National Data
https://usepa.sharepoint.com/:x:/r/sites/OCSPP/OPP/BEAD/Collaborate/Shared%20Documents/EAB/PctCropTreated_across_year_NationalwithlbsAIPCT_2016%20DEXTER%20IS%20THE%20MAN.xlsx?d=w12f38e3d35584792a3d3ea9a14a39ec5&csf=1&e=xAvVYQ

PctCropTreated_across_year_NationalwithlbsAIPCT_2016 DEXTER IS THE MAN

Shared via SharePoint

Fungicide Almonds IPRODIONE 369889 398771 196509 184 963009 501155 627945 307291 201 963009 444642 467501 231775 188 983948 367277 378502 ...

State Data
https://usepa.sharepoint.com/:x:/r/sites/OCSPP/OPP/BEAD/Collaborate/Shared%20Documents/EAB/PctCropTreated_across_year_StatewithlbsAIPCT_2016%20DEXTER%20IS%20THE%20MAN.xlsx?d=w13be639d680a486c950da07a4d749671&csf=1&e=wRHioE

PLEASE (I beg thee, I implore thee, and if the need arises, I'll scorn thee) do not overwrite the spreadsheet. – The 40th Commandment; Sections 155.56 and 155.58

Message

From: Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]
Sent: 9/5/2018 2:15:20 PM
To: Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Panger, Melissa [Panger.Melissa@epa.gov]
CC: Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Lennartz, Steven [Lennartz.Steven@epa.gov]; Peck, Charles [Peck.Charles@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Sims, Diann [Sims.Diann@epa.gov]
Subject: RE: ESA Usage (EPA/Services Coordination)

That makes sense to me – thanks!

From: Paisley-Jones, Claire
Sent: Wednesday, September 05, 2018 9:40 AM
To: Panger, Melissa <Panger.Melissa@epa.gov>
Cc: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Lennartz, Steven <Lennartz.Steven@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>
Subject: RE: ESA Usage (EPA/Services Coordination)

Sounds good ☺

From: Panger, Melissa
Sent: Wednesday, September 05, 2018 9:37 AM
To: Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Lennartz, Steven <Lennartz.Steven@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>
Subject: Re: ESA Usage (EPA/Services Coordination)

Yes... in our process. But I think we need to break the process into 'bite-sized' pieces. The idea is to get buy-in on that general idea... to lead them into a direction that aligns with our proposed process.. sound good?

Sent from my iPhone

On Sep 5, 2018, at 9:15 AM, Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov> wrote:

> One clarification, just to make sure we're all on the same page. I thought we were using the County
>
> **Ex. 5 Deliberative Process (DP)**
>
> Claire
>
> ---
>
> **From:** Panger, Melissa
> **Sent:** Wednesday, September 05, 2018 8:32 AM
> **To:** Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Lennartz, Steven <Lennartz.Steven@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>

Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>
Subject: ESA Usage (EPA/Services Coordination)

Hi All,

In an attempt to stay a bit of ahead of the curve… I wanted to start thinking about what we might want to discuss in our next meeting(s) with the services on the usage stuff (in case it comes up at the end of today's meeting).

Ex. 5 Deliberative Process (DP)

After we hopefully get agreement on the approach for ag, we could move to the mosquito adulticide use and other uses and then I think the residential should be last (I think that might be the hardest one).

Does that sound ok to folks? Any other ideas?

Thanks!
Melissa

Melissa Panger, Ph.D.
Senior Advisor, ERB2
Environmental Fate and Effects Division
Office of Pesticide Programs
USEPA

703-305-6136
panger.melissa@epa.gov

Message

From: Garber, Kristina [Garber.Kristina@epa.gov]
Sent: 5/8/2019 3:58:17 PM
To: Suarez, Mark [Suarez.Mark@epa.gov]
CC: Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Panger, Melissa [Panger.Melissa@epa.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Peck, Charles [Peck.Charles@epa.gov]; Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Donovan, Elizabeth [Donovan.Elizabeth@epa.gov]
Subject: request for carbaryl and methomyl usage data for Hawaii and Puerto Rico (and other territories if possible)

Hi Mark,

As we discussed last week, the EFED ESA team is interested in any reliable usage data for Hawaii and Puerto Rico and any of the other territories. As you know, there are hundreds of listed species that are located only in Hawaii and over a hundred in Puerto Rico. So, not having the ability to refine the most likely overlap areas of range and use sites is a big gap in the method. So, I am asking for input from the BEAD ESA folks to help fill that gap. **We have two major requests:**

Ex. 5 Deliberative Process (DP)

We can discuss this request more today at 1 if you have any questions.

Thanks,
Kris

Kris Garber, Senior Science Advisor
Environmental Fate and Effects Division
Office of Pesticide Programs
US Environmental Protection Agency
Mail Code: 7507P
1200 Pennsylvania Ave NW
Washington DC 20460-0001

Phone: 703-347-8940

Message

From: Negron-Encarnacion, Ideliz [Negron-Encarnacion.Ideliz@epa.gov]
Sent: 6/23/2020 10:24:21 PM
To: Matuszko, Jan [Matuszko.Jan@epa.gov]; Nesci, Kimberly [Nesci.Kimberly@epa.gov]; Echeverria, Marietta [Echeverria.Marietta@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Anderson, Neil [Anderson.Neil@epa.gov]; Spatz, Dana [Spatz.Dana@epa.gov]; Kyle, Lee [Kyle.Lee@epa.gov]; Thurman, Nelson [Thurman.Nelson@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Young, Dirk [young.dirk@epa.gov]; Corbin, Mark [Corbin.Mark@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Eckel, William [Eckel.William@epa.gov]; Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Bohaty, Rochelle [Bohaty.Rochelle@epa.gov]; Crowley, Matthew [Crowley.Matthew@epa.gov]; Waterworth, Rebeccah [Waterworth.Rebeccah@epa.gov]
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/23/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update
June 23, 2020
Attendees: Mark C., Monisha, Mark S., Dana, Matt C., Jonathan, Rebeccah, Bill, Jan, Marietta, Claire, Neil and Nelson.

1. PCA/PCT Status
   - Meeting with HED (Mike, David and Don):
     - The need for engagement of the risk managers on how to do spatially refined DW assessments was emphasized.
     - No major concerns on spatially distinct assessments.
     - Discussion on the DWLOC concept and where in their process the DWLOC may not change. A better idea of the DWLOC will likely be available by the time the PCA/PCT analysis is needed.
     - Mark will send a summary around.
   - Documentation for the docket:
     - Case study - no need to prepare a separate document, chlorpyrifos will become the case study.
     - QAPP - PCA/PCT automation part to be integrated in the QAPP. Matt will provide comments on the QAPP soon. Feedback from EISB will be incorporated as well.
     - RTC - Monica will format the RTC.
     - White paper - Josh will begin next week.
   - Implementation update: Suggestions from Rochelle were received. A tool in phyton code will be evaluated to improve the speed of the aggregation of the time series.

2. PWC Scenarios Status
   - Implementation update - Only scenario left in the trellis group is hops. Working with agricultural extension folks.
   - Documentation for the docket:
     - QAPP - received feedback from Jan.
     - RTC and methods document - sent to the team for review.

3. Documentation for docket - Request from Jan to explain the rationale when making a statement, not only point to the policy.

PWC Scenarios Documents	Primary Person Responsible	EFED & BEAD Team Review Start Date	EFED & BEAD IO Review Start Date
QAPP	Dirk Young	29-May-20	15-Jun-20
Response to Comments	Nelson Thurman	15-Jun-20	1-Jul-20
Methods Document	Dirk Young	15-Jun-20	1-Aug-20

Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman	8-Jul-20	1-Aug-20

BEAD Team: Monisha Kaul, Johnathan Becker, Rebeccah Waterworth. BEAD IO: Kimberly Nesci and Neil Anderson.

PCA/PCT Documents	Primary Person Responsible	EFED & BEAD Team Review Start Date	EFED & BEAD IO Review Start Date
QAPP	Bill Eckel	26-May-20	15-Jun-20
Response to Comments	Bill Eckel	15-Jun-20	1-Jul-20
White Paper	Josh Antoline	1-Jul-20	1-Aug-20

BEAD Team Contact: Mark Suarez. BEAD IO: Kimberly Nesci and Neil Anderson.

4. Presentations at the Environmental Modeling Public Meeting (EMPM) - August 5, 2020
   - Updates on presentations:
     - PCA/PCT Team - 1 presentation that may be joint with BEAD
     - BEAD teams - will further discuss, 2 presentations so far
   - Updates on briefing to Ed Messina: Jan reached out to discuss if Ed wants to get more familiar with the methodologies. Jan will walk him through the methodologies in the next general and schedule follow up meetings if needed. The team doesn't need to do anything else.
   - Review schedule we discussed last week is provided below. Note that the EMPM needs a bio from the presenters.

EMPM Review/Task Schedule (if OPP IO Review is not needed)

Dates	Activities
June 30	Let Jan and Ideliz know if you are planning to present.
July 10	Send slide deck to team reviewers (EFED and/or BEAD as necessary) requesting feedback by **July 16**.*
July 14	Send final abstract and short bio to EMPM Team and let them know if you need more or less than 25 min to present. The team will read your bio as an introduction to your presentation.
July 22	Send slide deck to EFED and BEAD IO requesting feedback by **July 27.***
July 30	Send slide deck to the EMPM Team.

From: Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Sent: Tuesday, June 16, 2020 3:39 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/16/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update
June 16, 2020

Attendees: Jan, Mark S., Dana, Rebeccah, Bill, Marietta, Kimberly, Mark C., Monisha, Nelson, Neil and Ideliz.

- PCA/PCT Briefing to HED: Meeting to brief David Miller and Mike Metzger on Thursday on what has been done for chlorpyrifos, and how they may use the analyses obtained by these new methodologies. DWLOC is used to streamline the process, i.e. narrow down the number of scenarios for which a time series is provided. DWLOC may be further used in the analyses if the estimate considers all routes of exposure applicable to the registered use of the pesticide.

- Status of running PWC scenarios: Running deciduous orchard and trellis (grape). Quality control being done and working on the growing degree days.

- Documentation for docket (Both Teams)
  - QAPP
    - Teams are incorporating reviewers' comments and will send to EFED IO and BEAD IO this week.
    - PCA/PCT: QAPP was reviewed by Kurt.
    - PWC Scenarios: QAPP was reviewed by Denise Rice. Trip will be the interim lead on the PWC Scenarios QAPP while Dirk is on leave.
  - RTC
    - PCA/PCT: Bill is addressing comments provided by BEAD and getting clarification on GIS issues.
    - PWC Scenarios: Nelson sent the RTC for team review, please provide comments if you haven't.
  - PWC scenarios "methods document" – will be sent for team review this week.
  - EFED IO and BEAD IO – will receive QAPP this week. The RTCs will be received by July 1.
  - If necessary, discussion on major comments can be raised in the weekly EFED/BEAD team meetings. Please, let Jan and Ideliz know.

- Presentations at the Environmental Modeling Public Meeting (EMPM) - August 5, 2020
  - Updates on presentations from PCA/PCT team and BEAD teams working on both DW projects: Teams are in the planning phase and will provide updates at a later time.
  - Kimberly agree with the proposal for review of presentations: Please send your presentation to EFED IO and BEAD IO. Depending on the content of the presentations, these may need to be primarily reviewed by one of the divisions, giving the other division the opportunity to review.
  - Need of OPP IO review - Jan indicated that OPP IO review is needed if the material to be presented has not been made publicly available yet. For those presentations, please plan to have team and IO review completed before June 14 and plan to send the presentation slides to OPP IO by June 14. Ideliz can prepare a schedule if that would help.
    - Rebeccah and Monisha's presentation on the methods may include new content and may need OPP IO review.
    - Mark S. presentation on the PCA/PCT methods may include content previously presented for ESA. A joint presentation with EFED may be considered.
  - Marietta recommended to verify if Ed is interested in a briefing. Jan is going to reach out to Ed.
  - The proposed review schedule for presentations that do not need OPP IO review is below. Please let Jan and Ideliz know if you have concerns or comments with the proposed schedule.

EMPM Review/Task Schedule (if OPP IO Review is not needed)

Dates	Activities

June 30	Let Jan and Ideliz know if you are planning to present.
July 10	Send slide deck to team reviewers (EFED and/or BEAD as necessary) requesting feedback by **July 16**.*
July 14	Send final abstract to EMPM Team and let them know if you need more or less than 25 min to present.
July 22	Send slide deck to EFED and BEAD IO requesting feedback by **July 27.***
July 30	Send slide deck to the EMPM Team.

* Major comments could be discussed during the weekly meeting.

From: "Negron-Encarnacion, Ideliz" <Negron-Encarnacion.Ideliz@epa.gov>
Date: Wednesday, June 10, 2020 at 11:49 AM
To: "Matuszko, Jan" <Matuszko.Jan@epa.gov>, "Nesci, Kimberly" <Nesci.Kimberly@epa.gov>, "Echeverria, Marietta" <Echeverria.Marietta@epa.gov>, "Anderson, Brian" <Anderson.Brian@epa.gov>, "Anderson, Neil" <Anderson.Neil@epa.gov>, "Spatz, Dana" <Spatz.Dana@epa.gov>, "Kyle, Lee" <Kyle.Lee@epa.gov>, "Thurman, Nelson" <Thurman.Nelson@epa.gov>, "Kaul, Monisha" <Kaul.Monisha@epa.gov>, "Suarez, Mark" <Suarez.Mark@epa.gov>, "Young, Dirk" <young.dirk@epa.gov>, "Corbin, Mark" <Corbin.Mark@epa.gov>, "Becker, Jonathan" <Becker.Jonathan@epa.gov>, "Eckel, William" <Eckel.William@epa.gov>, "Paisley-Jones, Claire" <Paisley-Jones.Claire@epa.gov>, "Bohaty, Rochelle" <Bohaty.Rochelle@epa.gov>, "Crowley, Matthew" <Crowley.Matthew@epa.gov>, "Waterworth, Rebeccah" <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/9/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

June 9, 2020

Attendees: Matt C., Lee, Mark S., Dana, Mark C., Neil, Jonathan, Jan, Claire, Rebeccah, Monisha, Dirk, Bill, Marietta, Nelson and Ideliz.

1. PCA/PCT Update

- Automation tools status – Update on PCT Tables for Chlorpyrifos team and QA of Tool.
    - Jen and Summathy have been working on this with Rochelle.
    - PCT tables are with the chlorpyrifos team. All the tools were provided.
    - Miscellaneous All Ag issue of negative values was resolved.
    - Rochelle is drafting an email to the team to discuss a few observations while running the tool.
    - QA of the tool was completed by Josh. Rochelle is looking at implementation aspects while running the tool.
- Mark Corbin set a meeting for next week to engage HED in the new PCA/PCT methodologies and their implementation.

2. PWC Scenarios Status Update

- Implementation update: resolution of approach for implementing in CPY and beyond.
    - Concluded that the long-term average concentrations will be used to determine the scenarios to be selected based on their vulnerability.
    - Use of a single Koc scenario rather than three (low, intermediate and high Koc). The scenario to select depends on the Koc. These will be selected based on Kocs <100, 100-3000, >3000.

- Status of running chlorpyrifos scenarios – The team has everything that they need.
- Status of running scenarios – All the scenarios have been generated with the exception of the deciduous orchard scenario. Inputs are being established for this scenario, e.g. growing degree dates.

3. Documentation for docket (Publicly available: EPA-HQ-OPP-2020-0279)

- QAPP
  - Team review ends this week
  - Send to EFED and BEAD IOs next Monday June 15
- RTC update
  - Send for team review next Monday June 15
  - No need of a cover page with signatures
- PWC scenarios "methods document"
  - Send for team review Monday June 15

Note that all documentation is on time or advanced in the schedule. Thank you!

4. Presentations at the Environmental Modeling Public Meeting (EMPM) - "Drinking Water Assessment Improvements for Surface Water Exposure", August 5, 2020.

Coordinators: Zoe Ruge and Michael Wagman

Topics: (1) New scenario development for PWC; (2) New methodology for incorporating PCA into refined drinking water assessments; (3) New methodology for incorporating PCT into refined drinking water assessments; (4) Automation tools developed for applying new methodologies; (5) The drinking water assessment framework.

Presentations:

- We are aiming to have a good balance of presentations between the PCA/PCT and PWC Scenarios projects.
- PCA/PCT team and Framework team will be presenting. Please, let us know how many presentations per team.
- PWC Scenario team has planned 3 presentations: Overview of New PWC Scenario Development; Methods for generating new PWC scenarios; Automating process for new scenario inputs.
- BEAD - Rebecca and Mark are considering presenting. Documents that are not finalized can be presented with a focus on methodology.

Tasks/Timeline:

- No need to have an abstract ready by July 3. This is a requirement for other teams. Abstracts can be made available at a later time.
- EMPM team will be assuming 25 minutes per presentation, with time for questions at the end. Let the organizers know sometime in July if more or less time is needed.
- Agenda will be finalized late in July.
- Provide slide deck to Zoe and Michael one week in advance (July 29).
- Internal review and approval are coordinated by the presenter.

- A review timeline will be prepared.

Level of Review: Depending on the content of the presentations, these may need to be primarily reviewed by either EFED IO or BEAD IO, giving the other division the opportunity to review. OPP may need to review the presentations as well. EFED IO would like to see the slide decks by July 15.

From: "Negron-Encarnacion, Ideliz" <Negron-Encarnacion.Ideliz@epa.gov>
Date: Tuesday, June 2, 2020 at 7:52 PM
To: "Matuszko, Jan" <Matuszko.Jan@epa.gov>, "Nesci, Kimberly" <Nesci.Kimberly@epa.gov>, "Echeverria, Marietta" <Echeverria.Marietta@epa.gov>, "Anderson, Brian" <Anderson.Brian@epa.gov>, "Anderson, Neil" <Anderson.Neil@epa.gov>, "Spatz, Dana" <Spatz.Dana@epa.gov>, "Kyle, Lee" <Kyle.Lee@epa.gov>, "Thurman, Nelson" <Thurman.Nelson@epa.gov>, "Kaul, Monisha" <Kaul.Monisha@epa.gov>, "Suarez, Mark" <Suarez.Mark@epa.gov>, "Young, Dirk" <young.dirk@epa.gov>, "Corbin, Mark" <Corbin.Mark@epa.gov>, "Becker, Jonathan" <Becker.Jonathan@epa.gov>, "Eckel, William" <Eckel.William@epa.gov>, "Paisley-Jones, Claire" <Paisley-Jones.Claire@epa.gov>, "Bohaty, Rochelle" <Bohaty.Rochelle@epa.gov>, "Crowley, Matthew" <Crowley.Matthew@epa.gov>, "Waterworth, Rebeccah" <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/2/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

June 2, 2020

Attendees: Jonathan, Bill, Matt C., Lee, Mark S, Dirk, Kimberly, Nelson, Jan, Monisha, Dana and Rochelle

1. PCA/PCT Update
   - Automation tools status - EISB is working to provide the PCT tables to Rochelle and Dana. Aiming for today.
   - Progress on plan for discussions with HED on output - The meeting is being setup
   - Documentation: status of QAPP - Sent by Bill to EFED and BEAD reviewers

2. PWC Scenarios Status Update Lee, Nelson and Dirk
   - Implementation update: resolution of approach for implementing in CPY and beyond
     - Team put together a short paper recommending the use of three scenarios (high erosion, high runoff and combined) in the modeling, and the use of the overall concentration to choose the scenarios representing the 90th percentile.
     - The team will meet with Jan and Marietta on Tuesday afternoon to discuss this and the next steps.
   - Status of running scenarios - The chlorpyrifos team has everything but need a decision on the scenarios.
   - Documentation: status of QAPP - In EFED internal review

3. Documentation for the docket
    - Review by BEAD:
        - All documents except the RTC - These documents have been previously reviewed by the teams and have been updated to include new work. When sending these documents for review, please copy BEAD's team but no need to wait for their review.
        - RTC - This document will be new for everybody. BEAD will provide feedback. It was noted that comments on the PCA/PCT project are mainly germane to BEAD.
    - After the meeting supporting documentation for the RTC document including a brief summary of public comments and other work previously done was compiled and shared by Elyssa.

Notes from May 26, 2020 were modified below to include updated schedule/review tables.

From: Negron-Encarnacion, Ideliz
Sent: Tuesday, May 26, 2020 5:20 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/26/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 26, 2020

Attendees: Bill, Marietta, Jan, Neil, Mark C., Monisha, Matt C., Lee, Ideliz, Claire, Dana, Nelson, Dirk, Kimberly, Nelson, Jonathan, Rochelle

1. PCA/PCT Update
    - Automation tools status
        - PCA/PCT Automation – This tool is already available for use. Minor adjustments will be made to adjust the EDWCs for miscellaneous uses.
        - Aggregation tool – This tool allows multiple model runs. QA of tool by ERB 3 will begin.
    - Progress on plan for discussions with HED on output – Ready to engage HED, coordination through Don Wilbur. A meeting will be set with HED branch chiefs to describe the project and potentially discuss how to consider time series if we these are established by HUC.
    - Documentation for docket

- Comments on list of reviewers & timeline:
  - White paper and case study will be available by August 1
  - Clarified that the SOP is internal and it doesn't have to be reviewed with other documents
  - A path forward is available and Josh will be the primary person responsible for the white paper and case study of the PCA/PCT project
- QAPP review begins this week – DRAFT circulating with the team.

Document	Primary Person Responsible	EFED Reviewers	BEAD Reviewers	Team Review Start Date	EFED IO Review Start Date	Concurrent BEAD IO Review
QAPP	Bill Eckel	Kurt Pluntke, Bill Eckel, and Rochelle Bohaty	Mark Suarez	26-May-20	15-Jun-20	
Response to Comments	Bill Eckel	To be determined		15-Jun-20	1-Jul-20	
White Paper	Josh Antoline			1-Jul-20	1-Aug-20	Kimberly Nesci and Neil Anderson
Case Study	Josh Antoline			8-Jul-20	1-Aug-20	

2. PWC Scenarios Status Update
   - Status of generating the scenarios
     - Team decided that cancer (overall concentration) will be used to define the 90th percentile.
     - Implementation Plan – Team will discuss Tuesday afternoon what is useful for scientists. Implementation targeted by September.
       - Improve batch run runs to make them useful in risk assessment
       - Plan will be presented to the PFTTT
       - Email everybody on the outcome of the discussions of the implementation plan after today's meeting
   - Status of running chlorpyrifos scenarios - Team will discuss Tuesday afternoon to make sure that it's in good shape.
   - Documentation for docket
     - Comments on list of reviewers
     - QAPP review begins this week

Document	Primary Person Responsible	EFED Reviewers	BEAD Reviewers	Team Review Start Date	EFED IO Review Start Date	Concurrent BEAD IO Review
QAPP	Dirk Young	Kurt Piuntke, Lee Kyle, Dirk Young, Nelson Thurman, and Trip Hook	Monisha Kaul, Johnathan Becker, Rebeccah Waterworth	29-May-20	15-Jun-20	
Response to Comments	Nelson Thurman	Lee Kyle, Dirk Young, Nelson Thurman, and Trip Hook		15-Jun-20	1-Jul-20	
Methods Document	Dirk Young			15-Jun-20	1-Aug-20	Kimberly Nesci and Neil Anderson
Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman			8-Jul-20	1-Aug-20	

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, May 19, 2020 2:58 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/19/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 19, 2020

Attendees: Neil, Bill, Mark C., Monisha, Lee, Jan, Ideliz, Claire, Dana, Nelson, Rebeccah, Dirk, Kimberly, Nelson, Jonathan, Rochelle, Matt C., Mark S., Elyssa

1. PCA/PCT Update
    - Automation tools status
        - PCA/PCT Automation – with Rochelle
            - Negative PCA issue is close to resolution – still some issues with rice
        - Aggregation tool – with Rochelle
    - Progress on plan for discussions with HED on output
        - Plan is close to complete – can initiate soon
        - Mark will talk to Jan about timing and outreach plan
    - Final documentation for docket – review timeline proposal:

- Intent of the schedule below is to space out deliverables and to set target dates without micromanaging the entire review process
- Team review step includes manager (Mark C.) and BEAD team members (Mark S. and Claire) for all documents
- BEAD IO (Kimberly and Neil) will review only the White Paper and Case Study (not the QAPP or RTC), subsequent or concurrent to the EFED IO review

PCA/PCT DOCUMENTS

Document	Primary Person Responsible	Team Review Start Date	EFED IO Review Start Date
QAPP	Bill Eckel	May 26, 2020	June 15, 2020
Response to Comments	Bill Eckel	June 15, 2020	July 1, 2020
White Paper	Josh Antoline (pending manager approval)	July 1, 2020	August 1, 2020
Case Study	Josh Antoline (pending manager approval)	July 8, 2020	August 1, 2020

2. PWC Scenarios Status Update
    a. Status of generating the scenarios
        i. The chlorpyrifos team has all the scenarios they need, but the teams have been discussing the definition of a "final" scenario
        ii. Chlorpyrifos is using a 21-day average concentration at HED's request, which is not part of the scenario selection and rankings.
        iii. We need a clear definition of "90th percentile" – the 90th percentile selection is for the specific chemical parameters run in the scenario generation process and it will not be exactly the same across different chemical parameters or timeframes.
        iv. If possible, trying to simplify the scenario selections for acute, chronic, and cancer (may not need all 3)
        v. Will impact chlorpyrifos and beyond; should discuss with the whole division. We need a manageable and practical approach for EFED.
    b. Status of running chlorpyrifos scenarios
        i. Rochelle is currently running the scenarios
            1. 1200 runs (12 crops), each run takes about 30 seconds
            2. Ok for chlorpyrifos, but need to simplify and clarify for wider EFED implementation
        ii. Remaining question is on how to characterize the values
            1. Ranking system applied to 1-day and 365-day averages, not 21-day – probably close but needs to be accurately described

2. Need to be clear about the definition of 90th percentile and what that means

c. Final documentation for docket – review timeline proposal:

i. Intent of the schedule below is to space out deliverables and to set target dates without micromanaging the entire review process

ii. Team review step includes manager (Lee) and BEAD team members (Jonathan, Rebeccah, Monisha) for all documents

iii. BEAD IO (Kimberly and Neil) will review only the Methods and Inputs/Creating New Scenarios documents (not the QAPP or RTC), subsequent or concurrent to the EFED IO review

iv. Note that the chlorpyrifos documents will also be going to EFED IO for review on August 1.

v. Dirk will be on extended leave after June 15

SCENARIOS DOCUMENTS

Document	**Primary Person Responsible**	**Team Review Start Date**	**EFED IO Review Start Date**
QAPP	Dirk Young	~~May 26, 2020~~ May 29, 2020	June 15, 2020
Response to Comments	Nelson Thurman	June 15, 2020	July 1, 2020
Methods Document	Dirk Young	~~July 1, 2020~~ June 15, 2020	August 1, 2020
Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman	July 8, 2020	August 1, 2020

From: Arnold, Elyssa
Sent: Tuesday, May 12, 2020 1:31 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/12/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 12, 2020

Attendees: Neil, Jan, Kimberly Lee, Mark C., Mark S., Dana, Rochelle, Bill, Nelson, Rebeccah, Dirk, Monisha, Jonathan, Elyssa

1. PCA/PCT Update
    - Automation tools status
        - PCA/PCT Automation – Negative PCA values
            - Issues were with double cropping and rice, now close to a solution
            - Will be able to use the miscellaneous ag calculation and will document the issues and solutions
            - Will be resolved for use in chlorpyrifos DWA
        - Aggregation tool
            - Josh has finished his QA, will send on to Rochelle for her to test
    - Progress on plan for discussions with HED on output
        - Jan sent additional comments to Mark
    - Data from WSDA?
        - Yes, Rochelle got it last week and sent it to the project team including BEAD
        - Have not reviewed the data yet
    - Documentation for docket
        - White Paper & Case Study
        - Response to Comments
        - QAPP – have made progress on the QAPP
        - For next week – team to share proposed timeline and assignments for documentation revisions.
            - All drafts complete by early August for DD review.

2. PWC Scenarios Status Update
    a. Status of generating the scenarios
        i. Delivered all Tier 1 scenarios except for soybean
            1. Complete: Cotton, Hay, Orchard, Row and Field Crops, Spring Wheat
            2. Soybean just needs to go through the ranking process
            3. Dana set up a meeting later today for the chlorpyrifos team to ask questions about the completed scenarios
        ii. Scenarios still in progress:
            1. Market vegetables – were missing some regions so re-running in batch runs and hope to have done end of this week or beginning of next week

2. Winter Wheat – still need to run Koc of 10,000
3. Still work to do on the orchard dates – Trip is working on the growing degree day model

b. Documentation for docket

i. Documents provided for peer review

1. Methods Document
2. Inputs Document
   a. Including spreadsheets
   b. Anything we sent to CLA during the comment period
3. Creating New Scenarios Document
   a. May be combined with the Inputs Document

ii. Response to Comments

iii. QAPP

iv. For next week – team to share proposed timeline and assignments for documentation revisions.

1. All drafts complete by early August for DD review.

c. Everything requested from BEAD has been delivered – thank you!!

From: Arnold, Elyssa
Sent: Tuesday, May 05, 2020 3:57 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/5/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 5, 2020

Attendees: Bill, Nelson, Kimberly, Neil, Marietta, Dana, Dirk, Jonathan, Rebeccah, Jan, Matt, Mark S., Mark C., Monisha, Lee, Claire, Rochelle, Elyssa

1. PCA/PCT Update
   - Automation tools status
     - Negative PCA values – issue appeared in miscellaneous agriculture calculation

        - Majority are under 5%, so may be rounding errors
        - Others may be due to double cropping, working on an approach to address that
        - Need a resolution in the next week or so to keep chlorpyrifos on track
        - Team is meeting tomorrow to discuss
    - Aggregation tool – one QA issue, will fix and deliver to chlorpyrifos team at the end of this week
- Plan for discussions with HED on output
    - Mark is addressing Jan's comments on the draft – will get it back to her this week
- Data from WSDA? – not yet

2. PWC Scenarios Status Update
    - Feedback from Rick
        - Positive feedback, he supports high benefit crop plan
    - Plan for chlorpyrifos high benefit crops
        - EISB confirmed that existing scenarios with new weather data (asparagus, orchards) have already been QA'd
        - BAB confirmed that they will provide application rate and timing data for asparagus (MI) and strawberries (OR) by May 11
    - Status of generating the Tier 1 scenarios
        - Soybeans, hay, evergreen orchards (citrus), row and field crops, cotton
            - Ranking and selection process is complete
            - Generating final versions formatted to run in PWC
            - Dirk wants to do a QC – 48 hours
        - Winter wheat is next – batch runs complete, Nelson is doing a final check and will hand off to Trip for scenario selection
        - Batch runs on market vegetables (strawberry) started this morning
    - Status of crop dates for deciduous orchards
        - BEAD delivered their information for the growing degree model on Friday
            - In draft, memo will be finalized over the next month or so (data will not change, just possibly the wording)
            - EFED has all of the information needed to proceed
        - Trip has pulled together the dates and has a model ready to test
        - Will work on the deciduous orchards scenario after the current set are complete

3. EMPM – non-EPA speaker suggestions?

- Peer reviewers – will not reach out to them, but they could self-nominate if they have work they want to present
- Workshop? (CLA request)
    - Will not hold a workshop, but will give more detailed presentations and provide an opportunity for questions
        - Detail on process to build scenarios, but not to help others run the code
    - Could include a demonstration/example, but need to consider network limitations
        - Screenshots rather than live demonstration
    - Don't want to overcommit the time of the team while they are working to complete all of the documentation
- Other presentation topics: overview of projects (current briefing package), more detail on implementation, PCA/PCT automation and aggregation tools

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From: Arnold, Elyssa
Sent: Tuesday, April 28, 2020 2:13 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/28/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 28, 2020

Attendees: Mark C., Bill, Nelson, Dana, Mark S., Jonathan, Marietta, Rebeccah, Dirk, Monisha, Rochelle, Kimberly, Lee, Jan, Neil, Matt Crowley, Claire, Elyssa

1. PCA/PCT Update
    - Automation tools
        - Question on some of the watersheds with negative PCA values associated with rice and turf
            - Meeting tomorrow with Rochelle and EISB to talk about this
        - Time series aggregation tool is in QA with Josh and Sumathy
    - Plan for discussions with HED on output
        - Jan sent comments to Mark
            - Need to clarify what we are going to give HED and what they can do with it

        - First need to figure out in EFED what makes the most sense
        - Clarify the outreach needs – public outreach beyond EMPM? (ACS probably not happening this year), need for OGC to weigh in?
- WSDA meeting follow-up
    - Still working on getting us the data
    - Data is in Access
    - Need to see the data before determining if/how it can be used

2. PWC Scenarios Status Update
    - Plan for chlorpyrifos high benefit crops
        - Asparagus (MI)
            - Use existing scenario with new weather data
            - BEAD will provide application rate and timing by May 11
        - Orchard crops – Apples, Peaches, Cherries
            - Use existing scenario with new weather data
            - Use application rate and timing from previous DWA
        - Strawberries (OR)
            - New scenario will be created by May 11
            - BEAD will provide application rate and timing by May 11 (OR only)
        - Oranges (CA) & Sugar beets (MN and ND)
            - Tier 1 scenarios
        - Lee will check whether we still need to QA existing scenarios with new weather data
        - BAB will discuss any concerns with this plan and will get back to us this afternoon
        - Marietta and Jan will discuss with Rick tomorrow at 4:00
    - Status of generating the Tier 1 scenarios
        - Finished runs for cotton, spring wheat, row and field crops (sugar beets), and evergreen orchards
            - Scenario selection process is running now and should be complete today
        - Hay (alfalfa) – run is complete but needs a QA check before scenario selection
        - Soybeans and winter wheat – still running and should be complete by the end of the week – scenario selection by Monday
        - Market vegetables (strawberries) – Nelson is doing a final check on the dates for consistency and will start the runs, on target for May 11
    - Status of crop dates for non-priority crops

- Deciduous orchards – in review with Jonathan, should be complete by the end of the week

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From: Arnold, Elyssa
Sent: Tuesday, April 21, 2020 4:10 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/21/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 21, 2020

Attendees: Neil, Jonathan, Derek Berwald, Mark C., Matt Crowley, Monisha, Lee, Nikhil, Jan, Nelson, Dana, Rebeccah, Dirk, Marietta, Rochelle, Kimberly, Bill, Elyssa

1. PWC Scenarios Status Update
   - Remote access to 5th lab computer
     - Yes, all 5 are now working
   - Sampling %
     - Mel analyzed 15%, 25%, and 35%; higher % = decreased CV
     - Tried to run 100% but was not feasible timewise
     - Currently planning to use 35%
     - EECs are the same within 2 sig figs regardless of the % (but CVs decrease)
   - Status of generating the Tier 1 scenarios? Update timeline
     - Original timeline:
       - PWC Scenario batch runs – Begin early April to mid April 2020
       - PWC Scenario Ranking/Selection – Early April to mid April 2020
       - Roll out in phases as completed – final delivery mid April 2020
     - Currently ~2 weeks behind from that schedule – deliver Tier 1 scenarios by April 30
     - Time required per crop is between a couple days and a week. Trip is currently mapping out what to run when on what computer.
     - By the end of today will start running all Tier 1 priority scenarios across the 5 computers.

- Will start getting output by the end of next week to send to chlorpyrifos team

- Input from Alex re: crops
  - Briefed Alex on the chlorpyrifos schedule on Thursday last week
  - Alex would like our DWA to include not just crops that are important to the registrant but also to the users (even if we are just doing a proof of concept DWA)
  - BEAD looked into that question and provided the following preliminary list of uses that are important to the grower community (high benefit)
    - **Preliminary** list:
      - Apples – deciduous orchards scenario
      - Asparagus (MI) – unique scenario
      - Cherries (MI) – deciduous orchards scenario
      - Oranges (CA)* – **Tier 1 citrus scenario**
      - Peaches (southeast) – deciduous orchards scenario
      - Sugar beets (MN and ND) – **Tier 1 sugar beet scenario**
      - Strawberries (OR) – market vegetable scenario
    - *Rick and Alex agreed to de-prioritize CA due to state restrictions
    - Providing details for all high benefit crops would take BEAD 5 weeks
      - Inputs for PWC: App dates and timing, rate distributions, max and avg rates
      - BEAD provide a time estimate for a subset of these (just strawberries?)
      - Dana and Rochelle: What would we assume without any new info from BEAD on these?
    - Nelson to estimate dates for completion of non-Tier 1 scenarios
      - Could also use old scenarios to evaluate high benefit crops that are not in Tier 1
  - We do not have to add in all the high benefit crops now, but need to scope it out. It's possible that the 2 already covered by the Tier 1 scenarios will be sufficient.

- Status of Crop dates for non-priority crops
  - Still QAing vegetable dates

For questions above, send Elyssa responses by Thursday 10:00 in preparation for the EFED/BEAD general at 1pm.

From: Arnold, Elyssa
Sent: Tuesday, April 14, 2020 1:57 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta'

<echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/13/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 13, 2020

Attendees: Jonathan, Mark C., Bill, Lee, Nelson, Rebeccah, Dirk, Dana, Neil, Jan, Marietta, Rochelle, Kimberly, Mark S., Monisha, Claire, Elyssa

1. PCA/PCT Project Status Update
   - Status of tools
     - Jen and Sumathy are integrating the last pieces of usage data from the SUUM report
     - Some quirky PCA numbers showing up – working out the details and will do some manual checks
     - Aggregation tool – behind because of Andrew's hardware issues, expect it to be ready for testing next week. If Andrew continues to have issues then Chuck can back him up.
   - Plan for discussions with HED on output
     - Bill and Mark are working on the proposal for presenting data (see last week's notes for details)
     - When that is ready Mark will reach out to Don Wilbur, probably next week
   - WSDA meeting (2:00 today)
     - Will find out what data they are able to provide

2. PWC Scenarios Status Update
   - Remote access to lab computers
     - Still just have 4 computers working. Not crucial to get the 5th computer but would be useful.
     - There is someone from EISD in the building this week who could help – Lee will follow up
   - Crop dates
     - No update from EFED
     - BEAD is on track, senior scientist review April 23
   - Status of generating the Tier 1 scenarios
     - Did a couple runs, working out bugs
   - Sampling %

- Mel is working with Trip to resolve an issue
- Data analysis is done but not written up
- 25% sampling looks like it will work

From: Arnold, Elyssa
Sent: Tuesday, April 07, 2020 4:13 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/7/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 7, 2020

Attendees: Marietta, Steve, Monisha, Lee, Jan, Nelson, Claire, Dana, Rebeccah, Dirk, Neil, Jonathan, Bill, Elyssa

1. PCA/PCT Project Status Update
   - Status of tools
     - Automation tool: Jen doing QA on Sumathy's tool but otherwise done
     - Aggregation tool (update from Chuck and Andrew post-meeting): expect to be ready for testing end of next week (4/17)
   - Plan for discussions with HED on output
     - Bill and Mark discussed the following output structure:
       - List of HUC2 regions that pass on PCA alone
       - List of HUC2 regions that pass based on PCA+PCT together
       - If any remaining HUC2s did not pass, report 90th percentile of the watersheds in the region and provide time series (or point estimates) to HED
       - Bill found discussion of the origin of the 90th percentile assumption in SAP documents from 1998 and 1999 on index reservoir and PCA. Not sure whether the SAP commented on that, but don't think that we were asking for comment on it.
     - Will need to set up meetings with HED to discuss this – timing?

- Rochelle set up a meeting with the Washington State Dept of Ag next week to talk about their usage data
    - Rochelle has asked about alternative dates and times to accommodate BEAD (Mark S. is out this week)
    - Should meet internally before talking to them

2. PWC Scenarios Status Update

- Remote access to lab computers
    - We now have access to 4 of the 5 computers
        - Trip has a request in to EISD to get the 5th computer working. If he doesn't have success by tomorrow Jan will elevate the issue.
    - Currently getting the weather files transferred to the computers (takes about 15 hours)
- Crop dates
    - Status of tier 1 crop dates
        - Crop dates for all tier 1 crops and other crop-related inputs for all crops were completed last week (Thursday, 4/2)
        - Also have several Tier 2 crops done (corn, other grains/corn, small grains) and will be ready to go as we finish the Tier 1 crops
        - The 2 vegetable scenarios are close to wrapping up for dates and should be done late next week
    - BEAD help on crop dates for deciduous orchards and small trellised fruit – timing
        - 3 people in BAB working on this, target is to deliver April 30 with senior review prior to that
- Status of generating the Tier 1 scenarios
    - Dates and inputs are all ready to go
        - Trip will start generating scenarios today
        - A few fields we will need to check
        - Scenarios will be done by the end of the week
        - Batch runs should start next week – these take multiple days – will go a few days past April 15
            - Can deliver to chlorpyrifos team as they are completed
- Sampling % update
    - Mel has the corn scenarios for 3 NHD regions (4, 5, and 7) for one Koc (1). Trip has post-processed them to assign percentiles.
    - Mel hopes to have the sample test completed by Wed, Apr 8

- Sampling % will impact time needed to generate the scenarios. Nelson will update us with the final determination.

3. DD feedback from briefing – any follow up?
   - No additional follow up; primary concern from other divisions is the implementation
   - Marietta and Jan will talk to Rick at their next general and see if he wants a briefing too or just the slides
   - Documentation for 90th percentile decision
     - Incorporate directly into final documentation for scenarios
     - Don't need to go into too much detail but can use the sources that Bill found from the 1998/1999 SAP presentations

---

From: Arnold, Elyssa
Sent: Tuesday, March 31, 2020 1:32 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/31/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 31, 2020

Attendees: Neil, Jonathan, Mark C., Marietta, Bill, Lee, Nelson, Kimberly, Dana, Rebeccah, Dirk, Monisha, Claire, Rebeccah, Matt C., Jan, Elyssa

1. PCA/PCT Project Status Update
   - Still some work to do on the time series aggregation tool (Andrew was having VPN issues) – goal for completion is still mid-April
   - Working on QAPP and other documentation
   - Mark will check in with Rochelle on Sumathy's tool – looks like things are in good shape

2. PWC Scenarios Status Update
   - Remote access to lab computers
     - Now have access to 3 of the 5 lab computers thanks to ITRMD

- Need EISD to take out the card readers on the other 2 computers
    - If this can't happen, will we be ok with the 3 we have?
- Trip just got wifi adapters delivered to his house and he will bring them by the office for EISD to install
- Melissa was able to access the results of her runs to evaluate the sampling %s – need to resolve this question before the batch runs begin
    - Lee and Nelson will talk to her and get back to us

- Tier 1 crop dates
    - Nelson provided Trip with the completed Tier 1 crop dates and he is reviewing the format now
    - Team will have the 2 vegetable scenarios wrapped up soon (quicker than expected)
    - Then just the deciduous orchard and small trellised fruit will be left to complete
- Generating the Tier 1 scenarios
    - Nelson still needs to update the formats of some of the other crop inputs, he is working with Trip on that
    - Had to add a couple flags for special cases and tweak code accordingly, but all substantive work is complete
    - Still plan to start generating the scenarios this week
- BEAD help on crop dates for deciduous orchards and small trellised fruit
    - Rebeccah asked for clarification on crop groups
        - Deciduous orchard – include both tree fruit and tree nut?
            - Yes
        - Small trellised fruit – just grapes?
            - Grapes are the critical crop, but we will also need to include caneberry and blueberry
            - If you find information on caneberry and blueberry while searching, please flag that too
            - Caneberry and blueberry are concentrated in a handful of states, so it may be quicker to go through the extensions for those and EFED can do that work
    - Timing
        - Rebeccah is also working on application timing for chlorpyrifos for the list of Tier 1 and 2 crops from Corteva. Will there be any additional crops?
            - We need to circle back with PRD on that. Only Tier 1 for September, but not clear on what will be left for chlorpyrifos after HED's SAP. BEAD is meeting with PRD on this issue tomorrow (Dana invited).
        - Rebeccah will talk to Monisha and Jonathan and will confirm how quickly the crop date work can be done; will bring in at least one other BEAD team member.

- Monisha will get back to us later this week

From: Arnold, Elyssa
Sent: Tuesday, March 24, 2020 3:34 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <nesci.kimberly@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: Bohaty, Rochelle (Bohaty.Rochelle@epa.gov) <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/24/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 24, 2020

Attendees: Marietta, Neil, Dana, Lee, Mark C., Matt, Jan, Kimberly, Claire, Mark S., Jonathan, Bill, Elyssa, Monisha, Nelson

PCA/PCT Project Status Update

- Rochelle tested Sumathy's tool with a couple HUC2s using PCT data and EDWCs from a previous assessment – worked pretty well
- Upper vs. uniform distribution makes a big difference in the results (% of watersheds passing)
- Mark C. is meeting with Chuck and Andrew today to talk about the aggregation tool next steps
- Peer review comment on including spray drift in the adjusted EDWCs – Mark will circle back with Chuck on the response
- Next steps will be to distill all the data into something easily understandable
    - Matrix of 9 options (min, avg, max PCT x lower, uniform, upper distribution) – this will be a policy question
    - For chlorpyrifos, we are just doing a DWLOC comparison so this is not an imminent problem
    - Preference in public and peer review comments for the uniform distribution

PWC Project Status Update

- Good progress on Tier 1 priority crops for chlorpyrifos
- Crop Dates
    - 1 thing outstanding from Rick S. – will have by midweek
    - Dates should be done by end of this week

- Can then hand off to Trip to generate the Tier 1 scenarios starting next week and start batch runs in PWC
- Challenge in accessing lab GIS computers remotely
    - Lee will reach out to Delores, her staff may be able to help
- Jan and Marietta spoke to Rick K. last week about the scenarios distribution
    - Rick wants us to stick with 90% to be consistent with historical approach – no rationale for changing that at this time, especially for chlorpyrifos
    - Will convey this at the DD briefing next week

What we need to complete scenarios by the summer (see attachment)

- Dates – deciduous orchards and small trellised fruit – would like **BEAD** assistance (Rebeccah)
    - Deciduous orchards – help to identify which crop stages relate to beginning canopy and maximum canopy
    - Small trellised fruit (grape) – help to identify bud break or bud burst as proxy for start of canopy
    - EFED can automate first freeze and growing degree dates
    - Deadline: end of April – Monisha will confirm whether this is doable for BEAD
- 25% sampling approach – need remote access to GIS lab computers to complete this analysis
    - This is needed for all scenarios, including Tier 1 chlorpyrifos crops
- General crop groups – finalized per BEAD's recommendations
    - Only change is for "other grains" – BEAD said to group with spring wheat, which works except for in the southeast where other grains are more likely to be fall planted and line up better with winter wheat
    - Nelson is cleaning up the list and will send a copy this afternoon

Elyssa will add Rebeccah to these meetings

From: Arnold, Elyssa
Sent: Tuesday, March 17, 2020 4:34 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <nesci.kimberly@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Johnson, Hope <Johnson.Hope@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: Bohaty, Rochelle (Bohaty.Rochelle@epa.gov) <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/17/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 17, 2020

Attendees: Neil, Mark C., Matt, Marietta, Bill, Monisha, Lee, Kimberly, Claire, Dana, Mark S., Nelson, Jonathan, Rochelle, Dirk, Bill, Jan, Elyssa

1. **Current status of each project:**
   a. Short term fixes based on peer review and public comments
   b. CPY status and tentative delivery dates (Tier 1 approach for scenarios)

Scenarios

- Tier 1 chlorpyrifos scenarios
  - Will have final scenarios for Tier 1 chlorpyrifos crops by April 15
  - Confirmed Tier 1 crops with Bruce ~a month ago
  - Wheat, soy, cotton, citrus, sugarbeet, alfalfa (hay scenario)
  - Still working on hay dates, aim to have those complete by this time next week
  - Updating standard default ag practices and curve numbers – will send table out to the team today. Team meeting tomorrow to make decisions on the c factor. By next week should have those inputs ready to converge with crop dates and put scenarios into batch runs.
- Remaining scenarios
  - After Tier 1 scenarios start the batch process will work on others – corn, sorghum/millet/small grains, vegetables, deciduous orchards – complete by summer
  - Dates – met with Rebeccah last week and walked through the process – would like some help from BEAD on finishing the deciduous orchards dates based on what Rebeccah has already done, the rest EFED can do using BEAD's methods
  - Working to automate some of the process; already automated the freeze date determination
- DWA work on Tier 2 crops for chlorpyrifos will be later (~Oct, but need to confirm the date)

PCA/PCT

- Sumathy sent updated info on the automation tool this morning
- Rochelle is testing it with chlorpyrifos this week
- Andrew is working on time series aggregation tool this week
- Chuck and Jen are out this week

2. **Any challenges due to teleworking?**

- Lab computers – setting them up to work remotely (not all online yet)
- At some point someone will have to come in to load some things on to the computers
- Mel was doing some test runs but the computers went to sleep before finishing – need to use a mouse jiggler
    - Mel doing runs to test the 25% sampling rate

3. High level discussion of Documentation and RTC general approach and timeframe (May-August)

- Documents to go out on a separate docket concurrent with chlorpyrifos assessment (Sept 21):
    - Documents previously released for comment will be revised and reviewed up to the DD level
        - Expect more changes to the PCA/PCT White Paper than to Scenarios documents
    - QAPPs
    - Response to comments (public and peer review) – summaries grouped by similar comments
- More detailed SOPs for EFED scientists will be completed separately

4. EMPM

- Plan to focus EMPM on DW projects
- High level – what we did, how to use the tools, longer term plans and challenges
- Workshop (as requested by CLA)
- Currently thinking July, prior to chlorpyrifos coming out (if global pandemic allows)
    - Could consider doing it virtually

5. Anyone have an ask of anyone else to tee-up for future conversations?

a. Next week: Discuss what we need to complete all scenarios by the summer

- Jonathan – General question about level of refinement for any chemical that doesn't pass screening level: We usually look at typical vs. maximum application rates, should we also refine number of apps, intervals, and distribution of rates?
    - Yes, EFED wants and uses all of those but we don't want to put an undue burden on BEAD
    - Do we need a checklist?
    - See framework document as a starting point -> attached (see Section 5.0)
    - Could include an EMPM talk about what goes into the higher tier assessments

- This question is not directly related to the scenarios or PCA/PCT projects (Note – this could be a good topic to raise at the PFTTT)

Message

From: Suarez, Mark [Suarez.Mark@epa.gov]
Sent: 6/14/2018 9:15:45 PM
To: Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Sims, Diann [Sims.Diann@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]
Subject: RE: CADPR PCT Discussion Follow Up

Claire,
Thank you. This is very helpful!

Regards,
Mark

Mark Suarez
Entomologist
Science Information and Analysis Branch
Biological and Economic Analysis Division
US EPA (Mail Code 7503P)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

phone: 703-305-0120

From: Paisley-Jones, Claire
Sent: Thursday, June 14, 2018 9:34 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>
Subject: RE: CADPR PCT Discussion Follow Up

Mark,

You can use the Ag crops tab of this draft crosswalk to help identify which crops only show up in the PUR data. Those are what I'd check for in the two CA acres harvested files. It should at least give you a set of crops we could have data on to start from ☺

Claire

From: Suarez, Mark
Sent: Thursday, June 14, 2018 8:56 AM
To: Sims, Diann <Sims.Diann@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Subject: RE: CADPR PCT Discussion Follow Up

I'll have an analysis of the NASS vs CA Ag Commissioners' data to everyone by tomorrow.
I think that we can have the CA PCT calculation worked out by late next week.
From the discussion yesterday, I think that we are leaning toward the Ag Commissioner's Report, unless the very few crops are missing from the NASS data, we see large discrepancies between the Ag Comm. Data and NASS and Kynetec, which suggest Ag Comm. data reliability issues .

Regards,
Mark

Mark Suarez
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Science Information and Analysis Branch
Biological and Economic Analysis Division
US EPA (Mail Code 7503P)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

phone: 703-305-0120

From: Sims, Diann
Sent: Thursday, June 14, 2018 8:38 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Subject: CADPR PCT Discussion Follow Up

Good Morning All,

There will be an ESA team meeting on Tuesday the 26th. (Claire will be sitting in the sun….)
The FWS will share their work to date on the catalogue.

Will we be ready to share our preferred method for calculating the PCT? I didn't commit to a time slot/agenda item, but it would be great if we could. Let me know.

Thanks

Message

From: Kaul, Monisha [Kaul.Monisha@epa.gov]
Sent: 6/11/2019 10:57:23 PM
To: Becker, Jonathan [Becker.Jonathan@epa.gov]; Tindall, Kelly [tindall.kelly@epa.gov]
Subject: FW: Feedback from EFED General
Attachments: Peer Review Opportunities for Drinking Water Assessment Methodologies 5.15.2019 abl v3.docx

Jonathan/Kelly – I would like to discuss item 2 (below) with both of you. Let's think about this a little before we hear from EFED. Please put a meeting on the Calendar for Thursday if you feel ready to discuss.

Regarding item 1 – Jonathan, please let me know if you are ready with some options and/or the team can brief Kimberly.

Item 3 – I sent Kimberly an update so she knows the current status. Jonathan – BTW – our drafted request for OPMP has gone to EFED for comment. I should hear back this week.

I also let Kimberly know that we have Kelly/Caleb's help on a items 2/3 so it's not all on Jonathan.

From: Nesci, Kimberly
Sent: Friday, June 07, 2019 6:11 PM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>
Cc: Anderson, Neil <Anderson.Neil@epa.gov>
Subject: Feedback from EFED General

All, I need to share some information from yesterday's DD general with EFED. I'm looking at calendar and not having much luck, so here goes. We can talk in person during generals next week (Mark & Steve, we need to get one on calendar for SIAB). Neil was there, so he can help fill in any gaps:

1. **ESA Surrogacy Method:**

   I understand from Marietta/Brian that the team (Claire, Mark, Jonathan, Kris G) are all working together to come to consensus on a Surrogacy method. I also understand that a decision is needed on PCT by the end of June in order to get these incorporated into the next Biological Evaluations. That's soon! Let's schedule some briefing (or just meeting) time to talk about where it stands. Mark, if you want to do this in general time, we can do that.

   Re: Jonathan's concerns about the UDLs, we should talk about that, too. I heard from Marietta/Brian that EFED is open to other suggestions on what to do instead, if BEAD has an alternate approach to address the satellite imaging interpretation, as EFED recognizes that the way they've done it is conservative. Not sure if Jonathan is hearing the same thing, or if he has an alternate approach for grouping/alternate proposal? Would have to be for spatial identification purposes, though, because that's the problem they were trying to address by rolling up the CDL into the UDLs. (Based on what I'm hearing, anyway.)

   Bottom line: let's chat soon!

2. **Drinking Water Options Paper** (attached, along with the minutes from the OPP General recording this)

   EFED just received feedback from the OCSPP IO that the OCSPP IO wants to move forward with Options 1-3 in the Options paper. Option 1 is the SAP that's happening and doesn't involve us; Options 2 and 3 are the revised PWC scenarios (Lee's project that Monisha has been involved in) and the use of Percent Crop Treated in DW

assessments. Both of these are great things for the Office, and are going to require support from us. It's good that we're being asked to be involved, I think – we definitely want our input and expertise considered – but we'll need to figure out how to make that happen. They've also asked OPP to talk to USDA, so there will be a discussion in July. EFED will initiate the July discussion.

Obviously, this is a priority to the IO, and especially so since it's being tied to Chlorpyrifos. Also, the expectation is that these will be incorporated into the Chlorpyrifos decision by October 2020.

EFED plans to staff a team on these. I'll keep you posted.

3. SRAC Status

Checking in – any information other than the fact that OPMP doesn't have the resources to help out? Monisha, Marietta has sent Justin to talk to you about this; not sure if that has happened yet. This might be something we renegotiate timeline on, considering the DW decision above.

I know Jonathan is on all of these project. In light of the priorities, we probably also want to pull together a team with some other members (e.g., Caleb, Kelly, maybe a newer person to do legwork) on the DW project in particular. If we can figure out the resources puzzle (I know it's a big one), this is actually a pretty exiting opportunity to influence DW assessments positively and in the direction of reality!

Let's talk next week. Thanks, and have great weekends. See you on Monday.

Kimberly

Kimberly Nesci, Acting Director
Biological and Economic Analysis Division (BEAD)
Office of Pesticide Programs
Office of Chemical Safety and Pollution Prevention
703-308-8059

Message

From: Garber, Kristina [Garber.Kristina@epa.gov]
Sent: 6/11/2019 6:57:36 PM
To: Suarez, Mark [Suarez.Mark@epa.gov]; Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Peck, Charles [Peck.Charles@epa.gov]; Donovan, Elizabeth [Donovan.Elizabeth@epa.gov]; White, Katrina [White.Katrina@epa.gov]; Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]
Subject: check in on usage data and method for ESA
Attachments: Carbaryl SIAB Use and Usage Matrix _ May 2019 update (DRAFT).xlsx

Hello all,

Here is a cleaned up summary of my notes from last week's usage meeting. Feel free to edit or comment if I missed important details or if there are errors in these notes.

Thanks,
Kris

Rangeland and pasture table:

- The information in this table replaces the pastures/rangeland info in table 2.
- Claire will update Table 2

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Internal and deliberative – for discussion purposes only

Carbaryl SIAB Use and Usage Matrix
(21 February 2019)

Introduction

Carbaryl is an insecticide registered for use on the crops listed in the tables below. The following document presents a summary of the use and usage data that is available to the Agency on this active ingredient, during the years listed.

Data Sources

Agricultural Market Research Data (AMRD) – proprietary pesticide usage data from 2013 to 2017. Data that covers pesticide usage on agricultural crops is collected and sold by a private market research firm. Data collected on pesticide use for about 60 crops by annual surveys of agricultural users in the continental United States. The survey design targets at least 80 percent of US acreage/production of the surveyed commodities. Survey methodology provides statistically valid results, typically at the state level. Surveys are conducted annually.

United States Department of Agriculture's National Agricultural Statistics Service (NASS) – publicly available pesticide usage data from 2013 to 2017. NASS data are based on surveys that focus on the top-producing states that together account for the majority of U.S. acres or production of the surveyed commodity. NASS survey design targets a minimum of 80 percent of the acreage/production for every fruit, vegetable, and field crop surveyed. Operation level data are combined during summary and, pending compliance with disclosure rules, published at the state and national levels. NASS collects data for various commodities on a rotating schedule.

California Department of Pesticide Regulation (CDPR) Pesticide Use Reporting (PUR) – publicly available pesticide usage data for 2012 to 2016. The PUR database contains detailed records and summaries of agricultural applications of pesticides on crops based on application permits and are published annually.

Non-Agricultural Market Research Data (NMRD) - proprietary pesticide usage data from 2010 to 2014. Data covers pesticide usage in several U.S. markets, including consumer, professional pest management, turf and ornamentals, food handling establishments, stored grain, industrial vegetation, as well as specialty biocides and biopesticides. Data are collected via surveys of pest management companies, suppliers, dealers, distributors, food-handling establishments, trade associations, consumers, and retailers. Market sizes and brand shares are determined by analyses of sales and other data obtained through interviews and are believed to be sufficiently accurate for screening-level needs at the national level.

The presented usage data are averaged over the number of years of available survey data based on sampling frequency (five years for AMRD and CDPR, and 1-2 years for NASS and NMRD), regardless of whether usage is observed in each surveyed year. The presented data may thus underestimate the maximum yearly usage. In certain cases, data are unavailable or withheld. These cases are indicated in the tables:

Some data sources do not provide all data elements. When a data element is not available this is indicated with a "--"notation in the relevant column.

In some cases, not enough samples are available to establish a robust average. This is indicated with the notation "Insufficient number of reports to establish an estimate". Generally, this indicates that the chemical is only periodically used by a small number of users.

If a registered use site is surveyed by one of our data sources but no usage is observed, this is indicated

with the notation "Surveyed but no usage reported" across the data columns. Lack of reported usage data for the pesticide on a surveyed crop indicates that there is a very low likelihood that the given pesticide is used on that crop.
If a registered use site is not surveyed nationally by any of our data sources, this is indicated with the

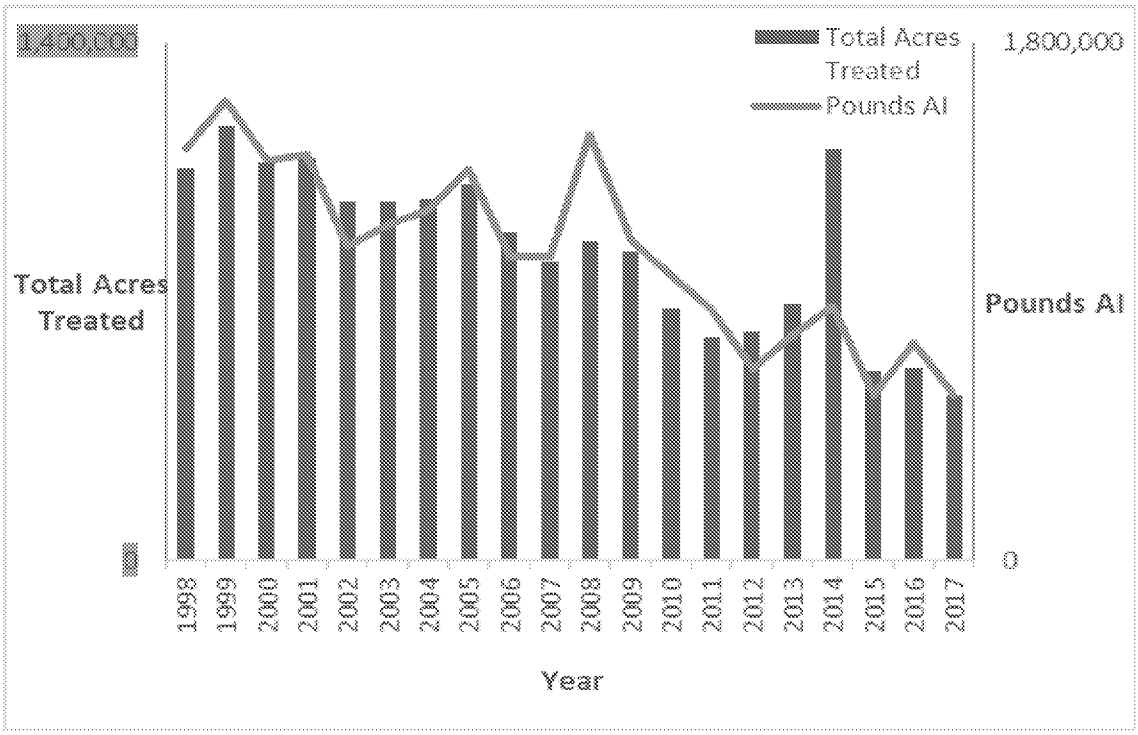

Figure 1. Carbaryl Total Acres Treated and Total Pounds A.I. Applied (1998-2017).
(Does not include crops surveyed only by NASS and CDRP , as indicated in Table 1)

Source: *Market Research Data (MRD).* 1998-2017

urposes only

Table 1. National Carbaryl Agricultural Usage by Crop. Data Averaged Over Reported Years.

Crop	Data Source	States with Reported Usage
Root and Tuber Vegetables	**See crops below**	**See crops below**
Root Crop Vegetables – (Garden Beets Roots, Radish, Rutabaga, and Turnip Roots)	**	**
Root & Tuber Crops - Crop Group 1 Except Sugar Beets and Sweet Potatoes	See crops below	See crops below
Carrot (Tops & Roots)	AMRD (2013 - 2017)	MI, WA
Potato	AMRD (2013 - 2017)	CA, FL, ID, ME, MI, MN, NY, PA, TX, WA, WI
Sugar Beet	AMRD (2013 - 2017)	ID
Other Root and Tuber Vegetables	**	**
Leafy Vegetables	**See crops below**	**See crops below**
Celery	CADPR (2012 - 2016*)	CA
Celery	AMRD (2013 - 2017)	MI
Lettuce	AMRD (2013 - 2017)	AZ
Spinach	AMRD (2013 - 2017)	TX
Other Leafy Vegetables	**	**
Brassica (Cole) Leafy Vegetables (5)	**See crops below**	**See crops below**
Cabbage	AMRD (2013 - 2017)	MI
Broccoli	CADPR (2012 - 2016*)	CA
Cauliflower	CADPR (2012 - 2016*)	CA
Other Brassica Leafy Vegetables	**	**
Legume Vegetables	**See crops below**	**See crops below**
Beans (Snap, Bush, Pole, String)	AMRD (2013 - 2017)	IN, MI, NC
Lima Beans	AMRD (2013 - 2017)	CA, SC
Soybeans	AMRD (2013 - 2017)	GA, NE, NC, OH TN, TX
Dry Beans/Peas	AMRD (2013 - 2017)	ID
Foliage of Legume Vegetables Used for Feed (7)	**See crops below**	**See crops below**
See Beans Above	See Beans Above	See Beans Above
Fruiting Vegetables (8 And Non-IR4)	**See crops below**	**See crops below**
Tomatoes	AMRD (2013 - 2017)	CA
Peppers	AMRD (2013 - 2017)	CA, NJ
Other Fruiting Vegetables	**	**
Cucurbits (9)	**See crops below**	**See crops below**
Cucumbers	AMRD (2013 - 2017)	CA, NC
Cantaloupes	AMRD (2013 - 2017)	AZ, CA, IN, NC, TX

n purposes only

Avg. Annual Pounds AI Applied[a]	Avg. Annual Total Acres Treated[b]	% Applied by Air	Avg. Single AI Rate	Max Single Labeled Rate lb/ac
See crops below	See crops below	See crops below	See crops below	4.00
**	**	**	**	4.00
See crops below	See crops below	See crops below	See crops below	2.04
770	970	0%	0.794	2.00
32,690	33,780	9%	0.968	2.04
30	60	0%	0.500	1.53
**	**	**	**	2.04
See crops below	See crops below	See crops below	See crops below	4.00
170	280	22%	1.753	4.00
20	20	0%	1.000	4.00
50	20	0%	1.850	4.00
2,790	1,400	0%	2.000	4.00
**	**	**	**	4.00
See crops below	See crops below	See crops below	See crops below	2.04
40	40	0%	1.000	2.04
90	70	8%	1.552	2.04
60	60	3%	1.050	2.04
**	**	**	**	4.00
See crops below	See crops below	See crops below	See crops below	2.00
1,600	1,740	0%	0.918	2.00
120	190	0%	0.643	2.00
70,510	133,250	2%	0.529	2.00
30	60	100%	0.500	2.00
See crops below	See crops below	See crops below	See crops below	1.53
See Beans Above	See Beans Above	See Beans Above	See Beans Above	See Beans Above
See crops below	See crops below	See crops below	See crops below	2.04
42,910	60,940	0%	0.704	2.04
1,420	2,280	0%	0.623	2.04
**	**	**	**	2.04
See crops below	See crops below	See crops below	See crops below	1.02
9,230	10,620	0%	0.869	1.02
10,460	16,070	0%	0.651	1.02

Pumpkins	AMRD (2013 - 2017)	CA, CT, IL, IN, MA, MI, MO, NJ, NY, NC, OH, OR, PA, TN, VA, WA, WI
Squash	AMRD (2013 - 2017)	CA, CT, MA, MI, NJ, NY, NC, OH, PA, SC, WI
Watermelons	AMRD (2013 - 2017)	AL, AZ, CA, MS, MO, NC, OK, SC, TX
Other Cucurbits	**	**
Citrus (10)	**See crops below**	**See crops below**
Grapefruit	AMRD (2013 - 2017)	FL, TX
Lemons	CADPR (2012 - 2016*)	CA
Oranges	AMRD (2013 - 2017)	CA, FL
Other Citrus	**	**
Pome Fruit (11)	**See crops below**	**See crops below**
Apples	AMRD (2013 - 2017)	CA, MI, NY, NC, OH, OR, PA, VA, WA, WV
Pears	AMRD (2013 - 2017)	CA, OR
Other Pome Fruit	**	**
Stone Fruit (12)	**See crops below**	**See crops below**
Apricots	CADPR (2012 - 2016*)	CA
Cherries	AMRD (2013 - 2017)	CA, MI, OR, WA
Peaches	AMRD (2013 - 2017)	AL, CA, CO, GA, IL, MI, NY, PA, SC, TX, WA
Nectarines	CADPR (2012 - 2016*)	CA
Plums	CADPR (2012 - 2016*)	CA
Prunes	CADPR (2012 - 2016*)	CA
Other Stone Fruit	**	**
Berry and Small Fruit	**See crops below**	**See crops below**
Berries (13-07A and 13-07B)	See crops below	See crops below
Blueberries	NASS (2015)	GA, MI, NC, NJ, OR
Caneberries	AMRD (2013 - 2017)	CA, OR
Cranberry	**	**
Grapes	See crops below	See crops below
Grapes, Table/Raisin	CADPR (2012 - 2016*)	CA
Grapes, Wine	AMRD (2013 - 2017)	CA, NY
Grapes, Wine	CADPR (2012 - 2016*)	CA
Strawberries	AMRD (2013 - 2017)	CA, MI, NY, OR, PA
Tree Nuts (14)	**See crops below**	**See crops below**
Almonds	CADPR (2012 - 2016*)	CA
Pecans	AMRD (2013 - 2017)	GA, MN, OK, TX
Pistachios	CADPR (2012 - 2016*)	CA
Walnuts	CADPR (2012 - 2016*)	CA

4,960	5,870	1%	0.846	1.02
7,260	8,950	0%	0.811	1.02
5,200	7,160	0%	0.726	1.02
**	**	**	**	1.02
See crops below	**See crops below**	**See crops below**	**See crops below**	**12.24**
9,770	3,160	0%	3.093	12.24
1,520	290	0%	4.438	12.24
44,740	23,530	13%	1.901	12.24
**	**	**	**	12.24
See crops below	**See crops below**	**See crops below**	**See crops below**	**3.06**
222,720	175,340	1%	2.594	3.06
11,310	4,570	0%	2.474	3.06
**	**	**	**	3.06
See crops below	**See crops below**	**See crops below**	**See crops below**	**5.10**
130	20	0%	2.432	5.10
20,030	9,990	0.5%	2.005	5.10
5,230	3,020	0%	1.728	5.10
30	10	0%	3.250	5.10
110	30	0%	3.208	5.10
660	90	36%	1.003	5.10
**	**	**	**	5.10
See crops below	**See crops below**	**See crops below**	**See crops below**	**Full Crop Group Not Registered**
See crops below	See crops below	See crops below	See crops below	2.04
4,500	--	--	1.804	2.04
350	240	0%	1.442	2.04
**	**	**	**	2.04
See crops below	See crops below	See crops below	See crops below	2.04
10	30	0%	1.143	2.04
5,790	3,710	7%	1.562	2.04
260	180	13%	1.327	2.04
360	390	0%	0.926	2.04
See crops below	**See crops below**	**See crops below**	**See crops below**	**5.10**
1,130	640	22%	2.051	5.10
81,720	32,290	8%	2.531	5.10
10,030	9,960	5%	1.300	5.10 (US)
250	270	14%	2.633	5.10

Hazelnuts	AMRD (2013 - 2017)	NR*
Other Tree Nuts	**	**
Cereal Grains	**See crops below**	**See crops below**
Corn (Sweet)	AMRD (2013 - 2017)	FL, IL, MI, MN, NJ, NY, OH, WI
Corn (Pop)	**	**
Corn (Field)	AMRD (2013 - 2017)	CA, IA, KY, NC, OH
Sorghum	AMRD (2013 - 2017)	TX
Rice	AMRD (2013 - 2017)	CA, LA, MS
Grass Forage, Fodder, And Hay Group / 18. Non-grass Animal	**See crops below**	**See crops below**
Alfalfa	AMRD (2013 - 2017)	AZ, IA, MO, NV, OH, PA, WI
Pastures/Rangeland	**	**
Other Forage Crops: Birdsfoot Trefoil, Clover, Forage Grasses Grown for Hay and/or Seed	**	**
Oilseed Group	**See crops below**	**See crops below**
Sunflower	AMRD (2013 - 2017)	SD, TX
Flax	**	**
Stalk, Stem and Leaf Petiole Vegetable Group	**See crops below**	**See crops below**
Asparagus	AMRD (2013 - 2017)	CA, MI, WA
Prickly pear Cactus Pads	**	**
Tropical and Subtropical Fruit, Edible Peel Group	**See crops below**	**See crops below**
Olive	CADPR (2012 - 2016*)	CA
Misc.	**See crops below**	**See crops below**
Peanuts	AMRD (2013 - 2017)	AL, FL, NC
Tobacco	AMRD (2013 - 2017)	NC, OH, TN
Shrimp Ponds, Commercial	**	**

	Notes
AMRD (YEAR-YEAR)	Agricultural usage surveyed by market research firm(s). Values rounde
NASS (YEAR)	Surveyed by United States Department of Agriculture National Agricul
Cal DPR (YEAR)	Surveyed by the California Department of Pesticide Regulation. Over t
a	The pounds AI displayed in this document may differ from those displa
b	Total Acres Treated accounts for multiple applications to a single area.
c	Max labeled rate from 2017 EFED 1-3 Master Use Table.
NR*	Surveyed by the indicated source in the years listed, but no usage report
**	Site not surveyed at national level

NR*	NR*	NR*	NR*	5.10
**	**	**	**	5.10
See crops below	**See crops below**	**See crops below**	**See crops below**	**Full Crop Group Not Registered**
7,570	8,050	2%	0.940	4.00
**	**	**	**	2.04
11,880	12,580	42%	0.945	2.04
100	100	0%	1.000	2.04
21,880	17,980	13%	1.216	1.53
See crops below	**See crops below**	**See crops below**	**See crops below**	**Full Crop Group Not Registered**
12,320	20,570	0%	0.599	1.53
**	**	**	**	1.02
**	**	**	**	1.53
See crops below	**See crops below**	**See crops below**	**See crops below**	**Full Crop Group Not Registered**
1,710	1,710	95%	1.000	1.53
**	**	**	**	1.53
See crops below	**See crops below**	**See crops below**	**See crops below**	**Full Crop Group Not Registered**
24,570	33,760	2%	0.728	2.04
**	**	**	**	2.04
See crops below	**See crops below**	**See crops below**	**See crops below**	**Full Crop Group Not Registered**
7,760	2,150	6%	3.997	7.65
See crops below	**See crops below**	**See crops below**	**See crops below**	--
3,210	6,690	0%	0.480	2.04
1,360	1,360	0%	1.000	2.04
**	**	**	**	8.01

d.

ltural Statistics Service. Values rounded.

han 80% of crop grown in California. Values rounded.

yed in the SLUA and other BEAD documents, because different calculation methods were used.

This may overestimate the number of acres treated as some acres are treated more than once.

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Table 2. Carbaryl Agricultural Usage by Crop and State.

Crop	Data Source	State	Avg. Annual Crop Acres Grown†
Root and Tuber Vegetables	***See Crops Below***	***See Crops Below***	***See Crops Below***
Root & Tuber Crops - Crop Group 1 Except Sugar Beets and Sweet Potatoes	*See Crops Below*	*See Crops Below*	*See Crops Below*
Carrot (Including Tops & Roots)	AMRD (2013 - 2017)	Michigan	3,430
Carrot (Including Tops & Roots)	AMRD (2013 - 2017)	Washington	6,400
Carrot (Including Tops & Roots)	AMRD (2013 - 2017)	*CA, TX, WI*	71,550
Potato	AMRD (2013 - 2017)	Texas	19,750
Potato	AMRD (2013 - 2017)	California	32,900
Potato	AMRD (2013 - 2017)	Minnesota	44,000
Potato	AMRD (2013 - 2017)	Wisconsin	62,500
Potato	AMRD (2013 - 2017)	Florida	29,000
Potato	AMRD (2013 - 2017)	Michigan	46,090
Potato	AMRD (2013 - 2017)	Washington	165,000
Potato	AMRD (2013 - 2017)	Pennsylvania	6,400
Potato	AMRD (2013 - 2017)	Idaho	317,000
Potato	AMRD (2013 - 2017)	Maine	54,490
Potato	AMRD (2013 - 2017)	New York	17,000
Potato	AMRD (2013 - 2017)	*CO, MT, NC, ND, NE, OR*	215,920
Radish	CADPR (2012 - 2016*)	California (18%)	1,490
Radish	**	Other States (87%)	**
Beets, Rutabaga, Turnips	CADPR (2012 - 2016*)	California (NR%)	1,170 (beets); 130 (rutabega); 240 (turnips)
Beets, Rutabaga, Turnips	**	Other States (NR%)	**
Sugar Beet	AMRD (2013 - 2017)	Idaho	171000
Sugar Beet	AMRD (2013 - 2017)	*CA, CO, MI, MN, MT, NE, ND, WY*	974,470
Other Root and Tuber Vegetables	**	**	**
Leafy Vegetables	***See Crops Below***	***See Crops Below***	***See Crops Below***
Celery	AMRD (2013 - 2017)	Michigan	2,100
Celery	CADPR (2012 - 2016*)	California (83%)	31,840
Lettuce	AMRD (2013 - 2017)	Arizona	64,300
Lettuce	AMRD (2013 - 2017)	*CA*	200,610
Parsley	CADPR (2012 - 2016*)	California (48%)	3,580
Parsley	**	Other states (52%)	**
Spinach	AMRD (2013 - 2017)	Texas	2,260
Spinach	AMRD (2013 - 2017)	*AZ, CA, CO, NJ, OK*	45,460
Other Leafy Vegetables	**	**	**
Brassica (Cole) Leafy Vegetables (5)	***See Crops Below***	***See Crops Below***	***See Crops Below***

ssion purposes only

Avg. Annual Total Lbs. AI Applied[a]	Min. Annual PCT[b]	Max. Annual PCT[b]	Avg. Annual PCT[b]
See Crops Below	*See Crops Below*	*See Crops Below*	*See Crops Below*
See Crops Below	*See Crops Below*	*See Crops Below*	*See Crops Below*
760	0	70	20
10	0	<5	<1
NR*	NR*	NR*	NR*
14,590	0	100	50
3,620	0	50	10
4,780	0	10	0
3,440	0	30	10
1,270	0	20	<5
1,360	<1	10	<5
3,400	0	<5	<1
20	0	<5	<1
160	0	<1	<1
40	0	<5	<1
10	0	<1	<1
NR*	NR*	NR*	NR*
160	N/C	N/C	N/C
**	**	**	**
NR*	NR*	NR*	NR*
**	**	**	**
30	0	<1	<1
NR*	NR*	NR*	NR*
**	**	**	**
See Crops Below	*See Crops Below*	*See Crops Below*	*See Crops Below*
20	0	5	<1
280	N/C	N/C	N/C
50	0	0	<1
NR*	NR*	NR*	NR*
<1	N/C	N/C	N/C
**	**	**	**
2,790	0	90	30
NR*	NR*	NR*	NR*
**	**	**	**
See Crops Below	*See Crops Below*	*See Crops Below*	*See Crops Below*

Cabbage	AMRD (2013 - 2017)	Michigan	3,000
Cabbage	AMRD (2013 - 2017)	*AZ, CA, CO, FL, GA, NY, NC, TX, WI*	50,040
Brussels Sprouts	CADPR (2012 - 2016*)	California (81%)	3,040
Broccoli	CADPR (2012 - 2016*)	California (96%)	124,790
Cauliflower	CADPR (2012 - 2016*)	California (82%)	35,630
Other Brassica Leafy Vegetables	**	**	**
Legume Vegetables	***See Crops Below***	***See Crops Below***	***See Crops Below***
Beans (Snap, Bush, Pole, String)	AMRD (2013 - 2017)	North Carolina	5,570
Beans (Snap, Bush, Pole, String)	AMRD (2013 - 2017)	Michigan	20,050
Beans (Snap, Bush, Pole, String)	AMRD (2013 - 2017)	Indiana	5,100
Beans (Snap, Bush, Pole, String)	AMRD (2013 - 2017)	*CA, FL, GA, IL, NY, OR, PA, TN, TX, WI*	188,850
Lima Beans	AMRD (2013 - 2017)	California	7,160
Lima Beans	AMRD (2013 - 2017)	South Carolina	790
Lima Beans	AMRD (2013 - 2017)	*DE, GA, IL, MD, WA, WI*	22,570
Soybeans	AMRD (2013 - 2017)	Texas	110,000
Soybeans	AMRD (2013 - 2017)	Ohio	4,800,000
Soybeans	AMRD (2013 - 2017)	Nebraska	5,700,000
Soybeans	AMRD (2013 - 2017)	Georgia	222,500
Soybeans	AMRD (2013 - 2017)	North Carolina	1,650,000
Soybeans	AMRD (2013 - 2017)	Tennessee	1,620,000
Soybeans	AMRD (2013 - 2017)	*AL, AK, DE, IL, IN, IA, KS, KY, LA, MD, MI, MN, MS, MO, NY, ND, OK, PA, SC, SD, VA, WI*	69,844,000
Dry Beans/Peas	AMRD (2013 - 2017)	Idaho	194,000
Dry Beans/Peas	AMRD (2013 - 2017)	*CA, CO, MI, MN, MT, NE, NY, ND, TX, WA, WY*	2,907,040
Foliage of Legume Vegetables Used for Feed (7)	***See Crops Below***	***See Crops Below***	***See Crops Below***
See Beans Above	*See Beans Above*	*See Beans Above*	*See Beans Above*
FRUITING VEGETABLES (8 And Non-IR4)	***See Crops Below***	***See Crops Below***	***See Crops Below***
Eggplant	CADPR (2012 - 2016*)	California (23%)	1,160
Eggplant	**	Other states (77%)	**
Tomatoes	AMRD (2013 - 2017)	California	299,600
Tomatoes	AMRD (2013 - 2017)	*FL*	31,400
Peppers	AMRD (2013 - 2017)	New Jersey	3,700
Peppers	AMRD (2013 - 2017)	California	28,070
Peppers	AMRD (2013 - 2017)	*AZ, FL, GA, NM, NC, OH, TX*	32,380
Other Fruiting Vegetables	**	**	**
Cucurbits (9)	***See Crops Below***	***See Crops Below***	***See Crops Below***
Cucumbers	AMRD (2013 - 2017)	California	9,700
Cucumbers	AMRD (2013 - 2017)	North Carolina	11,110

40	0	10	<5
NR*	NR*	NR*	NR*
120	N/C	N/C	N/C
90	N/C	N/C	N/C
60	NR*	NR*	NR*
**	**	**	**
See Crops Below	***See Crops Below***	***See Crops Below***	***See Crops Below***
1,450	0	60	10
140	0	<5	<1
10	0	<5	<1
NR*	NR*	NR*	NR*
60	0	10	<5
60	0	50	10
NR*	NR*	NR*	NR*
10	0	0	<1
610	0	0	<1
1,100	0	0	<1
2,680	0	10	<5
6,910	0	<5	<1
59,190	0	40	10
NR*	NR*	NR*	NR*
30	0	0	<1
NR*	NR*	NR*	NR*
See Crops Below	***See Crops Below***	***See Crops Below***	***See Crops Below***
See Beans Above	*See Beans Above*	*See Beans Above*	*See Beans Above*
See Crops Below	***See Crops Below***	***See Crops Below***	***See Crops Below***
10	N/C	N/C	N/C
**	**	**	**
42,910	10	30	20
NR*	NR*	NR*	NR*
180	0	10	<5
1,240	0	10	10
NR*	NR*	NR*	NR*
**	**	**	**
See Crops Below	***See Crops Below***	***See Crops Below***	***See Crops Below***
70	0	10	<5
9,160	0	70	40

Cucumbers	AMRD (2013 - 2017)	*DE, FL, GA, MD, MI, MO, NJ, SC, TX, WA, WI*	91,190
Cantaloupes	AMRD (2013 - 2017)	Texas	2,600
Cantaloupes	AMRD (2013 - 2017)	Arizona	16,000
Cantaloupes	AMRD (2013 - 2017)	Indiana	1,900
Cantaloupes	AMRD (2013 - 2017)	North Carolina	1,500
Cantaloupes	AMRD (2013 - 2017)	California	31,380
Cantaloupes	AMRD (2013 - 2017)	*FL, GA, SC*	5,240
Pumpkins	AMRD (2013 - 2017)	Illinois	17,500
Pumpkins	AMRD (2013 - 2017)	New Jersey	2,110
Pumpkins	AMRD (2013 - 2017)	Oregon	2,180
Pumpkins	AMRD (2013 - 2017)	Missouri	1,040
Pumpkins	AMRD (2013 - 2017)	California	5,850
Pumpkins	AMRD (2013 - 2017)	Ohio	6,850
Pumpkins	AMRD (2013 - 2017)	North Carolina	3,500
Pumpkins	AMRD (2013 - 2017)	Indiana	3,240
Pumpkins	AMRD (2013 - 2017)	Connecticut	1,360
Pumpkins	AMRD (2013 - 2017)	New York	5,120
Pumpkins	AMRD (2013 - 2017)	Tennessee	2,080
Pumpkins	AMRD (2013 - 2017)	Wisconsin	3,020
Pumpkins	AMRD (2013 - 2017)	Virginia	2,070
Pumpkins	AMRD (2013 - 2017)	Michigan	6,000
Pumpkins	AMRD (2013 - 2017)	Pennsylvania	5,850
Pumpkins	AMRD (2013 - 2017)	Massachusetts	2,030
Pumpkins	AMRD (2013 - 2017)	Washington	2,300
Pumpkins	AMRD (2013 - 2017)	*CO, MD, MN, NM, TX*	5,450
Squash	AMRD (2013 - 2017)	South Carolina	1,700
Squash	AMRD (2013 - 2017)	Ohio	1,800
Squash	AMRD (2013 - 2017)	California	5,850
Squash	AMRD (2013 - 2017)	Wisconsin	1,000
Squash	AMRD (2013 - 2017)	New York	4,550
Squash	AMRD (2013 - 2017)	Connecticut	840
Squash	AMRD (2013 - 2017)	Pennsylvania	900
Squash	AMRD (2013 - 2017)	New Jersey	3,200
Squash	AMRD (2013 - 2017)	Michigan	6,050
Squash	AMRD (2013 - 2017)	North Carolina	2,970
Squash	AMRD (2013 - 2017)	Massachusetts	1,660
Squash	AMRD (2013 - 2017)	*FL,GA,OR, TN, TX*	15,250
Watermelons	AMRD (2013 - 2017)	Texas	27,330
Watermelons	AMRD (2013 - 2017)	South Carolina	7,600
Watermelons	AMRD (2013 - 2017)	California	12,030
Watermelons	AMRD (2013 - 2017)	Oklahoma	4,850
Watermelons	AMRD (2013 - 2017)	Arizona	2,800
Watermelons	AMRD (2013 - 2017)	Alabama	3,330
Watermelons	AMRD (2013 - 2017)	Missouri	2,700
Watermelons	AMRD (2013 - 2017)	Mississippi	2,800

NR*	NR*	NR*	NR*
40	0	10	<5
520	0	60	10
760	0	100	20
580	0	100	30
8,560	30	50	40
NR*	NR*	NR*	NR*
100	0	<5	<1
120	0	20	<5
20	0	5	<1
300	0	40	10
90	0	10	<1
140	0	<5	<1
30	0	<5	<1
90	0	<5	<1
<5	0	<5	<1
620	0	10	10
100	0	30	10
140	0	20	10
90	0	30	10
490	0	20	10
2,030	0	30	20
560	0	70	10
40	0	10	<1
NR*	NR*	NR*	NR*
30	0	<5	<1
10	0	<5	<1
50	0	5	<5
30	0	20	<5
270	0	20	<5
130	0	40	10
130	0	20	10
1,670	0	20	10
1,070	0	50	20
3,190	0	80	50
680	0	90	20
NR*	NR*	NR*	NR*
50	0	<5	<1
60	0	<5	<5
100	0	<5	<1
180	0	10	<5
40	0	30	10
260	0	20	10
10	0	<5	<1
470	0	70	10

Watermelons	AMRD (2013 - 2017)	North Carolina	6,670
Watermelons	AMRD (2013 - 2017)	*FL, GA, IN, MD*	51,520
Other Cucurbits	**	**	**
Citrus (10)	***See Crops Below***	***See Crops Below***	***See Crops Below***
Grapefruit	AMRD (2013 - 2017)	Florida	42,930
Grapefruit	AMRD (2013 - 2017)	Texas	17,860
Lemons	CDPR (2012 - 2016*)	California	45,320
Lemons	AMRD (2013 - 2017)	*AZ, CA*	57,580
Oranges	AMRD (2013 - 2017)	California	180,640
Oranges	AMRD (2013 - 2017)	Florida	435,550
Tangerines	CADPR (2012 - 2016*)	California (80%)	59,990
Tangerines	**	Other states (20%)	**
Other Citrus	**	**	**
Pome Fruit (11)	***See Crops Below***	***See Crops Below***	***See Crops Below***
Apples	AMRD (2013 - 2017)	Virginia	20,710
Apples	AMRD (2013 - 2017)	New York	92,250
Apples	AMRD (2013 - 2017)	Washington	342,950
Apples	AMRD (2013 - 2017)	California	32,390
Apples	AMRD (2013 - 2017)	Michigan	80,410
Apples	AMRD (2013 - 2017)	Pennsylvania	39,370
Apples	AMRD (2013 - 2017)	Oregon	4,550
Apples	AMRD (2013 - 2017)	Ohio	4,790
Apples	AMRD (2013 - 2017)	West Virginia	1,300
Apples	AMRD (2013 - 2017)	North Carolina	3,660
Pears	AMRD (2013 - 2017)	California	12,660
Pears	AMRD (2013 - 2017)	Oregon	15,440
Pears	AMRD (2013 - 2017)	*WA*	22,910
Other Pome Fruit	**	**	**
Stone Fruit (12)	***See Crops Below***	***See Crops Below***	***See Crops Below***
Apricots	CADPR (2012 - 2016*)	California (84%)	9,420
Cherries	AMRD (2013 - 2017)	California	37,820
Cherries	AMRD (2013 - 2017)	Michigan	45,790
Cherries	AMRD (2013 - 2017)	Oregon	16,320
Cherries	AMRD (2013 - 2017)	Washington	42,120
Peaches	AMRD (2013 - 2017)	Georgia	12,870
Peaches	AMRD (2013 - 2017)	California	54,280
Peaches	AMRD (2013 - 2017)	New York	1,800
Peaches	AMRD (2013 - 2017)	Washington	2,710
Peaches	AMRD (2013 - 2017)	Pennsylvania	4,690
Peaches	AMRD (2013 - 2017)	Texas	4,720
Peaches	AMRD (2013 - 2017)	Michigan	3,520
Peaches	AMRD (2013 - 2017)	Colorado	3,320
Peaches	AMRD (2013 - 2017)	South Carolina	16,420
Peaches	AMRD (2013 - 2017)	Illinois	1,620
Peaches	AMRD (2013 - 2017)	Alabama	2,050
Peaches	AMRD (2013 - 2017)	*NJ*	5,150

4,010	0	60	40
NR*	NR*	NR*	NR*
**	**	**	**
See Crops Below	***See Crops Below***	***See Crops Below***	***See Crops Below***
1,500	0	<5	<1
8270	0	40	10
1,520	NR*	NR*	NR*
NR*	NR*	NR*	NR*
9,910	0	10	<5
34,840	0	10	<5
11,090	N/C	N/C	N/C
**	**	**	**
**	**	**	**
See Crops Below	***See Crops Below***	***See Crops Below***	***See Crops Below***
7,000	10	80	50
52,460	40	70	60
122,380	20	70	40
11,790	20	50	30
17,030	10	50	30
7,690	10	80	30
1,800	0	80	20
1,000	0	30	10
660	0	30	10
910	0	10	10
11,290	0	50	30
20	0	<5	<1
NR*	NR*	NR*	NR*
**	**	**	**
See Crops Below	***See Crops Below***	***See Crops Below***	***See Crops Below***
130	N/C	N/C	N/C
2,090	<1	<5	<5
2,180	0	10	<5
5,300	0	40	20
10,450	5	20	10
300	0	<5	<1
320	0	<5	<1
40	0	<5	<1
80	0	10	<5
300	0	10	<5
930	0	20	10
890	0	20	10
1,080	0	50	10
190	0	<5	<1
830	0	90	30
260	0	5	<1
NR*	NR*	NR*	NR*

Nectarines	CADPR (2012 - 2016*)	California (87%)	23,310
Plums	CADPR (2012 - 2016*)	California (94%)	23,570
Prunes	CADPR (2012 - 2016*)	California (94%)	54,480
Other Stone Fruit	**	**	**
Berry and Small Fruit	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
Berries (13-07A and 13-07B)	*See Crops Below*	*See Crops Below*	*See Crops Below*
Blueberries	NASS (2011, 2015)	Michigan	#VALUE!
Blueberries	NASS (2011, 2015)	New Jersey	#VALUE!
Blueberries	NASS (2011, 2015)	*AL, AR, CA, FL, GA, IN, ME, NY, NC, OR, WA*	138,370
Caneberries	AMRD (2013 - 2017)	California	7,710
Caneberries	AMRD (2013 - 2017)	Oregon	12,330
Caneberries	AMRD (2013 - 2017)	*WA*	6,950
Cranberry	**	**	**
Grapes	*See Crops Below*	*See Crops Below*	*See Crops Below*
Grapes, Table/Raisin	CADPR (2012 - 2016*)	California (83%)	300,340
Grapes, Wine	AMRD (2013 - 2017)	California	608,780
Grapes, Wine	AMRD (2013 - 2017)	New York	39,130
Grapes, Wine	AMRD (2013 - 2017)	*WA*	45,760
Grapes, Wine	CADPR (2012 - 2016*)	California (83%)	571,550
Strawberries	AMRD (2013 - 2017)	California	40,000
Strawberries	AMRD (2013 - 2017)	Pennsylvania	920
Strawberries	AMRD (2013 - 2017)	New York	1,400
Strawberries	AMRD (2013 - 2017)	Michigan	800
Strawberries	AMRD (2013 - 2017)	Oregon	2,060
Strawberries	AMRD (2013 - 2017)	*FL, WA*	11,100
Tree Nuts (14)	***See Crops Below***	***See Crops Below***	***See Crops Below***
Almonds	CADPR (2012 - 2016*)	California (100%)	1,039,110
Pecans	AMRD (2013 - 2017)	New Mexico	39,240
Pecans	AMRD (2013 - 2017)	Oklahoma	113,640
Pecans	AMRD (2013 - 2017)	Georgia	121,570
Pecans	AMRD (2013 - 2017)	Texas	166,890
Pecans	AMRD (2013 - 2017)	*AL, AZ, LA*	19,410
Pistachios	CADPR (2012 - 2016*)	California (98%)	256,060
Walnuts	CADPR (2012 - 2016*)	California (99%)	351,740
Hazelnuts	AMRD (2013 - 2017)	*OR*	38,280
Other Tree Nuts	**	**	**
Cereal Grains	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
Corn (Sweet)	AMRD (2013 - 2017)	Minnesota	120,250
Corn (Sweet)	AMRD (2013 - 2017)	New York	26,200
Corn (Sweet)	AMRD (2013 - 2017)	Wisconsin	68,600
Corn (Sweet)	AMRD (2013 - 2017)	Florida	37,600

30	N/C	N/C	N/C
110	N/C	N/C	N/C
660	N/C	N/C	N/C
**	**	**	**
Full Crop Group Not Reg. See Crops Below	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
See Crops Below	*See Crops Below*	*See Crops Below*	*See Crops Below*
1,140	0	10	<5
320	0	<5	<1
NR*	NR*	NR*	NR*
260	0	<5	<1
90	0	5	<1
NR*	NR*	NR*	NR*
**	**	**	**
See Crops Below	*See Crops Below*	*See Crops Below*	*See Crops Below*
20	N/C	N/C	N/C
720	0	<5	<1
5,080	0	20	10
NR*	NR*	NR*	NR*
260	N/C	N/C	N/C
30	0	<1	<1
30	0	10	<5
30	0	10	<5
10	0	10	<5
260	0	20	10
NR*	NR*	NR*	NR*
See Crops Below	***See Crops Below***	***See Crops Below***	***See Crops Below***
1,130	NR*	NR*	NR*
3,200	0	10	<5
8,210	0	<5	<5
35,350	<5	10	10
34,970	<5	10	0
NR*	NR*	NR*	NR*
10,030	NR*	NR*	NR*
250	NR*	NR*	NR*
NR*	NR*	NR*	NR*
**	**	**	**
Full Crop Group Not Reg. See Crops Below	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
190	0	<1	<1
60	0	<1	<1
110	0	<1	<1
110	0	<5	<1

Corn (Sweet)	AMRD (2013 - 2017)	Illinois	17,240
Corn (Sweet)	AMRD (2013 - 2017)	Ohio	15,320
Corn (Sweet)	AMRD (2013 - 2017)	New Jersey	7,950
Corn (Sweet)	AMRD (2013 - 2017)	Michigan	9,800
Corn (Sweet)	AMRD (2013 - 2017)	*CA, GA, OR, PA, WA*	180,460
Corn (Pop)	**	**	**
Corn (Field)	AMRD (2013 - 2017)	North Carolina	860,000
Corn (Field)	AMRD (2013 - 2017)	Iowa	13,999,990
Corn (Field)	AMRD (2013 - 2017)	Kentucky	1,349,990
Corn (Field)	AMRD (2013 - 2017)	Ohio	3,550,000
Corn (Field)	AMRD (2013 - 2017)	California	580,000
Corn (Field)	AMRD (2013 - 2017)	*AL, AK, CO, DE, GA, ID, IL, IN, KS, LA, MD, MI, MN MS, MO, NE, NM, NY, ND, OK, PA, SC, SD, TN, TX, VA, WA, WI, WY*	71,543,000
Sorghum	AMRD (2013 - 2017)	Texas	3,100,000
Sorghum	AMRD (2013 - 2017)	*AK, CO, GA, IL, KS, LA, MO, NE, NM, OK, SD,*	4,762,590
Rice	AMRD (2013 - 2017)	California	490,000
Rice	AMRD (2013 - 2017)	Louisiana	425,300
Rice	AMRD (2013 - 2017)	Mississippi	180,400
Rice	AMRD (2013 - 2017)	*AK, MO, TX*	1,757,730
Grass Forage, Fodder, And Hay Group / 18. Nongrass Animal Feeds (Forage, Fodder, Straw and Hay)	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
Alfalfa	AMRD (2013 - 2017)	Ohio	355,000
Alfalfa	AMRD (2013 - 2017)	Pennsylvania	360,000
Alfalfa	AMRD (2013 - 2017)	Wisconsin	1,299,990
Alfalfa	AMRD (2013 - 2017)	Arizona	270,000
Alfalfa	AMRD (2013 - 2017)	Nevada	240,000
Alfalfa	AMRD (2013 - 2017)	Missouri	290,000
Alfalfa	AMRD (2013 - 2017)	Iowa	760,000
Alfalfa	AMRD (2013 - 2017)	*CA, CO, ID, IL, IN, KS, KY, MI, MN, NE, ND,NM, NY, OK, OR, SD, TX, UT, VA, WA,WY*	14,266,000
Pastures/Rangeland	**	**	**
Other Forage Crops: Birdsfoot Trefoil, Clover, Forage Grasses Grown for Hay and/or Seed	**	**	**
Oilseed Group	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
Sunflower	AMRD (2013 - 2017)	South Dakota	680,000
Sunflower	AMRD (2013 - 2017)	Texas	115,000

520	0	10	<5
5,850	0	50	20
250	0	30	10
480	0	10	0
NR*	NR*	NR*	NR*
**	**	**	**
460	0	<1	<1
8,280	0	<1	<1
550	0	<1	<1
2,140	0	<1	<1
450	0	<5	<1
NR*	NR*	NR*	NR*
100	0	<1	<1
NR*	NR*	NR*	NR*
2,060	0	<5	<1
360	0	<1	<1
19,460	0	40	10
NR*	NR*	NR*	NR*
Full Crop Group Not Reg. See Crops Below	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
2,230	0	<5	<1
100	0	<1	<1
6,760	0	<5	<1
160	0	<5	<1
210	0	<5	<1
830	0	<5	<1
2,050	0	<5	<1
NR*	NR*	NR*	NR*
**	**	**	**
**	**	**	**
Full Crop Group Not Reg. See Crops Below	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
1,620	0	<5	<1
90	0	<1	<1

Sunflower	AMRD (2013 - 2017)	*CO, KS, MN, NE, ND*	855,300
Flax	**	**	**
Stalk, Stem and Leaf Petiole Vegetable Group	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
Asparagus	AMRD (2013 - 2017)	California	10,320
Asparagus	AMRD (2013 - 2017)	Michigan	10,120
Asparagus	AMRD (2013 - 2017)	Washington	4,160
Prickly Pear Cactus Pads	CADPR (2012 - 2016*)	California	NR*
Tropical and Subtropical Fruit, Edible Peel Group	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
Olive	CADPR (2012 - 2016*)	California (97%)	43,010
Misc.	***See Crops Below***	***See Crops Below***	***See Crops Below***
Peanuts	AMRD (2013 - 2017)	Alabama	183,330
Peanuts	AMRD (2013 - 2017)	Florida	158,330
Peanuts	AMRD (2013 - 2017)	North Carolina	89,990
Peanuts	AMRD (2013 - 2017)	*GA, OK, SC, TX, VA*	1,016,590
Tobacco	AMRD (2013 - 2017)	North Carolina	179,070
Tobacco	AMRD (2013 - 2017)	Ohio	1,900
Tobacco	AMRD (2013 - 2017)	Tennessee	22,890
Tobacco	AMRD (2013 - 2017)	*GA, KY, PA, SC, VA*	145,150
Shrimp Ponds, Commercial	**	**	**

	Notes
AMRD (YEAR-YEAR)	Agricultural usage surveyed by market research firm(s). Values rounded.
NASS (YEAR)	Surveyed by United States Department of Agriculture National Agricultural Statistics Servic
Cal DPR (YEAR)	Surveyed by the California Department of Pesticide Regulation. Over than 80% of crop grow
a	The PCTs displayed in this document may differ from those displayed in the SLUA and other
b	The pounds AI displayed in this document may differ from those displayed in the SLUA and c
NR*	Surveyed by the indicated source in the years listed, but no usage reported.
**	Site not surveyed at national level
†	CAG represents the total number of acres that are grown of the crop in each state. It is indepe

NR*	NR*	NR*	NR*
**	**	**	**
Full Crop Group Not Reg. See Crops Below	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
590	<1	10	<5
23,360	80	100	90
610	0	20	10
NR*	NR*	NR*	NR*
Full Crop Group Not Reg. See Crops Below	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***	***Full Crop Group Not Reg. See Crops Below***
7,760	N/C	N/C	N/C
See Crops Below	***See Crops Below***	***See Crops Below***	***See Crops Below***
2,610	0	5	<5
510	0	<5	<1
90	0	<5	<1
NR*	NR*	NR*	NR*
510	0	<5	<1
110	0	30	10
740	0	10	<5
NR*	NR*	NR*	NR*
**	**	**	**

;. Values rounded.
n in California. Values rounded.
BEAD documents, because different calculation methods were used.
other BEAD documents, because different calculation methods were used.
ndent of treatment with any pesticide

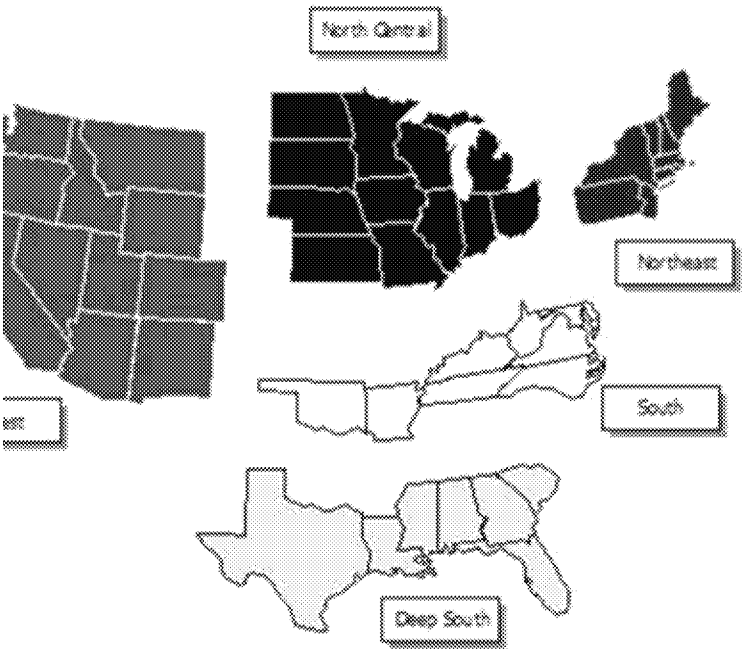
Table 3. National Carbaryl Non-Agricultural Usage by Use Site. Data Averaged Over Reported Years.

Use Site	Data Source	Region
Household/Domestic Dwellings Outdoor Premises	NMRD (2016)	--
External Pest Treatments Applied by Pest Management Professionals	NMRD (2016)	--
Ornamentals (Unspecified): *Covers Trees and Plants, Woody Shrubs and Vines grown in Nurseries*	NMRD (2013)	All
Ornamentals (Unspecified): *Covers Trees and Plants, Woody Shrubs and Vines grown in Nurseries*	NMRD (2013)	Northeast
Ornamentals (Unspecified): *Covers Trees and Plants, Woody Shrubs and Vines grown in Nurseries*	NMRD (2013)	North Central
Ornamentals (Unspecified): *Covers Trees and Plants, Woody Shrubs and Vines grown in Nurseries*	NMRD (2013)	South
Ornamentals (Unspecified): *Covers Trees and Plants, Woody Shrubs and Vines grown in Nurseries*	NMRD (2013)	Deep South
Ornamentals (Unspecified): *Covers Trees and Plants, Woody Shrubs and Vines grown in Nurseries*	NMRD (2013)	West
Ornamental Lawns & Turf	***See Sector usage below***	***See Sector usage below***
Applied by Lawn Care Operators	NMRD (2013)	All
Applied by Lawn Care Operators	NMRD (2013)	Northeast
Applied by Lawn Care Operators	NMRD (2013)	North Central
Applied by Lawn Care Operators	NMRD (2013)	South
Applied by Lawn Care Operators	NMRD (2013)	Deep South
Applied by Lawn Care Operators	NMRD (2013)	West
Applied by Landscape Contractors	NMRD (2013)	All
Applied by Landscape Contractors	NMRD (2013)	Northeast
Applied by Landscape Contractors	NMRD (2013)	North Central

ly

Avg. Annual Pounds AI Applied[a]	Avg. Annual Total Acres Treated[b]	Max Single Labeled Rate lb/ac
1,300,000	--	9.0
23,880	--	9.0
49,600	24,800	2.0
17,850	8,920	2.0
1,450	720	2.0
27,830	13,910	2.0
1,210	610	2.0
1,270	630	2.0
See Sector usage below	***See Sector usage below***	***See Sector usage below***
112,720	43,150	8.36
<5	0	8.36
105,730	37,910	8.36
6,790	3,300	8.36
60	240	8.36
130	1,710	8.36
710	470	8.36
60	30	8.36
210	140	8.36

Regions


North Central
Northeast
South
Deep South

Applied by Landscape Contractors	NMRD (2013)	South
Applied by Landscape Contractors	NMRD (2013)	Deep South
Applied by Landscape Contractors	NMRD (2013)	West
In Institutional Turf Facilities	NMRD (2013)	All
In Institutional Turf Facilities	NMRD (2013)	Northeast
In Institutional Turf Facilities	NMRD (2013)	North Central
In Institutional Turf Facilities	NMRD (2013)	South
In Institutional Turf Facilities	NMRD (2013)	Deep South
In Institutional Turf Facilities	NMRD (2013)	West
Golf Courses	NMRD (2013)	All
Golf Courses	NMRD (2013)	Northeast
Golf Courses	NMRD (2013)	North Central
Golf Courses	NMRD (2013)	South
Golf Courses	NMRD (2013)	Deep South
Golf Courses	NMRD (2013)	West
Ornamental Sod Farm (Turf)	NMRD (2013)	All
Ornamental Sod Farm (Turf)	NMRD (2013)	Northeast
Ornamental Sod Farm (Turf)	NMRD (2013)	North Central
Ornamental Sod Farm (Turf)	NMRD (2013)	South
Ornamental Sod Farm (Turf)	NMRD (2013)	Deep South
Ornamental Sod Farm (Turf)	NMRD (2013)	West
Forest Trees (All or Unspecified), *Covers Forested Areas and Rangeland Trees*	See NFS Table**	See NFS Table**
Non-Cropland Uses	***See Sector usage below***	***See Sector usage below***
Rangeland/Pasture	See APHIS Table **	West

--	--	8.36
440	310	8.36
<1	<1	8.36
31,420	15,690	8.36
--	--	8.36
3,400	1,700	8.36
6,850	3,410	8.36
21,170	10,580	8.36
--	--	8.36
130,810	73,610	8.0
42,060	25,260	8.0
4,230	2,090	8.0
10,740	6,370	8.0
61,110	30,360	8.0
12,670	9,530	8.0
1,350	680	8.16
--	--	8.16
--	--	8.16
1,350	680	8.16
--	--	8.16
--	--	8.16
See NFS Table**	See NFS Table**	2.0
See Sector usage below	***See Sector usage below***	***See Sector usage below***
See APHIS Table **	See APHIS Table **	1.02

Pasture/Rangeland (herbicide users = highly managed)	NMRD (2016)	South *(87% of total insecticide sales)* , North Central *(13% of total insecticide sales)* West (3% total insecticide sales)***
Roadways	NMRD (2016)	All
Railways	NMRD (2016)	Insecticide usage is so low that NMRD does not survey
Electrical ROWs	NMRD (2016)	Insecticide usage is so low that NMRD does not survey
Other Non-Cropland Uses: *Covers Conservation Reserve Program (CRP), Set Aside Program Acreage, Wasteland, Hedgerows, Ditch banks.*	Not Surveyed at National Level**	Not Surveyed at National Level**

Notes	
AMRD (YEAR-YEAR)	Surveyed by MRD Data, and Year(s) of data included
NASS (YEAR)	Surveyed by NASS, and Year(s) of data included
CDPR (YEAR)	Surveyed by CDPR and Year(s) of data included Percent of crop grown in California included under state
(S)	Insufficient number of reports to establish an estimate. This indicates that the chemical is only periodically used by a small number of users.
†	CAG represents the total number of acres that are grown of the crop in each state. It is independent of treatment with any pesticide

300	--	1.02
290	--	1.02
Insecticide usage is so low that NMRD does not survey	Insecticide usage is so low that NMRD does not survey	1.02
Insecticide usage is so low that NMRD does not survey	Insecticide usage is so low that NMRD does not survey	1.02
Not Surveyed at National Level**	Not Surveyed at National Level**	1.02

the other map?

Table 4. National Carbaryl Non-Agricultural Usage by Government Agencies. Data Averaged Over Report

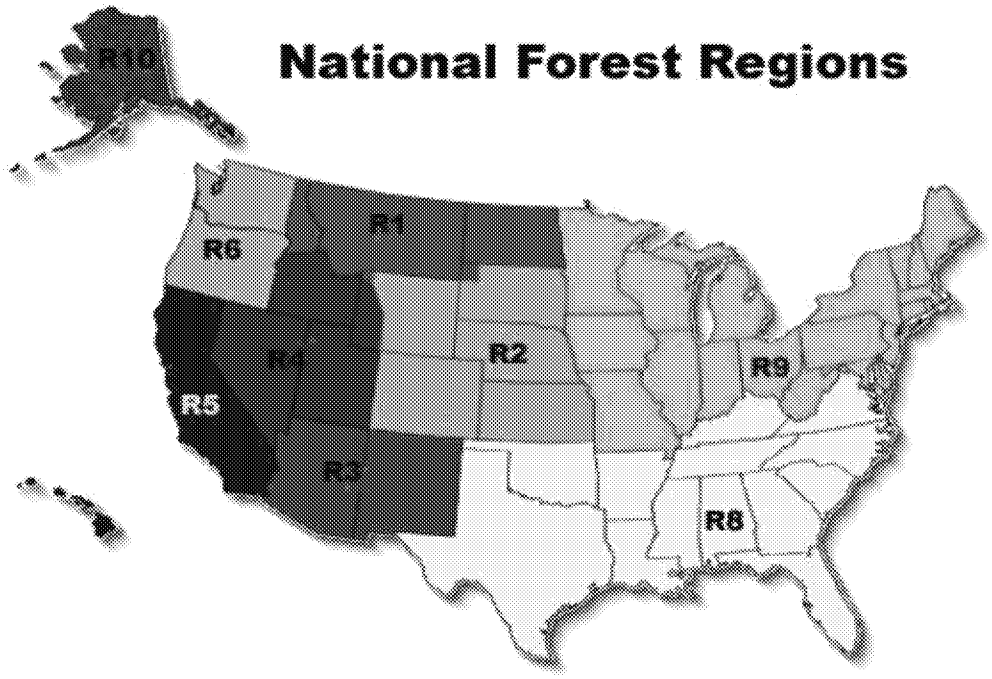
Crop	Data Source	Region*	Avg. Annual Acres of Use Site†	Min. Annual PCT	Max. Annual PCT	Avg. Annual PCT
Forests	NFS (2014-2018)	Region 1	25,603,205	0	<1	<1
Forests	NFS (2014-2018)	Region 2	22,108,996	<1	<1	<1
Forests	NFS (2014-2018)	Region 3	20,800,950	0	<1	<1
Forests	NFS (2014-2018)	Region 4	31,965,771	<1	<1	<1
Forests	NFS (2014-2018)	Region 5	20,220,780	0	<1	<1
Forests	NFS (2014-2018)	Region 6	24,778,672	**	**	**
Forests	NFS (2014-2018)	Region 8	13,358,768	**	**	**
Forests	NFS (2014-2018)	Region 9	12,127,385	**	**	**
Forests	NFS (2014-2018)	Region 10	21,956,783	**	**	**

Crop	Data Source	State	Avg. Annual Acres of Use Site†	Min. Annual PCT	Max. Annual PCT	Avg. Annual PCT
Rangeland and Pasture	APHIS (2014-2018)	Arizona	72,959,453	<1	<1	<1
Rangeland and Pasture	APHIS (2014-2018)	Idaho	53,484,027	<1	<1	<1
Rangeland and Pasture	APHIS (2014-2018)	Montana	94,105,246	0	<1	<1
Rangeland and Pasture	APHIS (2014-2018)	Nevada	70,759,076	0	<1	<1
Rangeland and Pasture	APHIS (2014-2018)	Utah	54,334,648	0	<1	<1
Rangeland and Pasture	APHIS (2014-2018)	Washington	43,271,440	<1	<1	<1
Rangeland and Pasture	APHIS (2014-2018)	California	101,215,530	*	*	*
Rangeland and Pasture	APHIS (2014-2018)	Colorado	66,619,994	*	*	*
Rangeland and Pasture	APHIS (2014-2018)	Kansas	52,657,900	*	*	*
Rangeland and Pasture	APHIS (2014-2018)	Nebraska	49,505,612	*	*	*
Rangeland and Pasture	APHIS (2014-2018)	New Mexico	77,817,733	*	*	*
Rangeland and Pasture	APHIS (2014-2018)	North Dakota	45,246,841	*	*	*
Rangeland and Pasture	APHIS (2014-2018)	Oklahoma	44,736,166	*	*	*
Rangeland and Pasture	APHIS (2014-2018)	Oregon	62,127,131	*	*	*
Rangeland and Pasture	APHIS (2014-2018)	South Dakota	49,353,639	*	*	*
Rangeland and Pasture	APHIS (2014-2018)	Texas	169,202,357	*	*	*
Rangeland and Pasture	APHIS (2014-2018)	Wyoming	62,600,122	*	*	*

* no APHIS treatments or APHIS funding. Likely treatments made by states using APHIS data, but at rates

Crop	Data Source	Usage
Carbaryl for Tick Control on the Border	Texas Animal Health Commission (2014-2018)	not used

ted Years.



Note: there is no NFS region 7.

Carbaryl for Tick Control on the Border	USDA/APHIS/ Veterinary Services (2014-2018)	not used

Message

From: Garber, Kristina [Garber.Kristina@epa.gov]
Sent: 3/20/2019 2:45:43 PM
To: Sims, Diann [Sims.Diann@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]
Subject: RE: BEAD Methods Mark Up
Attachments: usage_method_3-20-19.docx

Hello all,

Thank you for your comments. Attached is the updated portion of the ESA method doc that focuses on usage data (for step 2). In some cases, where your comments suggested alternative PCT approaches (e.g., residential, nurseries), I made the text more general so that the document does not commit to a specific approach. We can discuss approaches for refining the residential and nursery landcovers in a future meeting.

Thanks,
Kris

From: Sims, Diann
Sent: Thursday, March 14, 2019 4:35 PM
To: Garber, Kristina <Garber.Kristina@epa.gov>
Cc: Suarez, Mark <Suarez.Mark@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>
Subject: BEAD Methods Mark Up

Kris,

BEAD's comments at this link. Share the download at will.

https://usepa.sharepoint.com/:w:/r/sites/OCSPP/OPP/BEAD/Collaborate/Shared%20Documents/ESA/step2_usage_method_3-8-19%20BEAD%20Comments.docx?d=waca3c91ea58e480abcbe94aff7bef18d&csf=1&e=Ump5uW

Diann Sims, Chief

Science Information Analysis Branch

OCSPP/Office of Pesticide Programs

Phone: (703)308-8129

sims.diann@epa.gov

Message

From: Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]
Sent: 6/14/2018 1:33:38 PM
To: Suarez, Mark [Suarez.Mark@epa.gov]; Sims, Diann [Sims.Diann@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]
Subject: RE: CADPR PCT Discussion Follow Up
Attachments: ULUT Data Source Summary-crosswalk (draft for review).xlsx

Mark,

You can use the Ag crops tab of this draft crosswalk to help identify which crops only show up in the PUR data. Those are what I'd check for in the two CA acres harvested files. It should at least give you a set of crops we could have data on to start from ☺

Claire

From: Suarez, Mark
Sent: Thursday, June 14, 2018 8:56 AM
To: Sims, Diann <Sims.Diann@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Subject: RE: CADPR PCT Discussion Follow Up

I'll have an analysis of the NASS vs CA Ag Commissioners' data to everyone by tomorrow.
I think that we can have the CA PCT calculation worked out by late next week.
From the discussion yesterday, I think that we are leaning toward the Ag Commissioner's Report, unless the very few crops are missing from the NASS data, we see large discrepancies between the Ag Comm. Data and NASS and Kynetec, which suggest Ag Comm. data reliability issues .

Regards,
Mark

Mark Suarez
Entomologist
Science Information and Analysis Branch
Biological and Economic Analysis Division
US EPA (Mail Code 7503P)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

phone: 703-305-0120

From: Sims, Diann
Sent: Thursday, June 14, 2018 8:38 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Subject: CADPR PCT Discussion Follow Up

Good Morning All,

There will be an ESA team meeting on Tuesday the 26th. (Claire will be sitting in the sun....)
The FWS will share their work to date on the catalogue.

Will we be ready to share our preferred method for calculating the PCT? I didn't commit to a time slot/agenda item, but it would be great if we could. Let me know.

Thanks

Message

From: Suarez, Mark [Suarez.Mark@epa.gov]
Sent: 3/12/2019 1:49:55 PM
To: Becker, Jonathan [Becker.Jonathan@epa.gov]; Sims, Diann [Sims.Diann@epa.gov]
Subject: RE: PCT forecast RTC

Jonathan,

Ex. 5 Deliberative Process (DP)

-----Original Message-----
From: Becker, Jonathan
Sent: Monday, March 11, 2019 3:27 PM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>
Subject: RE: PCT forecast RTC

Hi Mark,

Thanks for the spreadsheet.

Ex. 5 Deliberative Process (DP)

Jonathan

-----Original Message-----
From: Suarez, Mark
Sent: Monday, March 11, 2019 3:01 PM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>
Subject: RE: PCT forecast RTC

Jonathan,

Thank you. I'll take a look.

Ex. 5 Deliberative Process (DP)

Regards,
Mark

-----Original Message-----
From: Becker, Jonathan
Sent: Monday, March 11, 2019 1:50 PM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>
Subject: FW: PCT forecast RTC

HI,

Ex. 5 Deliberative Process (DP)

Jonathan

-----Original Message-----
From: Becker, Jonathan
Sent: Friday, March 08, 2019 9:14 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>
Subject: RE: PCT forecast RTC

Hi Mark,

Ex. 5 Deliberative Process (DP)

Jonathan

-----Original Message-----
From: Suarez, Mark
Sent: Thursday, March 07, 2019 6:03 PM
To: Sims, Diann <Sims.Diann@epa.gov>
Cc: Becker, Jonathan <Becker.Jonathan@epa.gov>
Subject: PCT forecast RTC

Diann,

Ex. 5 Deliberative Process (DP)

Mark

Sent from my iPhone

Message

From: English, LisaRenee [English.LisaRenee@epa.gov]
Sent: 11/20/2018 9:16:47 PM
To: Becker, Jonathan [Becker.Jonathan@epa.gov]; Hanson, Charmaine [Hanson.Charmaine@epa.gov]; Wyatt, TJ [Wyatt.Tj@epa.gov]; Chism, William [Chism.Bill@epa.gov]
Subject: RE: Please review the BAb weekly write-up for clomazone ID.

Thanks Jonathan.

From: Becker, Jonathan
Sent: Tuesday, November 20, 2018 3:59 PM
To: English, LisaRenee <English.LisaRenee@epa.gov>; Hanson, Charmaine <Hanson.Charmaine@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Chism, William <Chism.Bill@epa.gov>
Subject: RE: Please review the BAb weekly write-up for clomazone ID.

I don't need to be an author of the weekly. Suggest removing reference to prometryn.

From: English, LisaRenee
Sent: Tuesday, November 20, 2018 3:46 PM
To: Hanson, Charmaine <Hanson.Charmaine@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>
Subject: Please review the BAb weekly write-up for clomazone ID.

Hello all. Please review this weekly and make changes as you see fit.

BEAD Team Reviews the Interim Decision for Clomazone. Clomazone is a broad-spectrum herbicide, with a unique mode of action (Group 15), that is active on both grasses and broadleaf weeds. The top crops in terms of percent crop treated (PCT) are cucumbers, pumpkins, squash, rice, and tobacco. OPP determined that all potential human health risks were below the Agency's level of concern and that ecological risks to non-target terrestrial plants be mitigated through spray drift reduction label language. A final decision on the prometryn registration review case will occur after: (1) an EDSP FFDCA determination, (2) an endangered species determination under the ESA, and (3) an assessment of nontarget exposure to pollinators. (LisaRenee English 703-308-9331, Charmaine Hanson, TJ Wyatt, William Chism, Jonathan Becker)

Thanks.
LisaRenee

LisaRenee English, Ph.D., Biologist
Biological and Economic Analysis Division (BEAD)
Office of Pesticide Programs (OPP)
Office of Chemical Safety and Pollution Prevention (OCSPP)
(Phone) 703-308-9331

Message

From: Kiely, Timothy [Kiely.Timothy@epa.gov]
Sent: 9/11/2019 1:20:01 PM
To: Wyatt, TJ [Wyatt.Tj@epa.gov]; Berwald, Derek [Berwald.Derek@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Chism, William [Chism.Bill@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Cook, Colwell [cook.colwell@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Jarboe, Stephen [Jarboe.Steve@epa.gov]; Gelso, Brett [gelso.brett@epa.gov]; Zinn, Nicole [Zinn.Nicole@epa.gov]; Tindall, Kelly [tindall.kelly@epa.gov]; Waterworth, Rebeccah [Waterworth.Rebeccah@epa.gov]; Hansel, Jeana [Hansel.Jeana@epa.gov]; Hendrick, Lindsey [hendrick.lindsey@epa.gov]; Anderson, Neil [Anderson.Neil@epa.gov]; English, LisaRenee [English.LisaRenee@epa.gov]
CC: Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]
Subject: draft Notes to BEAD registration review coordination meeting 9/10/19

Good morning. Please reply to all with comments. Thank you.

Tim

Notes from BEAD Registration Review Coordination Meeting – Tuesday, September 10, 2019

Attendees: Tim, Brett, Bill, Colwell, Monisha, Derek, Jonathan, Nicole

1. External peer review proposal for PWC scenarios and PCA PCT (Jonathan, Claire)
    a. The workgroup spent a fair amount of time discussing this project and related projects (ESA and pesticide usage data)
    b. Claire described how pesticide usage is proposed to be used in ESA determinations
        i. The proposed approach was published for public comment
        ii. The comment period recently closed, and the team is reviewing the comments
    c. The external peer review work statement was discussed
        i. EFED asked BEAD (BAB) to review the work statement
        ii. BAB was asked to review the project 1 work statement – improved method for developing field scenarios for DWAs
        iii. It is not clear whether or not BEAD (ULUT?) was asked to review project 2 work statement – using PCA and PCT in DWA
        iv. Comments on the work statement are due Thursday (9/11)
        v. The work statement refers to draft supporting documents for project 1 and project 2 that the external peer reviewers are to review, but it does not appear that either document has been drafted
            1. It is difficult to provide comments on the work statement without first having reviewed the two draft supporting documents
            2. BAB/ULUT will ask EFED to review the draft supporting documents for each project – Claire mentioned that she and Mark on a workgroup to develop the project 2 draft supporting document
    d. BEAD tasks
        i. Provide comment to EFED on draft work statement (Jonathan/Bill, due date: 9/11/19)
        ii. Provide update to BEAD reg review coordination workgroup on usage data/ESA public comment response (Claire/Mark, due date: TBD)
        iii. Provide update to BEAD reg review coordination workgroup on draft supporting documents referred to in the work statement for the external peer review for PWC scenarios and PCA PCT DWA projects (Mark/Monisha, due date: ongoing)
2. Spray drift windspeeds in reevaluation decisions (Jonathan, LisaRenee)

a. The workgroup discussed the PRD spray drift wind speed flowchart
b. The flowchart appears to have been completed in 2018 – no one from BEAD remembered having seen the chart until recently
c. The workgroup noted that there have been instances where BEAD has been unaware of proposed mitigation until very late in the decision-making process and not until after a PID has been published (i.e., mitigation added to PID after team review)
d. Nicole noted that the flow chart was developed based on input from other OPP divisions and stakeholders (NAAA and USDA) and is meant to be guidance for the CRMs as they work with the OPP teams on the mitigation proposal for a chemical
e. The workgroup stated that the requirement for wind speeds for groundboom seems to be a relatively new requirement, but Nicole stated that this has been included as part of spray drift mitigation for 1-1-1 ½ years – is it possible to check PRD's decision capture database to identify the chemicals with the groundboom wind speed mitigation?
f. BEAD tasks
    i. Provide PRD comments on wind speed flowchart (BEAD workgroup, due date: 10/11/19)
    ii. Discuss wind speed requirements with PRD (BEAD TLs/SSs and PRD TLs) (Brett/Colwell/Nicole, due date: after 10/11/19)

3. Next steps for aldicarb PRIA action (Jonathan, Rebeccah, Jeana)
    a. The registrant for aldicarb is requesting a new use on citrus
    b. The PRIA date is July 2020
    c. Aldicarb was previously registered on citrus but that use was voluntarily cancelled by the previous registrant due to HH risks of concern
    d. RD met with the OPP team last week to discuss the new use and next steps
    e. Many BEAD tasks were discussed during the meeting with RD
    f. BEAD tasks
        i. Schedule BEAD team meeting (invite Jonathan, Rebeccah, Jeana, Monisha, Dexter, Brett, Tim, Mark, Lindsey) (Jonathan, due date: ASAP)
        ii. Project PCT for citrus in FL and TX (Jonathan/Rebeccah/Jeana/Lindsey, due date: TBD)
        iii. Review new label for target pest and timing of application (Jonathan/Rebeccah/Jeana, due date: TBD)
        iv. FL and TX production statistics including production counties (Dexter, due date: TBD)

Message

From: Chism, William [Chism.Bill@epa.gov]
Sent: 9/10/2019 9:04:41 PM
To: Tindall, Kelly [tindall.kelly@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Kiely, Timothy [Kiely.Timothy@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]
Subject: RE: Need your help developing initial crop-related inputs for field scenarios
Attachments: 2019-08-28 DRAFT Combined External Peer Review Proposal for PWC Scenarios and PCA PCT bc.docx

Some potential edits to peer review proposal.
Bill

Bill Chism
Senior Biologist
Biological and Economic Analysis Division
U.S. EPA/Office of Pesticide Programs
(703) 308-8136
chism.bill@epa.gov

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Wednesday, September 04, 2019 9:19 AM
To: Tindall, Kelly <tindall.kelly@epa.gov>; Chism, William <Chism.Bill@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Lee

From: Kyle, Lee
Sent: Thursday, August 29, 2019 4:05 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>; Matuszko, Jan <Matuszko.Jan@epa.gov>
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

I've attached our draft proposal for contract peer review for the scenarios project and the PCA/PCT project. We sent it to contracts yesterday, but we have some time before we need to finalize it.

Please take a look at the charge questions for each project to make sure we're in agreement. The Scenarios questions are very similar to the questions we worked on with you last year. They start on page 12.

Thanks. I hope you had a wonderful vacation!

Lee

From: Kyle, Lee
Sent: Thursday, August 22, 2019 1:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha and Jonathan,

- Attached is the crop matrix spreadsheet I mentioned
- Jonathan, please review the curve number table (Table 1) in the Input Parameters document. We developed the groupings based largely on curve number
- You've both been invited to the DD briefing on the 4th. I'll ask them about finding another day since you'll be out next week
- I'll talk to Jan about inviting you to the USDA briefing on the 17th

Jonathan, as you suggested we will ask USDA if the groupings are sufficient for the purposes of the modeling effort, in addition to asking them to enter the planting dates.

Thanks!

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:33 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

Kimberly just informed me you'll be out all next week. If it's okay with you, Nelson and I can work with your staff/Jonathan on much of this next week.

I scheduled a quick check in with you tomorrow at noon.

Best,

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

The PWC scenarios project you helped us with last year is one of three drinking water projects that OPP needs to complete in time to be used in next year's chlorpyrifos risk assessment.

We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general groups can be made in

future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

Marietta and Kimberly have tasked us with presenting our initial inputs to them on September 4th. This will help us prepare for a meeting we've got scheduled with USDA on the 17th. I wanted to give you a heads up on this, and can follow up with details next week.

Lee

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, August 20, 2019 3:51 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/20

Drinking Water Projects Meeting Notes – Action items
August 20, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson, Lee

Contractor Peer Review

- Jan talked to Brian Katz, confirmed that we will use a single vehicle. They are ready to go, just waiting on us.
- Performance Work Statement for PCT/PCA was reviewed by Josh, Bill, Nelson, Lee, Claire (?)
    - Mark will clean up (address Nelson's comments) and send to Anna tomorrow for review by noon on Friday (gave Anna a heads up already).
    - Marietta can review it on Friday afternoon and then Lee can send to LaTangila.
    - Mark or Lee will combine the PCA/PCT and Scenarios documents before sending to Marietta.

Scenarios

- Nelson sent Input Parameters document to Jan on Friday.
    - Jan will review by the first week in September (Nelson is at ACS next week)
- Methods document – still on schedule
    - Demo of batch runs to PFTTT on Wednesday
- Scenario grouping for chlorpyrifos
    - Nelson and Dirk are going to focus on uses/management factors that result in different pest management approaches
- Jan scheduled an EFED/BEAD DD briefing for 9/4
- Lee and Nelson will send something to Monisha this week to prepare her for the briefing

PCA/PCT

- Have been focusing on the contract document
- Will share the white paper outline by the end of next week for early feedback

Ex. 5 Deliberative Process (DP)

Monitoring

- Team met with Anna this morning to work on refining the questions
    - Adding a question on the case study challenges
    - Removing redundancies
- White paper, case studies, framework, and SOP to OSCP for the docket next week.
    - Marietta wants to see a draft of the questions before signing the transmittal memo.
- Next week will work on finalizing the questions (Rochelle will be back)

- Send Marietta the questions to share with Rick
- Update Alex on the questions prior to posting

USDA Briefing – Sept 17

- Outline
  - Intro/purpose of briefing slide
  - 3 projects (in AA briefing – slides attached)
  - Monitoring: 2-3 slides
    - Conclusions slide from AA briefing
    - Timeline
  - PCA/PCT: ~10 slides
    - Can use material from peer review document
    - PCA – 4-5 slides from previous briefings (Karen presented to PFTTT on TPTH – check if that assessment is public yet)
    - PCT – Kris has ESA slides we can modify
      - Industry has submitted comments for ESA PCT approach – contracted with Stone for malathion case study to get below state level – CLA presented to us (Mark S. was there). Marietta will send around CLA's comments.
      - Input we need from USDA – have something similar we prepared for BEAD to pull from
  - Scenarios: ~10 slides
    - Use same slides as previous briefings (EMPM?) to explain the concept
    - Input we need from USDA
- Aim to get Marietta draft slides by 9/3 for her general with Rick on 9/4 (if not possible then Marietta can use an outline)
- Elyssa will pull the slides together into one presentation
- Clean up slides and send to USDA by 9/10
- Send asks for scenarios dates to USDA by 9/10 – Need to write up the spreadsheet process clearly for their feedback – Lee and Nelson will follow up on whether someone else can help on this.

Next week – Dana, Nelson, and Elyssa will be out. Jan will leave the meeting on the calendar for Lee and Mark to talk about the contractor document if needed.

From: Arnold, Elyssa
Sent: Monday, August 12, 2019 3:56 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/12

Drinking Water Projects Meeting Notes – Action items
August 12, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson

Contractor Peer Review

- Mark updated the draft of the contractor statement of work from Lee with the PCA/PCT details – added to PCA/PCT folder on ERB6 SharePoint site
- Clarified that there will be 2 separate reviews on 2 timelines with one Task Order to minimize process and overhead
- Need to review the charge questions (these are fairly general right now) and expertise
- This week – review by Josh, Nelson, Claire (will discuss at PCA/PCT meeting tomorrow)
- Next week – review by Anna and Lee (both out this week)

- Jan will follow up on Lee's email to LaTangila with Brian Katz to highlight our priorities

Scenarios

- Input Parameters document – Team comments were due on Friday, Nelson will clean it up this week and send it to Jan for review
- Methods document – describes how inputs are processed and scenarios selected, what was done and why
    - Sept 19: First part will describe the methods, currently being written
    - Oct 15: Will include examples for corn and wheat – including generation and running of the scenarios
        - Previous runs for corn had curve numbers read backwards, currently fixing and testing
        - Corn will be done before wheat
- Overall Executive Summary needed in plain language
- Chlorpyrifos scenarios – Nelson sent an edited version of Rochelle's list before the meeting with the status for each crop/scenario (one typo – grapes will be separate from orchards)
    - Scenario Grouping (e.g., generic orchard, vineyard, vegetable) – will be charge questions for peer review; we will also ask for input from USDA
        - BEAD input – Lee will talk to Monisha next week and send her the list of scenarios. We will have a DD briefing with Kimberly before the USDA meeting to make sure EFED and BEAD are on the same page. Jan will get a DD briefing on the calendar first week in Sept.
    - Planting dates
        - Perennials
            - Rick had a generic proposal
            - Another idea – can we use bud or beginning bloom as a proxy for "emergence"?
            - Need to get USDA input
        - Annuals
            - Need USDA input on the method for filling in planting dates for state/crop combinations not covered in the Planting and Harvesting Guides (Rick's method – has been shared with BEAD)
            - USDA could do additional work on this beyond the top 16 (e.g., vegetables) instead of PFTTT. Scenarios could be ready to process within a couple weeks after getting the dates. Could be ready for Rochelle to run 1-2 months after getting dates.
        - Nelson will continue working on the SOP for dates, will work with Rick. Need to add context for why the dates are important (big impact on model output). Rick's document is ~30 pages. Goal is to share with USDA at the briefing in Sept.
        - First week of Sept – Marietta will call Sheryl with a heads up about the ask to help fill in the planting dates
- Processing scenarios – will do continually as dates are complete
    - Lee met with CCOE about using contractor computing power – will get an update when he is back in the office

PCA/PCT

- Got the 2012-2016 chlorpyrifos PCT data from BEAD – they don't think that an update will add a lot of value
- White paper outline is drafted
    - This week – will discuss with the team tomorrow and then finalize the outline
    - Next week – will start to drop in text
- Be prepared to address issues quickly (e.g., non-ag)
- Prioritize questions for USDA and scenarios that will impact chlorpyrifos

USDA Briefing

- Marietta has emailed Sheryl with the potential dates and has not gotten a response yet
- Rick wants to see the slides in advance, but does not need us to brief him first

From: Arnold, Elyssa
Sent: Monday, August 05, 2019 4:02 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>
Subject: RE: Drinking Water Assessment Update - meeting notes

Drinking Water Projects Meeting Notes – Action items
August 5, 2019

Contractor Peer Review

- Lee will send latest draft of the contractor statement of work to Mark
- Mark will add the PCT/PCA sections and charge questions into that document with the possible goal of having 1 task order rather than 2
- Mark will have a first draft to share by next week's meeting, 8/12
- Need to be aware of possible end of fiscal year delays in the contracting office in Cincinnati
- Jan will talk to Brian Katz to make sure he is aware of our priorities

Scenarios

- Input Parameters document will be completed this week
- Methods White Paper – current dates are below, but may need to tighten these up to allow for internal review time of up to 2 months depending on document length
    - Sept 19 framework complete (all parts except results)
    - Oct 15 entire paper complete – not including internal review
- Need to initiate project with Rick to add dates for perennials
- Peer review planned by end of February, then expect at least a month for re-runs
- Will need management briefings to decide which centile to use
- For next week, 8/12 – Lee will get a plan in place for prioritizing the chlorpyrifos scenarios (Nelson can report back next week when Lee is out)
- Lee will talk to LaTangila about a contractor for processing the scenarios
    - Stone or Waterborne may be options – Lee can call them and ask if they are reachable on any EPA contracts

PCA/PCT

- Mark C. will check in with Mark S. on getting the 2012-2016 chlorpyrifos PCT data
- Will also ask about whether they plan on an updated SUUM per Marietta's conversation with Kimberly
- Holding weekly project meetings every Tuesday

USDA Briefing

- Marietta will talk to Rick about the briefing tomorrow at their general before emailing Sheryl, we may need to brief Rick first
- Everyone should have their asks for USDA ready by the last week in August
    - For PCT – USDA input on non-ag data sources

PERFORMANCE WORK STATEMENT
TO-00XX

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

A. ADMINISTRATION

1. **Period of Performance:** Award as soon as possible with performance period of four months

2. **Title:** External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

3. **Technical Experts**
   Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs
   Dirk Young, PhD Email: [HYPERLINK "mailto:young.dirk@epa.gov"]
   Nelson Thurman, PhD Email: thurman.nelson@epa.gov
   Lee Kyle, Chief Email: kyle.lee@epa.gov
   U.S. EPA/OSCPP/OPP

   Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA
   Karen Milians, PhD Email: [HYPERLINK "mailto:milians.karen@epa.gov"]
   Joshua Antoline, PhD Email: [HYPERLINK "mailto:antoline.joshua@epa.gov"]
   William Eckel, PhD Email: [HYPERLINK "mailto:eckel.william@epa.gov"]
   Mark Corbin, Chief Email: corbin.mark@epa.gov
   U.S. EPA/OSCPP/OPP

4. **Task Order CO's Representative (TOCOR)**

   Alternate TOCOR

5. **Mailing Address**
   1200 Pennsylvania Ave
   Washington, DC 20460
   Mail code 7502P

6. **Shipping Address**
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B. BACKGROUND

Federal law requires that pesticide products be registered for sale in the United States with the United States Environmental Protection Agency (USEPA). Several statutes establish the regulations under which this process

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occurs. The FFDCA (Federal Food Drug and Cosmetic Act), as amended by the Food Quality Protection Act (FQPA), the FIFRA (Federal Insecticide Fungicide and Rodenticide Act), and the Pesticide Registration Improvement Act (PRIA) are the primary legislation which govern this process. The process used to decide whether pesticide products can be legally marketed is risk-based and risk assessments for pesticides are developed using the framework outlined by the National Academy of Science criteria for risk assessment in the Federal Government. As a part of the requirements for new pesticide registration and for periodic (every 15 years) review of existing registrations, USEPA Office of Pesticide Programs (OPP) conducts aquatic exposure assessments to determine whether pesticides that are applied according to label directions can result in surface and/or groundwater water concentrations that may adversely impact human health or aquatic organisms.

Commented [bc1]: Isn't it risk – benefit based?

OPP's Environmental Fate and Effects Division's (EFED) risk assessors have the responsibility for conducting Drinking Water Assessments (DWA), which include an analysis of the potential for pesticide occurrence in both surface water and groundwater sources of drinking water. USEPA OPP employs a robust DWA process via a tiered approach that is designed to screen out less risky pesticides from those requiring more highly refined methods. Successive tiers incorporate refinements that draw on more focused chemical, spatial, temporal, and agronomic information coupled with consideration of available monitoring data to refine risk estimates for human health assessments and inform risk management decisions. The tiered approach uses model scenarios that represents conditions vulnerable to pesticide movement to water. Assessments at higher tiers use more refined fate data, spatial analyses, and germane pesticide usage information. For additional information on USEPA OPP's tiered approach, see *Framework for Conducting Pesticide Drinking Water Assessments for Surface Water* in USEPA OPP, 2019).

Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs

The Pesticide in Water Calculator (PWC) is a model that uses field, watershed, and waterbody properties to simulate environmental conditions. In PWC, both field and waterbody parameters define an environmental *scenario*. Underlying the PWC, the Pesticide Root Zone Model, PRZM5 (Young and Fry, 2016) simulates pesticide fate and transport in the field for defined pesticide applications, estimating pesticide loads to both surface water bodies and ground water aquifers. The unqualified word *scenario* refers to the combination of field and waterbody parameters that describe the combined environment of the field and the waterbody simulated in PWC. With the qualifier, *field scenario* is synonymous with the *field parameter set* which contains only the parameters that describe the field (environmental conditions) used in PRZM5.

USEPA OPP currently has more than 125 field scenarios that are used in Tier 2 (medium-level of the tiered approach) aquatic exposure assessments. They have been used for both human health (drinking water) and aquatic ecological assessments. These scenarios were developed over two decades using professional judgement and the available data at the time of development. While the goal was usually to develop a combination of soil, hydrology, agronomic practices, and weather conditions that resulted in "high-end" estimated water concentrations, not all scenarios were developed consistently. Differences in purpose (for instance, some scenarios were developed for cumulative drinking water assessments for human health under

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FFDCA while others were developed for use in endangered species assessments) and in available data over time have led to inconsistencies such that existing scenarios do not have well-defined levels of vulnerability relative to pesticides being transported into water bodies. With efforts to improve its tiered drinking water assessment approach (USEPA OPP, 2019), USEPA OPP plans to develop new scenarios for PWC using a well described and transparent process with the most recent data sources and technologies. These scenarios will have well-defined levels of vulnerability.

To generate new field scenarios, USEPA OPP first identified all possible soil-land cover-weather combinations for the conterminous 48 U.S. states by overlaying spatial data layers for soil map units from USDA's Soil Survey Geographic (SSURGO) database (USDA NRCS SSS, 2018), the latest five years of land cover/crop groups from the USDA's Cropland Data Layer (CDL) (USDA NASS, 2010-2018), and meteorological files/weather station grids generated from NOAA data (Fry et al, 2016). Field scenario input data are extracted for each soil-land cover-weather grid combination and the resulting data matrix contains all necessary input parameters for each soil-land cover-weather grid combination. Because of the size of the national data sets and the volume of data generated – millions of separate combinations – the data extraction and calculation process has been automated using Python code. The draft document ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM*** describes the field inputs required for the aquatic models, the data sources used, and the methods for generating field scenario combinations and for extracting and processing the input data. This includes documentation for the Python code used to automate the process.

The new scenario inputs will also be used in the Spatial Aquatic Model (SAM) (USEPA OPP, 2015) that USEPA OPP is developing to address the need for more spatial specificity in aquatic exposure assessments at a Tier 4 level (highest level of the tiered approach) described in USEPA OPP (2019). The peer review of this project will benefit both efforts.

Because the actual percentile of vulnerability for the current PWC scenarios is unknown, a process is needed to compare and rank the millions of new scenarios (combinations of soil-land cover-weather) in order to evaluate their potential for use in Tier 2 assessments. Selection of the new PWC scenarios will be based on clear, reproducible, consistent method and will offer the flexibility to choose a policy-defined percentile of vulnerability (e.g., 90th %-ile vulnerability). The draft document ***Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments*** describes how USEPA OPP generated estimated concentrations for each major crop and/or grouping of crops (described in Addendum B of ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM***) and ranked them by concentration with an area-weighted approach.

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

In estimating pesticide concentrations in drinking water, OPP also relies on pesticide use and usage data. Use data typically refers to what is on the pesticide label (e.g. apply to corn at 1 lb/acre by ground equipment) while usage data refers to information on what is actually applied by growers/applicators.

PERFORMANCE WORK STATEMENT
TO-00XX

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

Watersheds large enough to support a drinking water facility are generally not comprised of only one land cover type, nor planted completely with a single crop. In order to account for this variability, the USEPA OPP uses percent cropped area (PCA) adjustment factors to reflect the percentage of a watershed that is covered by a particular land cover type as a surrogate for agricultural crops and non-agricultural usage~~es~~. Currently, modeled concentrations of pesticides in surface waters are multiplied by a PCA factor that accounts for the areal fraction of a watershed with a land cover (*e.g.*, crops) that may be treated with a particular pesticide based on the pesticide's registered use patterns. The PCA-adjusted concentrations are used as the estimated drinking water concentrations (EDWCs) in human health dietary risk assessment.

The USEPA OPP initiated a peer review of an earlier version of how it develops and uses PCA in a document titled: "Development of Community Water System Drinking Water Intake Percent Cropped Area Adjustment Factors for use in Drinking Water Exposure Assessments, dated 10/10/2012." Consistent with USEPA's Peer Review guidelines, the feedback from reviewers was carefully considered and USEPA OPP updated the document accordingly. This current approach will not change the existing PCAs but will seek to leverage the full suite of watershed PCAs by defining a process to identify areas within each HUC2 which pass and which need further refinement. Detail on the current approach for utilizing PCA in OPP DWA may be found at the following website.

[HYPERLINK "https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/development-community-water-system-drinking-water"]

OPP also uses pesticide usage data for both human health and ecological risk assessments to better characterize how and where pesticides are most likely to be applied. Specifically, Percent Crop Treated (PCT) is the fraction of an area planted with a particular crop or group of crops that usage data suggests has been actually treated with a specific pesticide. Due to the nature of available pesticide usage data, PCTs are generally calculated at the state level. OPP pesticide usage data is derived from proprietary survey information with a statistical design that is aggregated at the Crop Reporting District (CRD). USEPA OPP has determined that aggregating usage data below the state level limits the ~~a~~ sample size of the reported values and thus reduces the confidence of the estimates of usage below the state level. Because of this, USEPA OPP has historically not used PCT for refining EDWCs because of uncertainties in applying state-level summaries to community water system (CWS) watersheds that are much smaller in area.

Recently, USEPA OPP has proposed a process incorporating PCT data into Endangered Species Act (ESA) assessments. The proposed approach explores the ability to calculate the fraction of a given area that is likely to overlap with an endangered species with treated acres calculated from a PCT. The process relies on a comparison of acres treated with the acreage of a species range (as defined by a mappable polygon). Since a species range and a CWS watershed are essentially mappable polygons, the proposed PCT method can serve as a starting point for developing a method to apply PCT data to refined DWA.

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

C. PURPOSE

Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs

The objectives of the New PWC Scenario Generation project are to:

- Update methods for developing field scenarios using available geospatial data to generate candidate PWC field scenarios for each crop/crop group within each of the 18 hydrologic unit code-2 (HUC2) regions located in the conterminous U.S. This will allow USEPA OPP to generate field scenarios with consistent properties and agronomic practices.
- Derive methods for standardizing and automating the percentile distributions of PWC field scenarios for each crop/crop group within each HUC2 region. This will provide USEPA OPP with a means of selecting scenarios for use in drinking water assessments that are consistent in terms of relative vulnerability to pesticides being transported into water bodies.
- Develop initial examples that apply the methods described in the draft documents to develop new field scenarios for use aquatic exposure modeling.

Consistent with USEPA peer review policies, the methods for systematically generating new PWC scenarios and associated draft documents are being submitted for peer review through an independent contractor in accordance with the 4th Edition of the Peer Review Handbook ([HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"]). Specifically, this work assignment addresses the assembly and conduct of a panel whose purpose is to complete an independent peer review of the PWC scenario development methods and associated materials, including examples of their application and the Python code used to generate field scenario inputs. The goal is to have the panel members review these materials in a manner that is consistent with the ***Charge to the New PWC Scenario Development Peer Review Panel*** in Section E of this work assignment.

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

The Percent Cropped Area (PCA) & Percent Crop Treated (PCT) Project has developed an approach to apply usage data to refine USEPA OPP DWA in higher-tier assessments for agricultural and non-agricultural uses individually or in combinations of uses. USEPA OPP currently uses the maximum PCA for total agriculture, selected major crops (corn, soybeans, wheat, cotton), crop groups (vegetables, orchards), crop combinations (*e.g.*, corn-wheat, soybeans-wheat), and turf for each of the 18 Hydrologic Unit Code 2 (HUC-2) boundaries in the continental US for which the use sites associated with pesticide only where it may be used. The HUC2 scale was selected as a means to regionally organize the PCA values for each CWS watershed within that boundary. In the current DWA approach any use being assessed (e.g. corn, turf) will have an associated landcover class with an associated maximum PCA at both the national and regional (e.g. HUC2) scale. However, these maximum values are a conservative value and are selected from the full distribution of PCAs for all mapped CWS watersheds within each HUC2. The proposed approach being evaluated in this

update will consider each PCA individually in a tiered approach to focus refinements on only those CWS watersheds that don't pass the DWLOC at each successive refinement step.

Commented [bc2]: Mark - Should we mention that in California we may be able to use country level data from CalPUR? IF we don't mention it Cal EPA probably will.

This current approach will not change the existing PCAs but will seek to leverage the full suite of watershed PCAs by defining a process to identify areas within each HUC2 which pass and which need further refinement. By identifying areas within a HUC2 that don't pass a drinking water level of concern (DWLOC) will allow for more focused and spatially explicit refinements (e.g. local conservation practices) within each HUC2. OPP will identify watersheds that need further refinement as those where EDWCs remain above a DWLOC. USEPA OPP will focus on regions and groups in these CWS watersheds within each HUC-2 that remain a potential concern and will require more spatially-focused refinements and mitigation.

The proposed PCT project will incorporate the percent area treated (also known as percent crop treated, or PCT) approach in DWA. This project will determine if state-level estimates of PCT can be used to refine exposure estimates that previously relied on the maximum PCA approach used currently by USEPA OPP for DWA. In addition, USEPA OPP will consider options to estimates of PCT at the sub-state level (CRD and County Level) including alternative ideas submitted to USEPA OPP in public comments on the proposed approach to use PCT in ESA. State level PCT will be converted into an area (e.g. treated acres of a use site) and that areal extent will be compared to the area of a drinking water watershed. When the calculated treated area is less than total area where the crop or group of crops is grown in a CWS watershed, the EDWC would be adjusted to account for the partial treatment.

Both the PCA and PCT projects will require an evaluation phase where modeled EDWCs are compared with relevant monitoring data. Ultimately, the PCA and PCT portions of the project could link up into a single automated process that allows for quick and seamless consideration of refinements to DWA that do not require additional modeling.

Consistent with USEPA peer review policies, the methods for systematically generating PCA/PCT and associated draft documents are being submitted for peer review through an independent contractor in accordance with the 4th Edition of the Peer Review Handbook ([HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"]). Specifically, this work assignment addresses the assembly and conduct of a panel whose purpose is to complete an independent peer review of the PCA/PCT methods and associated materials. The goal is to have the panel members review these materials in a manner that is consistent with the ***Charge to the PCA/PCT Development Peer Review Panel*** in Section E of this work assignment.

D. SCOPE OF WORK

Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs

PERFORMANCE WORK STATEMENT
TO-00XX

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

The focus of this project is on the clarity and reproducibility of the field scenario inputs and on the methods for generating and evaluating field scenarios for use in PWC. The models described in this document have already undergone review. The original PRZM documents have also been reviewed. The new input guidance document updates the data sources and automates processing data.

USEPA OPP requests peer review of two major draft documents and their supporting materials:

- ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM***, including the data collection, extraction, and processing code, written in Python, and code documentation. Additional crop input datasets used for scenario development are also provided.
- ***Generating New PWC Scenarios for Use in Pesticide Aquatic Indirect Exposure Assessments***, which includes two examples illustrating the scenario ranking process for corn and wheat.

Commented [bc3]: The way this is written sounds like you could be conducting assessments of an herbicide application to control weeds in a pond. I suggest clarification.

The Contractor shall conduct the tasks listed below to accomplish the peer review of new PWC scenario development methods based on the framework outlined in the ***Charge to the New PWC Scenario Development Peer Review Panel*** (Section E).

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

The focus of this project is on the evaluation of a refinement step for OPP DWA. This step will utilize the full distribution of drinking water watersheds and their associated percent crop area (PCA) and Percent Crop Treated (PCT).

USEPA OPP requests peer review of two draft documents and their supporting materials:

- ***Approach to Use the Full Distribution of PCA values for Pesticide Drinking Water Assessments (DWA)***, which considers how OPP's current approach using national and regional maximum PCAs can be modified to account for all PCAs on a HUC-2 basis.
- ***Approach to Integrate PCTs into a Refined DWA Process***, which includes an example illustrating how a PCT is derived, how it is calculated and applied to a watershed, the range of values available for consideration, and a proposed approach to refine DWA after consideration of the PCA distribution.

The Contractor shall conduct the following tasks to accomplish the peer review of PCA/PCT development methods based on the framework outlined in the ***Charge to the PCA/PCT Development Peer Review Panel*** (Section E).

Tasks that apply to each project

For each project, the goal is to provide a consensus review. The Contractor shall select recognized peer reviewers with appropriate expertise, determine potential conflicts of interest, establish schedules, conduct the peer review, and prepare and submit the expert panel review report. Peer reviewers shall provide an independent review of the draft documents and pertinent supporting materials. The peer review shall be conducted by email and use conference calls for panel discussions as appropriate. The peer reviewers shall be

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recognized scientists with demonstrated expertise related to the scope of work outlined in Section 2.b. The objective is to recruit 5 to 6 panel members for each project who are willing to participate and have broad disciplinary experience and a demonstrated professional history in technical areas related to these topics.

The Contractor shall attempt to balance the group of experts by selecting reviewers from academia, government, and the private sector. For each project, the output of this task order shall be an expert panel report that conveys the independent scientific judgment of each of the peer reviewers within the specific framework of the charge to the panel. Each panel will also be required to develop a synopsis of the findings of each reviewer and describe where consensus was achieved, with consensus being the goal, related to each element of the charge to the panel. It is also critically important that panelists reserve written commentary to areas within their demonstrated areas of expertise. All work to be done under this Task Order shall be in compliance with EPA's [HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"] (Fourth Edition; 2015). The requirements of each specific task are outlined below. An overall schedule is presented below in **Section F: Deliverables and Due Dates.**

Task 1. Prepare a Proposal

The Contractor shall initially prepare a proposal that includes the proposed firm fixed price (FFP), with an indication of the breakdown of the level of effort and other items that comprise the FFP proposed. The price proposal shall be submitted to the Contract Specialist (CS), Project Officer (PO) and the Task Order Project Officer (TOPO) within the specified time. The proposal will address not only the technical conduct of the work but also how panel members are to be managed and how the outcome will be summarized with a focus on the charge to the panel and whether consensus has been attained.

Task 2. Identify and Select Reviewers

Task 2.a – Clarify Scope: Within five (5) working days of the Task Order (TO) award the Contractor, with all their applicable staff, shall schedule a conference call with the TOPO and other appropriate USEPA OPP staff to clarify outstanding questions and confirm the schedule and specific tasks. The Contractor shall provide status updates to the TOPO on at least a bi-weekly basis. The Contractor shall initiate additional timely communication with the TOPO should developments arise that will affect the conduct or schedule of this peer review.

Task 2.b – Select Panelists and a Chair: For each project, the Contractor shall identify a pool of at least 10 potential experts from which 5-6 reviewers shall be selected by the Contractor. The experts shall be recognized scientists with demonstrated expertise covering each of the following scientific disciplines:

Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs

- Agronomy with specialization in crop growth and management (one or two panelists)

- /sSoils/hydrology/chemical transport with specialization in crop growth and management, erosion control, and/or irrigation (onetwo or three panelists)
- Aquatic modeling, with a focus on pesticide aquatic exposure assessments (two or three panelists)
- Computer programming/data management (specifically fluency in Python), preferably with an understanding of the disciplines mentioned above (one panelist).

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

- Agronomy with specialization in pesticide use and crop production (one panelist)
- S/soils/hydrology with specialization in pesticide use, pesticide fate and transport, and watershed modeling (one or two panelist).
- Pesticide risk assessment with emphasis on aquatic exposure and modeling for human health risk assessment, with a focus on pesticide aquatic exposure assessments (one or two panelists).
- Spatial analysis including GIS (one panelist).
- Economist and agronomists familiar with pest management, pesticide use and pesticide usage data (two or three panelists).

Commented [bc4]:

Ideally, for each project panelists would have demonstrated experience in multiple disciplines listed above. The search and selection criteria shall include the consideration of experience and demonstrated expertise in their respective field, professional record as demonstrated by peer-reviewed publications, professional awards, service to relevant professional societies, and affiliations (academic, consulting firm, industry, government, public interest, and environmental organizations). Service on prior peer review panels is a benefit. The reviewers shall have scientific credentials equivalent to a Ph.D. or comparable experience and shall be regarded as experts in their field. The Contractor shall not select reviewers from the USEPA OPP or individuals listed as contributors or authors for the materials presented to the panels. In addition, the Contractor shall not select scientists or consultants who have provided comments during review of materials which could have a bearing on the use of the models which would be developed as an outcome of this peer review process – i.e., the Contractor shall evaluate panelists for potential conflicts of interest. The Contractor shall not compensate or reimburse Federal personnel for service on the peer review panel. Provisions for compensation and reimbursement of Contractor-secured state personnel vary by state. Prior to the Contractor entering into formal agreements with any of the experts, the proposed list of experts, including *curriculum vitae* (CV) and other supporting information, shall be submitted to the COR for review to ensure adherence to the technical requirements of the task order. Each peer reviewer's work experiences, publication history, and CV must demonstrate that they are respected in their specialty/field(s) and have published extensively in their areas of expertise. The Contracting Officer Representative (COR) can provide comments to the Contractor regarding the expertise and potential conflicts of interest of the proposed reviewers. If USEPA OPP determines that the reviewers are unqualified for the specific review, the Contractor shall have ten (10) business days to submit substitutes for review. The final selection of reviewers will be the responsibility of the Contractor. The

final panel for each project shall include at least one reviewer with expertise in each of the disciplines listed above in this section and in section C.

For each project, the Contractor shall designate one of the panelists as the panel chair. This individual shall be broadly knowledgeable in the critical scientific disciplines noted above and have the demonstrated ability in leading a scientific group. The Contractor should also ensure that there is a broad representation in areas of expertise within the group to ensure each aspect of the PWC new scenario development process can be adequately reviewed given the scope of the charge to the panel.

Each Panel Chair shall review relevant materials, lead the discussion with the panelists for the review, and submit review comments to the Contractor in electronic format. They shall assist in the initiation of the draft panel report by receiving and organizing the comments of the other panelists and distributing these comments to all panelists prior to scheduled meetings. They will also work to resolve any conflicts and guide the preparation of a final report. In the preparation of the final report, the Panel Chair will also ensure milestones are met with regard to deliverables and will notify the Contractor in cases where milestones and appropriate resolution are not achieved. Additionally, the Panel Chair will ensure that the panel report responds to each element in the charge to the panel and the report accurately reflects consensus among the panel on each element or lack thereof. In cases where consensus is not achieved, the Panel Chair will ensure all findings are documented in detail in the panel report.

On each project, the other panelists shall review the provided documents/materials and submit their comments to the Chair and Contractor in electronic format prior to the peer review panel discussion/report preparation. The panelists shall study the comments from the other reviewers to facilitate active participation in discussions. The panelists shall also study other comments received (e.g., clarification from EPA staff) to facilitate an effective review process. They shall also contribute to the preparation of the draft and final reports of the peer review panel. Panelists will provide expert opinions within their specific fields of expertise and provide their input regarding the overall technical concepts outlined in the materials provided. Panelists will also be required to actively pursue consensus-building efforts and will assist in the development of a report, which documents their consensus? expert opinions to each of the designated charges provided by the Agency. In cases where dichotomous opinions exist, and consensus cannot be achieved, panelists will also ensure that the opinions of all panel members are accurately reflected in the final report to the Agency.

Task 3. Logistics and Preparation

Task 3.a – Provide Invitation Letters and Materials: The Contractor shall send an electronic package to each peer reviewer (including any Federal participants) which include letters of invitation and all key materials required for the review. The materials in this package will be defined by the USEPA OPP TOPO and the charge to participants; these shall include the documents and appropriate supporting materials under review. Copies of all packages shall also be sent to the TOPO and to the Deputy PO.

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Task 3.b – Schedule Conference Calls and Other Appropriate Panel Interactions: The Contractor will arrange multiple conference calls and other appropriate interactions with: (1) USEPA OPP to ensure that all necessary information has been provided and is adequately understood by the Contractor and (2) panelists prior to initiation of and during the peer review process.

Task 4. Peer Review Process

Within five (5) working days of providing the invitation letters and key materials (Task 3.a), the Contractor will initiate the peer review process. Each panelist is required to first independently provide comments that address each of the charge questions relevant to a panelist's expertise, then work with the entire panel to prepare a report and build consensus wherever possible.

The Contractor shall receive and compile the reviewers' comments in a draft document with input from the Panel Chair as described above (Task 2.b). The Contractor shall review the comments to ensure that the reviewers have fulfilled their responsibilities under their agreement with the Contractor. The Contractor shall not edit or rearrange comments but provide them in an electronic format (MS Word 2016 and other formats as deemed appropriate by USEPA OPP) as they are sent in the original form with reviewers' cover/comment letter. The compiled comments shall be provided to the TOPO and all panelists to prepare for panel discussions as outlined below.

Task 4.a – Conduct Orientation: The panel members will be given an overview of the provided materials, scope of the project, their assigned charge, and anticipated schedule.

Task 4.b – Clarify Materials: The panel members will be given an opportunity to seek clarification regarding technical or other topical issues after they have had at least two weeks to review the provided materials. USEPA OPP sponsors will also participate as appropriate.

Task 4.c - Initiate Draft Report: The Panel members should provide individual comments to address each element of the charge, seek consensus on each element of the charge, and prepare the draft report at this phase of the project.

Task 4.d – Initiate Final Report: The panel will review comments on the draft report and edit the document to prepare a final report, which ensures responses to USEPA OPP, so the reviewer comments are properly reflected in the document.

Task 5. Report Preparation

Task 5.a – Prepare and Disseminate Draft Report: The Contractor shall prepare, with the help of the Panel Chair, a draft Expert Panel Report. The draft report must include a succinct statement of the Panel's conclusions and recommendations, input from each panelist on the charge questions, and a summary of any

pertinent panel discussions up to that point. Comments from each panelist should be appended to the draft report as well.

The Contractor shall send an electronic copy of the draft expert panel report (MS Word 2016 and other formats as deemed appropriate by USEPA OPP) to the TOPO, deputy PO, CO, and each panelist for review and comment once the document is compiled.

Task 5.b – Receive Written Comments on the Draft Report: All reviewers will provide written comments on the draft Expert Panel Report to the Contractor who shall provide to and discuss the comments on the draft report with the TOPO before finalizing the Expert Panel report. The Contractor shall not edit or rearrange comments but provide them in a bound document and electronic version (MS Word 2016 and other formats as deemed appropriate by USEPA OPP), as they are sent in the original form with the reviewers' cover/comment letter. The Contractor may, however, format the comments for consistency.

Task 5.c – Prepare and Disseminate Final Report: The Contractor shall receive and compile reviewers' final, post-meeting, edits into a final document. The Contractor shall supply the COR and TOPO with an electronic copy of the report. The final Expert Panel Report shall also be sent to the peer review panel members by the Contractor. An electronic version (MS Word 2016 and/or other formats as deemed appropriate by USEPA OPP) shall be sent.

The Contractor is expected to exercise quality control measures to ensure proper completion of the document. The Contractor is also responsible for editing the final report content to ensure appropriate quality control findings are reflected in the document.

Task 6. Post Review Activities

Task 6.a – Complete Fiduciary Responsibilities: The Contractor shall be responsible for paying the expert's expenses and fees (except Federal personnel) and provide copies of the final report, as appropriate.

E. SPECIAL CONDITIONS

Along with the scope of the task order described above, it is necessary that the following technical charge be addressed by the peer review panel. This should include developing responses to and achieving consensus, to the extent possible, by the panel to each issue outlined in the charge. It should also include providing all necessary records (e.g., written documentation and computer files) associated with this effort. The charge questions are as follows:

Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs. Charge to the Peer Review Panel:

PERFORMANCE WORK STATEMENT
TO-00XX

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

1. **Clarity and reproducibility of the Field Scenario Input Guidance Document:** It is important that the input sources, data extraction methods, and any processing and/or calculations performed on the data are adequately documented and clear to follow for readers with backgrounds in pesticide risk assessments and aquatic modeling. This applies to both written documentation and the resulting Python code used to automate the process. Once finalized, the draft document ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM*** will be used by USEPA OPP, the regulated industry, and other interested public parties to generate field scenario inputs for use in pesticide aquatic assessments using PWC and/or SAM.
    a. Please comment on the clarity and level of documentation for the input parameters, their sources, and the data extraction and manipulation (calculation) methods described in the input document. Please identify any documentation that is not clear to follow and suggest alternative language for clarity.
    b. Because of the number of model inputs and the sizes of the national databases used to derive the inputs, USEPA OPP used automated processes to facilitate the extraction and processing of inputs for large numbers of scenarios. The code needed for this extraction will be available for interested parties and needs to be sufficiently documented for use. Please comment on the documentation of the Python code used to extract and process data to generate the necessary data inputs used to generate field scenarios.

2. **Questions on Specific Inputs:** While the national databases for soils, land cover, and weather are well documented, several inputs (listed below) had minimal background documentation (data sources, references) in previous PRZM manuals (Carousel et al, 2005; Young and Fry, 2016). Where possible, USEPA OPP attempted to better document the data sources and methods for these inputs. In some cases, USEPA OPP used default methods and/or inputs in the absence of better data. Please comment on the methods described in the input parameter document and, if available, provide recommendations for better methods of estimating the following parameters:
    a. **Default agronomic practices for annual crops:** USEPA OPP assumes contour plowing with some residue left on the surface as the default agronomic practice for determining the runoff curve numbers and USLE P (usle_p) factor. Please comment on the default assumption.
    b. **Crop emergence and maximum canopy cover dates for annual crops:** USEPA OPP used USDA NASS (2006, 2007, and 2010) for planting and harvest dates. Dates for emergence and for maximum canopy cover are estimated from these dates. Please comment on this approach.
    c. **Missing crop planting and harvest dates:** In instances in which the crop occurs in a state, but no date ranges are reported in USDA NASS (2006, 2007, and 2010), dates are estimated by identifying the nearest neighbor state (similar in latitude) which had data for the given crop. Please comment on the approach.
    d. **Equivalent dates for planting/emergence and harvest dates for perennials:** The current defaults for perennial crops (alfalfa, grass hay, orchards, some fruits) are to assume 1) the curve number does not vary over time, except during crop harvest and emergence (For perennial tree and vine crops USEPA OPP assumes grass cover between rows for curve numbers?) ; and 2) the maximum canopy cover and the maximum root depth do not vary spatially for any particular crop. Equivalent

dates for emergence (beginning of active growth/leafing), maximum canopy cover (full cover before harvest, maximum leaf canopy for orchards), and harvest (crop removal, leaf-drop) would not only require data sources beyond USDA NASS (2006, 2007, and 2010), but would need reliable data for different runoff curve numbers. Please comment on the adequacy of these default assumptions.

e. **Crops with multiple growing seasons in a year:** In some areas (~~particularly~~ e.g., California, Florida, and Texas), vegetables can be grown on the same field more than once in a year – up to four seasons according to USDA NASS (2007). In many cases, different vegetables may be rotated on the same fields in a given year. For these crops/states, USEPA OPP proposes developing generic vegetable scenarios with 2, or 3, ~~or 4~~ growing seasons, based on USDA NASS (2007). Please comment on the proposed method.

Commented [bc5]: Crop shipment data out of Texas suggests one crop of vegetables or melons per year.

f. **USLE cover management (C) factor:** USEPA OPP relies on factors provided by USDA NRCS for scenarios in use in 2000. The C factors compiled by USDA NRCS are based on feedback from local/regional offices. The approach is based on the RUSLE model released in 1992, but values for specific crop scenarios are not well-documented. The background and data tables are available in the spreadsheet *Crop Input Data.xlsx*. Please provide any recommendations on available data sources and/or methods of deriving a minimum and maximum C factor for each crop group identified in Addendum B.

g. **Irrigation inputs:** In the current plan, USEPA OPP will develop non-irrigated PWC field scenarios. As described in the Irrigation Inputs section of the input parameters document, irrigation rates are intended to minimize the potential for runoff. To minimize runoff, the maximum application rate will be set so that it does not exceed the maximum amount of water that will trigger runoff from the curve number method. Please comment on the proposed use of greater than 40% crop acres irrigated, for the relevant crop, in a state as a trigger for the irrigation routine and on the proposal to cap the irrigation rate on the maximum amount of water that will not result in runoff by the curve number method.

3. **Methods for Ranking and Selecting Scenarios:** The process USEPA OPP proposes to replace existing PWC field scenarios with new scenarios for PWC that have well-defined levels of vulnerability is described in the draft document ***Generating New PWC Scenarios for Use in Pesticide Indirect Aquatic Exposure Assessments***. This describes the methods used to generate scenario inputs for all soil-land cover-weather combinations, to process and rank these scenarios by crop and region, and to identify field scenarios with similar levels of vulnerability for use in aquatic exposure assessments. Once finalized, this document will provide a framework for generating and updating new PWC scenarios.

   a. Because pesticide concentrations in water estimated from PWC depend not only on the field and weather properties but also on the interaction of chemical properties with the environmental parameters, the "vulnerability" of field scenarios can be defined in a number of ways. USEPA OPP has elected to base field scenario vulnerability on the water body concentration (EEC) that results from running the field scenario with USEPA OPP's receiving water body (index reservoir). Different scenarios will be selected based on the relative mobility of the chemical (represented by K_{oc}). These classes reflect differences in the inherent vulnerability of the site to off-site transport dominated by

Commented [bc6]: Define term at first use.

surface water runoff and/or by erosion/sediment transport. Please comment on the suitability of estimated concentration as an indicator of scenario vulnerability and on the selection of different sets of scenarios based on K_{oc} classes.

b. For each crop, field scenarios are ranked within National Hydrography Dataset Regions (HUC-2, major river basins) by magnitude of estimated concentration, weighted by land area. Scenarios will be comparable across HUC-2 regions by percentile rankings (e.g., 95th, 90th, 75th, 50th). Please comment on the suitability of this approach for selecting an appropriate scenario at some level of vulnerability to represent a HUC2 region.

c. USEPA OPP provided two examples for ranking and comparing scenarios using corn and wheat to illustrate how new PWC scenarios will be generated using the methods in the draft document. Please comment on how well the examples illustrate the methods described in the draft documents. In what ways can USEPA OPP improve the clarity and level of documentation in the methods for generating new PWC scenarios?

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA. Charge to the Peer Review Panel:

USEPA OPP is proposing to use a "distributional approach" for applying PCA and PCT to DWA. The following Charge Questions:

1. **Clarity and reproducibility of the Proposal in the attached White Paper to use the full distribution of watershed PCAs:**
   a. Please comment on the clarity and level of documentation and on how well it can be reproduced by others with an understanding in risk assessments.
   b. USEPA defines a pesticide concentration below which no human dietary risk is likely. This drinking water level of concern (DWLOC) represents an exposure value which can be compared against modeled concentrations of pesticides in CWS watersheds. Typically, USEPA considers an EDWC developed using a maximum national or regional PCA. This new approach will use all CWS watershed specific PCAs to identify which areas within a geographic region (e.g. HUC2) are below the DWLOC and which are above and need further refinement. Please comment on the scientific soundness of identifying sub-regions of HUC2 watersheds needing further refinement by comparing the ratio of EDWC to DWLOC to define the threshold for comparison with each PCA.
   c. Please comment on methods for applying the PCA approach for pesticides with multiple agricultural usage~~es~~.
   d. Please comment on the methods for applying a similar PCA-like approach to address non-agricultural ~~uses~~usage.
2. **Clarity and reproducibility of the Proposal described in the attached White Paper to use PCT as a refinement to the PCA distributional approach in Question 1:**
   a. Please comment on the clarity and level of documentation for the proposed PCT approach on how well it can be reproduced by others with an understanding in risk assessments.
   b. Please comment on the proposed approach to account for multiple use sites and PCT in OPP's DWA as a refinement to the proposed PCA approach.

c. Unlike agricultural ~~uses~~usage, non-agricultural ~~uses~~ usage of pesticides have less robust usage data and for the most part estimates of usage and PCT are ~~only~~ not available at the state level. USEPA OPP has developed a case study on how ~~state level PCT~~non-agricultural uses can be used to refine EDWC at the HUC2 scale. Please comment on OPP's proposed approach to account for non-agricultural PCT in the OPP proposed PCA approach.

Commented [bc7]: This is going to be amazing.

d. Please comment on the appropriateness and utility of assuming a uniform distribution of treated area across an entire state when determining the acres treated in a watershed. Are there alternative assumptions that would provide a more appropriate and informative mid-range estimate of watershed-scale PCT based on state-level data?
e. Please comment on alternative approaches for determining areas more or less likely to be treated with a pesticide.

F. DELIVERABLES AND DUE DATES

Scope of work for each project to be completed within the approximate four (4) month timeline after initiation of this Task Order as detailed in the table below. Completion of each task should be documented in Contractor status reports.

As per the Task Order or request for a proposal, the Contractor shall provide the Agency with a proposal within the timeframe specified for this Task Order. The EPA Contracting Officer (CO), CORs, or panel members will review the proposal and provide the Contractor with an approval or disapproval, and revision (if necessary) in writing. The timelines involved, will proceed as stipulated in the request for a proposal or Contract.

The contractor shall prepare a Quality Assurance Project Plan for this Task Order. [HYPERLINK "http://www.epa.gov/quality/epa-qar-5-epa-requirements-quality-assurance-project-plans"] before award as part of the proposal for approval.

Task	Subtask	Timeline (Days After Award)	Comments
1 – Prepare Proposal	N/A	N/A	N/A
2 – Identify and Select Reviewers	2.a - Clarify Scope	5	N/A
	2.b – Select Panelists and a Chair	15	Accounts for likely conflicts of interest, availability, etc. along with 10-day period for substitute review, if needed
	3.a – Provide Invitation Letters and Materials	20	N/A

PERFORMANCE WORK STATEMENT
TO-00XX

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

Task	Subtask	Timeline (Days After Award)	Comments
3 – Logistics and Preparation	3.b – Schedule calls and other panel interactions	20	
4 – Peer Review Process	4.a – Conduct orientation	30	Discuss roles, responsibilities, provide overview of materials
	4.b – Clarify materials	45	Allow reviewers to seek clarification on materials
	4.c – Initiate Draft Report	60	Panel is to plan how draft report will be prepared over writing period
	4.d – Initiate Final Report	95	Panel is to plan how final report will be prepared over writing period
5 – Report Preparation	5.a – Prepare and Disseminate Draft Report	75	15-day period to prepare a draft report after process is initiated at day 60
	5.b – Receive Written Comments	95	Contractor will coordinate comments from reviewers and provide to panel members at end of 15-day review period
	5.c – Prepare and disseminate Final Report	110	Contractor will coordinate with peer review panel on how comments will be addressed and prepare a final report
6 – Post Review Activities	6.a. – Complete Fiduciary Responsibilities	NA	TBD based on final contract agreement

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PERFORMANCE WORK STATEMENT
TO-00XX

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

QUALITY ASSURANCE SURVEILLANCE PLAN

PERFORMANCE REQUIREMENT	PERFORMANCE MEASURE (PM)	PERFORMANCE STANDARD	SURVEILLANCE METHOD	INCENTIVES & DISINCENTIVES
MANAGEMENT & COMMUNICATION: The contractor shall maintain contact with the EPA CO, PO, and TOPO throughout the performance of the contract.	Contractor shall immediately bring potential problems to the appropriate EPA personnel and shall recommend actions that would mitigate or resolve the problem.	Issues that impact project schedules and costs shall be brought to the attention of the EPA within 3-days of occurrence.	All active task orders will be reviewed by the EPA to identify unreported issues.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation of Business Relations in the NIH Performance Evaluation System.
TIMELINESS: For every Task Order awarded establishing a firm, specific delivery date for the generation of a report, the contractor shall deliver such report to the PO, TOPO and CO no later than the time specified in the order's PWS.	Deliverables and related work must comply with contractual timeliness requirements. The contractor will be evaluated on its responsiveness to all task orders.	100% of all deliverables and related work shall be completed on time within task schedule and/or tech. direction requirements.	100% inspection of all deliverables and related work by the COR; COR will document the timeliness of all work requirements.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation of Timeliness in the NIH Performance Evaluation System.
COST MANAGEMENT & CONTROL: For every cost and time-and-material Task Order awarded, the contractor shall assign appropriate levels and skilled personnel; practice and encourage time management; and ensure accurate and appropriate cost controls and reporting.	The contractor shall demonstrate a high level of productivity and efficiency in maintaining costs.	Failure to manage and control costs cannot result in an overrun of more than 5% of the total estimated costs of each cost and time-and-material task order.	Active cost type and time-and-material type task orders' costs will be reviewed by the COR monthly using progress reports and vouchers to compare actual versus projected expenditures.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation in the category of Cost Control in the NIH Performance Evaluation System.
TECHNICAL QUALITY: For every task order awarded, the analyses conducted by the contractor shall be factual, defensible, credible, and based on sound scientific methods. All data shall be collected from reputable sources and quality assurance measures shall be conducted in accordance with the agency requirements outlined in the task orders.	All deliverables and related work must be complete, accurate, thorough, and professionally credible.	Data are 100% accurate; review demonstrates a high level of expertise and credibility about personnel and use of scientific methodology. Projects shall be conducted in strict conformance with approved project and QA plans. Outputs shall withstand internal review by the US EPA and outside scientific reviewers.	COR will conduct periodic reviews of work in progress and evaluations based on a sampling of internal and external customers.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation in the category of Quality of Product or Service in the NIH Performance Evaluation System.

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G.ADDITIONAL REFERENCES CITED

Project 1: Improved Method for Developing Pesticide in Water Calculator Scenarios.

Carousel, R.F., J.C. Imhoff, P.R. Hummel, J.M. Cheplick, A.S. Donigian, Jr., and L.A. Suárez. 2005. PRZM-3, A Model for Predicting Pesticide and Nitrogen Fate in the Crop Root and Unsaturated Soil Zones: Users Manual for Release 3.12.2. Center for Exposure Assessment Modeling (CEAM), National Exposure Research Laboratory - Ecosystems Research Division, Office of Research and Development (ORD), U.S. Environmental Protection Agency (U.S. EPA).

Fry, M.M., G. Rothman, D.F. Young, and N. Thurman. 2016. Daily gridded weather for exposure modeling. Environmental Modelling & Software, 82, 167-173, doi.org/10.1016/j.envsoft.2016.04.008

USDA National Agricultural Statistics Service (USDA NASS). 2006. Fruit and Tree Nuts: Blooming, Harvesting, and Marketing Dates. Agricultural Handbook Number 729. December 2006.

USDA National Agricultural Statistics Service (USDA NASS). 2007. Vegetables: Usual Planting and Harvesting Dates. Agricultural Handbook Number 507. May 2007.

USDA National Agricultural Statistics Service (USDA NASS). 2010. Field Crops: Usual Planting and Harvesting Dates. Agricultural Handbook Number 628. October 2010.

USDA National Agricultural Statistics Service Cropland Data Layer. 2010-2017. Published crop-specific data layer [Online]. Available at https://nassgeodata.gmu.edu/CropScape/ (accessed 9/25/2018). USDA-NASS, Washington, DC.

USDA Natural Resources Conservation Service Soil Survey Staff (USDA NRCS SSS). 2018. Gridded Soil Survey Geographic (gSSURGO) Database. United States Department of Agriculture, Natural Resources Conservation Service. Available online at http://datagateway.nrcs.usda.gov/. October 11-12, 2018 (FY2018 official release).

U.S. Environmental Protection Agency Office of Pesticide Programs (USEPA OPP). 2015. Development of a Spatial Aquatic Model (SAM) for Pesticide Risk Assessments. Presented to the FIFRA Scientific Advisory Panel, September 15-17, 2015. Available in the public e-docket, Docket No. EPA-HQ-OPP-2015-0424, accessible through the docket portal: http://ww.rw.regulations.gov.

U.S. Environmental Protection Agency Office of Pesticide Programs (USEPA OPP). 2019. Framework for Conducting Pesticide Drinking Water Assessments for Surface Water, August 28, 2019. Available in the public e-docket, TBD

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Young, D.F. and Fry, M.M. 2016. PRZM5: A Model for Predicting Pesticide in Runoff, Erosion, and Leachate. Revision A. USEPA/OPP 734S16001, U.S. Environmental Protection Agency, Washington, DC. Available for download with the Pesticide in Water Calculator from the USEPA OPP Water Models web site at https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/models-pesticide-risk-assessment#aquatic

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Message

From: Anderson, Brian [Anderson.Brian@epa.gov]
Sent: 10/18/2018 12:58:56 PM
To: Becker, Jonathan [Becker.Jonathan@epa.gov]
CC: Kaul, Monisha [Kaul.Monisha@epa.gov]
Subject: RE: Surrogacy paragraph

Thanks Jonathan,

Is there someone else who knows the issue well enough to write up a draft?

Thanks again!

Brian

From: Becker, Jonathan
Sent: Thursday, October 18, 2018 8:11 AM
To: Anderson, Brian <Anderson.Brian@epa.gov>
Cc: Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: RE: Surrogacy paragraph

Hi Brian,

I remember that I committed to write up the use of PCT by pesticide type for use as a surrogate.

Unfortunately, dicamba is taking all my time so there is no way I can do that this week, or even maybe next. Things change every day.

Sorry,

Jonathan

From: Anderson, Brian
Sent: Thursday, October 18, 2018 7:42 AM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>
Subject: Surrogacy paragraph

Hi Jonathan,

I think you had an action item for the ESA usage group from a couple of weeks back, which is to send FWS a paragraph on surrogacy – I forget exactly what it was – I'm hoping you remember. Is there any way to get that drafted up this week? FWS has been asking for it, and we had committed to sending it.

Thanks Jonathan,

Brian

Brian Anderson
Office of Pesticide Programs
Environmental Fate and Effects Division
703.305.0067

Message

From: Suarez, Mark [Suarez.Mark@epa.gov]
Sent: 9/9/2019 7:57:39 PM
To: Becker, Jonathan [Becker.Jonathan@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Chism, William [Chism.Bill@epa.gov]
Subject: FW: PCA/PCT Recurring Meeting
Attachments: PCA PCT USDA presentation 090919 v2.pptx

Here are the PCA PCT slides

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Monday, September 09, 2019 11:29 AM
To: Corbin, Mark <Corbin.Mark@epa.gov>; Milians, Karen <Milians.Karen@epa.gov>; Antoline, Joshua <antoline.joshua@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Holmes, Jean <Holmes.Jean@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>
Subject: RE: PCA/PCT Recurring Meeting

Version attached with revisions made during today's meeting.

Elyssa

-----Original Appointment-----
From: Corbin, Mark <Corbin.Mark@epa.gov>
Sent: Wednesday, July 31, 2019 10:31 AM
To: Corbin, Mark; Milians, Karen; Antoline, Joshua; Eckel, William; Holmes, Jean; Arnold, Elyssa; Suarez, Mark; Paisley-Jones, Claire; Spatz, Dana; Bohaty, Rochelle
Subject: PCA/PCT Recurring Meeting
When: Monday, September 09, 2019 10:00 AM-11:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomPYS10671/Potomac-Yard-One

I've added updated version with highlighted sections on pages 3, 5, and 10 that could be removed to get at Jan's comments about detail and audience. We can talk about these and the question of whether we want the questions on slide 16 to be answered by USDA or whether this is to target their participation on the group

Dial-in Information

202-991-0477

Code 757696

Updating with comments from Jan and Marietta on the 090619 slide set (attached). Because these need to go to USDA on Tuesday I'm moving this up to Monday at 10. I realize it doesn't work for everyone but it looks like the best spot for most folks

Jan Comments

Better. Just suggest that your team look at some of the more detailed slides and ask themselves to think about the audience. Assume the audience doesn't know about any of this. 10,000 foot level. I think most of this fits the bill but a few slides seem to be fairly detailed.

Ex. 5 Deliberative Process (DP)

Percent Crop Area (PCA) and Percent Crop Treated (PCT) for Higher Tier Drinking Water Assessment (DWA) Refinements

EPA OPP EFED

Mark Corbin, Karen Milians, Joshua Antoline, Bill Eckel

September 17, 2019

Introductions of self and team

Outline

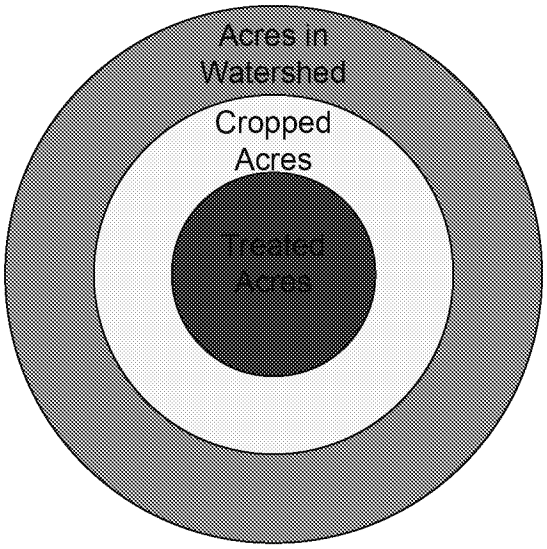
- Background information and objective
- Description of the proposed distributional Percent Cropped Area (PCA) approach
- Description of the proposed Percent Crop Treated (PCT) approach
- Application of Watershed-Scale PCA and PCT to Refined Drinking Water Assessments (DWA)
- Questions

Background Information

- DWA are developed using a tiered approach
- Estimated Drinking Water Concentrations (EDWC) are compared to a Drinking Water Level of Concern (DWLOC) representing a threshold below which no human risk is likely
- Low Tier Assumptions
  - 100% of a watershed is planted with the same crop
  - 100% of a watershed's cropped area is treated with a pesticide
- EDWCs are proportional to the treated area

Drinking Water Assessments (DWA) are developed via a tiered approach
Moving from what's possible to what's likely
Low tiers use conservative fate parameters and assume pesticide can be used wherever crops are present
Higher tiers use a more refined fate data, spatial analyses and usage information
Pesticide concentrations in the environment are proportional to the amount applied
Low tier assumption: 100% PCA, 100% PCT
PCA is used in DWAs to account for the fact that a watershed is not likely to be devoted entirely to any single use (ag or non-ag) or uses
Current DWA approach uses maximum national or regional (HUC2) value
Each CWS watershed has a unique PCA for each generalized landcover type
PCT used as refinement in HED Dietary Assessment but not in EFED DWA
Determine likely pesticide exposure overlap with watersheds location

Objective



PCA: percent area in the watershed where crops are grown
PCT: percent of crops treated with a specific chemical

Graphical representation of what this effort is about
Move from what's possible for DW exposure to what's likely
Refine drinking water exposure estimates with the best available usage data
Refine assumptions for what area within a watershed is treated with a given chemical
Develop a method to apply PCA and PCT refinements at a watershed scale
Percent Crop Treated (PCT) used as refinement in HED Dietary Assessment but not in EFED DWA

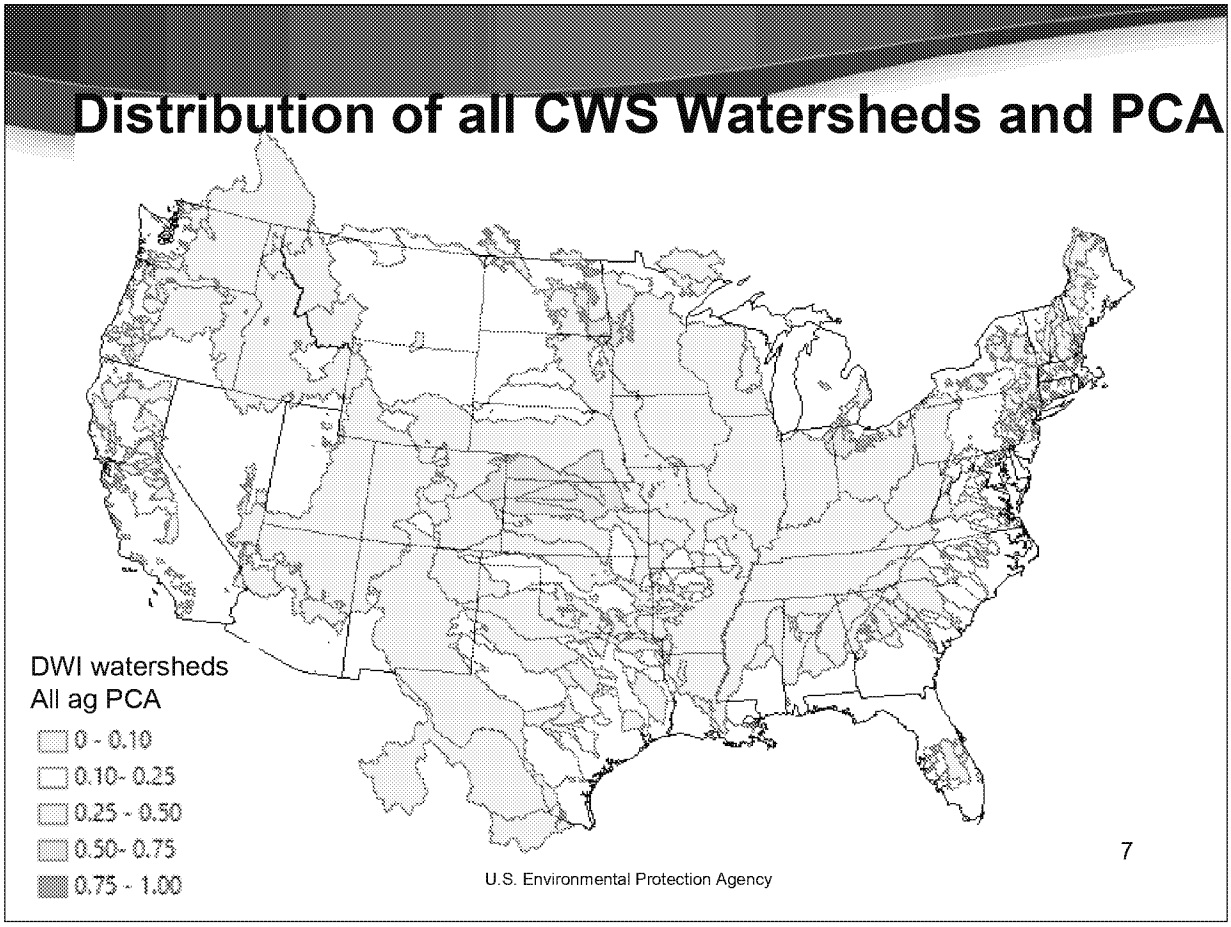
Relationship of Treated Area to EDWC

- EDWC is proportional to treated area, which scales with PCA and PCT
- Watershed PCAs have been calculated for a range of crops/crop groups (e.g. corn)
- Current uses of PCA and PCT
  - EFED DWA process uses maximum national and/or maximum regional PCA for refinements
  - Each delineated watershed has a unique PCA for each crop group and combinations of crop groups
  - PCTs are available at state level but have not been calculated for individual watersheds
- Watershed-scale PCA and PCT represent a potential new drinking water refinement for high tier assessments

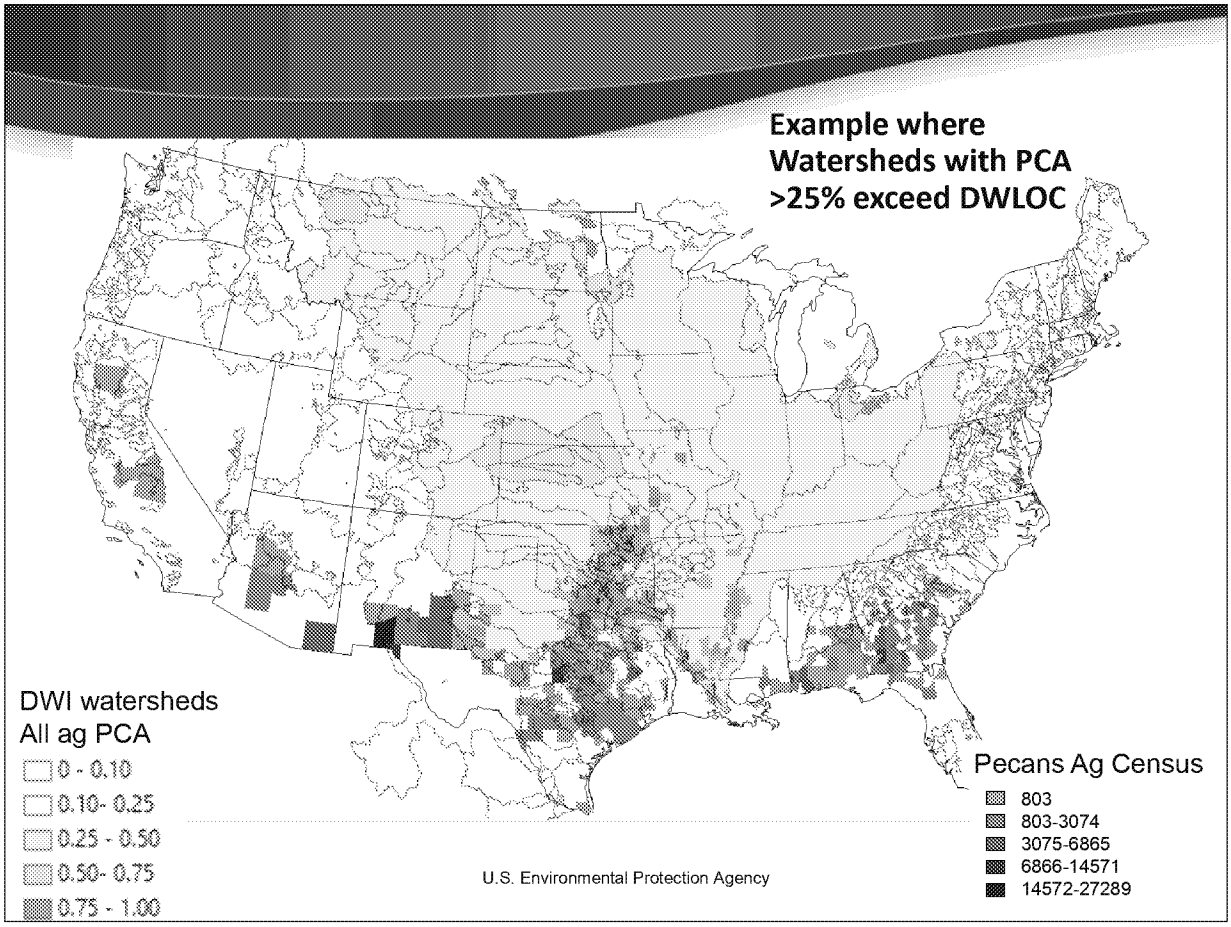
What data do we have to meet these objectives?

- Potential use sites
  - General land cover classes (based on Cropland Data Layer (CDL) & National Landcover Database (NLCD)
  - Crop-specific number of acres grown at state level (from USDA NASS Census of Agriculture)
  - Watershed-level PCA
- Usage data
  - Proprietary crop-specific PCT at state level
  - Proprietary non-ag PCT for selected uses at national level
  - Non-proprietary NASS and CA data
- Delineated Community Water System (CWS) watershed boundaries
  - Uncertainty with undelineated watersheds will be considered

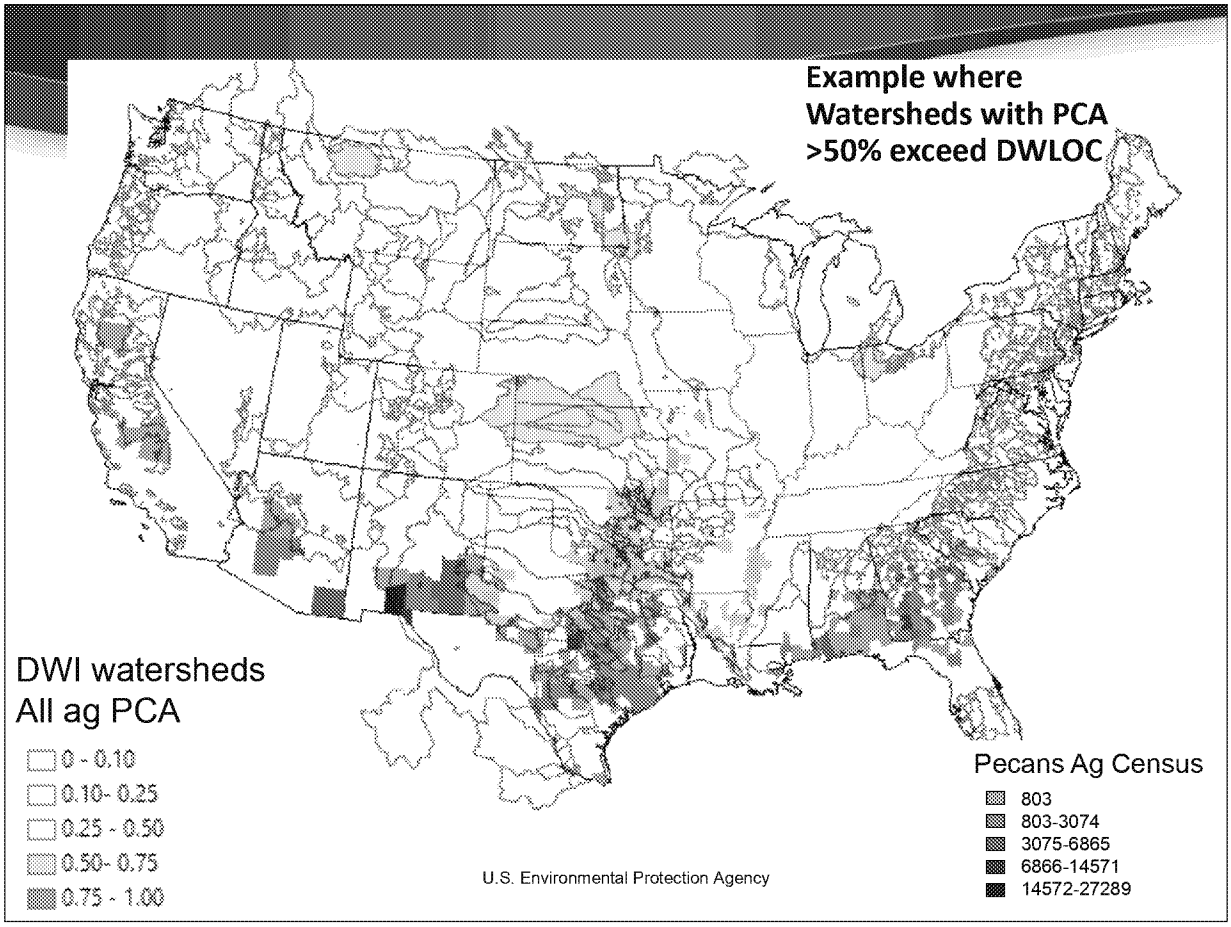
CDL is used for ESA, while NCLD was used for PCA development. Functionally equivalent with a few differences (e.g. turf PCA)
DWA PCA's developed prior to development of ESA approach with CDL groups
USDA NASS census ag data can help refine relevance of EDWC for crop groups to individual uses
CWS watersheds delineated in ????. Opportunity to update delineations and landcover associations but not able to complete with this effort.



Graphically representation of all CWS watersheds with their respective PCA's.
Watershed sizes range from very small to very large.
Majority of watersheds have PCA's less than 75%
20% of watersheds have PCA's of 0%



This slide shows watersheds that exceed DWLOC with a 25% or greater PCA adjustment
in other words all watersheds with PCA less than 25% pass the dietary level of concern and need no further refinements



Same as previous except threshold for pass vs fail is 50%. Can see a dramatic difference in number and geographic extent of watersheds passing. Shows how use of distribution of PCA vs current max PCA approach can focus into specific regions

Applying PCT to CWS Watershed

- Calculate the state-level treated acreage using the method developed for ESA
  - Acreage for single or multiple crops
- Calculate overlap between total treated acres and cropped area in individual watersheds
  - Use the different methods from ESA approach to allocate state level treated acres individual watersheds
    - Maximize treated acres in watershed
    - Uniformly distribute treated acres across state
    - Infill treated acres outside watershed first with excess acres overlapping watershed

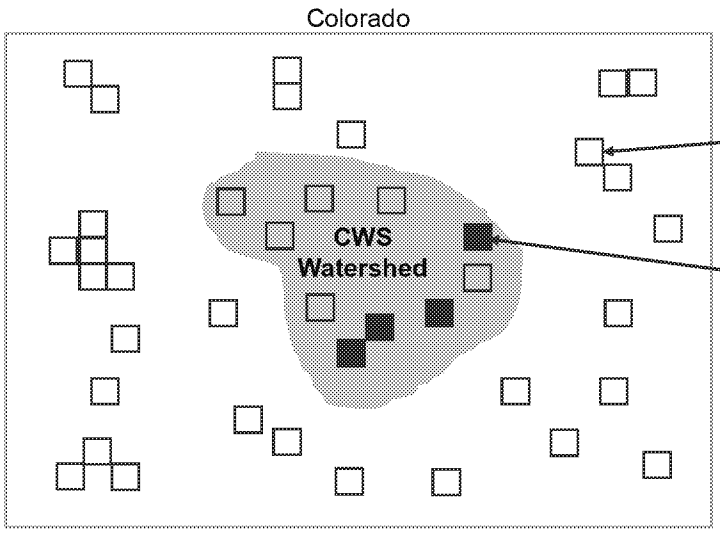
Historically, EPA has not applied PCT to DWA. However, recent approach for ESA suggests possible path forward. Allows for initial conservative assumption of all treated acres co-occuring with any single CWS watershed.
Further refinements allow for consideration of less conservative overlap between watershed and treated acres
For many pesticides will likely focus risk calls on specific sub-regions of the use pattern

Example of PCT Distribution Approach

All treated acres fall within the watershed

PCT = 10%

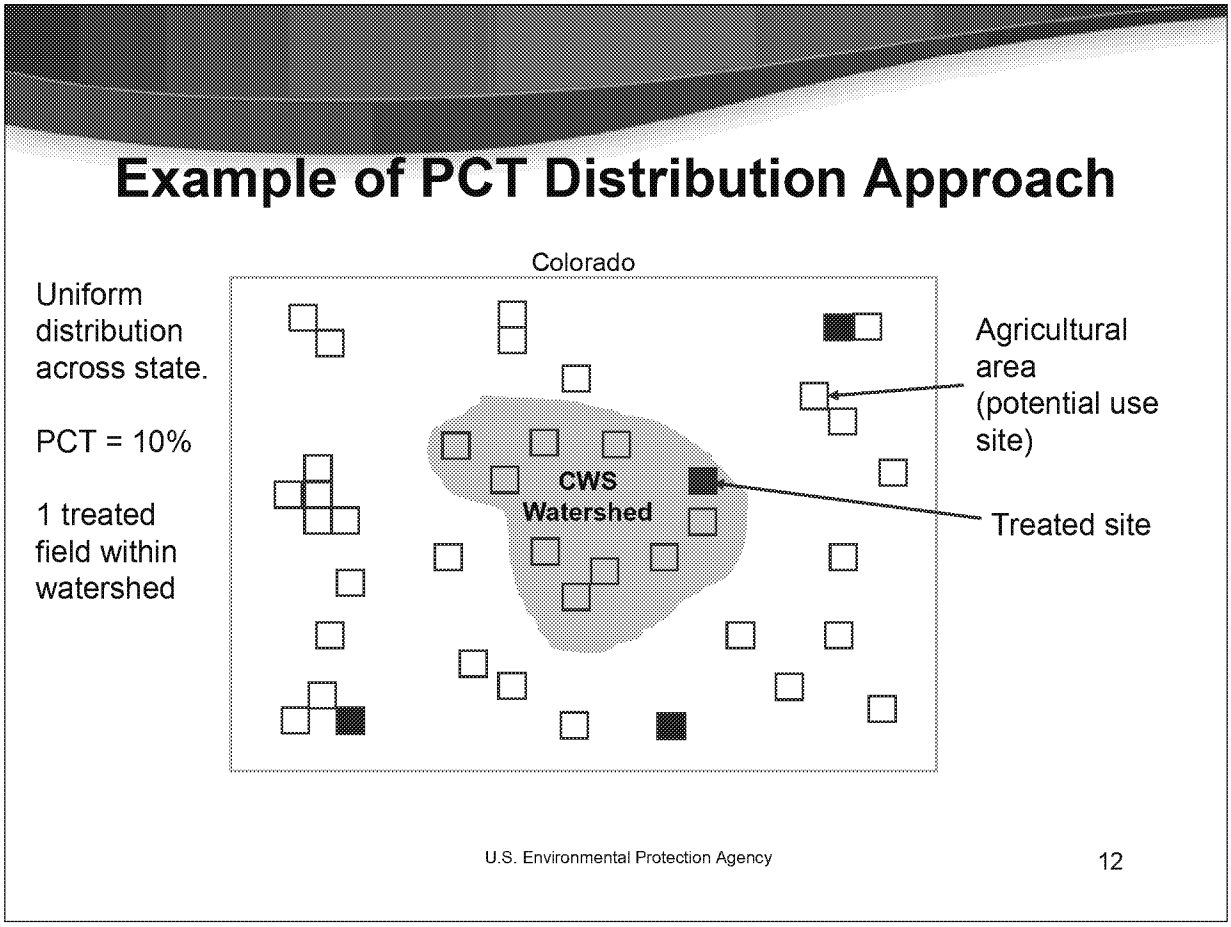
4 field treated within watershed



Agricultural area (potential use site)

Treated site

This graphically represents the "maximum overlap" approach from ESA. All treated acres are present within boundaries of CWS watershed. Most conservative method. For some CWS watersheds the overlap could result in 100% overlap.



This is graphical representation of the "uniform overlap" approach from ESA. In this case, treated acres are uniformly distributed across state (or states). Overlap is functionally equivalent to the state level PCT provided by BEAD from Kynetec data.

Third option not shown but assumes treated acres are outside watershed boundary and any excess treated acres form the overlap. Least conservative of the ESA methods

Taken together EPA could use a weight of evidence approach to define watersheds needing further refinements (e.g. regionally specific ag practices)

Assumptions
Treated acres are concentrated within species range (e.g., simulates focused area of pest pressure)
i.e., non-uniform distribution of pesticide usage across the state
Capped at total acres of potential use sites within range
Extra acres occur outside of range
Based on current use patterns over a 5-year period

Strengths
Conservative
reasonable upper bound on exposure using best available data
NOTE: alternative to employing the PCT is only considering the potential overlap of areas without considering usage vastly overestimates the amount of potential overlap
If there is no risk identified with this scenario, confident that there is minimal risk

Limitations
Assume that pest pressure is concentrated within species range every year

Consideration for WoE: The larger the species range, the more likely there will be overlap with treated areas (and the closer the assumption is to being representative). For instance, if the species range is state-size, then the total acres for the state will, by default, fall entirely within the range.

Calculation of overlap of treated acres for multistate watershed

- For watersheds that span multiple states we would aggregate the acreage based on the state level PCT and area of the watershed within each state
- Mirror the proposed ESA method for aggregating uses and states

EPA's approach will need to account for larger CWS watersheds that span multiple state boundaries and thus will need an aggregated PCT. Will mirror ESA approach to extent possible

Ultimately, much of this can be automated to define watersheds that pass and fail given specific EDWC and DWLOC

Conclusions

- Method will allow us to refine exposure assumptions with best available usage data
  - Integrates data at different scales
  - Conservatively accounts for distribution of potential use sites within individual watersheds
  - Considers alternative approaches to allocate treated acres (e.g. ESA method)
  - Different assumptions of pesticide usage on use sites may be considered
- Moves from “potential” to “more likely” amount of overlap
- Allows for more focused refinements on uses and regions that are most likely to result in risk

Questions for USDA Input

1. Please comment on the strengths and weaknesses of the proposed PCA distributional approach.
2. Please comment on the use of the proposed ESA method in DWA for distributing treated acres.
   a) Is it appropriate to use the ESA method for aggregating PCT across multiple states for drinking water?
   b) Is it appropriate to assess PCT at a sub-state level for drinking water?
   c) Is it appropriate to apply the ESA approach to non-agricultural uses for drinking water?
3. Are there additional PCT data sources that we should be referencing?

Questions for USDA consideration.

We will be asking similar question of the external peer reviewers.

Message

From: Kyle, Lee [Kyle.Lee@epa.gov]
Sent: 9/6/2019 8:16:33 PM
To: Kaul, Monisha [Kaul.Monisha@epa.gov]
CC: Thurman, Nelson [Thurman.Nelson@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Chism, William [Chism.Bill@epa.gov]; Tindall, Kelly [tindall.kelly@epa.gov]
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Thanks Monisha,

Monday morning Nelson and I will review this and get back with you.

Have a great weekend!

Lee

From: Kaul, Monisha <Kaul.Monisha@epa.gov>
Sent: Friday, September 06, 2019 2:28 PM
To: Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>
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Attached is a one-pager from BEAD that we can share on Monday. Please send us what you plan to share with the DDs (e.g., to kick off the meeting and background on your "ask" for BEAD). Hopefully, what we've put together will supplement you piece.

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I scheduled a quick check in with you tomorrow at noon.

Best,

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We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general groups can be made in future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

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To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/20

Drinking Water Projects Meeting Notes – Action items
August 20, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson, Lee

Contractor Peer Review

- Jan talked to Brian Katz, confirmed that we will use a single vehicle. They are ready to go, just waiting on us.
- Performance Work Statement for PCT/PCA was reviewed by Josh, Bill, Nelson, Lee, Claire (?)
    - Mark will clean up (address Nelson's comments) and send to Anna tomorrow for review by noon on Friday (gave Anna a heads up already).
    - Marietta can review it on Friday afternoon and then Lee can send to LaTangila.
    - Mark or Lee will combine the PCA/PCT and Scenarios documents before sending to Marietta.

Scenarios

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- Jan scheduled an EFED/BEAD DD briefing for 9/4
- Lee and Nelson will send something to Monisha this week to prepare her for the briefing

PCA/PCT

- Have been focusing on the contract document
- Will share the white paper outline by the end of next week for early feedback

Ex. 5 Deliberative Process (DP)

Monitoring

- Team met with Anna this morning to work on refining the questions
  - Adding a question on the case study challenges
  - Removing redundancies
- White paper, case studies, framework, and SOP to OSCP for the docket next week.
  - Marietta wants to see a draft of the questions before signing the transmittal memo.
- Next week will work on finalizing the questions (Rochelle will be back)
  - Send Marietta the questions to share with Rick
  - Update Alex on the questions prior to posting

USDA Briefing – Sept 17

- Outline
  - Intro/purpose of briefing slide
  - 3 projects (in AA briefing – slides attached)
  - Monitoring: 2-3 slides
    - Conclusions slide from AA briefing
    - Timeline
  - PCA/PCT: ~10 slides
    - Can use material from peer review document
    - PCA – 4-5 slides from previous briefings (Karen presented to PFTTT on TPTH – check if that assessment is public yet)
    - PCT – Kris has ESA slides we can modify
      - Industry has submitted comments for ESA PCT approach – contracted with Stone for malathion case study to get below state level – CLA presented to us (Mark S. was there). Marietta will send around CLA's comments.
      - Input we need from USDA – have something similar we prepared for BEAD to pull from
  - Scenarios: ~10 slides
    - Use same slides as previous briefings (EMPM?) to explain the concept
    - Input we need from USDA
- Aim to get Marietta draft slides by 9/3 for her general with Rick on 9/4 (if not possible then Marietta can use an outline)
- Elyssa will pull the slides together into one presentation
- Clean up slides and send to USDA by 9/10
- Send asks for scenarios dates to USDA by 9/10 – Need to write up the spreadsheet process clearly for their feedback – Lee and Nelson will follow up on whether someone else can help on this.

Next week – Dana, Nelson, and Elyssa will be out. Jan will leave the meeting on the calendar for Lee and Mark to talk about the contractor document if needed.

From: Arnold, Elyssa
Sent: Monday, August 12, 2019 3:56 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/12

Drinking Water Projects Meeting Notes – Action items
August 12, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson

Contractor Peer Review

- Mark updated the draft of the contractor statement of work from Lee with the PCA/PCT details – added to PCA/PCT folder on ERB6 SharePoint site
- Clarified that there will be 2 separate reviews on 2 timelines with one Task Order to minimize process and overhead
- Need to review the charge questions (these are fairly general right now) and expertise
- This week – review by Josh, Nelson, Claire (will discuss at PCA/PCT meeting tomorrow)
- Next week – review by Anna and Lee (both out this week)
- Jan will follow up on Lee's email to LaTangila with Brian Katz to highlight our priorities

Scenarios

- Input Parameters document – Team comments were due on Friday, Nelson will clean it up this week and send it to Jan for review
- Methods document – describes how inputs are processed and scenarios selected, what was done and why
    - Sept 19: First part will describe the methods, currently being written
    - Oct 15: Will include examples for corn and wheat – including generation and running of the scenarios
        - Previous runs for corn had curve numbers read backwards, currently fixing and testing
        - Corn will be done before wheat
- Overall Executive Summary needed in plain language
- Chlorpyrifos scenarios – Nelson sent an edited version of Rochelle's list before the meeting with the status for each crop/scenario (one typo – grapes will be separate from orchards)
    - Scenario Grouping (e.g., generic orchard, vineyard, vegetable) – will be charge questions for peer review; we will also ask for input from USDA
        - BEAD input – Lee will talk to Monisha next week and send her the list of scenarios. We will have a DD briefing with Kimberly before the USDA meeting to make sure EFED and BEAD are on the same page. Jan will get a DD briefing on the calendar first week in Sept.
    - Planting dates
        - Perennials
            - Rick had a generic proposal
            - Another idea – can we use bud or beginning bloom as a proxy for "emergence"?
            - Need to get USDA input
        - Annuals
            - Need USDA input on the method for filling in planting dates for state/crop combinations not covered in the Planting and Harvesting Guides (Rick's method – has been shared with BEAD)
            - USDA could do additional work on this beyond the top 16 (e.g., vegetables) instead of PFTTT. Scenarios could be ready to process within a couple weeks after getting the dates. Could be ready for Rochelle to run 1-2 months after getting dates.
        - Nelson will continue working on the SOP for dates, will work with Rick. Need to add context for why the dates are important (big impact on model output). Rick's document is ~30 pages. Goal is to share with USDA at the briefing in Sept.
        - First week of Sept – Marietta will call Sheryl with a heads up about the ask to help fill in the planting dates
- Processing scenarios – will do continually as dates are complete
    - Lee met with CCOE about using contractor computing power – will get an update when he is back in the office

PCA/PCT

- Got the 2012-2016 chlorpyrifos PCT data from BEAD – they don't think that an update will add a lot of value
- White paper outline is drafted
    - This week – will discuss with the team tomorrow and then finalize the outline
    - Next week – will start to drop in text
- Be prepared to address issues quickly (e.g., non-ag)

- Prioritize questions for USDA and scenarios that will impact chlorpyrifos

USDA Briefing

- Marietta has emailed Sheryl with the potential dates and has not gotten a response yet
- Rick wants to see the slides in advance, but does not need us to brief him first

---

From: Arnold, Elyssa
Sent: Monday, August 05, 2019 4:02 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>
Subject: RE: Drinking Water Assessment Update - meeting notes

Drinking Water Projects Meeting Notes – Action items
August 5, 2019

Contractor Peer Review

- Lee will send latest draft of the contractor statement of work to Mark
- Mark will add the PCT/PCA sections and charge questions into that document with the possible goal of having 1 task order rather than 2
- Mark will have a first draft to share by next week's meeting, 8/12
- Need to be aware of possible end of fiscal year delays in the contracting office in Cincinnati
- Jan will talk to Brian Katz to make sure he is aware of our priorities

Scenarios

- Input Parameters document will be completed this week
- Methods White Paper – current dates are below, but may need to tighten these up to allow for internal review time of up to 2 months depending on document length
    - Sept 19 framework complete (all parts except results)
    - Oct 15 entire paper complete – not including internal review
- Need to initiate project with Rick to add dates for perennials
- Peer review planned by end of February, then expect at least a month for re-runs
- Will need management briefings to decide which centile to use
- For next week, 8/12 – Lee will get a plan in place for prioritizing the chlorpyrifos scenarios (Nelson can report back next week when Lee is out)
- Lee will talk to LaTangila about a contractor for processing the scenarios
    - Stone or Waterborne may be options – Lee can call them and ask if they are reachable on any EPA contracts

PCA/PCT

- Mark C. will check in with Mark S. on getting the 2012-2016 chlorpyrifos PCT data
- Will also ask about whether they plan on an updated SUUM per Marietta's conversation with Kimberly
- Holding weekly project meetings every Tuesday

USDA Briefing

- Marietta will talk to Rick about the briefing tomorrow at their general before emailing Sheryl, we may need to brief Rick first
- Everyone should have their asks for USDA ready by the last week in August
    - For PCT – USDA input on non-ag data sources

Message

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Sent: 9/6/2019 6:28:10 PM
To: Kyle, Lee [Kyle.Lee@epa.gov]
CC: Thurman, Nelson [Thurman.Nelson@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Chism, William [Chism.Bill@epa.gov]; Tindall, Kelly [tindall.kelly@epa.gov]
Subject: RE: Need your help developing initial crop-related inputs for field scenarios
Attachments: BEAD support for EFED modeling for Chlorpyrifos.docx

Lee,

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    - Industry has submitted comments for ESA PCT approach – contracted with Stone for malathion case study to get below state level – CLA presented to us (Mark S. was there). Marietta will send around CLA's comments.
    - Input we need from USDA – have something similar we prepared for BEAD to pull from
- Scenarios: ~10 slides
  - Use same slides as previous briefings (EMPM?) to explain the concept
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- Aim to get Marietta draft slides by 9/3 for her general with Rick on 9/4 (if not possible then Marietta can use an outline)
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Next week – Dana, Nelson, and Elyssa will be out. Jan will leave the meeting on the calendar for Lee and Mark to talk about the contractor document if needed.

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Sent: Monday, August 12, 2019 3:56 PM
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Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/12

Drinking Water Projects Meeting Notes – Action items
August 12, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson

Contractor Peer Review

- Mark updated the draft of the contractor statement of work from Lee with the PCA/PCT details – added to PCA/PCT folder on ERB6 SharePoint site
- Clarified that there will be 2 separate reviews on 2 timelines with one Task Order to minimize process and overhead
- Need to review the charge questions (these are fairly general right now) and expertise
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- Methods document – describes how inputs are processed and scenarios selected, what was done and why
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    - This week – will discuss with the team tomorrow and then finalize the outline
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Subject: RE: Drinking Water Assessment Update - meeting notes

Drinking Water Projects Meeting Notes – Action items
August 5, 2019

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- Will also ask about whether they plan on an updated SUUM per Marietta's conversation with Kimberly
- Holding weekly project meetings every Tuesday

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- Marietta will talk to Rick about the briefing tomorrow at their general before emailing Sheryl, we may need to brief Rick first
- Everyone should have their asks for USDA ready by the last week in August
    - For PCT – USDA input on non-ag data sources

BEAD support for EFED's SAM scenarios that will be used for the Chlorpyrifos assessment

BEAD's preliminary approach:

1. EFED will provide their timing data for the 16 largest acreage crops for BEAD's review. Following BEAD's recommendation from 2018, EFED planned to use USDA's Usual Plant/Harvest dates by state.
   - BEAD will review EFED's timing data for the 16 largest acreage crops.

2. BEAD will review of EFED's crop and crop grouping spreadsheet and will work to develop several general scenarios that match two of EFED's general crop groups – Orchards (perennial crops) and Vegetables (annual crops). This would be based on general crop phenology and grouped into scenarios with the similar model parameters (e.g., Curve Number). These would be used for modeling rather than a crop-specific scenario. Preliminary scenarios that are being considered are:

   - "Vegetable crops" grown as commodity field crops (e.g., dry beans, mustard, processing tomatoes, etc.). Root crops (carrots, dry onions, potatoes, sugar beets) may also be included here, but additional discussion is needed.
   - Vegetable crops that are intensely managed and are grown for fresh market (e.g., Brassica vegetables, green onions, fresh tomatoes, etc.). BEAD will also develop scenarios for multiple crops grown on the same fields in a calendar year and indicate which states should be assessed.
   - Evergreen Orchard Crops (e.g., all citrus, avocado, christmas trees)
   - Deciduous Orchard Crops (e.g., most fruit and nut trees and possibly vine and trellis crops as well)
   - BEAD will base the dates for perennial deciduous crops on when leaves are present (begin leafing, full leaf, leaf senescence) using crop phenology-based terms.
   - BEAD will try to develop some terminology for some parameters that is more descriptive. For example, the date for crop maturity is not the point when the crop is mature, it is the date when the crop foliage is completely developed.

3. For each of the highlighted crop/HUC-2 combinations from the Chlorpyrifos Crop Matrix, BEAD will compare the US production to the state production to identify the states that produce the majority of US Production. Based on available resources, BEAD will determine an acreage cutoff and develop data only for the major production states. This will result in data being developed for a limited number of crop/HUC-2 combinations.

Other Topics for Future Discussion:

- BEAD review of the Statement of Work for the external peer review of the methods & PCA/PCT.
- BEAD review of CLA comments on methods.
- Review typical planting and harvesting dates to see if crops can be merged into fewer categorizes.
- Additional discussion of model input parameters and characteristic of active ingredients as needed.

Timing and Next Steps:

- BEAD can begin work on items 1, 2, 3 in early October with a minimum of 3-4 weeks needed. This will likely require some working meeting between BEAD and EFED.
- BEAD recommends that USDA be involved in determining crop dates, crop grouping, erosion parameters, etc.

Message

From: Kaul, Monisha [Kaul.Monisha@epa.gov]
Sent: 9/4/2019 1:42:14 PM
To: Becker, Jonathan [Becker.Jonathan@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]
CC: Tindall, Kelly [tindall.kelly@epa.gov]; Kiely, Timothy [Kiely.Timothy@epa.gov]; Chism, William [Chism.Bill@epa.gov]
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Resent the access to word doc in a separate email – I heard you all could not open it.

From: Kaul, Monisha
Sent: Tuesday, September 03, 2019 2:14 PM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Paisley-Jones, Claire <paisley-jones.claire@epa.gov>
Cc: Tindall, Kelly <tindall.kelly@epa.gov>; Timothy Kiely <Kiely.Timothy@epa.gov>; Chism, William <Chism.Bill@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Hi all –

I just met with Mark C. and Lee Kyle about some help they are requesting. One task is to review the attached draft proposal. They mentioned that SIAB has reviewed a previous version – but I am sending this around so we are all looped in. Please add your comments by the end of this week.

I also received draft slides for next week's DD briefing. Jonathan, let me know if you have any comments. We should be receiving one more slide deck from Mark C – which I will also send around. Bill/Kelly - this is an FYI – but any thoughts are welcome.

Tim – this is FYI

As background – I am adding meeting notes from the last BAB-EFED meetings:

September 3, 2019
Lee. Mark C., Monisha

- Request for BEAD to review contract task order. Try to complete by end of this week. Mark/Claire reviewed earlier version.
- EFED will send all materials to USDA by 9/10 in advance of 9/17 meeting
- Jonathan will set up meeting with Nelson about the crop grouping spreading review.
- EFED will send slide decks for upcoming DD briefing. Both are being reviewed by Marietta now. DD briefing is 9/9.

August 22, 2019
Lee (EFED), Monisha, Jonathan
Email from Lee Kyle, Aug 21: *We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general*

groups can be made in future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

Notes:

- BEAD suggests that the input from USDA should be for not only planting/harvest date but also for crop groupings and other crop specific inputs.
- BEAD will begin by reviewing EFED's crop grouping spreadsheet over next week.
- Keep Tim in the loop since this will involve consultation with OPMP.
- Mark Suarez has done some similar work (ESA). Include him. Jonathan will touch base with Mark.
- Jonathan will compile sources for planting dates.
- USDA meeting 9/17 - Sheryl, Teung, Clayton, Linda Abbott
  - BEAD has requested an invitation

- Lee indicated that Kimberly and Marietta requested a briefing on Sept 4. However, Nelson and Monisha are out until then, so the briefing may be moved.

Let me know if you have any questions.

Thanks,

Monisha

Monisha Kaul, Chief
Biological Analysis Branch
Biological and Economic Analysis Division
Office of Pesticide Programs
US Environmental Protection Agency
703-308-0098

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Thursday, August 29, 2019 4:05 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>; Matuszko, Jan <Matuszko.Jan@epa.gov>
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

I've attached our draft proposal for contract peer review for the scenarios project and the PCA/PCT project. We sent it to contracts yesterday, but we have some time before we need to finalize it.

Please take a look at the charge questions for each project to make sure we're in agreement. The Scenarios questions are very similar to the questions we worked on with you last year. They start on page 12.

Thanks. I hope you had a wonderful vacation!

Lee

From: Kyle, Lee
Sent: Thursday, August 22, 2019 1:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>

Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha and Jonathan,

- Attached is the crop matrix spreadsheet I mentioned
- Jonathan, please review the curve number table (Table 1) in the Input Parameters document. We developed the groupings based largely on curve number
- You've both been invited to the DD briefing on the 4th. I'll ask them about finding another day since you'll be out next week
- I'll talk to Jan about inviting you to the USDA briefing on the 17th

Jonathan, as you suggested we will ask USDA if the groupings are sufficient for the purposes of the modeling effort, in addition to asking them to enter the planting dates.

Thanks!

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:33 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

Kimberly just informed me you'll be out all next week. If it's okay with you, Nelson and I can work with your staff/Jonathan on much of this next week.

I scheduled a quick check in with you tomorrow at noon.

Best,

Lee

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Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
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Hi Monisha,

The PWC scenarios project you helped us with last year is one of three drinking water projects that OPP needs to complete in time to be used in next year's chlorpyrifos risk assessment.

We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate

and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general groups can be made in future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

Marietta and Kimberly have tasked us with presenting our initial inputs to them on September 4th. This will help us prepare for a meeting we've got scheduled with USDA on the 17th. I wanted to give you a heads up on this, and can follow up with details next week.

Lee

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, August 20, 2019 3:51 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/20

Drinking Water Projects Meeting Notes – Action items
August 20, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson, Lee

Contractor Peer Review

- Jan talked to Brian Katz, confirmed that we will use a single vehicle. They are ready to go, just waiting on us.
- Performance Work Statement for PCT/PCA was reviewed by Josh, Bill, Nelson, Lee, Claire (?)
    - Mark will clean up (address Nelson's comments) and send to Anna tomorrow for review by noon on Friday (gave Anna a heads up already).
    - Marietta can review it on Friday afternoon and then Lee can send to LaTangila.
    - Mark or Lee will combine the PCA/PCT and Scenarios documents before sending to Marietta.

Scenarios

- Nelson sent Input Parameters document to Jan on Friday.
    - Jan will review by the first week in September (Nelson is at ACS next week)
- Methods document – still on schedule
    - Demo of batch runs to PFTTT on Wednesday
- Scenario grouping for chlorpyrifos
    - Nelson and Dirk are going to focus on uses/management factors that result in different pest management approaches
- Jan scheduled an EFED/BEAD DD briefing for 9/4
- Lee and Nelson will send something to Monisha this week to prepare her for the briefing

PCA/PCT

- Have been focusing on the contract document
- Will share the white paper outline by the end of next week for early feedback

Ex. 5 Deliberative Process (DP)

Monitoring

- Team met with Anna this morning to work on refining the questions
    - Adding a question on the case study challenges
    - Removing redundancies
- White paper, case studies, framework, and SOP to OSCP for the docket next week.

    - Marietta wants to see a draft of the questions before signing the transmittal memo.
- Next week will work on finalizing the questions (Rochelle will be back)
    - Send Marietta the questions to share with Rick
    - Update Alex on the questions prior to posting

USDA Briefing – Sept 17

- Outline
    - Intro/purpose of briefing slide
    - 3 projects (in AA briefing – slides attached)
    - Monitoring: 2-3 slides
        - Conclusions slide from AA briefing
        - Timeline
    - PCA/PCT: ~10 slides
        - Can use material from peer review document
        - PCA – 4-5 slides from previous briefings (Karen presented to PFTTT on TPTH – check if that assessment is public yet)
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CC: Tindall, Kelly [tindall.kelly@epa.gov]; Kiely, Timothy [Kiely.Timothy@epa.gov]; Chism, William [Chism.Bill@epa.gov]
Subject: FW: Need your help developing initial crop-related inputs for field scenarios
Attachments: 2019-08-30 DRAFTy scenarios briefing for USDA.pptx

<!--[if lte mso 15 || CheckWebRef]-->

Kaul, Monisha has shared a OneDrive for Business file with you. To view it, click the link below.

2019-08-28 DRAFT Combined External Peer Review Proposal for PWC Scenarios and PCA PCT.docx

<!--[endif]-->

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August 22, 2019
Lee (EFED), Monisha, Jonathan
Email from Lee Kyle, Aug 21: *We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general groups can be made in future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.*

Notes:

- BEAD suggests that the input from USDA should be for not only planting/harvest date but also for crop groupings and other crop specific inputs.
- BEAD will begin by reviewing EFED's crop grouping spreadsheet over next week.
- Keep Tim in the loop since this will involve consultation with OPMP.
- Mark Suarez has done some similar work (ESA). Include him. Jonathan will touch base with Mark.
- Jonathan will compile sources for planting dates.
- USDA meeting 9/17 - Sheryl, Teung, Clayton, Linda Abbott
  - BEAD has requested an invitation

- Lee indicated that Kimberly and Marietta requested a briefing on Sept 4. However, Nelson and Monisha are out until then, so the briefing may be moved.

Let me know if you have any questions.

Thanks,

Monisha

Monisha Kaul, Chief
Biological Analysis Branch
Biological and Economic Analysis Division
Office of Pesticide Programs
US Environmental Protection Agency
703-308-0098

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Thursday, August 29, 2019 4:05 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>; Matuszko, Jan <Matuszko.Jan@epa.gov>
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

I've attached our draft proposal for contract peer review for the scenarios project and the PCA/PCT project. We sent it to contracts yesterday, but we have some time before we need to finalize it.

Please take a look at the charge questions for each project to make sure we're in agreement. The Scenarios questions are very similar to the questions we worked on with you last year. They start on page 12.

Thanks. I hope you had a wonderful vacation!

Lee

From: Kyle, Lee
Sent: Thursday, August 22, 2019 1:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha and Jonathan,

- Attached is the crop matrix spreadsheet I mentioned
- Jonathan, please review the curve number table (Table 1) in the Input Parameters document. We developed the groupings based largely on curve number
- You've both been invited to the DD briefing on the 4th. I'll ask them about finding another day since you'll be out next week
- I'll talk to Jan about inviting you to the USDA briefing on the 17th

Jonathan, as you suggested we will ask USDA if the groupings are sufficient for the purposes of the modeling effort, in addition to asking them to enter the planting dates.

Thanks!

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:33 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

Kimberly just informed me you'll be out all next week. If it's okay with you, Nelson and I can work with your staff/Jonathan on much of this next week.

I scheduled a quick check in with you tomorrow at noon.

Best,

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

The PWC scenarios project you helped us with last year is one of three drinking water projects that OPP needs to complete in time to be used in next year's chlorpyrifos risk assessment.

We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general groups can be made in

future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

Marietta and Kimberly have tasked us with presenting our initial inputs to them on September 4th. This will help us prepare for a meeting we've got scheduled with USDA on the 17th. I wanted to give you a heads up on this, and can follow up with details next week.

Lee

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, August 20, 2019 3:51 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/20

Drinking Water Projects Meeting Notes – Action items
August 20, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson, Lee

Contractor Peer Review

- Jan talked to Brian Katz, confirmed that we will use a single vehicle. They are ready to go, just waiting on us.
- Performance Work Statement for PCT/PCA was reviewed by Josh, Bill, Nelson, Lee, Claire (?)
    - Mark will clean up (address Nelson's comments) and send to Anna tomorrow for review by noon on Friday (gave Anna a heads up already).
    - Marietta can review it on Friday afternoon and then Lee can send to LaTangila.
    - Mark or Lee will combine the PCA/PCT and Scenarios documents before sending to Marietta.

Scenarios

- Nelson sent Input Parameters document to Jan on Friday.
    - Jan will review by the first week in September (Nelson is at ACS next week)
- Methods document – still on schedule
    - Demo of batch runs to PFTTT on Wednesday
- Scenario grouping for chlorpyrifos
    - Nelson and Dirk are going to focus on uses/management factors that result in different pest management approaches
- Jan scheduled an EFED/BEAD DD briefing for 9/4
- Lee and Nelson will send something to Monisha this week to prepare her for the briefing

PCA/PCT

- Have been focusing on the contract document
- Will share the white paper outline by the end of next week for early feedback

Ex. 5 Deliberative Process (DP)

Monitoring

- Team met with Anna this morning to work on refining the questions
    - Adding a question on the case study challenges
    - Removing redundancies
- White paper, case studies, framework, and SOP to OSCP for the docket next week.
    - Marietta wants to see a draft of the questions before signing the transmittal memo.
- Next week will work on finalizing the questions (Rochelle will be back)

- Send Marietta the questions to share with Rick
- Update Alex on the questions prior to posting

USDA Briefing – Sept 17

- Outline
  - Intro/purpose of briefing slide
  - 3 projects (in AA briefing – slides attached)
  - Monitoring: 2-3 slides
    - Conclusions slide from AA briefing
    - Timeline
  - PCA/PCT: ~10 slides
    - Can use material from peer review document
    - PCA – 4-5 slides from previous briefings (Karen presented to PFTTT on TPTH – check if that assessment is public yet)
    - PCT – Kris has ESA slides we can modify
      - Industry has submitted comments for ESA PCT approach – contracted with Stone for malathion case study to get below state level – CLA presented to us (Mark S. was there). Marietta will send around CLA's comments.
      - Input we need from USDA – have something similar we prepared for BEAD to pull from
  - Scenarios: ~10 slides
    - Use same slides as previous briefings (EMPM?) to explain the concept
    - Input we need from USDA
- Aim to get Marietta draft slides by 9/3 for her general with Rick on 9/4 (if not possible then Marietta can use an outline)
- Elyssa will pull the slides together into one presentation
- Clean up slides and send to USDA by 9/10
- Send asks for scenarios dates to USDA by 9/10 – Need to write up the spreadsheet process clearly for their feedback – Lee and Nelson will follow up on whether someone else can help on this.

Next week – Dana, Nelson, and Elyssa will be out. Jan will leave the meeting on the calendar for Lee and Mark to talk about the contractor document if needed.

From: Arnold, Elyssa
Sent: Monday, August 12, 2019 3:56 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/12

Drinking Water Projects Meeting Notes – Action items
August 12, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson

Contractor Peer Review

- Mark updated the draft of the contractor statement of work from Lee with the PCA/PCT details – added to PCA/PCT folder on ERB6 SharePoint site
- Clarified that there will be 2 separate reviews on 2 timelines with one Task Order to minimize process and overhead
- Need to review the charge questions (these are fairly general right now) and expertise
- This week – review by Josh, Nelson, Claire (will discuss at PCA/PCT meeting tomorrow)
- Next week – review by Anna and Lee (both out this week)

- Jan will follow up on Lee's email to LaTangila with Brian Katz to highlight our priorities

Scenarios

- Input Parameters document – Team comments were due on Friday, Nelson will clean it up this week and send it to Jan for review
- Methods document – describes how inputs are processed and scenarios selected, what was done and why
    - Sept 19: First part will describe the methods, currently being written
    - Oct 15: Will include examples for corn and wheat – including generation and running of the scenarios
        - Previous runs for corn had curve numbers read backwards, currently fixing and testing
        - Corn will be done before wheat
- Overall Executive Summary needed in plain language
- Chlorpyrifos scenarios – Nelson sent an edited version of Rochelle's list before the meeting with the status for each crop/scenario (one typo – grapes will be separate from orchards)
    - Scenario Grouping (e.g., generic orchard, vineyard, vegetable) – will be charge questions for peer review; we will also ask for input from USDA
        - BEAD input – Lee will talk to Monisha next week and send her the list of scenarios. We will have a DD briefing with Kimberly before the USDA meeting to make sure EFED and BEAD are on the same page. Jan will get a DD briefing on the calendar first week in Sept.
    - Planting dates
        - Perennials
            - Rick had a generic proposal
            - Another idea – can we use bud or beginning bloom as a proxy for "emergence"?
            - Need to get USDA input
        - Annuals
            - Need USDA input on the method for filling in planting dates for state/crop combinations not covered in the Planting and Harvesting Guides (Rick's method – has been shared with BEAD)
            - USDA could do additional work on this beyond the top 16 (e.g., vegetables) instead of PFTTT. Scenarios could be ready to process within a couple weeks after getting the dates. Could be ready for Rochelle to run 1-2 months after getting dates.
        - Nelson will continue working on the SOP for dates, will work with Rick. Need to add context for why the dates are important (big impact on model output). Rick's document is ~30 pages. Goal is to share with USDA at the briefing in Sept.
        - First week of Sept – Marietta will call Sheryl with a heads up about the ask to help fill in the planting dates
- Processing scenarios – will do continually as dates are complete
    - Lee met with CCOE about using contractor computing power – will get an update when he is back in the office

PCA/PCT

- Got the 2012-2016 chlorpyrifos PCT data from BEAD – they don't think that an update will add a lot of value
- White paper outline is drafted
    - This week – will discuss with the team tomorrow and then finalize the outline
    - Next week – will start to drop in text
- Be prepared to address issues quickly (e.g., non-ag)
- Prioritize questions for USDA and scenarios that will impact chlorpyrifos

USDA Briefing

- Marietta has emailed Sheryl with the potential dates and has not gotten a response yet
- Rick wants to see the slides in advance, but does not need us to brief him first

From: Arnold, Elyssa
Sent: Monday, August 05, 2019 4:02 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>
Subject: RE: Drinking Water Assessment Update - meeting notes

Drinking Water Projects Meeting Notes – Action items
August 5, 2019

Contractor Peer Review

- Lee will send latest draft of the contractor statement of work to Mark
- Mark will add the PCT/PCA sections and charge questions into that document with the possible goal of having 1 task order rather than 2
- Mark will have a first draft to share by next week's meeting, 8/12
- Need to be aware of possible end of fiscal year delays in the contracting office in Cincinnati
- Jan will talk to Brian Katz to make sure he is aware of our priorities

Scenarios

- Input Parameters document will be completed this week
- Methods White Paper – current dates are below, but may need to tighten these up to allow for internal review time of up to 2 months depending on document length
    - Sept 19 framework complete (all parts except results)
    - Oct 15 entire paper complete – not including internal review
- Need to initiate project with Rick to add dates for perennials
- Peer review planned by end of February, then expect at least a month for re-runs
- Will need management briefings to decide which centile to use
- For next week, 8/12 – Lee will get a plan in place for prioritizing the chlorpyrifos scenarios (Nelson can report back next week when Lee is out)
- Lee will talk to LaTangila about a contractor for processing the scenarios
    - Stone or Waterborne may be options – Lee can call them and ask if they are reachable on any EPA contracts

PCA/PCT

- Mark C. will check in with Mark S. on getting the 2012-2016 chlorpyrifos PCT data
- Will also ask about whether they plan on an updated SUUM per Marietta's conversation with Kimberly
- Holding weekly project meetings every Tuesday

USDA Briefing

- Marietta will talk to Rick about the briefing tomorrow at their general before emailing Sheryl, we may need to brief Rick first
- Everyone should have their asks for USDA ready by the last week in August
    - For PCT – USDA input on non-ag data sources

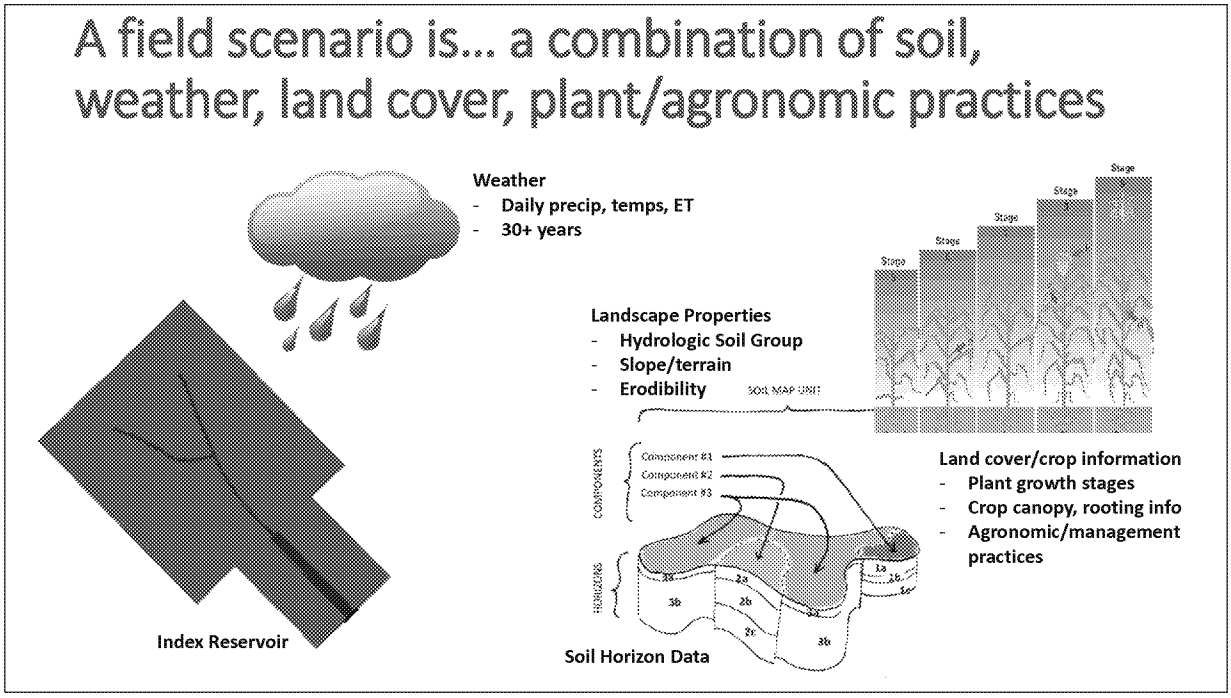
Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs

Presentation to USDA

Tuesday, September 17, 2019

Agenda

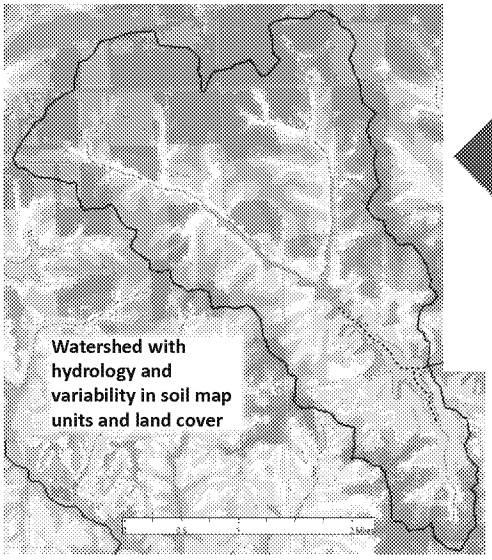
- Overview of the Scenarios project
- Questions for USDA on data inputs

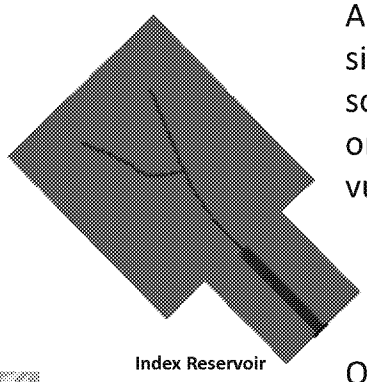


Nelson

For PWC, scenario is combination of soil, land cover, weather, crop/agronomic practices that occur in the watershed that supplies the index reservoir.
Pull soil data from SSURGO – includes landscape props and horizon data – hydrologic soil group is key, particularly for mobile chemicals; slope and erodibility come into play with high Koc (low mobility) chemicals
Crop data and agronomic practices come from a variety of sources – we're updating these in our guidance now
Weather data is changing – from old SAMSON data (1961-1990) to more extensive gridded data from NOAA with more recent coverage (1961-2014)

What PWC scenarios represent





An artificial watershed – a simplification with one soil, one land cover, based on a combination of vulnerable conditions.

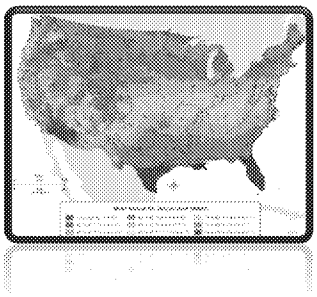
One water body (index reservoir) with a fixed drainage area.

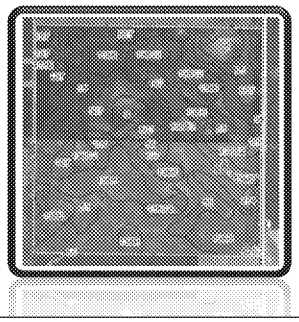
Nelson

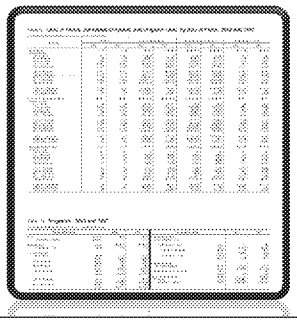
Color patterns on the left represent different soil-land cover combinations that occur in this watershed
We simplify this for our Tier 2 assessment in PWC – one soil type; one land cover (even with PCA adjustments, still one cover)
We select a runoff-prone soil for the crop, but not the most runoff-prone soil conditions for the watershed. Not all watersheds have the same combination of crop/soil cover – there are some that are dominated by runoff-prone conditions, but as the watershed increases in size, the diversity of conditions also increases.
The fixed drainage area and reservoir volume are part of the 'conservative' inputs that go into our Tier 2 assessment.

How current scenarios were developed

- The largely manual process relied heavily on professional judgement
  - Target an area "that appropriately represents the crop area" using USDA Ag Census and Major Land Resource Areas (MLRA)
  - Use the nearest weather station (SAMSON data) linked to the MLRA
  - Identify hydrologic group C or D soil (from SSURGO) within the county(ies)/MLRA that supports the crop in question; use (NRCS) benchmark soils when possible
  - Use crop data from USDA Crop Profiles, extension specialists, universities





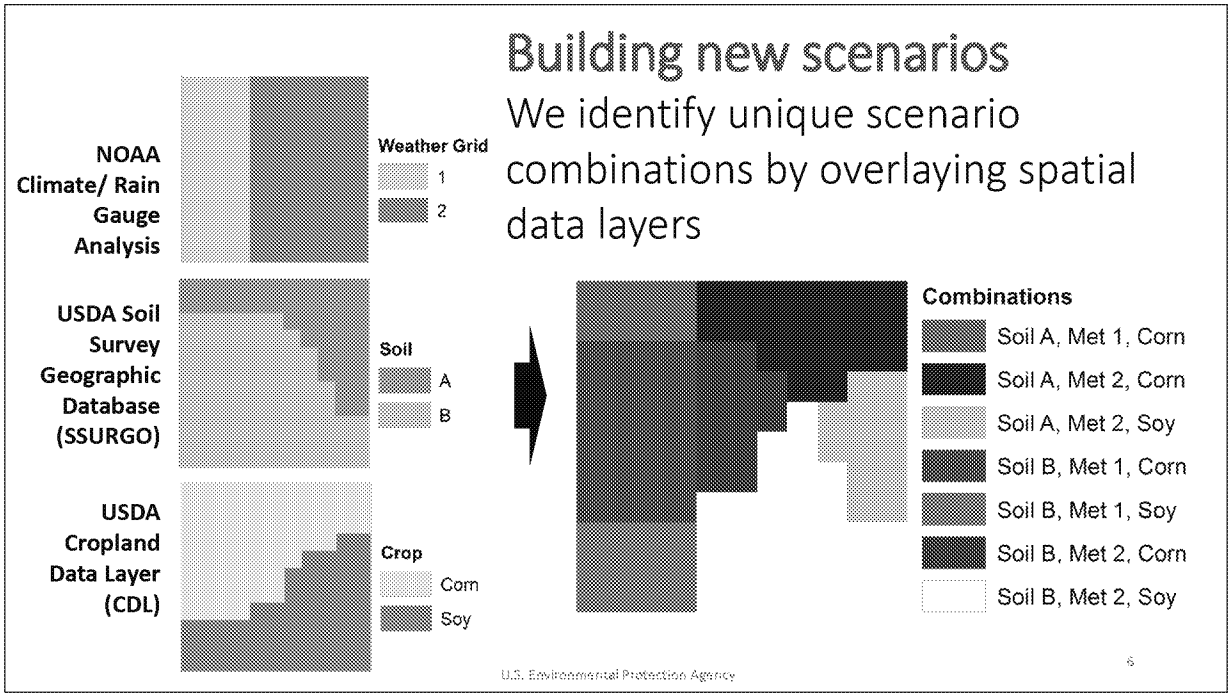


Nelson

Don't get into the details: largely manual process.
A lot of sleuthing to gather data for developing scenarios – try to select a soil on which the crop is/can be grown, but also one that has a wealth of data (benchmark soils).
Weather stations are spread out, so we try to find one that is close to the scenario area.
Crop data relies a lot on USDA sources.

Challenges/Opportunity

- **Limitations of existing scenarios**
  - Inconsistencies in how they were developed over time – different input sources, practices
  - Uncertain levels of vulnerability and/or representation of use areas
  - Served well as screens, but could be updated, improved
- **Opportunity**
  - Develop a quantifiable method for describing the relative vulnerability of the scenarios so they will be consistent across crops/groups and regions
    - **Advances in best available data, especially geospatial data**
      - Allows consistency, transparency and automation for generating scenarios
      - Incorporates current predominant agronomic practices (e.g., cultivation along contours, residue cover; no till)

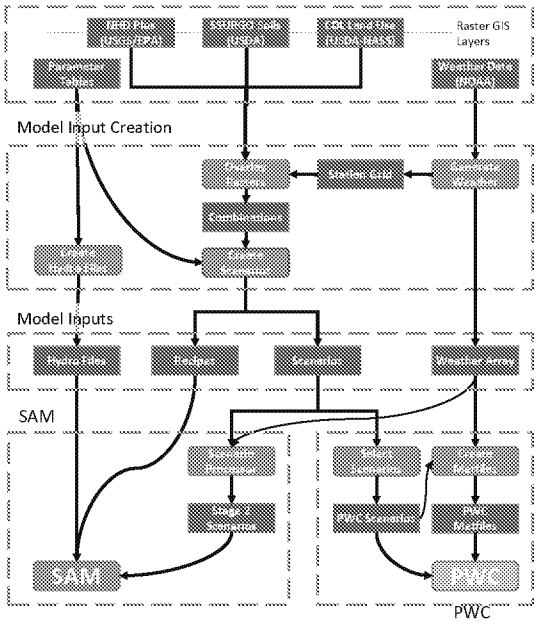


Unique combinations of land use, soil, and weather
Generated by an overlay of 4 gridded (raster) GIS layers for US
Land Use
Cropland Data Layer (CDL) – USDA
Soils
Soil Survey Geographic Database (SSURGO) – USDA
Weather
Interpolated NOAA Climate/ Rain Gauge Analysis –
Water Body
National Hydrology Dataset (NHD) Plus – USGS/EPA
Used for modeling in SAM

Building/ Automating New Scenarios

Coding
Documented all inputs for transparency

Automated, tested and documented (in a code repository) all Python processing scripts to ensure high quality and consistency



Data sources

- Soil Survey Geographic Database (SSURGO) – USDA
- Cropland Data Layer (CDL) for multiple years – USDA
  - Crop plant and harvest dates
  - Curve numbers
  - Irrigation parameters
- Interpolated Climate and Rain Gauge Analysis – NOAA
- Raster overlay **continuous** over continental US, 30 meter resolution

Key:
- Dataset
- Process (Python)
- Process (Other)

Selecting Representative Scenarios

Corn Pilot Study

- Random sample of unique scenario combinations from each HUC-2 region
- Exploratory Data Analyses/Scoping for each region to ID more scientific/methodological issues

Water Half-Life = Stable

Soil Half-Life = Variable

K_{ow}	Half-Life X_1 (Short)	Half-Life X_2 (Med-Long)	Half-Life X_3 (Stable)
K_{ow} (Low)	Y_{L1}	Y_{L2}	Y_{L3}
K_{ow} (Medium)	Y_{M1}	Y_{M2}	Y_{M3}
K_{ow} (High)	Y_{H1}	Y_{H2}	Y_{H3}

Methodologies for…

- Area-weighted percentile ranking
- Automating the scenario selection process
- Mitigating data gaps by using surrogate crops/crop groups
- Standardizing, documenting QC processes

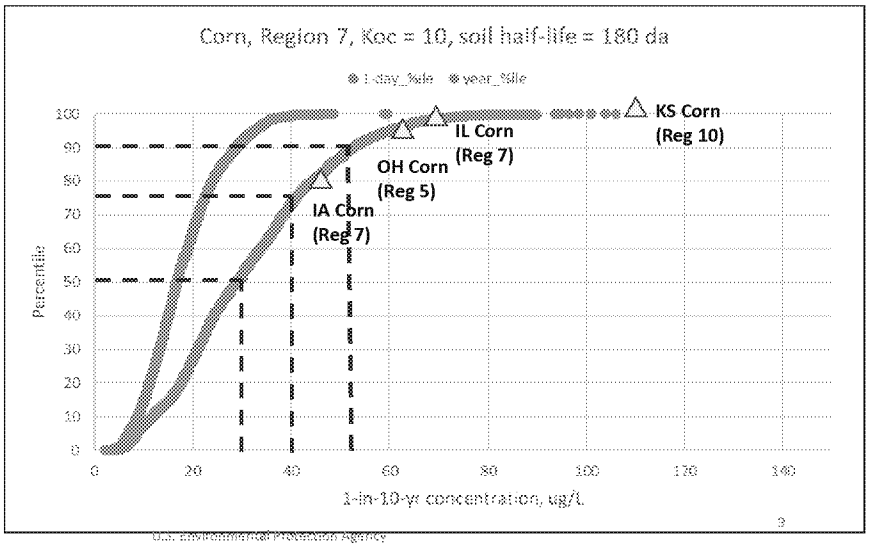
Ranking Scenarios - Corn

Sample of corn scenarios for NHD region 7 using low chemical:

- 90th %ile – 53 ppb
- 75th %ile – 41 ppb
- Median – 42 ppb
- 10th %ile – 11 ppb

Comparison with selected PWC scenarios:

- IL (standard), IA are in the same region
- OH (standard), KS are in adjacent regions



Result: a table of inputs for all possible soil map unit / land cover / weather station grid combinations (20M+ combinations)
Scenarios representing each crop / crop group for each of the NHD hydroregions
Account for chemical interactions –a different set of scenarios based on Koc (low, medium, high)
Starting out with top 16 annual cultivated crops (based on acreage)
Note the range in variability in existing scenarios: a wide range that reflects the inconsistent levels of conservatism
10th and 90th are within a factor of 3 to 5 – illustrates the variations due to soil/weather/crop inputs, all other things being equal

Contract peer review – charge questions

Background Documents

- Field Scenario Input Guidance Document
- Methods Document on Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments

Charge Questions on

(1) Clarity and reproducibility of the Field Scenario Input Guidance Document

(2) Specific inputs (primarily related to cropping practices, erosion parameters) where national datasets are not available

(3) Methods for ranking and selecting PWC scenarios

Questions for USDA on Specific Crop-related Inputs

- **Default agronomic practices:** Assuming contour plowing with some residue left on the surface as default agronomic practice for determining runoff curve numbers and USLE P (usle_p) factor
- **USLE cover management (C) factor:** Relying on factors provided by USDA NRCS for scenarios in use in 2000. C factors compiled by USDA NRCS are based on feedback from local/regional offices. Approach is based on the RUSLE model released in 1992, but values for specific crop scenarios are not well-documented
- **Irrigation inputs:** Irrigation rates are intended to minimize the potential for runoff. To minimize runoff, the maximum application rate will be set so that it does not exceed the maximum amount of water that will trigger runoff from the curve number method
- **Crop emergence and maximum canopy cover dates:** based on USDA NASS (2006, 2007, and 2010) planting/harvest dates
- **Missing crop planting and harvest dates:** In instances in which the crop occurs in a state, but no date ranges are reported in USDA NASS (2006, 2007, 2010), dates are estimated by identifying the nearest neighbor state (similar in latitude) which had data for the given crop
- **Equivalent dates for planting/emergence and harvest dates for perennials:** Impact curve number vary during harvest and emergence; maximum canopy cover and maximum root depth. Equivalent dates for emergence (beginning of active growth/leafing), maximum canopy cover (full cover before harvest, maximum leaf canopy for orchards), and harvest (crop removal, leaf-drop) would not only require data sources beyond USDA NASS (2006, 2007, and 2010), but would need reliable data for different runoff curve numbers
- **Crops with multiple growing seasons in a year:** In some areas vegetables can be grown up to four seasons according to USDA NASS (2007). In many cases, different vegetables may be rotated on the same fields in a given year. For these crops/states, we propose developing generic vegetable scenarios with 2, 3, or 4 growing seasons

Next steps

- Timeframe
- Contacts
  - Nelson Thurman, Sr. Science Advisor (thurman.nelson@epa.gov)
  - Dirk Young, PWC Model Developer (young.dirk@epa.gov)
  - Lee Kyle, Branch Chief (kyle.lee@epa.gov)

Message

From: Kyle, Lee [Kyle.Lee@epa.gov]
Sent: 8/29/2019 8:05:13 PM
To: Kaul, Monisha [Kaul.Monisha@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]
CC: Thurman, Nelson [Thurman.Nelson@epa.gov]; Matuszko, Jan [Matuszko.Jan@epa.gov]
Subject: RE: Need your help developing initial crop-related inputs for field scenarios
Attachments: 2019-08-28 DRAFT Combined External Peer Review Proposal for PWC Scenarios and PCA PCT.docx

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Thanks!

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:33 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

Kimberly just informed me you'll be out all next week. If it's okay with you, Nelson and I can work with your staff/Jonathan on much of this next week.

I scheduled a quick check in with you tomorrow at noon.

Best,

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

The PWC scenarios project you helped us with last year is one of three drinking water projects that OPP needs to complete in time to be used in next year's chlorpyrifos risk assessment.

We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general groups can be made in future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

Marietta and Kimberly have tasked us with presenting our initial inputs to them on September 4th. This will help us prepare for a meeting we've got scheduled with USDA on the 17th. I wanted to give you a heads up on this, and can follow up with details next week.

Lee

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, August 20, 2019 3:51 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/20

Drinking Water Projects Meeting Notes – Action items
August 20, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson, Lee

Contractor Peer Review

- Jan talked to Brian Katz, confirmed that we will use a single vehicle. They are ready to go, just waiting on us.
- Performance Work Statement for PCT/PCA was reviewed by Josh, Bill, Nelson, Lee, Claire (?)
    - Mark will clean up (address Nelson's comments) and send to Anna tomorrow for review by noon on Friday (gave Anna a heads up already).

- Marietta can review it on Friday afternoon and then Lee can send to LaTangila.
- Mark or Lee will combine the PCA/PCT and Scenarios documents before sending to Marietta.

Scenarios

- Nelson sent Input Parameters document to Jan on Friday.
  - Jan will review by the first week in September (Nelson is at ACS next week)
- Methods document – still on schedule
  - Demo of batch runs to PFTTT on Wednesday
- Scenario grouping for chlorpyrifos
  - Nelson and Dirk are going to focus on uses/management factors that result in different pest management approaches
- Jan scheduled an EFED/BEAD DD briefing for 9/4
- Lee and Nelson will send something to Monisha this week to prepare her for the briefing

PCA/PCT

- Have been focusing on the contract document
- Will share the white paper outline by the end of next week for early feedback

Ex. 5 Deliberative Process (DP)

done

Monitoring

- Team met with Anna this morning to work on refining the questions
  - Adding a question on the case study challenges
  - Removing redundancies
- White paper, case studies, framework, and SOP to OSCP for the docket next week.
  - Marietta wants to see a draft of the questions before signing the transmittal memo.
- Next week will work on finalizing the questions (Rochelle will be back)
  - Send Marietta the questions to share with Rick
  - Update Alex on the questions prior to posting

USDA Briefing – Sept 17

- Outline
  - Intro/purpose of briefing slide
  - 3 projects (in AA briefing – slides attached)
  - Monitoring: 2-3 slides
    - Conclusions slide from AA briefing
    - Timeline
  - PCA/PCT: ~10 slides
    - Can use material from peer review document
    - PCA – 4-5 slides from previous briefings (Karen presented to PFTTT on TPTH – check if that assessment is public yet)
    - PCT – Kris has ESA slides we can modify
      - Industry has submitted comments for ESA PCT approach – contracted with Stone for malathion case study to get below state level – CLA presented to us (Mark S. was there). Marietta will send around CLA's comments.
      - Input we need from USDA – have something similar we prepared for BEAD to pull from
  - Scenarios: ~10 slides
    - Use same slides as previous briefings (EMPM?) to explain the concept
    - Input we need from USDA
- Aim to get Marietta draft slides by 9/3 for her general with Rick on 9/4 (if not possible then Marietta can use an outline)
- Elyssa will pull the slides together into one presentation
- Clean up slides and send to USDA by 9/10

- Send asks for scenarios dates to USDA by 9/10 – Need to write up the spreadsheet process clearly for their feedback – Lee and Nelson will follow up on whether someone else can help on this.

Next week – Dana, Nelson, and Elyssa will be out. Jan will leave the meeting on the calendar for Lee and Mark to talk about the contractor document if needed.

From: Arnold, Elyssa
Sent: Monday, August 12, 2019 3:56 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/12

Drinking Water Projects Meeting Notes – Action items
August 12, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson

Contractor Peer Review

- Mark updated the draft of the contractor statement of work from Lee with the PCA/PCT details – added to PCA/PCT folder on ERB6 SharePoint site
- Clarified that there will be 2 separate reviews on 2 timelines with one Task Order to minimize process and overhead
- Need to review the charge questions (these are fairly general right now) and expertise
- This week – review by Josh, Nelson, Claire (will discuss at PCA/PCT meeting tomorrow)
- Next week – review by Anna and Lee (both out this week)
- Jan will follow up on Lee's email to LaTangila with Brian Katz to highlight our priorities

Scenarios

- Input Parameters document – Team comments were due on Friday, Nelson will clean it up this week and send it to Jan for review
- Methods document – describes how inputs are processed and scenarios selected, what was done and why
    - Sept 19: First part will describe the methods, currently being written
    - Oct 15: Will include examples for corn and wheat – including generation and running of the scenarios
        - Previous runs for corn had curve numbers read backwards, currently fixing and testing
        - Corn will be done before wheat
- Overall Executive Summary needed in plain language
- Chlorpyrifos scenarios – Nelson sent an edited version of Rochelle's list before the meeting with the status for each crop/scenario (one typo – grapes will be separate from orchards)
    - Scenario Grouping (e.g., generic orchard, vineyard, vegetable) – will be charge questions for peer review; we will also ask for input from USDA
        - BEAD input – Lee will talk to Monisha next week and send her the list of scenarios. We will have a DD briefing with Kimberly before the USDA meeting to make sure EFED and BEAD are on the same page. Jan will get a DD briefing on the calendar first week in Sept.
    - Planting dates
        - Perennials
            - Rick had a generic proposal
            - Another idea – can we use bud or beginning bloom as a proxy for "emergence"?
            - Need to get USDA input
        - Annuals

        - Need USDA input on the method for filling in planting dates for state/crop combinations not covered in the Planting and Harvesting Guides (Rick's method – has been shared with BEAD)
        - USDA could do additional work on this beyond the top 16 (e.g., vegetables) instead of PFTTT. Scenarios could be ready to process within a couple weeks after getting the dates. Could be ready for Rochelle to run 1-2 months after getting dates.
    - Nelson will continue working on the SOP for dates, will work with Rick. Need to add context for why the dates are important (big impact on model output). Rick's document is ~30 pages. Goal is to share with USDA at the briefing in Sept.
    - First week of Sept – Marietta will call Sheryl with a heads up about the ask to help fill in the planting dates
- Processing scenarios – will do continually as dates are complete
    - Lee met with CCOE about using contractor computing power – will get an update when he is back in the office

PCA/PCT

- Got the 2012-2016 chlorpyrifos PCT data from BEAD – they don't think that an update will add a lot of value
- White paper outline is drafted
    - This week – will discuss with the team tomorrow and then finalize the outline
    - Next week – will start to drop in text
- Be prepared to address issues quickly (e.g., non-ag)
- Prioritize questions for USDA and scenarios that will impact chlorpyrifos

USDA Briefing

- Marietta has emailed Sheryl with the potential dates and has not gotten a response yet
- Rick wants to see the slides in advance, but does not need us to brief him first

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From: Arnold, Elyssa
Sent: Monday, August 05, 2019 4:02 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>
Subject: RE: Drinking Water Assessment Update - meeting notes

Drinking Water Projects Meeting Notes – Action items
August 5, 2019

Contractor Peer Review

- Lee will send latest draft of the contractor statement of work to Mark
- Mark will add the PCT/PCA sections and charge questions into that document with the possible goal of having 1 task order rather than 2
- Mark will have a first draft to share by next week's meeting, 8/12
- Need to be aware of possible end of fiscal year delays in the contracting office in Cincinnati
- Jan will talk to Brian Katz to make sure he is aware of our priorities

Scenarios

- Input Parameters document will be completed this week
- Methods White Paper – current dates are below, but may need to tighten these up to allow for internal review time of up to 2 months depending on document length
    - Sept 19 framework complete (all parts except results)
    - Oct 15 entire paper complete – not including internal review

- Need to initiate project with Rick to add dates for perennials
- Peer review planned by end of February, then expect at least a month for re-runs
- Will need management briefings to decide which centile to use
- For next week, 8/12 – Lee will get a plan in place for prioritizing the chlorpyrifos scenarios (Nelson can report back next week when Lee is out)
- Lee will talk to LaTangila about a contractor for processing the scenarios
    - Stone or Waterborne may be options – Lee can call them and ask if they are reachable on any EPA contracts

PCA/PCT

- Mark C. will check in with Mark S. on getting the 2012-2016 chlorpyrifos PCT data
- Will also ask about whether they plan on an updated SUUM per Marietta's conversation with Kimberly
- Holding weekly project meetings every Tuesday

USDA Briefing

- Marietta will talk to Rick about the briefing tomorrow at their general before emailing Sheryl, we may need to brief Rick first
- Everyone should have their asks for USDA ready by the last week in August
    - For PCT – USDA input on non-ag data sources

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

A. ADMINISTRATION

1. **Period of Performance:** Award as soon as possible with performance period of four months

2. **Title:** External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

3. **Technical Experts**
   Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs
   Dirk Young, PhD Email: [HYPERLINK "mailto:young.dirk@epa.gov"]
   Nelson Thurman, PhD Email: thurman.nelson@epa.gov
   Lee Kyle, Chief Email: kyle.lee@epa.gov
   U.S. EPA/OSCPP/OPP

   Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA
   Karen Milians, PhD Email: [HYPERLINK "mailto:milians.karen@epa.gov"]
   Joshua Antoline, PhD Email: [HYPERLINK "mailto:antoline.joshua@epa.gov"]
   William Eckel, PhD Email: [HYPERLINK "mailto:eckel.william@epa.gov"]
   Mark Corbin, Chief Email: corbin.mark@epa.gov
   U.S. EPA/OSCPP/OPP

4. **Task Order CO's Representative (TOCOR)**

   Alternate TOCOR

5. **Mailing Address**
   1200 Pennsylvania Ave
   Washington, DC 20460
   Mail code 7502P

6. **Shipping Address**
   1200 Pennsylvania Ave
   Washington, DC 20460
   Mail code 7502P

B. BACKGROUND

Federal law requires that pesticide products be registered for sale in the United States with the United States Environmental Protection Agency (USEPA). Several statutes establish the regulations under which this process

occurs. The FFDCA (Federal Food Drug and Cosmetic Act), as amended by the Food Quality Protection Act (FQPA), the FIFRA (Federal Insecticide Fungicide and Rodenticide Act), and the Pesticide Registration Improvement Act (PRIA) are the primary legislation which govern this process. The process used to decide whether pesticide products can be legally marketed is risk-based and risk assessments for pesticides are developed using the framework outlined by the National Academy of Science criteria for risk assessment in the Federal Government. As a part of the requirements for new pesticide registration and for periodic (every 15 years) review of existing registrations, USEPA Office of Pesticide Programs (OPP) conducts aquatic exposure assessments to determine whether pesticides that are applied according to label directions can result in surface and/or groundwater water concentrations that may adversely impact human health or aquatic organisms.

OPP's Environmental Fate and Effects Division's (EFED) risk assessors have the responsibility for conducting Drinking Water Assessments (DWA), which include an analysis of the potential for pesticide occurrence in both surface water and groundwater sources of drinking water. USEPA OPP employs a robust DWA process via a tiered approach that is designed to screen out less risky pesticides from those requiring more highly refined methods. Successive tiers incorporate refinements that draw on more focused chemical, spatial, temporal, and agronomic information coupled with consideration of available monitoring data to refine risk estimates for human health assessments and inform risk management decisions. The tiered approach uses model scenarios that represents conditions vulnerable to pesticide movement to water. Assessments at higher tiers use more refined fate data, spatial analyses, and germane pesticide usage information. For additional information on USEPA OPP's tiered approach, see *Framework for Conducting Pesticide Drinking Water Assessments for Surface Water* in USEPA OPP, 2019).

Project 1: <u>Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs</u>

The Pesticide in Water Calculator (PWC) is a model that uses field, watershed, and waterbody properties to simulate environmental conditions. In PWC, both field and waterbody parameters define an environmental *scenario*. Underlying the PWC, the Pesticide Root Zone Model, PRZM5 (Young and Fry, 2016) simulates pesticide fate and transport in the field for defined pesticide applications, estimating pesticide loads to both surface water bodies and ground water aquifers. The unqualified word *scenario* refers to the combination of field and waterbody parameters that describe the combined environment of the field and the waterbody simulated in PWC. With the qualifier, *field scenario* is synonymous with the *field parameter set* which contains only the parameters that describe the field (environmental conditions) used in PRZM5.

USEPA OPP currently has more than 125 field scenarios that are used in Tier 2 (medium-level of the tiered approach) aquatic exposure assessments. They have been used for both human health (drinking water) and aquatic ecological assessments. These scenarios were developed over two decades using professional judgement and the available data at the time of development. While the goal was usually to develop a combination of soil, hydrology, agronomic practices, and weather conditions that resulted in "high-end" estimated water concentrations, not all scenarios were developed consistently. Differences in purpose (for instance, some scenarios were developed for cumulative drinking water assessments for human health under

FFDCA while others were developed for use in endangered species assessments) and in available data over time have led to inconsistencies such that existing scenarios do not have well-defined levels of vulnerability relative to pesticides being transported into water bodies. With efforts to improve its tiered drinking water assessment approach (USEPA OPP, 2019), USEPA OPP plans to develop new scenarios for PWC using a well described and transparent process with the most recent data sources and technologies. These scenarios will have well-defined levels of vulnerability.

To generate new field scenarios, USEPA OPP first identified all possible soil-land cover-weather combinations for the conterminous 48 U.S. states by overlaying spatial data layers for soil map units from USDA's Soil Survey Geographic (SSURGO) database (USDA NRCS SSS, 2018), the latest five years of land cover/crop groups from the USDA's Cropland Data Layer (CDL) (USDA NASS, 2010-2018), and meteorological files/weather station grids generated from NOAA data (Fry et al, 2016). Field scenario input data are extracted for each soil-land cover-weather grid combination and the resulting data matrix contains all necessary input parameters for each soil-land cover-weather grid combination. Because of the size of the national data sets and the volume of data generated – millions of separate combinations – the data extraction and calculation process has been automated using Python code. The draft document ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM*** describes the field inputs required for the aquatic models, the data sources used, and the methods for generating field scenario combinations and for extracting and processing the input data. This includes documentation for the Python code used to automate the process.

The new scenario inputs will also be used in the Spatial Aquatic Model (SAM) (USEPA OPP, 2015) that USEPA OPP is developing to address the need for more spatial specificity in aquatic exposure assessments at a Tier 4 level (highest level of the tiered approach) described in USEPA OPP (2019). The peer review of this project will benefit both efforts.

Because the actual percentile of vulnerability for the current PWC scenarios is unknown, a process is needed to compare and rank the millions of new scenarios (combinations of soil-land cover-weather) in order to evaluate their potential for use in Tier 2 assessments. Selection of the new PWC scenarios will be based on clear, reproducible, consistent method and will offer the flexibility to choose a policy-defined percentile of vulnerability (e.g., 90th %-ile vulnerability). The draft document ***Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments*** describes how USEPA OPP generated estimated concentrations for each major crop and/or grouping of crops (described in Addendum B of ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM***) and ranked them by concentration with an area-weighted approach.

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

In estimating pesticide concentrations in drinking water, OPP also relies on pesticide use and usage data. Use data typically refers to what is on the pesticide label (e.g. apply to corn at 1 lb/acre by ground equipment) while usage data refers to information on what is actually applied by growers/applicators.

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

Watersheds large enough to support a drinking water facility are generally not comprised of only one land cover type, nor planted completely with a single crop. In order to account for this variability, the USEPA OPP uses percent cropped area (PCA) adjustment factors to reflect the percentage of a watershed that is covered by a particular land cover type as a surrogate for agricultural crops and non-agricultural uses. Currently, modeled concentrations of pesticides in surface waters are multiplied by a PCA factor that accounts for the areal fraction of a watershed with a land cover (*e.g.*, crops) that may be treated with a particular pesticide based on the pesticide's registered use patterns. The PCA-adjusted concentrations are used as the estimated drinking water concentrations (EDWCs) in human health dietary risk assessment.

The USEPA OPP initiated a peer review of an earlier version of how it develops and uses PCA in a document titled: "Development of Community Water System Drinking Water Intake Percent Cropped Area Adjustment Factors for use in Drinking Water Exposure Assessments, dated 10/10/2012." Consistent with USEPA's Peer Review guidelines, the feedback from reviewers was carefully considered and USEPA OPP updated the document accordingly. This current approach will not change the existing PCAs but will seek to leverage the full suite of watershed PCAs by defining a process to identify areas within each HUC2 which pass and which need further refinement. Detail on the current approach for utilizing PCA in OPP DWA may be found at the following website.

[HYPERLINK "https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/development-community-water-system-drinking-water"]

OPP also uses pesticide usage data for both human health and ecological risk assessments to better characterize how and where pesticides are most likely to be applied. Specifically, Percent Crop Treated (PCT) is the fraction of an area planted with a particular crop or group of crops that usage data suggests has been actually treated with a specific pesticide. Due to the nature of available pesticide usage data, PCTs are generally calculated at the state level. OPP pesticide usage data is derived from proprietary survey information with a statistical design that is aggregated at the Crop Reporting District (CRD). USEPA OPP has determined that aggregating usage data below the state level limits the n size of the reported values and thus reduces the confidence of the estimates of use below the state level. Because of this, USEPA OPP has historically not used PCT for refining EDWCs because of uncertainties in applying state-level summaries to community water system (CWS) watersheds that are much smaller in area.

Recently, USEPA OPP has proposed a process incorporating PCT data into Endangered Species Act (ESA) assessments. The proposed approach explores the ability to calculate the fraction of a given area that is likely to overlap with an endangered species with treated acres calculated from a PCT. The process relies on a comparison of acres treated with the acreage of a species range (as defined by a mappable polygon). Since a species range and a CWS watershed are essentially mappable polygons, the proposed PCT method can serve as a starting point for developing a method to apply PCT data to refined DWA.

C. PURPOSE

Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs

The objectives of the New PWC Scenario Generation project are to:

- Update methods for developing field scenarios using available geospatial data to generate candidate PWC field scenarios for each crop/crop group within each of the 18 hydrologic unit code-2 (HUC2) regions located in the conterminous U.S. This will allow USEPA OPP to generate field scenarios with consistent properties and agronomic practices.
- Derive methods for standardizing and automating the percentile distributions of PWC field scenarios for each crop/crop group within each HUC2 region. This will provide USEPA OPP with a means of selecting scenarios for use in drinking water assessments that are consistent in terms of relative vulnerability to pesticides being transported into water bodies.
- Develop initial examples that apply the methods described in the draft documents to develop new field scenarios for use aquatic exposure modeling.

Consistent with USEPA peer review policies, the methods for systematically generating new PWC scenarios and associated draft documents are being submitted for peer review through an independent contractor in accordance with the 4th Edition of the Peer Review Handbook ([HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"]). Specifically, this work assignment addresses the assembly and conduct of a panel whose purpose is to complete an independent peer review of the PWC scenario development methods and associated materials, including examples of their application and the Python code used to generate field scenario inputs. The goal is to have the panel members review these materials in a manner that is consistent with the ***Charge to the New PWC Scenario Development Peer Review Panel*** in Section E of this work assignment.

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

The Percent Cropped Area (PCA) & Percent Crop Treated (PCT) Project has developed an approach to apply usage data to refine USEPA OPP DWA in higher-tier assessments for agricultural and non-agricultural uses individually or in combinations of uses. USEPA OPP currently uses the maximum PCA for total agriculture, selected major crops (corn, soybeans, wheat, cotton), crop groups (vegetables, orchards), crop combinations (*e.g.*, corn-wheat, soybeans-wheat), and turf for each of the 18 Hydrologic Unit Code 2 (HUC-2) boundaries in the continental US for which the use sites associated with pesticide only where it may be used. The HUC2 scale was selected as a means to regionally organize the PCA values for each CWS watershed within that boundary. In the current DWA approach any use being assessed (e.g. corn, turf) will have an associated landcover class with an associated maximum PCA at both the national and regional (e.g. HUC2) scale. However, these maximum values are a conservative value and are selected from the full distribution of PCAs for all mapped CWS watersheds within each HUC2. The proposed approach being evaluated in this

update will consider each PCA individually in a tiered approach to focus refinements on only those CWS watersheds that don't pass the DWLOC at each successive refinement step.

This current approach will not change the existing PCAs but will seek to leverage the full suite of watershed PCAs by defining a process to identify areas within each HUC2 which pass and which need further refinement. By identifying areas within a HUC2 that don't pass a drinking water level of concern (DWLOC) will allow for more focused and spatially explicit refinements (e.g. local conservation practices) within each HUC2. OPP will identify watersheds that need further refinement as those where EDWCs remain above a DWLOC. USEPA OPP will focus on regions and groups in these CWS watersheds within each HUC-2 that remain a potential concern and will require more spatially-focused refinements and mitigation.

The proposed PCT project will incorporate the percent area treated (also known as percent crop treated, or PCT) approach in DWA. This project will determine if state-level estimates of PCT can be used to refine exposure estimates that previously relied on the maximum PCA approach used currently by USEPA OPP for DWA. In addition, USEPA OPP will consider options to estimates of PCT at the sub-state level (CRD and County Level) including alternative ideas submitted to USEPA OPP in public comments on the proposed approach to use PCT in ESA. State level PCT will be converted into an area (e.g. treated acres of a use site) and that areal extent will be compared to the area of a drinking water watershed. When the calculated treated area is less than total area where the crop or group of crops is grown in a CWS watershed, the EDWC would be adjusted to account for the partial treatment.

Both the PCA and PCT projects will require an evaluation phase where modeled EDWCs are compared with relevant monitoring data. Ultimately, the PCA and PCT portions of the project could link up into a single automated process that allows for quick and seamless consideration of refinements to DWA that do not require additional modeling.

Consistent with USEPA peer review policies, the methods for systematically generating PCA/PCT and associated draft documents are being submitted for peer review through an independent contractor in accordance with the 4th Edition of the Peer Review Handbook ([HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"]). Specifically, this work assignment addresses the assembly and conduct of a panel whose purpose is to complete an independent peer review of the PCA/PCT methods and associated materials. The goal is to have the panel members review these materials in a manner that is consistent with the ***Charge to the PCA/PCT Development Peer Review Panel*** in Section E of this work assignment.

D. SCOPE OF WORK

Project 1: <u>Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs</u>

The focus of this project is on the clarity and reproducibility of the field scenario inputs and on the methods for generating and evaluating field scenarios for use in PWC. The models described in this document have already undergone review. The original PRZM documents have also been reviewed. The new input guidance document updates the data sources and automates processing data.

USEPA OPP requests peer review of two major draft documents and their supporting materials:

- ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM***, including the data collection, extraction, and processing code, written in Python, and code documentation. Additional crop input datasets used for scenario development are also provided.
- ***Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments***, which includes two examples illustrating the scenario ranking process for corn and wheat.

The Contractor shall conduct the tasks listed below to accomplish the peer review of new PWC scenario development methods based on the framework outlined in the ***Charge to the New PWC Scenario Development Peer Review Panel*** (Section E).

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

The focus of this project is on the evaluation of a refinement step for OPP DWA. This step will utilize the full distribution of drinking water watersheds and their associated percent crop area (PCA) and Percent Crop Treated (PCT).

USEPA OPP requests peer review of two draft documents and their supporting materials:

- ***Approach to Use the Full Distribution of PCA values for Pesticide Drinking Water Assessments (DWA)***, which considers how OPP's current approach using national and regional maximum PCAs can be modified to account for all PCAs on a HUC-2 basis.
- ***Approach to Integrate PCTs into a Refined DWA Process***, which includes an example illustrating how a PCT is derived, how it is calculated and applied to a watershed, the range of values available for consideration, and a proposed approach to refine DWA after consideration of the PCA distribution.

The Contractor shall conduct the following tasks to accomplish the peer review of PCA/PCT development methods based on the framework outlined in the ***Charge to the PCA/PCT Development Peer Review Panel*** (Section E).

Tasks that apply to each project

For each project, the goal is to provide a consensus review. The Contractor shall select recognized peer reviewers with appropriate expertise, determine potential conflicts of interest, establish schedules, conduct the peer review, and prepare and submit the expert panel review report. Peer reviewers shall provide an independent review of the draft documents and pertinent supporting materials. The peer review shall be conducted by email and use conference calls for panel discussions as appropriate. The peer reviewers shall be

recognized scientists with demonstrated expertise related to the scope of work outlined in Section 2.b. The objective is to recruit 5 to 6 panel members for each project who are willing to participate and have broad disciplinary experience and a demonstrated professional history in technical areas related to these topics.

The Contractor shall attempt to balance the group of experts by selecting reviewers from academia, government, and the private sector. For each project, the output of this task order shall be an expert panel report that conveys the independent scientific judgment of each of the peer reviewers within the specific framework of the charge to the panel. Each panel will also be required to develop a synopsis of the findings of each reviewer and describe where consensus was achieved, with consensus being the goal, related to each element of the charge to the panel. It is also critically important that panelists reserve written commentary to areas within their demonstrated areas of expertise. All work to be done under this Task Order shall be in compliance with EPA's [HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"] (Fourth Edition; 2015). The requirements of each specific task are outlined below. An overall schedule is presented below in **Section F: Deliverables and Due Dates.**

Task 1. Prepare a Proposal

The Contractor shall initially prepare a proposal that includes the proposed firm fixed price (FFP), with an indication of the breakdown of the level of effort and other items that comprise the FFP proposed. The price proposal shall be submitted to the Contract Specialist (CS), Project Officer (PO) and the Task Order Project Officer (TOPO) within the specified time. The proposal will address not only the technical conduct of the work but also how panel members are to be managed and how the outcome will be summarized with a focus on the charge to the panel and whether consensus has been attained.

Task 2. Identify and Select Reviewers

Task 2.a – Clarify Scope: Within five (5) working days of the Task Order (TO) award the Contractor, with all their applicable staff, shall schedule a conference call with the TOPO and other appropriate USEPA OPP staff to clarify outstanding questions and confirm the schedule and specific tasks. The Contractor shall provide status updates to the TOPO on at least a bi-weekly basis. The Contractor shall initiate additional timely communication with the TOPO should developments arise that will affect the conduct or schedule of this peer review.

Task 2.b – Select Panelists and a Chair: For each project, the Contractor shall identify a pool of at least 10 potential experts from which 5-6 reviewers shall be selected by the Contractor. The experts shall be recognized scientists with demonstrated expertise covering each of the following scientific disciplines:

Project 1: <u>Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs</u>

- Agronomy/soils/hydrology/chemical transport with specialization in crop growth and management, erosion control, and/or irrigation (two or three panelists)

- Aquatic modeling, with a focus on pesticide aquatic exposure assessments (two or three panelists)
- Computer programming/data management (specifically fluency in Python), preferably with an understanding of the disciplines mentioned above (one panelist).

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

- Agronomy/soils/hydrology with specialization in pesticide use, pesticide fate and transport, and watershed modeling (one or two panelist).
- Pesticide risk assessment with emphasis on aquatic exposure and modeling for human health risk assessment, with a focus on pesticide aquatic exposure assessments (one or two panelists).
- Spatial analysis including GIS (one panelist).
- Economist and agronomists familiar with pest management, pesticide use and pesticide usage data (two or three panelists).

Ideally, for each project panelists would have demonstrated experience in multiple disciplines listed above. The search and selection criteria shall include the consideration of experience and demonstrated expertise in their respective field, professional record as demonstrated by peer-reviewed publications, professional awards, service to relevant professional societies, and affiliations (academic, consulting firm, industry, government, public interest, and environmental organizations). Service on prior peer review panels is a benefit. The reviewers shall have scientific credentials equivalent to a Ph.D. or comparable experience and shall be regarded as experts in their field. The Contractor shall not select reviewers from the USEPA OPP or individuals listed as contributors or authors for the materials presented to the panels. In addition, the Contractor shall not select scientists or consultants who have provided comments during review of materials which could have a bearing on the use of the models which would be developed as an outcome of this peer review process – i.e., the Contractor shall evaluate panelists for potential conflicts of interest. The Contractor shall not compensate or reimburse Federal personnel for service on the peer review panel. Provisions for compensation and reimbursement of Contractor-secured state personnel vary by state. Prior to the Contractor entering into formal agreements with any of the experts, the proposed list of experts, including *curriculum vitae* (CV) and other supporting information, shall be submitted to the COR for review to ensure adherence to the technical requirements of the task order. Each peer reviewer's work experiences, publication history, and CV must demonstrate that they are respected in their specialty/field(s) and have published extensively in their areas of expertise. The Contracting Officer Representative (COR) can provide comments to the Contractor regarding the expertise and potential conflicts of interest of the proposed reviewers. If USEPA OPP determines that the reviewers are unqualified for the specific review, the Contractor shall have ten (10) business days to submit substitutes for review. The final selection of reviewers will be the responsibility of the Contractor. The final panel for each project shall include at least one reviewer with expertise in each of the disciplines listed above in this section and in section C.

For each project, the Contractor shall designate one of the panelists as the panel chair. This individual shall be broadly knowledgeable in the critical scientific disciplines noted above and have the demonstrated ability in

leading a scientific group. The Contractor should also ensure that there is a broad representation in areas of expertise within the group to ensure each aspect of the PWC new scenario development process can be adequately reviewed given the scope of the charge to the panel.

Each Panel Chair shall review relevant materials, lead the discussion with the panelists for the review, and submit review comments to the Contractor in electronic format. They shall assist in the initiation of the draft panel report by receiving and organizing the comments of the other panelists and distributing these comments to all panelists prior to scheduled meetings. They will also work to resolve any conflicts and guide the preparation of a final report. In the preparation of the final report, the Panel Chair will also ensure milestones are met with regard to deliverables and will notify the Contractor in cases where milestones and appropriate resolution are not achieved. Additionally, the Panel Chair will ensure that the panel report responds to each element in the charge to the panel and the report accurately reflects consensus among the panel on each element or lack thereof. In cases where consensus is not achieved, the Panel Chair will ensure all findings are documented in detail in the panel report.

On each project, the other panelists shall review the provided documents/materials and submit their comments to the Chair and Contractor in electronic format prior to the peer review panel discussion/report preparation. The panelists shall study the comments from the other reviewers to facilitate active participation in discussions. The panelists shall also study other comments received (e.g., clarification from EPA staff) to facilitate an effective review process. They shall also contribute to the preparation of the draft and final reports of the peer review panel. Panelists will provide expert opinions within their specific fields of expertise and provide their input regarding the overall technical concepts outlined in the materials provided. Panelists will also be required to actively pursue consensus-building efforts and will assist in the development of a report, which documents their consensus? expert opinions to each of the designated charges provided by the Agency. In cases where dichotomous opinions exist, and consensus cannot be achieved, panelists will also ensure that the opinions of all panel members are accurately reflected in the final report to the Agency.

Task 3. Logistics and Preparation

Task 3.a – Provide Invitation Letters and Materials: The Contractor shall send an electronic package to each peer reviewer (including any Federal participants) which include letters of invitation and all key materials required for the review. The materials in this package will be defined by the USEPA OPP TOPO and the charge to participants; these shall include the documents and appropriate supporting materials under review. Copies of all packages shall also be sent to the TOPO and to the Deputy PO.

Task 3.b – Schedule Conference Calls and Other Appropriate Panel Interactions: The Contractor will arrange multiple conference calls and other appropriate interactions with: (1) USEPA OPP to ensure that all necessary information has been provided and is adequately understood by the Contractor and (2) panelists prior to initiation of and during the peer review process.

Task 4. Peer Review Process

Within five (5) working days of providing the invitation letters and key materials (Task 3.a), the Contractor will initiate the peer review process. Each panelist is required to first independently provide comments that address each of the charge questions relevant to a panelist's expertise, then work with the entire panel to prepare a report and build consensus wherever possible.

The Contractor shall receive and compile the reviewers' comments in a draft document with input from the Panel Chair as described above (Task 2.b). The Contractor shall review the comments to ensure that the reviewers have fulfilled their responsibilities under their agreement with the Contractor. The Contractor shall not edit or rearrange comments but provide them in an electronic format (MS Word 2016 and other formats as deemed appropriate by USEPA OPP) as they are sent in the original form with reviewers' cover/comment letter. The compiled comments shall be provided to the TOPO and all panelists to prepare for panel discussions as outlined below.

Task 4.a – Conduct Orientation: The panel members will be given an overview of the provided materials, scope of the project, their assigned charge, and anticipated schedule.

Task 4.b – Clarify Materials: The panel members will be given an opportunity to seek clarification regarding technical or other topical issues after they have had at least two weeks to review the provided materials. USEPA OPP sponsors will also participate as appropriate.

Task 4.c - Initiate Draft Report: The Panel members should provide individual comments to address each element of the charge, seek consensus on each element of the charge, and prepare the draft report at this phase of the project.

Task 4.d – Initiate Final Report: The panel will review comments on the draft report and edit the document to prepare a final report, which ensures responses to USEPA OPP, so the reviewer comments are properly reflected in the document.

Task 5. Report Preparation

Task 5.a – Prepare and Disseminate Draft Report: The Contractor shall prepare, with the help of the Panel Chair, a draft Expert Panel Report. The draft report must include a succinct statement of the Panel's conclusions and recommendations, input from each panelist on the charge questions, and a summary of any pertinent panel discussions up to that point. Comments from each panelist should be appended to the draft report as well.

The Contractor shall send an electronic copy of the draft expert panel report (MS Word 2016 and other formats as deemed appropriate by USEPA OPP) to the TOPO, deputy PO, CO, and each panelist for review and comment once the document is compiled.

Task 5.b – Receive Written Comments on the Draft Report: All reviewers will provide written comments on the draft Expert Panel Report to the Contractor who shall provide to and discuss the comments on the draft report with the TOPO before finalizing the Expert Panel report. The Contractor shall not edit or rearrange comments but provide them in a bound document and electronic version (MS Word 2016 and other formats as deemed appropriate by USEPA OPP), as they are sent in the original form with the reviewers' cover/comment letter. The Contractor may, however, format the comments for consistency.

Task 5.c – Prepare and Disseminate Final Report: The Contractor shall receive and compile reviewers' final, post-meeting, edits into a final document. The Contractor shall supply the COR and TOPO with an electronic copy of the report. The final Expert Panel Report shall also be sent to the peer review panel members by the Contractor. An electronic version (MS Word 2016 and/or other formats as deemed appropriate by USEPA OPP) shall be sent.

The Contractor is expected to exercise quality control measures to ensure proper completion of the document. The Contractor is also responsible for editing the final report content to ensure appropriate quality control findings are reflected in the document.

Task 6. Post Review Activities

Task 6.a – Complete Fiduciary Responsibilities: The Contractor shall be responsible for paying the expert's expenses and fees (except Federal personnel) and provide copies of the final report, as appropriate.

E. SPECIAL CONDITIONS

Along with the scope of the task order described above, it is necessary that the following technical charge be addressed by the peer review panel. This should include developing responses to and achieving consensus, to the extent possible, by the panel to each issue outlined in the charge. It should also include providing all necessary records (e.g., written documentation and computer files) associated with this effort. The charge questions are as follows:

Project 1: <u>Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs</u>. <u>Charge to the Peer Review Panel:</u>

1. **<u>Clarity and reproducibility of the Field Scenario Input Guidance Document:</u>** It is important that the input sources, data extraction methods, and any processing and/or calculations performed on the data are adequately documented and clear to follow for readers with backgrounds in pesticide risk assessments and aquatic modeling. This applies to both written documentation and the resulting Python code used to automate the process. Once finalized, the draft document ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM*** will be used by USEPA OPP, the regulated industry, and other interested public parties to generate field scenario inputs for use in pesticide aquatic assessments using PWC and/or SAM.

a. Please comment on the clarity and level of documentation for the input parameters, their sources, and the data extraction and manipulation (calculation) methods described in the input document. Please identify any documentation that is not clear to follow and suggest alternative language for clarity.
b. Because of the number of model inputs and the sizes of the national databases used to derive the inputs, USEPA OPP used automated processes to facilitate the extraction and processing of inputs for large numbers of scenarios. The code needed for this extraction will be available for interested parties and needs to be sufficiently documented for use. Please comment on the documentation of the Python code used to extract and process data to generate the necessary data inputs used to generate field scenarios.

2. **Questions on Specific Inputs:** While the national databases for soils, land cover, and weather are well documented, several inputs (listed below) had minimal background documentation (data sources, references) in previous PRZM manuals (Carousel et al, 2005; Young and Fry, 2016). Where possible, USEPA OPP attempted to better document the data sources and methods for these inputs. In some cases, USEPA OPP used default methods and/or inputs in the absence of better data. Please comment on the methods described in the input parameter document and, if available, provide recommendations for better methods of estimating the following parameters:
   a. **Default agronomic practices:** USEPA OPP assumes contour plowing with some residue left on the surface as the default agronomic practice for determining the runoff curve numbers and USLE P (usle_p) factor. Please comment on the default assumption.
   b. **Crop emergence and maximum canopy cover dates:** USEPA OPP used USDA NASS (2006, 2007, and 2010) for planting and harvest dates. Dates for emergence and for maximum canopy cover are estimated from these dates. Please comment on this approach.
   c. **Missing crop planting and harvest dates:** In instances in which the crop occurs in a state, but no date ranges are reported in USDA NASS (2006, 2007, and 2010), dates are estimated by identifying the nearest neighbor state (similar in latitude) which had data for the given crop. Please comment on the approach.
   d. **Equivalent dates for planting/emergence and harvest dates for perennials:** The current defaults for perennial crops (alfalfa, grass hay, orchards, some fruits) are to assume 1) the curve number does not vary over time, except during crop harvest and emergence; and 2) the maximum canopy cover and the maximum root depth do not vary spatially for any particular crop. Equivalent dates for emergence (beginning of active growth/leafing), maximum canopy cover (full cover before harvest, maximum leaf canopy for orchards), and harvest (crop removal, leaf-drop) would not only require data sources beyond USDA NASS (2006, 2007, and 2010), but would need reliable data for different runoff curve numbers. Please comment on the adequacy of these default assumptions.
   e. **Crops with multiple growing seasons in a year:** In some areas (particularly California, Florida, and Texas), vegetables can be grown more than once in a year – up to four seasons according to USDA NASS (2007). In many cases, different vegetables may be rotated on the same fields in a given year. For these crops/states, USEPA OPP proposes developing generic vegetable scenarios with 2, 3, or 4 growing seasons, based on USDA NASS (2007). Please comment on the proposed method

f. **USLE cover management (C) factor:** USEPA OPP relies on factors provided by USDA NRCS for scenarios in use in 2000. The C factors compiled by USDA NRCS are based on feedback from local/regional offices. The approach is based on the RUSLE model released in 1992, but values for specific crop scenarios are not well-documented. The background and data tables are available in the spreadsheet *Crop Input Data.xlsx*. Please provide any recommendations on available data sources and/or methods of deriving a minimum and maximum C factor for each crop group identified in Addendum B.

g. **Irrigation inputs:** In the current plan, USEPA OPP will develop non-irrigated PWC field scenarios. As described in the Irrigation Inputs section of the input parameters document, irrigation rates are intended to minimize the potential for runoff. To minimize runoff, the maximum application rate will be set so that it does not exceed the maximum amount of water that will trigger runoff from the curve number method. Please comment on the proposed use of greater than 40% crop acres irrigated in a state as a trigger for the irrigation routine and on the proposal to cap the irrigation rate on the maximum amount of water that will not result in runoff by the curve number method.

3. **Methods for Ranking and Selecting Scenarios:** The process USEPA OPP proposes to replace existing PWC field scenarios with new scenarios for PWC that have well-defined levels of vulnerability is described in the draft document ***Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments***. This describes the methods used to generate scenario inputs for all soil-land cover-weather combinations, to process and rank these scenarios by crop and region, and to identify field scenarios with similar levels of vulnerability for use in aquatic exposure assessments. Once finalized, this document will provide a framework for generating and updating new PWC scenarios.

   a. Because pesticide concentrations in water estimated from PWC depend not only on the field and weather properties but also on the interaction of chemical properties with the environmental parameters, the "vulnerability" of field scenarios can be defined in a number of ways. USEPA OPP has elected to base field scenario vulnerability on the water body concentration (EEC) that results from running the field scenario with USEPA OPP's receiving water body (index reservoir). Different scenarios will be selected based on the relative mobility of the chemical (represented by K_{oc}). These classes reflect differences in the inherent vulnerability of the site to off-site transport dominated by surface water runoff and/or by erosion/sediment transport. Please comment on the suitability of estimated concentration as an indicator of scenario vulnerability and on the selection of different sets of scenarios based on K_{oc} classes.

   b. For each crop, field scenarios are ranked within National Hydrography Dataset Regions (HUC-2, major river basins) by magnitude of estimated concentration, weighted by land area. Scenarios will be comparable across HUC-2 regions by percentile rankings (e.g., 95th, 90th, 75th, 50th). Please comment on the suitability of this approach for selecting an appropriate scenario at some level of vulnerability to represent a HUC2 region.

   c. USEPA OPP provided two examples for ranking and comparing scenarios using corn and wheat to illustrate how new PWC scenarios will be generated using the methods in the draft document. Please comment on how well the examples illustrate the methods described in the draft

documents. In what ways can USEPA OPP improve the clarity and level of documentation in the methods for generating new PWC scenarios?

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA. Charge to the Peer Review Panel:

USEPA OPP is proposing to use a "distributional approach" for applying PCA and PCT to DWA. The following Charge Questions:

1. **Clarity and reproducibility of the Proposal in the attached White Paper to use the full distribution of watershed PCAs:**
    a. Please comment on the clarity and level of documentation and on how well it can be reproduced by others with an understanding in risk assessments.
    b. USEPA defines a pesticide concentration below which no human dietary risk is likely. This drinking water level of concern (DWLOC) represents an exposure value which can be compared against modeled concentrations of pesticides in CWS watersheds. Typically, USEPA considers an EDWC developed using a maximum national or regional PCA. This new approach will use all CWS watershed specific PCAs to identify which areas within a geographic region (e.g. HUC2) are below the DWLOC and which are above and need further refinement. Please comment on the scientific soundness of identifying sub-regions of HUC2 watersheds needing further refinement by comparing the ratio of EDWC to DWLOC to define the threshold for comparison with each PCA.
    c. Please comment on methods for applying the PCA approach for pesticides with multiple agricultural uses.
    d. Please comment on the methods for applying a similar PCA-like approach to address non-agricultural uses.
2. **Clarity and reproducibility of the Proposal described in the attached White Paper to use PCT as a refinement to the PCA distributional approach in Question 1:**
    a. Please comment on the clarity and level of documentation for the proposed PCT approach on how well it can be reproduced by others with an understanding in risk assessments.
    b. Please comment on the proposed approach to account for multiple use sites and PCT in OPP's DWA as a refinement to the proposed PCA approach.
    c. Unlike agricultural uses, non-agricultural uses of pesticides have less robust usage data and for the most part estimates of usage and PCT are only available at the state level. USEPA OPP has developed a case study on how state level PCT can be used to refine EDWC at the HUC2 scale. Please comment on OPP's proposed approach to account for non-agricultural PCT in the OPP proposed PCA approach.
    d. Please comment on the appropriateness and utility of assuming a uniform distribution of treated area across an entire state when determining the acres treated in a watershed. Are there alternative assumptions that would provide a more appropriate and informative mid-range estimate of watershed-scale PCT based on state-level data?
    e. Please comment on alternative approaches for determining areas more or less likely to be treated with a pesticide.

F. DELIVERABLES AND DUE DATES

Scope of work for each project to be completed within the approximate four (4) month timeline after initiation of this Task Order as detailed in the table below. Completion of each task should be documented in Contractor status reports.

As per the Task Order or request for a proposal, the Contractor shall provide the Agency with a proposal within the timeframe specified for this Task Order. The EPA Contracting Officer (CO), CORs, or panel members will review the proposal and provide the Contractor with an approval or disapproval, and revision (if necessary) in writing. The timelines involved, will proceed as stipulated in the request for a proposal or Contract.

The contractor shall prepare a Quality Assurance Project Plan for this Task Order. [HYPERLINK "http://www.epa.gov/quality/epa-qar-5-epa-requirements-quality-assurance-project-plans"]_before award as part of the proposal for approval.

Task	Subtask	Timeline (Days After Award)	Comments
1 – Prepare Proposal	N/A	N/A	N/A
2 – Identify and Select Reviewers	2.a - Clarify Scope	5	N/A
	2.b – Select Panelists and a Chair	15	Accounts for likely conflicts of interest, availability, etc. along with 10-day period for substitute review, if needed
3 – Logistics and Preparation	3.a – Provide Invitation Letters and Materials	20	N/A
	3.b – Schedule calls and other panel interactions	20	
4 – Peer Review Process	4.a – Conduct orientation	30	Discuss roles, responsibilities, provide overview of materials
	4.b – Clarify materials	45	Allow reviewers to seek clarification on materials
	4.c – Initiate Draft Report	60	Panel is to plan how draft report will be prepared over writing period
	4.d – Initiate Final Report	95	Panel is to plan how final report will be prepared over writing period

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

Task	Subtask	Timeline (Days After Award)	Comments
5 – Report Preparation	5.a – Prepare and Disseminate Draft Report	75	15-day period to prepare a draft report after process is initiated at day 60
	5.b – Receive Written Comments	95	Contractor will coordinate comments from reviewers and provide to panel members at end of 15-day review period
	5.c – Prepare and disseminate Final Report	110	Contractor will coordinate with peer review panel on how comments will be addressed and prepare a final report
6 – Post Review Activities	6.a. – Complete Fiduciary Responsibilities	NA	TBD based on final contract agreement

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

QUALITY ASSURANCE SURVEILLANCE PLAN

PERFORMANCE REQUIREMENT	PERFORMANCE MEASURE (PM)	PERFORMANCE STANDARD	SURVEILLANCE METHOD	INCENTIVES & DISINCENTIVES
MANAGEMENT & COMMUNICATION: The contractor shall maintain contact with the EPA CO, PO, and TOPO throughout the performance of the contract.	Contractor shall immediately bring potential problems to the appropriate EPA personnel and shall recommend actions that would mitigate or resolve the problem.	Issues that impact project schedules and costs shall be brought to the attention of the EPA within 3-days of occurrence.	All active task orders will be reviewed by the EPA to identify unreported issues.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation of Business Relations in the NIH Performance Evaluation System.
TIMELINESS: For every Task Order awarded establishing a firm, specific delivery date for the generation of a report, the contractor shall deliver such report to the PO, TOPO and CO no later than the time specified in the order's PWS.	Deliverables and related work must comply with contractual timeliness requirements. The contractor will be evaluated on its responsiveness to all task orders.	100% of all deliverables and related work shall be completed on time within task schedule and/or tech. direction requirements.	100% inspection of all deliverables and related work by the COR; COR will document the timeliness of all work requirements.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation of Timeliness in the NIH Performance Evaluation System.
COST MANAGEMENT & CONTROL: For every cost and time-and-material Task Order awarded, the contractor shall assign appropriate levels and skilled personnel; practice and encourage time management; and ensure accurate and appropriate cost controls and reporting.	The contractor shall demonstrate a high level of productivity and efficiency in maintaining costs.	Failure to manage and control costs cannot result in an overrun of more than 5% of the total estimated costs of each cost and time-and-material task order.	Active cost type and time-and-material type task orders' costs will be reviewed by the COR monthly using progress reports and vouchers to compare actual versus projected expenditures.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation in the category of Cost Control in the NIH Performance Evaluation System.
TECHNICAL QUALITY: For every task order awarded, the analyses conducted by the contractor shall be factual, defensible, credible, and based on sound scientific methods. All data shall be collected from reputable sources and quality assurance measures shall be conducted in accordance with the agency requirements outlined in the task orders.	All deliverables and related work must be complete, accurate, thorough, and professionally credible.	Data are 100% accurate; review demonstrates a high level of expertise and credibility about personnel and use of scientific methodology. Projects shall be conducted in strict conformance with approved project and QA plans. Outputs shall withstand internal review by the US EPA and outside scientific reviewers.	COR will conduct periodic reviews of work in progress and evaluations based on a sampling of internal and external customers.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation in the category of Quality of Product or Service in the NIH Performance Evaluation System.

G.ADDITIONAL REFERENCES CITED

Project 1: Improved Method for Developing Pesticide in Water Calculator Scenarios.

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Fry, M.M., G. Rothman, D.F. Young, and N. Thurman. 2016. Daily gridded weather for exposure modeling. Environmental Modelling & Software, 82, 167-173, doi.org/10.1016/j.envsoft.2016.04.008

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USDA National Agricultural Statistics Service (USDA NASS). 2007. Vegetables: Usual Planting and Harvesting Dates. Agricultural Handbook Number 507. May 2007.

USDA National Agricultural Statistics Service (USDA NASS). 2010. Field Crops: Usual Planting and Harvesting Dates. Agricultural Handbook Number 628. October 2010.

USDA National Agricultural Statistics Service Cropland Data Layer. 2010-2017. Published crop-specific data layer [Online]. Available at https://nassgeodata.gmu.edu/CropScape/ (accessed 9/25/2018). USDA-NASS, Washington, DC.

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U.S. Environmental Protection Agency Office of Pesticide Programs (USEPA OPP). 2019. Framework for Conducting Pesticide Drinking Water Assessments for Surface Water, August 28, 2019. Available in the public e-docket, TBD

Young, D.F. and Fry, M.M. 2016. PRZM5: A Model for Predicting Pesticide in Runoff, Erosion, and Leachate. Revision A. USEPA/OPP 734S16001, U.S. Environmental Protection Agency, Washington, DC. Available for download with the Pesticide in Water Calculator from the USEPA OPP Water Models web site at https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/models-pesticide-risk-assessment#aquatic

Message

From: Garber, Kristina [Garber.Kristina@epa.gov]
Sent: 2/15/2018 5:44:11 PM
To: Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Panger, Melissa [Panger.Melissa@epa.gov]; Peck, Charles [Peck.Charles@epa.gov]; Lennartz, Steven [Lennartz.Steven@epa.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Blankinship, Amy [Blankinship.Amy@epa.gov]; Donovan, Elizabeth [Donovan.Elizabeth@epa.gov]; Eckel, William [Eckel.William@epa.gov]; White, Katrina [White.Katrina@epa.gov]; Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Atwood, Donald [Atwood.Donald@epa.gov]; Sims, Diann [Sims.Diann@epa.gov]; Corbin, Mark [Corbin.Mark@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Myers, Clayton [Myers.Clayton@epa.gov]
CC: Spatz, Dana [Spatz.Dana@epa.gov]; Stebbins, Katherine [Stebbins.Katherine@epa.gov]; Jones, Arnet [Jones.Arnet@epa.gov]; Kiely, Timothy [Kiely.Timothy@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Wyatt, TJ [Wyatt.Tj@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Chism, William [Chism.Bill@epa.gov]; Berwald, Derek [Berwald.Derek@epa.gov]
Subject: discuss draft method for incorporating usage data (PCT) into ESA method
Attachments: Usage_step2_2-15-18(BEAD scientists).pptx

Thank you all for taking the time to talk today. Attached is the slide deck that I presented today. If you have any major comments, please provide them by COB Monday.

Kris

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Phone: 703-347-8940

Message

From: Negron-Encarnacion, Ideliz [Negron-Encarnacion.Ideliz@epa.gov]
Sent: 6/16/2020 7:39:24 PM
To: Matuszko, Jan [Matuszko.Jan@epa.gov]; Nesci, Kimberly [Nesci.Kimberly@epa.gov]; Echeverria, Marietta [Echeverria.Marietta@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Anderson, Neil [Anderson.Neil@epa.gov]; Spatz, Dana [Spatz.Dana@epa.gov]; Kyle, Lee [Kyle.Lee@epa.gov]; Thurman, Nelson [Thurman.Nelson@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Young, Dirk [young.dirk@epa.gov]; Corbin, Mark [Corbin.Mark@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Eckel, William [Eckel.William@epa.gov]; Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Bohaty, Rochelle [Bohaty.Rochelle@epa.gov]; Crowley, Matthew [Crowley.Matthew@epa.gov]; Waterworth, Rebeccah [Waterworth.Rebeccah@epa.gov]
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/16/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update
June 16, 2020
Attendees: Jan, Mark S., Dana, Rebeccah, Bill, Marietta, Kimberly, Mark C., Monisha, Nelson, Neil and Ideliz.

- PCA/PCT Briefing to HED: Meeting to brief David Miller and Mike Metzger on Thursday on what has been done for chlorpyrifos, and how they may use the analyses obtained by these new methodologies. DWLOC is used to streamline the process, i.e. narrow down the number of scenarios for which a time series is provided. DWLOC may be further used in the analyses if the estimate considers all routes of exposure applicable to the registered use of the pesticide.

- Status of running PWC scenarios: Running deciduous orchard and trellis (grape). Quality control being done and working on the growing degree days.

- Documentation for docket (Both Teams)
  - QAPP
    - Teams are incorporating reviewers' comments and will send to EFED IO and BEAD IO this week.
    - PCA/PCT: QAPP was reviewed by Kurt.
    - PWC Scenarios: QAPP was reviewed by Denise Rice. Trip will be the interim lead on the PWC Scenarios QAPP while Dirk is on leave.
  - RTC
    - PCA/PCT: Bill is addressing comments provided by BEAD and getting clarification on GIS issues.
    - PWC Scenarios: Nelson sent the RTC for team review, please provide comments if you haven't.
  - PWC scenarios "methods document" – will be sent for team review this week.
  - EFED IO and BEAD IO – will receive QAPP this week. The RTCs will be received by July 1.
  - If necessary, discussion on major comments can be raised in the weekly EFED/BEAD team meetings. Please, let Jan and Ideliz know.

- Presentations at the Environmental Modeling Public Meeting (EMPM) - August 5, 2020
  - Updates on presentations from PCA/PCT team and BEAD teams working on both DW projects: Teams are in the planning phase and will provide updates at a later time.
  - Kimberly agree with the proposal for review of presentations: Please send your presentation to EFED IO and BEAD IO. Depending on the content of the presentations, these may need to be primarily reviewed by one of the divisions, giving the other division the opportunity to review.

- Need of OPP IO review - Jan indicated that OPP IO review is needed if the material to be presented has not been made publicly available yet. For those presentations, please plan to have team and IO review completed before June 14 and plan to send the presentation slides to OPP IO by June 14. Ideliz can prepare a schedule if that would help.
    - Rebeccah and Monisha's presentation on the methods may include new content and may need OPP IO review.
    - Mark S. presentation on the PCA/PCT methods may include content previously presented for ESA. A joint presentation with EFED may be considered.
- Marietta recommended to verify if Ed is interested in a briefing. Jan is going to reach out to Ed.
- The proposed review schedule for presentations that do not need OPP IO review is below. Please let Jan and Ideliz know if you have concerns or comments with the proposed schedule.

EMPM Review/Task Schedule (if OPP IO Review is not needed)

Dates	Activities
June 30	Let Jan and Ideliz know if you are planning to present.
July 10	Send slide deck to team reviewers (EFED and/or BEAD as necessary) requesting feedback by **July 16**.*
July 14	Send final abstract to EMPM Team and let them know if you need more or less than 25 min to present.
July 22	Send slide deck to EFED and BEAD IO requesting feedback by **July 27.***
July 30	Send slide deck to the EMPM Team.

* Major comments could be discussed during the weekly meeting.

From: "Negron-Encarnacion, Ideliz" <Negron-Encarnacion.Ideliz@epa.gov>
Date: Wednesday, June 10, 2020 at 11:49 AM
To: "Matuszko, Jan" <Matuszko.Jan@epa.gov>, "Nesci, Kimberly" <Nesci.Kimberly@epa.gov>, "Echeverria, Marietta" <Echeverria.Marietta@epa.gov>, "Anderson, Brian" <Anderson.Brian@epa.gov>, "Anderson, Neil" <Anderson.Neil@epa.gov>, "Spatz, Dana" <Spatz.Dana@epa.gov>, "Kyle, Lee" <Kyle.Lee@epa.gov>, "Thurman, Nelson" <Thurman.Nelson@epa.gov>, "Kaul, Monisha" <Kaul.Monisha@epa.gov>, "Suarez, Mark" <Suarez.Mark@epa.gov>, "Young, Dirk" <young.dirk@epa.gov>, "Corbin, Mark" <Corbin.Mark@epa.gov>, "Becker, Jonathan" <Becker.Jonathan@epa.gov>, "Eckel, William" <Eckel.William@epa.gov>, "Paisley-Jones, Claire" <Paisley-Jones.Claire@epa.gov>, "Bohaty, Rochelle" <Bohaty.Rochelle@epa.gov>, "Crowley, Matthew" <Crowley.Matthew@epa.gov>, "Waterworth, Rebeccah" <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/9/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

June 9, 2020

Attendees: Matt C., Lee, Mark S., Dana, Mark C., Neil, Jonathan, Jan, Claire, Rebeccah, Monisha, Dirk, Bill, Marietta, Nelson and Ideliz.

1. PCA/PCT Update

- Automation tools status – Update on PCT Tables for Chlorpyrifos team and QA of Tool.
    - Jen and Summathy have been working on this with Rochelle.
    - PCT tables are with the chlorpyrifos team. All the tools were provided.
    - Miscellaneous All Ag issue of negative values was resolved.
    - Rochelle is drafting an email to the team to discuss a few observations while running the tool.
    - QA of the tool was completed by Josh. Rochelle is looking at implementation aspects while running the tool.
- Mark Corbin set a meeting for next week to engage HED in the new PCA/PCT methodologies and their implementation.

2. PWC Scenarios Status Update

- Implementation update: resolution of approach for implementing in CPY and beyond.
    - Concluded that the long-term average concentrations will be used to determine the scenarios to be selected based on their vulnerability.
    - Use of a single Koc scenario rather than three (low, intermediate and high Koc). The scenario to select depends on the Koc. These will be selected based on Kocs <100, 100-3000, >3000.
- Status of running chlorpyrifos scenarios – The team has everything that they need.
- Status of running scenarios – All the scenarios have been generated with the exception of the deciduous orchard scenario. Inputs are being established for this scenario, e.g. growing degree dates.

3. Documentation for docket (Publicly available: EPA-HQ-OPP-2020-0279)

- QAPP
    - Team review ends this week
    - Send to EFED and BEAD IOs next Monday June 15
- RTC update
    - Send for team review next Monday June 15
    - No need of a cover page with signatures
- PWC scenarios "methods document"
    - Send for team review Monday June 15

Note that all documentation is on time or advanced in the schedule. Thank you!

4. Presentations at the Environmental Modeling Public Meeting (EMPM) - "Drinking Water Assessment Improvements for Surface Water Exposure", August 5, 2020.

Coordinators: Zoe Ruge and Michael Wagman

Topics: (1) New scenario development for PWC; (2) New methodology for incorporating PCA into refined drinking water assessments; (3) New methodology for incorporating PCT into refined drinking water assessments; (4) Automation tools developed for applying new methodologies; (5) The drinking water assessment framework.

Presentations:

- We are aiming to have a good balance of presentations between the PCA/PCT and PWC Scenarios projects.
- PCA/PCT team and Framework team will be presenting. Please, let us know how many presentations per team.

- PWC Scenario team has planned 3 presentations: Overview of New PWC Scenario Development; Methods for generating new PWC scenarios; Automating process for new scenario inputs.
- BEAD - Rebecca and Mark are considering presenting. Documents that are not finalized can be presented with a focus on methodology.

Tasks/Timeline:

- No need to have an abstract ready by July 3. This is a requirement for other teams. Abstracts can be made available at a later time.
- EMPM team will be assuming 25 minutes per presentation, with time for questions at the end. Let the organizers know sometime in July if more or less time is needed.
- Agenda will be finalized late in July.
- Provide slide deck to Zoe and Michael one week in advance (July 29).
- Internal review and approval are coordinated by the presenter.
- A review timeline will be prepared.

Level of Review: Depending on the content of the presentations, these may need to be primarily reviewed by either EFED IO or BEAD IO, giving the other division the opportunity to review. OPP may need to review the presentations as well. EFED IO would like to see the slide decks by July 15.

From: "Negron-Encarnacion, Ideliz" <Negron-Encarnacion.Ideliz@epa.gov>
Date: Tuesday, June 2, 2020 at 7:52 PM
To: "Matuszko, Jan" <Matuszko.Jan@epa.gov>, "Nesci, Kimberly" <Nesci.Kimberly@epa.gov>, "Echeverria, Marietta" <Echeverria.Marietta@epa.gov>, "Anderson, Brian" <Anderson.Brian@epa.gov>, "Anderson, Neil" <Anderson.Neil@epa.gov>, "Spatz, Dana" <Spatz.Dana@epa.gov>, "Kyle, Lee" <Kyle.Lee@epa.gov>, "Thurman, Nelson" <Thurman.Nelson@epa.gov>, "Kaul, Monisha" <Kaul.Monisha@epa.gov>, "Suarez, Mark" <Suarez.Mark@epa.gov>, "Young, Dirk" <young.dirk@epa.gov>, "Corbin, Mark" <Corbin.Mark@epa.gov>, "Becker, Jonathan" <Becker.Jonathan@epa.gov>, "Eckel, William" <Eckel.William@epa.gov>, "Paisley-Jones, Claire" <Paisley-Jones.Claire@epa.gov>, "Bohaty, Rochelle" <Bohaty.Rochelle@epa.gov>, "Crowley, Matthew" <Crowley.Matthew@epa.gov>, "Waterworth, Rebeccah" <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 6/2/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

June 2, 2020

Attendees: Jonathan, Bill, Matt C., Lee, Mark S, Dirk, Kimberly, Nelson, Jan, Monisha, Dana and Rochelle

1. PCA/PCT Update
    - Automation tools status - EISB is working to provide the PCT tables to Rochelle and Dana. Aiming for today.

- Progress on plan for discussions with HED on output - The meeting is being setup
- Documentation: status of QAPP - Sent by Bill to EFED and BEAD reviewers

2. PWC Scenarios Status Update Lee, Nelson and Dirk
   - Implementation update: resolution of approach for implementing in CPY and beyond
     - Team put together a short paper recommending the use of three scenarios (high erosion, high runoff and combined) in the modeling, and the use of the overall concentration to choose the scenarios representing the 90th percentile.
     - The team will meet with Jan and Marietta on Tuesday afternoon to discuss this and the next steps.
   - Status of running scenarios - The chlorpyrifos team has everything but need a decision on the scenarios.
   - Documentation: status of QAPP - In EFED internal review

3. Documentation for the docket
   - Review by BEAD:
     - All documents except the RTC - These documents have been previously reviewed by the teams and have been updated to include new work. When sending these documents for review, please copy BEAD's team but no need to wait for their review.
     - RTC - This document will be new for everybody. BEAD will provide feedback. It was noted that comments on the PCA/PCT project are mainly germane to BEAD.
   - After the meeting supporting documentation for the RTC document including a brief summary of public comments and other work previously done was compiled and shared by Elyssa.

Notes from May 26, 2020 were modified below to include updated schedule/review tables.

From: Negron-Encarnacion, Ideliz
Sent: Tuesday, May 26, 2020 5:20 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/26/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 26, 2020

Attendees: Bill, Marietta, Jan, Neil, Mark C., Monisha, Matt C., Lee, Ideliz, Claire, Dana, Nelson, Dirk, Kimberly, Nelson, Jonathan, Rochelle

1. PCA/PCT Update
   - Automation tools status
     - PCA/PCT Automation – This tool is already available for use. Minor adjustments will be made to adjust the EDWCs for miscellaneous uses.
     - Aggregation tool – This tool allows multiple model runs. QA of tool by ERB 3 will begin.
   - Progress on plan for discussions with HED on output – Ready to engage HED, coordination through Don Wilbur. A meeting will be set with HED branch chiefs to describe the project and potentially discuss how to consider time series if we these are established by HUC.
   - Documentation for docket
     - Comments on list of reviewers & timeline:
       - White paper and case study will be available by August 1
       - Clarified that the SOP is internal and it doesn't have to be reviewed with other documents
       - A path forward is available and Josh will be the primary person responsible for the white paper and case study of the PCA/PCT project
     - QAPP review begins this week – DRAFT circulating with the team.

Document	Primary Person Responsible	EFED Reviewers	BEAD Reviewers	Team Review Start Date	EFED IO Review Start Date	Concurrent BEAD IO Review
QAPP	Bill Eckel	Kurt Pluntke, Bill Eckel, and Rochelle Bohaty	Mark Suarez	26-May-20	15-Jun-20	
Response to Comments	Bill Eckel	To be determined		15-Jun-20	1-Jul-20	
White Paper	Josh Antoline			1-Jul-20	1-Aug-20	Kimberly Nesci and Neil Anderson
Case Study	Josh Antoline			8-Jul-20	1-Aug-20	

2. PWC Scenarios Status Update
   - Status of generating the scenarios
     - Team decided that cancer (overall concentration) will be used to define the 90th percentile.
     - Implementation Plan – Team will discuss Tuesday afternoon what is useful for scientists. Implementation targeted by September.
       - Improve batch run runs to make them useful in risk assessment

- Plan will be presented to the PFTTT
- Email everybody on the outcome of the discussions of the implementation plan after today's meeting

- Status of running chlorpyrifos scenarios - Team will discuss Tuesday afternoon to make sure that it's in good shape.
- Documentation for docket
  - Comments on list of reviewers
  - QAPP review begins this week

Document	Primary Person Responsible	EFED Reviewers	BEAD Reviewers	Team Review Start Date	EFED IO Review Start Date	Concurrent BEAD IO Review
QAPP	Dirk Young	Kurt Piuntke, Lee Kyle, Dirk Young, Nelson Thurman, and Trip Hook	Monisha Kaul, Johnathan Becker, Rebeccah Waterworth	29-May-20	15-Jun-20	
Response to Comments	Nelson Thurman	Lee Kyle, Dirk Young, Nelson Thurman, and Trip Hook		15-Jun-20	1-Jul-20	
Methods Document	Dirk Young			15-Jun-20	1-Aug-20	Kimberly Nesci and Neil Anderson
Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman			8-Jul-20	1-Aug-20	

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, May 19, 2020 2:58 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/19/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 19, 2020

Attendees: Neil, Bill, Mark C., Monisha, Lee, Jan, Ideliz, Claire, Dana, Nelson, Rebeccah, Dirk, Kimberly, Nelson, Jonathan, Rochelle, Matt C., Mark S., Elyssa

1. PCA/PCT Update
   - Automation tools status

- PCA/PCT Automation – with Rochelle
    - Negative PCA issue is close to resolution – still some issues with rice
- Aggregation tool – with Rochelle

- Progress on plan for discussions with HED on output
    - Plan is close to complete – can initiate soon
    - Mark will talk to Jan about timing and outreach plan
- Final documentation for docket – review timeline proposal:
    - Intent of the schedule below is to space out deliverables and to set target dates without micromanaging the entire review process
    - Team review step includes manager (Mark C.) and BEAD team members (Mark S. and Claire) for all documents
    - BEAD IO (Kimberly and Neil) will review only the White Paper and Case Study (not the QAPP or RTC), subsequent or concurrent to the EFED IO review

PCA/PCT DOCUMENTS

Document	**Primary Person Responsible**	**Team Review Start Date**	**EFED IO Review Start Date**
QAPP	Bill Eckel	May 26, 2020	June 15, 2020
Response to Comments	Bill Eckel	June 15, 2020	July 1, 2020
White Paper	Josh Antoline (pending manager approval)	July 1, 2020	August 1, 2020
Case Study	Josh Antoline (pending manager approval)	July 8, 2020	August 1, 2020

2. PWC Scenarios Status Update
    a. Status of generating the scenarios
        i. The chlorpyrifos team has all the scenarios they need, but the teams have been discussing the definition of a "final" scenario
        ii. Chlorpyrifos is using a 21-day average concentration at HED's request, which is not part of the scenario selection and rankings.
        iii. We need a clear definition of "90th percentile" – the 90th percentile selection is for the specific chemical parameters run in the scenario generation process and it will not be exactly the same across different chemical parameters or timeframes.
        iv. If possible, trying to simplify the scenario selections for acute, chronic, and cancer (may not need all 3)

v. Will impact chlorpyrifos and beyond; should discuss with the whole division. We need a manageable and practical approach for EFED.

b. Status of running chlorpyrifos scenarios

i. Rochelle is currently running the scenarios

1. 1200 runs (12 crops), each run takes about 30 seconds

2. Ok for chlorpyrifos, but need to simplify and clarify for wider EFED implementation

ii. Remaining question is on how to characterize the values

1. Ranking system applied to 1-day and 365-day averages, not 21-day – probably close but needs to be accurately described

2. Need to be clear about the definition of 90th percentile and what that means

c. Final documentation for docket – review timeline proposal:

i. Intent of the schedule below is to space out deliverables and to set target dates without micromanaging the entire review process

ii. Team review step includes manager (Lee) and BEAD team members (Jonathan, Rebeccah, Monisha) for all documents

iii. BEAD IO (Kimberly and Neil) will review only the Methods and Inputs/Creating New Scenarios documents (not the QAPP or RTC), subsequent or concurrent to the EFED IO review

iv. Note that the chlorpyrifos documents will also be going to EFED IO for review on August 1.

v. Dirk will be on extended leave after June 15

SCENARIOS DOCUMENTS

Document	**Primary Person Responsible**	**Team Review Start Date**	**EFED IO Review Start Date**
QAPP	Dirk Young	~~May 26, 2020~~ May 29, 2020	June 15, 2020
Response to Comments	Nelson Thurman	June 15, 2020	July 1, 2020
Methods Document	Dirk Young	~~July 1, 2020~~ June 15, 2020	August 1, 2020
Inputs Document + Creating New Scenarios + associated Excel files	Nelson Thurman	July 8, 2020	August 1, 2020

From: Arnold, Elyssa
Sent: Tuesday, May 12, 2020 1:31 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta'

<echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/12/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 12, 2020

Attendees: Neil, Jan, Kimberly Lee, Mark C., Mark S., Dana, Rochelle, Bill, Nelson, Rebeccah, Dirk, Monisha, Jonathan, Elyssa

1. PCA/PCT Update
    - Automation tools status
        - PCA/PCT Automation – Negative PCA values
            - Issues were with double cropping and rice, now close to a solution
            - Will be able to use the miscellaneous ag calculation and will document the issues and solutions
            - Will be resolved for use in chlorpyrifos DWA
        - Aggregation tool
            - Josh has finished his QA, will send on to Rochelle for her to test
    - Progress on plan for discussions with HED on output
        - Jan sent additional comments to Mark
    - Data from WSDA?
        - Yes, Rochelle got it last week and sent it to the project team including BEAD
        - Have not reviewed the data yet
    - Documentation for docket
        - White Paper & Case Study
        - Response to Comments
        - QAPP – have made progress on the QAPP
        - For next week – team to share proposed timeline and assignments for documentation revisions.
            - All drafts complete by early August for DD review.

2. PWC Scenarios Status Update
    a. Status of generating the scenarios
        i. Delivered all Tier 1 scenarios except for soybean
            1. Complete: Cotton, Hay, Orchard, Row and Field Crops, Spring Wheat
            2. Soybean just needs to go through the ranking process
            3. Dana set up a meeting later today for the chlorpyrifos team to ask questions about the completed scenarios
        ii. Scenarios still in progress:
            1. Market vegetables – were missing some regions so re-running in batch runs and hope to have done end of this week or beginning of next week
            2. Winter Wheat – still need to run Koc of 10,000
            3. Still work to do on the orchard dates – Trip is working on the growing degree day model
    b. Documentation for docket
        i. Documents provided for peer review
            1. Methods Document
            2. Inputs Document
                a. Including spreadsheets
                b. Anything we sent to CLA during the comment period
            3. Creating New Scenarios Document
                a. May be combined with the Inputs Document
        ii. Response to Comments
        iii. QAPP
        iv. For next week – team to share proposed timeline and assignments for documentation revisions.
            1. All drafts complete by early August for DD review.
    c. Everything requested from BEAD has been delivered – thank you!!

From: Arnold, Elyssa
Sent: Tuesday, May 05, 2020 3:57 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>;

Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 5/5/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

May 5, 2020

Attendees: Bill, Nelson, Kimberly, Neil, Marietta, Dana, Dirk, Jonathan, Rebeccah, Jan, Matt, Mark S., Mark C., Monisha, Lee, Claire, Rochelle, Elyssa

1. PCA/PCT Update
    - Automation tools status
        - Negative PCA values – issue appeared in miscellaneous agriculture calculation
            - Majority are under 5%, so may be rounding errors
            - Others may be due to double cropping, working on an approach to address that
            - Need a resolution in the next week or so to keep chlorpyrifos on track
            - Team is meeting tomorrow to discuss
        - Aggregation tool – one QA issue, will fix and deliver to chlorpyrifos team at the end of this week
    - Plan for discussions with HED on output
        - Mark is addressing Jan's comments on the draft – will get it back to her this week
    - Data from WSDA? – not yet

2. PWC Scenarios Status Update
    - Feedback from Rick
        - Positive feedback, he supports high benefit crop plan
    - Plan for chlorpyrifos high benefit crops
        - EISB confirmed that existing scenarios with new weather data (asparagus, orchards) have already been QA'd
        - BAB confirmed that they will provide application rate and timing data for asparagus (MI) and strawberries (OR) by May 11
    - Status of generating the Tier 1 scenarios
        - Soybeans, hay, evergreen orchards (citrus), row and field crops, cotton
            - Ranking and selection process is complete
            - Generating final versions formatted to run in PWC
            - Dirk wants to do a QC – 48 hours

- Winter wheat is next – batch runs complete, Nelson is doing a final check and will hand off to Trip for scenario selection
- Batch runs on market vegetables (strawberry) started this morning

- Status of crop dates for deciduous orchards
  - BEAD delivered their information for the growing degree model on Friday
    - In draft, memo will be finalized over the next month or so (data will not change, just possibly the wording)
    - EFED has all of the information needed to proceed
  - Trip has pulled together the dates and has a model ready to test
  - Will work on the deciduous orchards scenario after the current set are complete

3. EMPM – non-EPA speaker suggestions?

- Peer reviewers – will not reach out to them, but they could self-nominate if they have work they want to present
- Workshop? (CLA request)
  - Will not hold a workshop, but will give more detailed presentations and provide an opportunity for questions
    - Detail on process to build scenarios, but not to help others run the code
  - Could include a demonstration/example, but need to consider network limitations
    - Screenshots rather than live demonstration
  - Don't want to overcommit the time of the team while they are working to complete all of the documentation
- Other presentation topics: overview of projects (current briefing package), more detail on implementation, PCA/PCT automation and aggregation tools

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From: Arnold, Elyssa
Sent: Tuesday, April 28, 2020 2:13 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/28/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 28, 2020

Attendees: Mark C., Bill, Nelson, Dana, Mark S., Jonathan, Marietta, Rebeccah, Dirk, Monisha, Rochelle, Kimberly, Lee, Jan, Neil, Matt Crowley, Claire, Elyssa

1. PCA/PCT Update
    - Automation tools
        - Question on some of the watersheds with negative PCA values associated with rice and turf
            - Meeting tomorrow with Rochelle and EISB to talk about this
        - Time series aggregation tool is in QA with Josh and Sumathy
    - Plan for discussions with HED on output
        - Jan sent comments to Mark
            - Need to clarify what we are going to give HED and what they can do with it
            - First need to figure out in EFED what makes the most sense
            - Clarify the outreach needs – public outreach beyond EMPM? (ACS probably not happening this year), need for OGC to weigh in?
    - WSDA meeting follow-up
        - Still working on getting us the data
        - Data is in Access
        - Need to see the data before determining if/how it can be used

2. PWC Scenarios Status Update
    - Plan for chlorpyrifos high benefit crops
        - Asparagus (MI)
            - Use existing scenario with new weather data
            - BEAD will provide application rate and timing by May 11
        - Orchard crops – Apples, Peaches, Cherries
            - Use existing scenario with new weather data
            - Use application rate and timing from previous DWA
        - Strawberries (OR)
            - New scenario will be created by May 11
            - BEAD will provide application rate and timing by May 11 (OR only)
        - Oranges (CA) & Sugar beets (MN and ND)
            - Tier 1 scenarios

- Lee will check whether we still need to QA existing scenarios with new weather data
- BAB will discuss any concerns with this plan and will get back to us this afternoon
- Marietta and Jan will discuss with Rick tomorrow at 4:00

- Status of generating the Tier 1 scenarios
  - Finished runs for cotton, spring wheat, row and field crops (sugar beets), and evergreen orchards
    - Scenario selection process is running now and should be complete today
  - Hay (alfalfa) – run is complete but needs a QA check before scenario selection
  - Soybeans and winter wheat – still running and should be complete by the end of the week – scenario selection by Monday
  - Market vegetables (strawberries) – Nelson is doing a final check on the dates for consistency and will start the runs, on target for May 11
- Status of crop dates for non-priority crops
  - Deciduous orchards – in review with Jonathan, should be complete by the end of the week

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From: Arnold, Elyssa
Sent: Tuesday, April 21, 2020 4:10 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/21/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 21, 2020

Attendees: Neil, Jonathan, Derek Berwald, Mark C., Matt Crowley, Monisha, Lee, Nikhil, Jan, Nelson, Dana, Rebeccah, Dirk, Marietta, Rochelle, Kimberly, Bill, Elyssa

1. PWC Scenarios Status Update
   - Remote access to 5th lab computer
     - Yes, all 5 are now working
   - Sampling %
     - Mel analyzed 15%, 25%, and 35%; higher % = decreased CV

- Tried to run 100% but was not feasible timewise
- Currently planning to use 35%
- EECs are the same within 2 sig figs regardless of the % (but CVs decrease)

- Status of generating the Tier 1 scenarios? Update timeline
  - Original timeline:
    - PWC Scenario batch runs – Begin early April to mid April 2020
    - PWC Scenario Ranking/Selection – Early April to mid April 2020
    - Roll out in phases as completed – final delivery mid April 2020
  - Currently ~2 weeks behind from that schedule – deliver Tier 1 scenarios by April 30
  - Time required per crop is between a couple days and a week. Trip is currently mapping out what to run when on what computer.
  - By the end of today will start running all Tier 1 priority scenarios across the 5 computers.
  - Will start getting output by the end of next week to send to chlorpyrifos team
- Input from Alex re: crops
  - Briefed Alex on the chlorpyrifos schedule on Thursday last week
  - Alex would like our DWA to include not just crops that are important to the registrant but also to the users (even if we are just doing a proof of concept DWA)
  - BEAD looked into that question and provided the following preliminary list of uses that are important to the grower community (high benefit)
    - **Preliminary** list:
      - Apples – deciduous orchards scenario
      - Asparagus (MI) – unique scenario
      - Cherries (MI) – deciduous orchards scenario
      - Oranges (CA)* – **Tier 1 citrus scenario**
      - Peaches (southeast) – deciduous orchards scenario
      - Sugar beets (MN and ND) – **Tier 1 sugar beet scenario**
      - Strawberries (OR) – market vegetable scenario
    - *Rick and Alex agreed to de-prioritize CA due to state restrictions
    - Providing details for all high benefit crops would take BEAD 5 weeks
      - Inputs for PWC: App dates and timing, rate distributions, max and avg rates
      - BEAD provide a time estimate for a subset of these (just strawberries?)
      - Dana and Rochelle: What would we assume without any new info from BEAD on these?

        - Nelson to estimate dates for completion of non-Tier 1 scenarios
            - Could also use old scenarios to evaluate high benefit crops that are not in Tier 1
    - We do not have to add in all the high benefit crops now, but need to scope it out. It's possible that the 2 already covered by the Tier 1 scenarios will be sufficient.
- Status of Crop dates for non-priority crops
    - Still QAing vegetable dates

For questions above, send Elyssa responses by Thursday 10:00 in preparation for the EFED/BEAD general at 1pm.

From: Arnold, Elyssa
Sent: Tuesday, April 14, 2020 1:57 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/13/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 13, 2020

Attendees: Jonathan, Mark C., Bill, Lee, Nelson, Rebeccah, Dirk, Dana, Neil, Jan, Marietta, Rochelle, Kimberly, Mark S., Monisha, Claire, Elyssa

1. PCA/PCT Project Status Update
    - Status of tools
        - Jen and Sumathy are integrating the last pieces of usage data from the SUUM report
        - Some quirky PCA numbers showing up – working out the details and will do some manual checks
        - Aggregation tool – behind because of Andrew's hardware issues, expect it to be ready for testing next week. If Andrew continues to have issues then Chuck can back him up.
    - Plan for discussions with HED on output
        - Bill and Mark are working on the proposal for presenting data (see last week's notes for details)
        - When that is ready Mark will reach out to Don Wilbur, probably next week
    - WSDA meeting (2:00 today)

- Will find out what data they are able to provide

2. PWC Scenarios Status Update

- Remote access to lab computers
  - Still just have 4 computers working. Not crucial to get the 5th computer but would be useful.
  - There is someone from EISD in the building this week who could help – Lee will follow up
- Crop dates
  - No update from EFED
  - BEAD is on track, senior scientist review April 23
- Status of generating the Tier 1 scenarios
  - Did a couple runs, working out bugs
- Sampling %
  - Mel is working with Trip to resolve an issue
  - Data analysis is done but not written up
  - 25% sampling looks like it will work

From: Arnold, Elyssa
Sent: Tuesday, April 07, 2020 4:13 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 4/7/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

April 7, 2020

Attendees: Marietta, Steve, Monisha, Lee, Jan, Nelson, Claire, Dana, Rebeccah, Dirk, Neil, Jonathan, Bill, Elyssa

1. PCA/PCT Project Status Update

- Status of tools

- Automation tool: Jen doing QA on Sumathy's tool but otherwise done
- Aggregation tool (update from Chuck and Andrew post-meeting): expect to be ready for testing end of next week (4/17)

- Plan for discussions with HED on output
  - Bill and Mark discussed the following output structure:
    - List of HUC2 regions that pass on PCA alone
    - List of HUC2 regions that pass based on PCA+PCT together
    - If any remaining HUC2s did not pass, report 90th percentile of the watersheds in the region and provide time series (or point estimates) to HED
    - Bill found discussion of the origin of the 90th percentile assumption in SAP documents from 1998 and 1999 on index reservoir and PCA. Not sure whether the SAP commented on that, but don't think that we were asking for comment on it.
  - Will need to set up meetings with HED to discuss this – timing?

- Rochelle set up a meeting with the Washington State Dept of Ag next week to talk about their usage data
  - Rochelle has asked about alternative dates and times to accommodate BEAD (Mark S. is out this week)
  - Should meet internally before talking to them

2. PWC Scenarios Status Update

- Remote access to lab computers
  - We now have access to 4 of the 5 computers
    - Trip has a request in to EISD to get the 5th computer working. If he doesn't have success by tomorrow Jan will elevate the issue.
  - Currently getting the weather files transferred to the computers (takes about 15 hours)
- Crop dates
  - Status of tier 1 crop dates
    - Crop dates for all tier 1 crops and other crop-related inputs for all crops were completed last week (Thursday, 4/2)
    - Also have several Tier 2 crops done (corn, other grains/corn, small grains) and will be ready to go as we finish the Tier 1 crops
    - The 2 vegetable scenarios are close to wrapping up for dates and should be done late next week
  - BEAD help on crop dates for deciduous orchards and small trellised fruit – timing

        - 3 people in BAB working on this, target is to deliver April 30 with senior review prior to that

- Status of generating the Tier 1 scenarios
    - Dates and inputs are all ready to go
        - Trip will start generating scenarios today
        - A few fields we will need to check
        - Scenarios will be done by the end of the week
        - Batch runs should start next week – these take multiple days – will go a few days past April 15
            - Can deliver to chlorpyrifos team as they are completed
- Sampling % update
    - Mel has the corn scenarios for 3 NHD regions (4, 5, and 7) for one Koc (1). Trip has post-processed them to assign percentiles.
    - Mel hopes to have the sample test completed by Wed, Apr 8
    - Sampling % will impact time needed to generate the scenarios. Nelson will update us with the final determination.

3. DD feedback from briefing – any follow up?
    - No additional follow up; primary concern from other divisions is the implementation
    - Marietta and Jan will talk to Rick at their next general and see if he wants a briefing too or just the slides
    - Documentation for 90th percentile decision
        - Incorporate directly into final documentation for scenarios
        - Don't need to go into too much detail but can use the sources that Bill found from the 1998/1999 SAP presentations

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From: Arnold, Elyssa
Sent: Tuesday, March 31, 2020 1:32 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; 'Nesci, Kimberly' <nesci.kimberly@epa.gov>; 'Echeverria, Marietta' <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: 'Bohaty, Rochelle (Bohaty.Rochelle@epa.gov)' <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/31/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 31, 2020

Attendees: Neil, Jonathan, Mark C., Marietta, Bill, Lee, Nelson, Kimberly, Dana, Rebeccah, Dirk, Monisha, Claire, Rebeccah, Matt C., Jan, Elyssa

1. PCA/PCT Project Status Update
    - Still some work to do on the time series aggregation tool (Andrew was having VPN issues) – goal for completion is still mid-April
    - Working on QAPP and other documentation
    - Mark will check in with Rochelle on Sumathy's tool – looks like things are in good shape

2. PWC Scenarios Status Update
    - Remote access to lab computers
        - Now have access to 3 of the 5 lab computers thanks to ITRMD
        - Need EISD to take out the card readers on the other 2 computers
            - If this can't happen, will we be ok with the 3 we have?
        - Trip just got wifi adapters delivered to his house and he will bring them by the office for EISD to install
        - Melissa was able to access the results of her runs to evaluate the sampling %s – need to resolve this question before the batch runs begin
            - Lee and Nelson will talk to her and get back to us
    - Tier 1 crop dates
        - Nelson provided Trip with the completed Tier 1 crop dates and he is reviewing the format now
        - Team will have the 2 vegetable scenarios wrapped up soon (quicker than expected)
        - Then just the deciduous orchard and small trellised fruit will be left to complete
    - Generating the Tier 1 scenarios
        - Nelson still needs to update the formats of some of the other crop inputs, he is working with Trip on that
        - Had to add a couple flags for special cases and tweak code accordingly, but all substantive work is complete
        - Still plan to start generating the scenarios this week
    - BEAD help on crop dates for deciduous orchards and small trellised fruit
        - Rebeccah asked for clarification on crop groups
            - Deciduous orchard – include both tree fruit and tree nut?

            - Yes
        - Small trellised fruit – just grapes?
            - Grapes are the critical crop, but we will also need to include caneberry and blueberry
            - If you find information on caneberry and blueberry while searching, please flag that too
            - Caneberry and blueberry are concentrated in a handful of states, so it may be quicker to go through the extensions for those and EFED can do that work
    - Timing
        - Rebeccah is also working on application timing for chlorpyrifos for the list of Tier 1 and 2 crops from Corteva. Will there be any additional crops?
            - We need to circle back with PRD on that. Only Tier 1 for September, but not clear on what will be left for chlorpyrifos after HED's SAP. BEAD is meeting with PRD on this issue tomorrow (Dana invited).
        - Rebeccah will talk to Monisha and Jonathan and will confirm how quickly the crop date work can be done; will bring in at least one other BEAD team member.
            - Monisha will get back to us later this week

From: Arnold, Elyssa
Sent: Tuesday, March 24, 2020 3:34 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <nesci.kimberly@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: Bohaty, Rochelle (Bohaty.Rochelle@epa.gov) <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>; Waterworth, Rebeccah <Waterworth.Rebeccah@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/24/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 24, 2020

Attendees: Marietta, Neil, Dana, Lee, Mark C., Matt, Jan, Kimberly, Claire, Mark S., Jonathan, Bill, Elyssa, Monisha, Nelson

PCA/PCT Project Status Update

- Rochelle tested Sumathy's tool with a couple HUC2s using PCT data and EDWCs from a previous assessment – worked pretty well

- Upper vs. uniform distribution makes a big difference in the results (% of watersheds passing)
- Mark C. is meeting with Chuck and Andrew today to talk about the aggregation tool next steps
- Peer review comment on including spray drift in the adjusted EDWCs – Mark will circle back with Chuck on the response
- Next steps will be to distill all the data into something easily understandable
    - Matrix of 9 options (min, avg, max PCT x lower, uniform, upper distribution) – this will be a policy question
    - For chlorpyrifos, we are just doing a DWLOC comparison so this is not an imminent problem
    - Preference in public and peer review comments for the uniform distribution

PWC Project Status Update

- Good progress on Tier 1 priority crops for chlorpyrifos
- Crop Dates
    - 1 thing outstanding from Rick S. – will have by midweek
    - Dates should be done by end of this week
- Can then hand off to Trip to generate the Tier 1 scenarios starting next week and start batch runs in PWC
- Challenge in accessing lab GIS computers remotely
    - Lee will reach out to Delores, her staff may be able to help
- Jan and Marietta spoke to Rick K. last week about the scenarios distribution
    - Rick wants us to stick with 90% to be consistent with historical approach – no rationale for changing that at this time, especially for chlorpyrifos
    - Will convey this at the DD briefing next week

What we need to complete scenarios by the summer (see attachment)

- Dates – deciduous orchards and small trellised fruit – would like **BEAD** assistance (Rebeccah)
    - Deciduous orchards – help to identify which crop stages relate to beginning canopy and maximum canopy
    - Small trellised fruit (grape) – help to identify bud break or bud burst as proxy for start of canopy
    - EFED can automate first freeze and growing degree dates
    - Deadline: end of April – Monisha will confirm whether this is doable for BEAD
- 25% sampling approach – need remote access to GIS lab computers to complete this analysis
    - This is needed for all scenarios, including Tier 1 chlorpyrifos crops
- General crop groups – finalized per BEAD's recommendations

- Only change is for "other grains" – BEAD said to group with spring wheat, which works except for in the southeast where other grains are more likely to be fall planted and line up better with winter wheat
- Nelson is cleaning up the list and will send a copy this afternoon

Elyssa will add Rebeccah to these meetings

From: Arnold, Elyssa
Sent: Tuesday, March 17, 2020 4:34 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Nesci, Kimberly <nesci.kimberly@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Anderson, Neil <Anderson.Neil@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Thurman, Nelson <Thurman.Nelson@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Young, Dirk <young.dirk@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Johnson, Hope <Johnson.Hope@epa.gov>; Eckel, William <Eckel.William@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Cc: Bohaty, Rochelle (Bohaty.Rochelle@epa.gov) <Bohaty.Rochelle@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>
Subject: PWC Scenarios & PCA/PCT Weekly DD Update - 3/17/2020 Notes

PWC Scenarios & PCA/PCT Weekly DD Update

March 17, 2020

Attendees: Neil, Mark C., Matt, Marietta, Bill, Monisha, Lee, Kimberly, Claire, Dana, Mark S., Nelson, Jonathan, Rochelle, Dirk, Bill, Jan, Elyssa

1. **Current status of each project:**
   a. Short term fixes based on peer review and public comments
   b. CPY status and tentative delivery dates (Tier 1 approach for scenarios)

Scenarios

- Tier 1 chlorpyrifos scenarios
  - Will have final scenarios for Tier 1 chlorpyrifos crops by April 15
  - Confirmed Tier 1 crops with Bruce ~a month ago
  - Wheat, soy, cotton, citrus, sugarbeet, alfalfa (hay scenario)
  - Still working on hay dates, aim to have those complete by this time next week
  - Updating standard default ag practices and curve numbers – will send table out to the team today. Team meeting tomorrow to make decisions on the c factor. By next week should have those inputs ready to converge with crop dates and put scenarios into batch runs.

- Remaining scenarios
    - After Tier 1 scenarios start the batch process will work on others – corn, sorghum/millet/small grains, vegetables, deciduous orchards – complete by summer
    - Dates – met with Rebeccah last week and walked through the process – would like some help from BEAD on finishing the deciduous orchards dates based on what Rebeccah has already done, the rest EFED can do using BEAD's methods
    - Working to automate some of the process; already automated the freeze date determination
- DWA work on Tier 2 crops for chlorpyrifos will be later (~Oct, but need to confirm the date)

<u>PCA/PCT</u>

- Sumathy sent updated info on the automation tool this morning
- Rochelle is testing it with chlorpyrifos this week
- Andrew is working on time series aggregation tool this week
- Chuck and Jen are out this week

2. Any challenges due to teleworking?

- Lab computers – setting them up to work remotely (not all online yet)
- At some point someone will have to come in to load some things on to the computers
- Mel was doing some test runs but the computers went to sleep before finishing – need to use a mouse jiggler
    - Mel doing runs to test the 25% sampling rate

3. High level discussion of Documentation and RTC general approach and timeframe (May-August)

- Documents to go out on a separate docket concurrent with chlorpyrifos assessment (Sept 21):
    - Documents previously released for comment will be revised and reviewed up to the DD level
        - Expect more changes to the PCA/PCT White Paper than to Scenarios documents
    - QAPPs
    - Response to comments (public and peer review) – summaries grouped by similar comments
- More detailed SOPs for EFED scientists will be completed separately

4. EMPM

- Plan to focus EMPM on DW projects
- High level – what we did, how to use the tools, longer term plans and challenges
- Workshop (as requested by CLA)
- Currently thinking July, prior to chlorpyrifos coming out (if global pandemic allows)
    - Could consider doing it virtually

5. **Anyone have an ask of anyone else to tee-up for future conversations?**
    a. Next week: Discuss what we need to complete all scenarios by the summer

- Jonathan – General question about level of refinement for any chemical that doesn't pass screening level: We usually look at typical vs. maximum application rates, should we also refine number of apps, intervals, and distribution of rates?
    - Yes, EFED wants and uses all of those but we don't want to put an undue burden on BEAD
    - Do we need a checklist?
    - See framework document as a starting point -> attached (see Section 5.0)
    - Could include an EMPM talk about what goes into the higher tier assessments
    - This question is not directly related to the scenarios or PCA/PCT projects (Note – this could be a good topic to raise at the PFTTT)

Message

From: Suarez, Mark [Suarez.Mark@epa.gov]
Sent: 6/12/2020 1:08:22 PM
To: Kaul, Monisha [Kaul.Monisha@epa.gov]; Wyatt, TJ [Wyatt.Tj@epa.gov]; Chism, William [Chism.Bill@epa.gov]
CC: Crowley, Matthew [Crowley.Matthew@epa.gov]; Kiely, Timothy [Kiely.Timothy@epa.gov]; Jarboe, Stephen [Jarboe.Steve@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Tindall, Kelly [tindall.kelly@epa.gov]; Berwald, Derek [Berwald.Derek@epa.gov]; Gelso, Brett [gelso.brett@epa.gov]
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Kaul, Monisha <Kaul.Monisha@epa.gov>
Sent: Friday, June 12, 2020 8:57 AM
To: Wyatt, TJ <Wyatt.Tj@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Wyatt, TJ <Wyatt.Tj@epa.gov>
Sent: Friday, June 12, 2020 8:26 AM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
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Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
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From: Kaul, Monisha
Sent: Wednesday, June 10, 2020 11:03 AM
To: Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
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Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Bill Chism
Senior Biologist
Biological and Economic Analysis Division
U.S. EPA/Office of Pesticide Programs
(571) 242-0254 Cell phone while on telework
chism.bill@epa.gov

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To: Suarez, Mark <Suarez.Mark@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>
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Sent: Wednesday, June 10, 2020 12:08 AM
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Subject: FW: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Mark

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Wednesday, May 13, 2020 11:08 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Wednesday, May 13, 2020 10:43 AM
To: Perry, Tracy <Perry.Tracy@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Wednesday, May 6, 2020 9:15 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Hi Monica,

Ex. 5 Deliberative Process (DP)

Thanks,

Tracy

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Tuesday, May 05, 2020 8:01 AM
To: Perry, Tracy <Perry.Tracy@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Monday, May 4, 2020 11:27 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
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Subject: RE: Propazine ESA - question for PRD, commitment letter

Hi Monica –

Ex. 5 Deliberative Process (DP)

Thanks,

Tracy L. Perry
Senior Regulatory Advisor
Risk Management and Implementation Branch III
Pesticide Re-evaluation Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
(703) 308-0128

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Wednesday, April 29, 2020 9:56 AM
To: Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Perry, Tracy <Perry.Tracy@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks so much,

Monica Wait
Risk Assessment Process Leader
OPP / EFED / ERB 6
Work cell: (703) 927-9594
Desk: (703) 347-8019

Message

From: Kaul, Monisha [Kaul.Monisha@epa.gov]
Sent: 6/12/2020 12:55:37 AM
To: Wyatt, TJ [Wyatt.Tj@epa.gov]; Chism, William [Chism.Bill@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]
CC: Crowley, Matthew [Crowley.Matthew@epa.gov]; Kiely, Timothy [Kiely.Timothy@epa.gov]; Jarboe, Stephen [Jarboe.Steve@epa.gov]; Becker, Jonathan [Becker.Jonathan@epa.gov]; Tindall, Kelly [tindall.kelly@epa.gov]; Berwald, Derek [Berwald.Derek@epa.gov]; Gelso, Brett [gelso.brett@epa.gov]
Subject: RE: Propazine ESA - question for PRD, commitment letter

<!--[if lte mso 15 || CheckWebRef]-->

Kaul, Monisha has shared a OneDrive for Business file with you. To view it, click the link below.

triazines ESA use cancelation meeting notes_BEAD response.docx

Ex. 5 Deliberative Process (DP)

From: Wyatt, TJ <Wyatt.Tj@epa.gov>
Sent: Thursday, June 11, 2020 8:46 AM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
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From: Kaul, Monisha <Kaul.Monisha@epa.gov>
Sent: Wednesday, June 10, 2020 7:50 PM
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Biological and Economic Analysis Division
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Please let me know if you have any more questions.

Thanks,

Tracy

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Subject: RE: Propazine ESA - question for PRD, commitment letter

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Tracy L. Perry
Senior Regulatory Advisor
Risk Management and Implementation Branch III
Pesticide Re-evaluation Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
(703) 308-0128

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Sent: Wednesday, April 29, 2020 9:56 AM
To: Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Perry, Tracy <Perry.Tracy@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
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Ex. 5 Deliberative Process (DP)

Thanks so much,

Monica Wait
Risk Assessment Process Leader
OPP / EFED / ERB 6
Work cell: (703) 927-9594
Desk: (703) 347-8019

Message

From: Kiely, Timothy [Kiely.Timothy@epa.gov]
Sent: 2/12/2018 6:22:58 PM
To: Becker, Jonathan [Becker.Jonathan@epa.gov]
Subject: RE: Draft Agenda for the Feb 26th Meeting

The agenda is full for tomorrow between 2-3 pm. Maybe ask Monisha if you can take time from the 3pm meeting.

From: Becker, Jonathan
Sent: Monday, February 12, 2018 12:54 PM
To: Sims, Diann <Sims.Diann@epa.gov>
Cc: Kaul, Monisha <Kaul.Monisha@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Miller, Wynne <Miller.Wynne@epa.gov>; Jones, Arnet <Jones.Arnet@epa.gov>; Myers, Clayton <Myers.Clayton@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Cook, Colwell <cook.colwell@epa.gov>; Chism, William <Chism.Bill@epa.gov>
Subject: RE: Draft Agenda for the Feb 26th Meeting

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Sims, Diann
Sent: Monday, February 12, 2018 9:06 AM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>
Subject: RE: Draft Agenda for the Feb 26th Meeting

Ahhh ok. Didn't see the attachment on my cell phone. Thanks

From: Becker, Jonathan
Sent: Monday, February 12, 2018 9:06 AM
To: Sims, Diann <Sims.Diann@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Subject: RE: Draft Agenda for the Feb 26th Meeting

Ex. 5 Deliberative Process (DP)

From: Sims, Diann
Sent: Monday, February 12, 2018 8:42 AM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Subject: Fwd: Draft Agenda for the Feb 26th Meeting

FYI
I haven't seen the questions yet.
Sent from my iPhone

Begin forwarded message:

> **From:** "Pease, Anita" <Pease.Anita@epa.gov>
> **Date:** February 10, 2018 at 8:27:21 AM EST
> **To:** "Miller, Wynne" <Miller.Wynne@epa.gov>, "Sims, Diann" <Sims.Diann@epa.gov>
> **Subject: Fwd: Draft Agenda for the Feb 26th Meeting**
>
> FYI...
>
> Sent from my iPhone
>
> Begin forwarded message:

From: "Ashfield, Patrice" <patrice_ashfield@fws.gov>
Date: February 9, 2018 at 5:58:29 PM EST
To: Anita Pease <Pease.Anita@epa.gov>, "Aubrey, Craig" <craig_aubrey@fws.gov>, Brian Anderson <Anderson.Brian@epa.gov>, Cathy Tortorici <cathy.tortorici@noaa.gov>, diane sims <sims.diann@epa.gov>, Gina Shultz <gina_shultz@fws.gov>, "Guilaran, Yu-Ting" <Guilaran.Yu-Ting@epa.gov>, Marietta Echeverria <echeverria.marietta@epa.gov>, Philip Villanueva <Villanueva.Philip@epa.gov>, Sheryl Kunickis <Sheryl.Kunickis@osec.usda.gov>, Tracy Perry <Perry.Tracy@epa.gov>
Subject: Draft Agenda for the Feb 26th Meeting

Ex. 5 Deliberative Process (DP)

Patrice M. Ashfield
Branch Chief for National Pesticide Consultations
Headquarters, Fish and Wildlife Service
5275 Leesburg Pike, MS:ES
Falls Church, VA 22041
(703) 358-2478 office

Message

From: Wyatt, TJ [Wyatt.Tj@epa.gov]
Sent: 2/7/2018 7:15:11 PM
To: Becker, Jonathan [Becker.Jonathan@epa.gov]
CC: Kiely, Timothy [Kiely.Timothy@epa.gov]
Subject: RE: discuss draft method for incorporating usage data (PCT) into ESA method

Ex. 6 Personal Privacy (PP)

-----Original Appointment-----
From: Becker, Jonathan **On Behalf Of** Garber, Kristina
Sent: Wednesday, February 07, 2018 1:40 PM
To: Jones, Arnet; Kiely, Timothy; Rossmeisl, Colleen; Kaul, Monisha; Panger, Melissa; Wyatt, TJ; Peck, Charles; Suarez, Mark; Lennartz, Steven; Chism, William; Connolly, Jennifer; Berwald, Derek; Blankinship, Amy; Donovan, Elizabeth; Eckel, William; White, Katrina; Paisley-Jones, Claire; Atwood, Donald; Sims, Diann; Corbin, Mark; Anderson, Brian; Becker, Jonathan; Myers, Clayton
Cc: Spatz, Dana; Stebbins, Katherine
Subject: FW: discuss draft method for incorporating usage data (PCT) into ESA method
When: Thursday, February 15, 2018 9:00 AM-10:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomPYS7100/Potomac-Yard-One

-----Original Appointment-----
From: Garber, Kristina
Sent: Wednesday, February 07, 2018 1:31 PM
To: Garber, Kristina; Rossmeisl, Colleen; Panger, Melissa; Peck, Charles; Lennartz, Steven; Connolly, Jennifer; Blankinship, Amy; Donovan, Elizabeth; Eckel, William; White, Katrina; Paisley-Jones, Claire; Atwood, Donald; Sims, Diann; Corbin, Mark; Anderson, Brian; Becker, Jonathan; Myers, Clayton
Cc: Spatz, Dana; Stebbins, Katherine
Subject: discuss draft method for incorporating usage data (PCT) into ESA method
When: Thursday, February 15, 2018 9:00 AM-10:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomPYS7100/Potomac-Yard-One

Ex. 5 Deliberative Process (DP)

Ex. 6 – Conference Code

Message

From: Knorr, Michele [knorr.michele@epa.gov]
Sent: 6/11/2020 1:42:06 PM
To: Kaul, Monisha [Kaul.Monisha@epa.gov]
CC: Becker, Jonathan [Becker.Jonathan@epa.gov]
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Michele L. Knorr, Attorney
Pesticides and Toxic Substances Law Office
Office of General Counsel
202-564-5631

From: Kaul, Monisha <Kaul.Monisha@epa.gov>
Sent: Thursday, June 11, 2020 9:36 AM
To: Knorr, Michele <knorr.michele@epa.gov>
Cc: Becker, Jonathan <Becker.Jonathan@epa.gov>
Subject: FW: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Becker, Jonathan <Becker.Jonathan@epa.gov>
Sent: Thursday, June 11, 2020 8:32 AM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Kaul, Monisha
Sent: Wednesday, June 10, 2020 7:50 PM
To: Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Kaul, Monisha
Sent: Wednesday, June 10, 2020 11:03 AM
To: Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Chism, William <Chism.Bill@epa.gov>
Sent: Wednesday, June 10, 2020 9:15 AM
To: Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Bill Chism
Senior Biologist
Biological and Economic Analysis Division

U.S. EPA/Office of Pesticide Programs
(571) 242-0254 Cell phone while on telework
chism.bill@epa.gov

From: Wyatt, TJ <Wyatt.Tj@epa.gov>
Sent: Wednesday, June 10, 2020 8:52 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Suarez, Mark <Suarez.Mark@epa.gov>
Sent: Wednesday, June 10, 2020 12:08 AM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: FW: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Wednesday, May 13, 2020 11:08 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Wednesday, May 13, 2020 10:43 AM
To: Perry, Tracy <Perry.Tracy@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Wednesday, May 6, 2020 9:15 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>

Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Tuesday, May 05, 2020 8:01 AM
To: Perry, Tracy <Perry.Tracy@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Monday, May 4, 2020 11:27 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>

Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Tracy L. Perry
Senior Regulatory Advisor
Risk Management and Implementation Branch III
Pesticide Re-evaluation Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
(703) 308-0128

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Wednesday, April 29, 2020 9:56 AM
To: Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Perry, Tracy <Perry.Tracy@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Monica Wait
Risk Assessment Process Leader
OPP / EFED / ERB 6
Work cell: (703) 927-9594
Desk: (703) 347-8019

Message

From: Kaul, Monisha [Kaul.Monisha@epa.gov]
Sent: 6/11/2020 1:35:57 PM
To: Knorr, Michele [knorr.michele@epa.gov]
CC: Becker, Jonathan [Becker.Jonathan@epa.gov]
Subject: FW: Propazine ESA - question for PRD, commitment letter
Attachments: FW: Propazine ESA assessment

<!--[if lte mso 15 || CheckWebRef]-->

Kaul, Monisha has shared a OneDrive for Business file with you. To view it, click the link below.

triazines ESA use cancelation meeting notes_BEAD response.docx

<!--[endif]-->

Ex. 5 Deliberative Process (DP)

From: Becker, Jonathan <Becker.Jonathan@epa.gov>
Sent: Thursday, June 11, 2020 8:32 AM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Jonathan

From: Kaul, Monisha
Sent: Wednesday, June 10, 2020 7:50 PM
To: Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
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Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

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Sent: Wednesday, June 10, 2020 9:15 AM
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Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Bill Chism
Senior Biologist
Biological and Economic Analysis Division
U.S. EPA/Office of Pesticide Programs
(571) 242-0254 Cell phone while on telework
chism.bill@epa.gov

From: Wyatt, TJ <Wyatt.Tj@epa.gov>
Sent: Wednesday, June 10, 2020 8:52 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>
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<Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Suarez, Mark <Suarez.Mark@epa.gov>
Sent: Wednesday, June 10, 2020 12:08 AM
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Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: FW: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Regards,
Mark

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Wednesday, May 13, 2020 11:08 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
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Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Thanks,
Monica

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Wednesday, May 6, 2020 9:15 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Hi Monica,

Ex. 5 Deliberative Process (DP)

Thanks,

Tracy

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Tuesday, May 05, 2020 8:01 AM
To: Perry, Tracy <Perry.Tracy@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Thanks,
Monica

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Monday, May 4, 2020 11:27 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Hi Monica –

Ex. 5 Deliberative Process (DP)

Thanks,

Tracy L. Perry
Senior Regulatory Advisor
Risk Management and Implementation Branch III
Pesticide Re-evaluation Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
(703) 308-0128

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Wednesday, April 29, 2020 9:56 AM
To: Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Perry, Tracy <Perry.Tracy@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks so much,

Monica Wait
Risk Assessment Process Leader
OPP / EFED / ERB 6
Work cell: (703) 927-9594
Desk: (703) 347-8019

Message

From: Perry, Tracy [Perry.Tracy@epa.gov]
Sent: 6/5/2020 5:50:19 PM
To: Kiely, Timothy [Kiely.Timothy@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Spatz, Dana [Spatz.Dana@epa.gov]; Corbin, Mark [Corbin.Mark@epa.gov]; Sherman, Kelly [Sherman.Kelly@epa.gov]
CC: Biscoe, Melanie [Biscoe.Melanie@epa.gov]; Tindall, Kelly [tindall.kelly@epa.gov]; McFarley, Heather [McFarley.Heather@epa.gov]; Chism, William [Chism.Bill@epa.gov]; Berwald, Derek [Berwald.Derek@epa.gov]; Kells, Bradley [kells.bradley@epa.gov]; Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Donovan, Elizabeth [Donovan.Elizabeth@epa.gov]; Hafner, Sarah [hafner.sarah@epa.gov]; Louie-Juzwiak, Rosanna [Louie-Juzwiak.Rosanna@epa.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Wait, Monica [Wait.Monica@epa.gov]; Jakob, Avivah [Jakob.Avivah@epa.gov]; Smith, Carolyn [smith.carolyn@epa.gov]; Bongard, Christian [bongard.christian@epa.gov]; Walsh, Linsey [Walsh.Linsey@epa.gov]
Subject: FW: Propazine ESA assessment
Attachments: ATT00001.txt

Ex. 5 Deliberative Process (DP)

From: Nathan Ehresman [US] <nathane@albaughllc.com>
Sent: Friday, June 05, 2020 11:36 AM
To: Perry, Tracy <Perry.Tracy@epa.gov>
Subject: FW: Propazine ESA assessment

Ex. 5 Deliberative Process (DP)

Kind regards,

Nathan

Nathan Ehresman
Regulatory Director, NA
Albaugh, LLC
P.O. Box 2127 (2906D N. Patterson St.)
Valdosta, GA 31604-2127
O/M:919-740-9895
NathanE@albaughllc.com
www.albaughllc.com

From: Carolyn Miter [US] <CarolynM@albaughllc.com>
Sent: Friday, June 5, 2020 10:28 AM
To: Nathan Ehresman [US] <nathane@albaughllc.com>
Subject: FW: Propazine ESA assessment

Ex. 6 – Personal Phone

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Friday, June 5, 2020 10:27 AM
To: Carolyn Miter [US] <CarolynM@albaughllc.com>
Cc: Smith, Carolyn <smith.carolyn@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>
Subject: FW: Propazine ESA assessment

Ex. 5 Deliberative Process (DP)

Regards,

Tracy L. Perry
Senior Regulatory Advisor
Pesticide Re-evaluation Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
(703) 308-0128

From: Perry, Tracy
Sent: Wednesday, May 13, 2020 4:40 PM
To: morrisg@albaughllc.com
Cc: Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Subject: Propazine ESA commitment letter

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Regards,

Tracy L. Perry
Senior Regulatory Advisor
Pesticide Re-evaluation Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
(703) 308-0128

Message

From: Suarez, Mark [Suarez.Mark@epa.gov]
Sent: 6/11/2020 12:53:21 PM
To: Kaul, Monisha [Kaul.Monisha@epa.gov]
CC: Becker, Jonathan [Becker.Jonathan@epa.gov]; Crowley, Matthew [Crowley.Matthew@epa.gov]; Kiely, Timothy [Kiely.Timothy@epa.gov]; Jarboe, Stephen [Jarboe.Steve@epa.gov]; Chism, William [Chism.Bill@epa.gov]; Wyatt, TJ [Wyatt.Tj@epa.gov]; Tindall, Kelly [tindall.kelly@epa.gov]; Berwald, Derek [Berwald.Derek@epa.gov]; Gelso, Brett [gelso.brett@epa.gov]
Subject: FW: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Suarez, Mark
Sent: Wednesday, June 10, 2020 2:30 PM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Becker, Jonathan <Becker.Jonathan@epa.gov>
Sent: Wednesday, June 10, 2020 12:48 PM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Suarez, Mark
Sent: Wednesday, June 10, 2020 12:08 AM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Crowley, Matthew <Crowley.Matthew@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Jarboe, Stephen <Jarboe.Steve@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Tindall, Kelly <tindall.kelly@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Gelso, Brett <gelso.brett@epa.gov>
Subject: FW: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Wednesday, May 13, 2020 11:08 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Wednesday, May 13, 2020 10:43 AM
To: Perry, Tracy <Perry.Tracy@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Wednesday, May 6, 2020 9:15 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Tuesday, May 05, 2020 8:01 AM
To: Perry, Tracy <Perry.Tracy@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Perry, Tracy <Perry.Tracy@epa.gov>
Sent: Monday, May 4, 2020 11:27 AM
To: Wait, Monica <Wait.Monica@epa.gov>; Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: RE: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Tracy L. Perry
Senior Regulatory Advisor
Risk Management and Implementation Branch III
Pesticide Re-evaluation Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
(703) 308-0128

From: Wait, Monica <Wait.Monica@epa.gov>
Sent: Wednesday, April 29, 2020 9:56 AM
To: Smith, Carolyn <smith.carolyn@epa.gov>; Jakob, Avivah <Jakob.Avivah@epa.gov>; Perry, Tracy <Perry.Tracy@epa.gov>; Sherman, Kelly <Sherman.Kelly@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Farruggia, Frank

<Farruggia.Frank@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Schmid, Emily <Schmid.Emily@epa.gov>
Subject: Propazine ESA - question for PRD, commitment letter

Ex. 5 Deliberative Process (DP)

Thanks so much,

Monica Wait
Risk Assessment Process Leader
OPP / EFED / ERB 6
Work cell: (703) 927-9594
Desk: (703) 347-8019

Message

From: Becker, Jonathan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CC74340798E549A1B3E20BD8BCC233DA-JONATHAN BECKER]
Sent: 6/14/2018 2:36:04 PM
To: Sims, Diann [Sims.Diann@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]
Subject: RE: CADPR PCT Discussion Follow Up

No. I haven't made any progress recently.

From: Sims, Diann
Sent: Thursday, June 14, 2018 8:38 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Subject: CADPR PCT Discussion Follow Up

Good Morning All,

There will be an ESA team meeting on Tuesday the 26th. (Claire will be sitting in the sun....)
The FWS will share their work to date on the catalogue.

Will we be ready to share our preferred method for calculating the PCT? I didn't commit to a time slot/agenda item, but it would be great if we could. Let me know.

Thanks

Message

From: Becker, Jonathan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CC74340798E549A1B3E20BD8BCC233DA-JONATHAN BECKER]
Sent: 6/26/2018 1:01:19 PM
To: Garber, Kristina [Garber.Kristina@epa.gov]; Sims, Diann [Sims.Diann@epa.gov]; Miller, Wynne [Miller.Wynne@epa.gov]; Perry, Tracy [Perry.Tracy@epa.gov]
CC: Suarez, Mark [Suarez.Mark@epa.gov]
Subject: RE: Agenda for Pesticide Usage Meeting 6/26/18

FYI: I have another all-afternoon meeting, so I won't be able to attend.

Jonathan

From: Garber, Kristina
Sent: Monday, June 25, 2018 5:04 PM
To: Sims, Diann <Sims.Diann@epa.gov>; Miller, Wynne <Miller.Wynne@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Perry, Tracy <Perry.Tracy@epa.gov>
Subject: RE: Agenda for Pesticide Usage Meeting 6/26/18

FYI: I will be on telework tomorrow. I plan on calling into the ESA meeting from home.

From: Sims, Diann
Sent: Monday, June 25, 2018 4:40 PM
To: Nancy Golden <nancy_golden@fws.gov>; Ryan DeWitt <ryan.dewitt@noaa.gov>; scott.hecht@noaa.gov; tony.hawkes@noaa.gov; andrew_raabe@fws.gov; Garber, Kristina <Garber.Kristina@epa.gov>; sheryl.kunickis@osec.usda.gov; ashley_stilson@fws.gov; david.baldwin@noaa.gov; elizabeth.hill2@ars.usda.gov; craig_aubrey@fws.gov; Miller, Wynne <Miller.Wynne@epa.gov>; david epstein <David.Epstein@ARS.USDA.GOV>; George Noguchi <george_noguchi@fws.gov>; Patrice Ashfield <patrice_ashfield@fws.gov>; thomas.hooper@noaa.gov; cathy.tortorici@noaa.gov; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; clayton.myers@ars.usda.gov; Shultz, Gina <gina_shultz@fws.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>
Subject: RE: Agenda for Pesticide Usage Meeting 6/26/18

Thank you Nancy,
Shortly, we'll send everyone a slide deck for tomorrow's discussion on the CADPR PCT. Have a great evening.

From: Google Calendar [mailto:calendar-notification@google.com] **On Behalf Of** nancy_golden@fws.gov
Sent: Monday, June 25, 2018 3:44 PM
To: Ryan DeWitt <ryan.dewitt@noaa.gov>; scott.hecht@noaa.gov; tony.hawkes@noaa.gov; andrew_raabe@fws.gov; Garber, Kristina <Garber.Kristina@epa.gov>; sheryl.kunickis@osec.usda.gov; ashley_stilson@fws.gov; david.baldwin@noaa.gov; elizabeth.hill2@ars.usda.gov; craig_aubrey@fws.gov; Miller, Wynne <Miller.Wynne@epa.gov>; david epstein <David.Epstein@ARS.USDA.GOV>; George Noguchi <george_noguchi@fws.gov>; Sims, Diann <Sims.Diann@epa.gov>; Patrice Ashfield <patrice_ashfield@fws.gov>; thomas.hooper@noaa.gov; cathy.tortorici@noaa.gov; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; clayton.myers@ars.usda.gov; Shultz, Gina <gina_shultz@fws.gov>; Nancy Golden <nancy_golden@fws.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Subject: Agenda for Pesticide Usage Meeting 6/26/18

Agenda:

Usage catalog - FWS
Other task list items due in June (CalDPR corrections, Kynetec request, usage data from BE/BO comments)
Updates from workgroups
- Hawaii
- California
- Mosquito adulticide

Any other updates/topics?
Next steps

Pesticide Usage Meeting Conference line - Ex. 6 Conference Line/Passcode

Conference line - Ex. 6 Conference Line/Passcode

When Tue Jun 26, 2018 1pm – 3pm Eastern Time

Where Ex. 6 Conference Line/Passcode (map)

Who
- Gina_Shultz@fws.gov - organizer
- lois_wellman@fws.gov - creator
- cathy.tortorici@noaa.gov
- garber.kristina@epa.gov
- echeverria.marietta@epa.gov
- sheryl.kunickis@osec.usda.gov
- miller.wynne@epa.gov
- becker.jonathan@epa.gov
- george_noguchi@fws.gov
- david.epstein@ars.usda.gov
- nancy_golden@fws.gov
- clayton.myers@ars.usda.gov
- sims.diann@epa.gov
- paisley-jones.claire@epa.gov
- tony.hawkes@noaa.gov
- sara_omar@ios.doi.gov
- ashley_stilson@fws.gov
- david.baldwin@noaa.gov
- elizabeth.hill2@ars.usda.gov

Message

From: Becker, Jonathan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CC74340798E549A1B3E20BD8BCC233DA-JONATHAN BECKER]
Sent: 9/3/2019 11:32:29 AM
To: Kiely, Timothy [Kiely.Timothy@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]
Subject: Topic for Senior Staff meeting
Attachments: 2019-08-28 DRAFT Combined External Peer Review Proposal for PWC Scenarios and PCA PCT.docx

Might be more of a FYI than a topic

Hi Monisha,

I've attached our draft proposal for contract peer review for the scenarios project and the PCA/PCT project. We sent it to contracts yesterday, but we have some time before we need to finalize it.

Please take a look at the charge questions for each project to make sure we're in agreement. The Scenarios questions are very similar to the questions we worked on with you last year. They start on page 12.

Thanks. I hope you had a wonderful vacation!

Lee

From Task Order from EFED

The proposed PCT project will incorporate the percent area treated (also known as percent crop treated, or PCT) approach in DWA. This project will determine if state-level estimates of PCT can be used to refine exposure estimates that previously relied on the maximum PCA approach used currently by USEPA OPP for DWA. In addition, USEPA OPP will consider options to estimates of PCT at the sub-state level (CRD and County Level) including alternative ideas submitted to USEPA OPP in public comments on the proposed approach to use PCT in ESA. State level PCT will be converted into an area (e.g. treated acres of a use site) and that areal extent will be compared to the area of a drinking water watershed. When the calculated treated area is less than total area where the crop or group of crops is grown in a CWS watershed, the EDWC would be adjusted to account for the partial treatment.

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

A. ADMINISTRATION

1. **Period of Performance:** Award as soon as possible with performance period of four months

2. **Title:** External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

3. **Technical Experts**
   Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs
   Dirk Young, PhD Email: [HYPERLINK "mailto:young.dirk@epa.gov"]
   Nelson Thurman, PhD Email: thurman.nelson@epa.gov
   Lee Kyle, Chief Email: kyle.lee@epa.gov
   U.S. EPA/OSCPP/OPP

   Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA
   Karen Milians, PhD Email: [HYPERLINK "mailto:milians.karen@epa.gov"]
   Joshua Antoline, PhD Email: [HYPERLINK "mailto:antoline.joshua@epa.gov"]
   William Eckel, PhD Email: [HYPERLINK "mailto:eckel.william@epa.gov"]
   Mark Corbin, Chief Email: corbin.mark@epa.gov
   U.S. EPA/OSCPP/OPP

4. **Task Order CO's Representative (TOCOR)**

   Alternate TOCOR

5. **Mailing Address**
   1200 Pennsylvania Ave
   Washington, DC 20460
   Mail code 7502P

6. **Shipping Address**
   1200 Pennsylvania Ave
   Washington, DC 20460
   Mail code 7502P

B. BACKGROUND

Federal law requires that pesticide products be registered for sale in the United States with the United States Environmental Protection Agency (USEPA). Several statutes establish the regulations under which this process

occurs. The FFDCA (Federal Food Drug and Cosmetic Act), as amended by the Food Quality Protection Act (FQPA), the FIFRA (Federal Insecticide Fungicide and Rodenticide Act), and the Pesticide Registration Improvement Act (PRIA) are the primary legislation which govern this process. The process used to decide whether pesticide products can be legally marketed is risk-based and risk assessments for pesticides are developed using the framework outlined by the National Academy of Science criteria for risk assessment in the Federal Government. As a part of the requirements for new pesticide registration and for periodic (every 15 years) review of existing registrations, USEPA Office of Pesticide Programs (OPP) conducts aquatic exposure assessments to determine whether pesticides that are applied according to label directions can result in surface and/or groundwater water concentrations that may adversely impact human health or aquatic organisms.

OPP's Environmental Fate and Effects Division's (EFED) risk assessors have the responsibility for conducting Drinking Water Assessments (DWA), which include an analysis of the potential for pesticide occurrence in both surface water and groundwater sources of drinking water. USEPA OPP employs a robust DWA process via a tiered approach that is designed to screen out less risky pesticides from those requiring more highly refined methods. Successive tiers incorporate refinements that draw on more focused chemical, spatial, temporal, and agronomic information coupled with consideration of available monitoring data to refine risk estimates for human health assessments and inform risk management decisions. The tiered approach uses model scenarios that represents conditions vulnerable to pesticide movement to water. Assessments at higher tiers use more refined fate data, spatial analyses, and germane pesticide usage information. For additional information on USEPA OPP's tiered approach, see *Framework for Conducting Pesticide Drinking Water Assessments for Surface Water* in USEPA OPP, 2019).

Project 1: <u>Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs</u>

The Pesticide in Water Calculator (PWC) is a model that uses field, watershed, and waterbody properties to simulate environmental conditions. In PWC, both field and waterbody parameters define an environmental *scenario*. Underlying the PWC, the Pesticide Root Zone Model, PRZM5 (Young and Fry, 2016) simulates pesticide fate and transport in the field for defined pesticide applications, estimating pesticide loads to both surface water bodies and ground water aquifers. The unqualified word *scenario* refers to the combination of field and waterbody parameters that describe the combined environment of the field and the waterbody simulated in PWC. With the qualifier, *field scenario* is synonymous with the *field parameter set* which contains only the parameters that describe the field (environmental conditions) used in PRZM5.

USEPA OPP currently has more than 125 field scenarios that are used in Tier 2 (medium-level of the tiered approach) aquatic exposure assessments. They have been used for both human health (drinking water) and aquatic ecological assessments. These scenarios were developed over two decades using professional judgement and the available data at the time of development. While the goal was usually to develop a combination of soil, hydrology, agronomic practices, and weather conditions that resulted in "high-end" estimated water concentrations, not all scenarios were developed consistently. Differences in purpose (for instance, some scenarios were developed for cumulative drinking water assessments for human health under

FFDCA while others were developed for use in endangered species assessments) and in available data over time have led to inconsistencies such that existing scenarios do not have well-defined levels of vulnerability relative to pesticides being transported into water bodies. With efforts to improve its tiered drinking water assessment approach (USEPA OPP, 2019), USEPA OPP plans to develop new scenarios for PWC using a well described and transparent process with the most recent data sources and technologies. These scenarios will have well-defined levels of vulnerability.

To generate new field scenarios, USEPA OPP first identified all possible soil-land cover-weather combinations for the conterminous 48 U.S. states by overlaying spatial data layers for soil map units from USDA's Soil Survey Geographic (SSURGO) database (USDA NRCS SSS, 2018), the latest five years of land cover/crop groups from the USDA's Cropland Data Layer (CDL) (USDA NASS, 2010-2018), and meteorological files/weather station grids generated from NOAA data (Fry et al, 2016). Field scenario input data are extracted for each soil-land cover-weather grid combination and the resulting data matrix contains all necessary input parameters for each soil-land cover-weather grid combination. Because of the size of the national data sets and the volume of data generated – millions of separate combinations – the data extraction and calculation process has been automated using Python code. The draft document ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM*** describes the field inputs required for the aquatic models, the data sources used, and the methods for generating field scenario combinations and for extracting and processing the input data. This includes documentation for the Python code used to automate the process.

The new scenario inputs will also be used in the Spatial Aquatic Model (SAM) (USEPA OPP, 2015) that USEPA OPP is developing to address the need for more spatial specificity in aquatic exposure assessments at a Tier 4 level (highest level of the tiered approach) described in USEPA OPP (2019). The peer review of this project will benefit both efforts.

Because the actual percentile of vulnerability for the current PWC scenarios is unknown, a process is needed to compare and rank the millions of new scenarios (combinations of soil-land cover-weather) in order to evaluate their potential for use in Tier 2 assessments. Selection of the new PWC scenarios will be based on clear, reproducible, consistent method and will offer the flexibility to choose a policy-defined percentile of vulnerability (e.g., 90th %-ile vulnerability). The draft document ***Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments*** describes how USEPA OPP generated estimated concentrations for each major crop and/or grouping of crops (described in Addendum B of ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM***) and ranked them by concentration with an area-weighted approach.

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

In estimating pesticide concentrations in drinking water, OPP also relies on pesticide use and usage data. Use data typically refers to what is on the pesticide label (e.g. apply to corn at 1 lb/acre by ground equipment) while usage data refers to information on what is actually applied by growers/applicators.

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

Watersheds large enough to support a drinking water facility are generally not comprised of only one land cover type, nor planted completely with a single crop. In order to account for this variability, the USEPA OPP uses percent cropped area (PCA) adjustment factors to reflect the percentage of a watershed that is covered by a particular land cover type as a surrogate for agricultural crops and non-agricultural uses. Currently, modeled concentrations of pesticides in surface waters are multiplied by a PCA factor that accounts for the areal fraction of a watershed with a land cover (*e.g.*, crops) that may be treated with a particular pesticide based on the pesticide's registered use patterns. The PCA-adjusted concentrations are used as the estimated drinking water concentrations (EDWCs) in human health dietary risk assessment.

The USEPA OPP initiated a peer review of an earlier version of how it develops and uses PCA in a document titled: "Development of Community Water System Drinking Water Intake Percent Cropped Area Adjustment Factors for use in Drinking Water Exposure Assessments, dated 10/10/2012." Consistent with USEPA's Peer Review guidelines, the feedback from reviewers was carefully considered and USEPA OPP updated the document accordingly. This current approach will not change the existing PCAs but will seek to leverage the full suite of watershed PCAs by defining a process to identify areas within each HUC2 which pass and which need further refinement. Detail on the current approach for utilizing PCA in OPP DWA may be found at the following website.

[HYPERLINK "https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/development-community-water-system-drinking-water"]

OPP also uses pesticide usage data for both human health and ecological risk assessments to better characterize how and where pesticides are most likely to be applied. Specifically, Percent Crop Treated (PCT) is the fraction of an area planted with a particular crop or group of crops that usage data suggests has been actually treated with a specific pesticide. Due to the nature of available pesticide usage data, PCTs are generally calculated at the state level. OPP pesticide usage data is derived from proprietary survey information with a statistical design that is aggregated at the Crop Reporting District (CRD). USEPA OPP has determined that aggregating usage data below the state level limits the n size of the reported values and thus reduces the confidence of the estimates of use below the state level. Because of this, USEPA OPP has historically not used PCT for refining EDWCs because of uncertainties in applying state-level summaries to community water system (CWS) watersheds that are much smaller in area.

Recently, USEPA OPP has proposed a process incorporating PCT data into Endangered Species Act (ESA) assessments. The proposed approach explores the ability to calculate the fraction of a given area that is likely to overlap with an endangered species with treated acres calculated from a PCT. The process relies on a comparison of acres treated with the acreage of a species range (as defined by a mappable polygon). Since a species range and a CWS watershed are essentially mappable polygons, the proposed PCT method can serve as a starting point for developing a method to apply PCT data to refined DWA.

C. PURPOSE

Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs

The objectives of the New PWC Scenario Generation project are to:

- Update methods for developing field scenarios using available geospatial data to generate candidate PWC field scenarios for each crop/crop group within each of the 18 hydrologic unit code-2 (HUC2) regions located in the conterminous U.S. This will allow USEPA OPP to generate field scenarios with consistent properties and agronomic practices.
- Derive methods for standardizing and automating the percentile distributions of PWC field scenarios for each crop/crop group within each HUC2 region. This will provide USEPA OPP with a means of selecting scenarios for use in drinking water assessments that are consistent in terms of relative vulnerability to pesticides being transported into water bodies.
- Develop initial examples that apply the methods described in the draft documents to develop new field scenarios for use aquatic exposure modeling.

Consistent with USEPA peer review policies, the methods for systematically generating new PWC scenarios and associated draft documents are being submitted for peer review through an independent contractor in accordance with the 4th Edition of the Peer Review Handbook ([HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"]). Specifically, this work assignment addresses the assembly and conduct of a panel whose purpose is to complete an independent peer review of the PWC scenario development methods and associated materials, including examples of their application and the Python code used to generate field scenario inputs. The goal is to have the panel members review these materials in a manner that is consistent with the ***Charge to the New PWC Scenario Development Peer Review Panel*** in Section E of this work assignment.

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

The Percent Cropped Area (PCA) & Percent Crop Treated (PCT) Project has developed an approach to apply usage data to refine USEPA OPP DWA in higher-tier assessments for agricultural and non-agricultural uses individually or in combinations of uses. USEPA OPP currently uses the maximum PCA for total agriculture, selected major crops (corn, soybeans, wheat, cotton), crop groups (vegetables, orchards), crop combinations (*e.g.*, corn-wheat, soybeans-wheat), and turf for each of the 18 Hydrologic Unit Code 2 (HUC-2) boundaries in the continental US for which the use sites associated with pesticide only where it may be used. The HUC2 scale was selected as a means to regionally organize the PCA values for each CWS watershed within that boundary. In the current DWA approach any use being assessed (e.g. corn, turf) will have an associated landcover class with an associated maximum PCA at both the national and regional (e.g. HUC2) scale. However, these maximum values are a conservative value and are selected from the full distribution of PCAs for all mapped CWS watersheds within each HUC2. The proposed approach being evaluated in this

update will consider each PCA individually in a tiered approach to focus refinements on only those CWS watersheds that don't pass the DWLOC at each successive refinement step.

This current approach will not change the existing PCAs but will seek to leverage the full suite of watershed PCAs by defining a process to identify areas within each HUC2 which pass and which need further refinement. By identifying areas within a HUC2 that don't pass a drinking water level of concern (DWLOC) will allow for more focused and spatially explicit refinements (e.g. local conservation practices) within each HUC2. OPP will identify watersheds that need further refinement as those where EDWCs remain above a DWLOC. USEPA OPP will focus on regions and groups in these CWS watersheds within each HUC-2 that remain a potential concern and will require more spatially-focused refinements and mitigation.

The proposed PCT project will incorporate the percent area treated (also known as percent crop treated, or PCT) approach in DWA. This project will determine if state-level estimates of PCT can be used to refine exposure estimates that previously relied on the maximum PCA approach used currently by USEPA OPP for DWA. In addition, USEPA OPP will consider options to estimates of PCT at the sub-state level (CRD and County Level) including alternative ideas submitted to USEPA OPP in public comments on the proposed approach to use PCT in ESA. State level PCT will be converted into an area (e.g. treated acres of a use site) and that areal extent will be compared to the area of a drinking water watershed. When the calculated treated area is less than total area where the crop or group of crops is grown in a CWS watershed, the EDWC would be adjusted to account for the partial treatment.

Both the PCA and PCT projects will require an evaluation phase where modeled EDWCs are compared with relevant monitoring data. Ultimately, the PCA and PCT portions of the project could link up into a single automated process that allows for quick and seamless consideration of refinements to DWA that do not require additional modeling.

Consistent with USEPA peer review policies, the methods for systematically generating PCA/PCT and associated draft documents are being submitted for peer review through an independent contractor in accordance with the 4th Edition of the Peer Review Handbook ([HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"]). Specifically, this work assignment addresses the assembly and conduct of a panel whose purpose is to complete an independent peer review of the PCA/PCT methods and associated materials. The goal is to have the panel members review these materials in a manner that is consistent with the ***Charge to the PCA/PCT Development Peer Review Panel*** in Section E of this work assignment.

D. SCOPE OF WORK

Project 1: <u>Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs</u>

The focus of this project is on the clarity and reproducibility of the field scenario inputs and on the methods for generating and evaluating field scenarios for use in PWC. The models described in this document have already undergone review. The original PRZM documents have also been reviewed. The new input guidance document updates the data sources and automates processing data.

USEPA OPP requests peer review of two major draft documents and their supporting materials:

- ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM***, including the data collection, extraction, and processing code, written in Python, and code documentation. Additional crop input datasets used for scenario development are also provided.
- ***Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments***, which includes two examples illustrating the scenario ranking process for corn and wheat.

The Contractor shall conduct the tasks listed below to accomplish the peer review of new PWC scenario development methods based on the framework outlined in the ***Charge to the New PWC Scenario Development Peer Review Panel*** (Section E).

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

The focus of this project is on the evaluation of a refinement step for OPP DWA. This step will utilize the full distribution of drinking water watersheds and their associated percent crop area (PCA) and Percent Crop Treated (PCT).

USEPA OPP requests peer review of two draft documents and their supporting materials:

- ***Approach to Use the Full Distribution of PCA values for Pesticide Drinking Water Assessments (DWA)***, which considers how OPP's current approach using national and regional maximum PCAs can be modified to account for all PCAs on a HUC-2 basis.
- ***Approach to Integrate PCTs into a Refined DWA Process***, which includes an example illustrating how a PCT is derived, how it is calculated and applied to a watershed, the range of values available for consideration, and a proposed approach to refine DWA after consideration of the PCA distribution.

The Contractor shall conduct the following tasks to accomplish the peer review of PCA/PCT development methods based on the framework outlined in the ***Charge to the PCA/PCT Development Peer Review Panel*** (Section E).

Tasks that apply to each project

For each project, the goal is to provide a consensus review. The Contractor shall select recognized peer reviewers with appropriate expertise, determine potential conflicts of interest, establish schedules, conduct the peer review, and prepare and submit the expert panel review report. Peer reviewers shall provide an independent review of the draft documents and pertinent supporting materials. The peer review shall be conducted by email and use conference calls for panel discussions as appropriate. The peer reviewers shall be

recognized scientists with demonstrated expertise related to the scope of work outlined in Section 2.b. The objective is to recruit 5 to 6 panel members for each project who are willing to participate and have broad disciplinary experience and a demonstrated professional history in technical areas related to these topics.

The Contractor shall attempt to balance the group of experts by selecting reviewers from academia, government, and the private sector. For each project, the output of this task order shall be an expert panel report that conveys the independent scientific judgment of each of the peer reviewers within the specific framework of the charge to the panel. Each panel will also be required to develop a synopsis of the findings of each reviewer and describe where consensus was achieved, with consensus being the goal, related to each element of the charge to the panel. It is also critically important that panelists reserve written commentary to areas within their demonstrated areas of expertise. All work to be done under this Task Order shall be in compliance with EPA's [HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"] (Fourth Edition; 2015). The requirements of each specific task are outlined below. An overall schedule is presented below in **Section F: Deliverables and Due Dates.**

Task 1. Prepare a Proposal

The Contractor shall initially prepare a proposal that includes the proposed firm fixed price (FFP), with an indication of the breakdown of the level of effort and other items that comprise the FFP proposed. The price proposal shall be submitted to the Contract Specialist (CS), Project Officer (PO) and the Task Order Project Officer (TOPO) within the specified time. The proposal will address not only the technical conduct of the work but also how panel members are to be managed and how the outcome will be summarized with a focus on the charge to the panel and whether consensus has been attained.

Task 2. Identify and Select Reviewers

Task 2.a – Clarify Scope: Within five (5) working days of the Task Order (TO) award the Contractor, with all their applicable staff, shall schedule a conference call with the TOPO and other appropriate USEPA OPP staff to clarify outstanding questions and confirm the schedule and specific tasks. The Contractor shall provide status updates to the TOPO on at least a bi-weekly basis. The Contractor shall initiate additional timely communication with the TOPO should developments arise that will affect the conduct or schedule of this peer review.

Task 2.b – Select Panelists and a Chair: For each project, the Contractor shall identify a pool of at least 10 potential experts from which 5-6 reviewers shall be selected by the Contractor. The experts shall be recognized scientists with demonstrated expertise covering each of the following scientific disciplines:

Project 1: <u>Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs</u>

- Agronomy/soils/hydrology/chemical transport with specialization in crop growth and management, erosion control, and/or irrigation (two or three panelists)

- Aquatic modeling, with a focus on pesticide aquatic exposure assessments (two or three panelists)
- Computer programming/data management (specifically fluency in Python), preferably with an understanding of the disciplines mentioned above (one panelist).

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

- Agronomy/soils/hydrology with specialization in pesticide use, pesticide fate and transport, and watershed modeling (one or two panelist).
- Pesticide risk assessment with emphasis on aquatic exposure and modeling for human health risk assessment, with a focus on pesticide aquatic exposure assessments (one or two panelists).
- Spatial analysis including GIS (one panelist).
- Economist and agronomists familiar with pest management, pesticide use and pesticide usage data (two or three panelists).

Ideally, for each project panelists would have demonstrated experience in multiple disciplines listed above. The search and selection criteria shall include the consideration of experience and demonstrated expertise in their respective field, professional record as demonstrated by peer-reviewed publications, professional awards, service to relevant professional societies, and affiliations (academic, consulting firm, industry, government, public interest, and environmental organizations). Service on prior peer review panels is a benefit. The reviewers shall have scientific credentials equivalent to a Ph.D. or comparable experience and shall be regarded as experts in their field. The Contractor shall not select reviewers from the USEPA OPP or individuals listed as contributors or authors for the materials presented to the panels. In addition, the Contractor shall not select scientists or consultants who have provided comments during review of materials which could have a bearing on the use of the models which would be developed as an outcome of this peer review process – i.e., the Contractor shall evaluate panelists for potential conflicts of interest. The Contractor shall not compensate or reimburse Federal personnel for service on the peer review panel. Provisions for compensation and reimbursement of Contractor-secured state personnel vary by state. Prior to the Contractor entering into formal agreements with any of the experts, the proposed list of experts, including *curriculum vitae* (CV) and other supporting information, shall be submitted to the COR for review to ensure adherence to the technical requirements of the task order. Each peer reviewer's work experiences, publication history, and CV must demonstrate that they are respected in their specialty/field(s) and have published extensively in their areas of expertise. The Contracting Officer Representative (COR) can provide comments to the Contractor regarding the expertise and potential conflicts of interest of the proposed reviewers. If USEPA OPP determines that the reviewers are unqualified for the specific review, the Contractor shall have ten (10) business days to submit substitutes for review. The final selection of reviewers will be the responsibility of the Contractor. The final panel for each project shall include at least one reviewer with expertise in each of the disciplines listed above in this section and in section C.

For each project, the Contractor shall designate one of the panelists as the panel chair. This individual shall be broadly knowledgeable in the critical scientific disciplines noted above and have the demonstrated ability in

leading a scientific group. The Contractor should also ensure that there is a broad representation in areas of expertise within the group to ensure each aspect of the PWC new scenario development process can be adequately reviewed given the scope of the charge to the panel.

Each Panel Chair shall review relevant materials, lead the discussion with the panelists for the review, and submit review comments to the Contractor in electronic format. They shall assist in the initiation of the draft panel report by receiving and organizing the comments of the other panelists and distributing these comments to all panelists prior to scheduled meetings. They will also work to resolve any conflicts and guide the preparation of a final report. In the preparation of the final report, the Panel Chair will also ensure milestones are met with regard to deliverables and will notify the Contractor in cases where milestones and appropriate resolution are not achieved. Additionally, the Panel Chair will ensure that the panel report responds to each element in the charge to the panel and the report accurately reflects consensus among the panel on each element or lack thereof. In cases where consensus is not achieved, the Panel Chair will ensure all findings are documented in detail in the panel report.

On each project, the other panelists shall review the provided documents/materials and submit their comments to the Chair and Contractor in electronic format prior to the peer review panel discussion/report preparation. The panelists shall study the comments from the other reviewers to facilitate active participation in discussions. The panelists shall also study other comments received (e.g., clarification from EPA staff) to facilitate an effective review process. They shall also contribute to the preparation of the draft and final reports of the peer review panel. Panelists will provide expert opinions within their specific fields of expertise and provide their input regarding the overall technical concepts outlined in the materials provided. Panelists will also be required to actively pursue consensus-building efforts and will assist in the development of a report, which documents their consensus? expert opinions to each of the designated charges provided by the Agency. In cases where dichotomous opinions exist, and consensus cannot be achieved, panelists will also ensure that the opinions of all panel members are accurately reflected in the final report to the Agency.

Task 3. Logistics and Preparation

Task 3.a – Provide Invitation Letters and Materials: The Contractor shall send an electronic package to each peer reviewer (including any Federal participants) which include letters of invitation and all key materials required for the review. The materials in this package will be defined by the USEPA OPP TOPO and the charge to participants; these shall include the documents and appropriate supporting materials under review. Copies of all packages shall also be sent to the TOPO and to the Deputy PO.

Task 3.b – Schedule Conference Calls and Other Appropriate Panel Interactions: The Contractor will arrange multiple conference calls and other appropriate interactions with: (1) USEPA OPP to ensure that all necessary information has been provided and is adequately understood by the Contractor and (2) panelists prior to initiation of and during the peer review process.

Task 4. Peer Review Process

Within five (5) working days of providing the invitation letters and key materials (Task 3.a), the Contractor will initiate the peer review process. Each panelist is required to first independently provide comments that address each of the charge questions relevant to a panelist's expertise, then work with the entire panel to prepare a report and build consensus wherever possible.

The Contractor shall receive and compile the reviewers' comments in a draft document with input from the Panel Chair as described above (Task 2.b). The Contractor shall review the comments to ensure that the reviewers have fulfilled their responsibilities under their agreement with the Contractor. The Contractor shall not edit or rearrange comments but provide them in an electronic format (MS Word 2016 and other formats as deemed appropriate by USEPA OPP) as they are sent in the original form with reviewers' cover/comment letter. The compiled comments shall be provided to the TOPO and all panelists to prepare for panel discussions as outlined below.

Task 4.a – Conduct Orientation: The panel members will be given an overview of the provided materials, scope of the project, their assigned charge, and anticipated schedule.

Task 4.b – Clarify Materials: The panel members will be given an opportunity to seek clarification regarding technical or other topical issues after they have had at least two weeks to review the provided materials. USEPA OPP sponsors will also participate as appropriate.

Task 4.c - Initiate Draft Report: The Panel members should provide individual comments to address each element of the charge, seek consensus on each element of the charge, and prepare the draft report at this phase of the project.

Task 4.d – Initiate Final Report: The panel will review comments on the draft report and edit the document to prepare a final report, which ensures responses to USEPA OPP, so the reviewer comments are properly reflected in the document.

Task 5. Report Preparation

Task 5.a – Prepare and Disseminate Draft Report: The Contractor shall prepare, with the help of the Panel Chair, a draft Expert Panel Report. The draft report must include a succinct statement of the Panel's conclusions and recommendations, input from each panelist on the charge questions, and a summary of any pertinent panel discussions up to that point. Comments from each panelist should be appended to the draft report as well.

The Contractor shall send an electronic copy of the draft expert panel report (MS Word 2016 and other formats as deemed appropriate by USEPA OPP) to the TOPO, deputy PO, CO, and each panelist for review and comment once the document is compiled.

Task 5.b – Receive Written Comments on the Draft Report: All reviewers will provide written comments on the draft Expert Panel Report to the Contractor who shall provide to and discuss the comments on the draft report with the TOPO before finalizing the Expert Panel report. The Contractor shall not edit or rearrange comments but provide them in a bound document and electronic version (MS Word 2016 and other formats as deemed appropriate by USEPA OPP), as they are sent in the original form with the reviewers' cover/comment letter. The Contractor may, however, format the comments for consistency.

Task 5.c – Prepare and Disseminate Final Report: The Contractor shall receive and compile reviewers' final, post-meeting, edits into a final document. The Contractor shall supply the COR and TOPO with an electronic copy of the report. The final Expert Panel Report shall also be sent to the peer review panel members by the Contractor. An electronic version (MS Word 2016 and/or other formats as deemed appropriate by USEPA OPP) shall be sent.

The Contractor is expected to exercise quality control measures to ensure proper completion of the document. The Contractor is also responsible for editing the final report content to ensure appropriate quality control findings are reflected in the document.

Task 6. Post Review Activities

Task 6.a – Complete Fiduciary Responsibilities: The Contractor shall be responsible for paying the expert's expenses and fees (except Federal personnel) and provide copies of the final report, as appropriate.

E. SPECIAL CONDITIONS

Along with the scope of the task order described above, it is necessary that the following technical charge be addressed by the peer review panel. This should include developing responses to and achieving consensus, to the extent possible, by the panel to each issue outlined in the charge. It should also include providing all necessary records (e.g., written documentation and computer files) associated with this effort. The charge questions are as follows:

Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs. Charge to the Peer Review Panel:

1. **Clarity and reproducibility of the Field Scenario Input Guidance Document:** It is important that the input sources, data extraction methods, and any processing and/or calculations performed on the data are adequately documented and clear to follow for readers with backgrounds in pesticide risk assessments and aquatic modeling. This applies to both written documentation and the resulting Python code used to automate the process. Once finalized, the draft document ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM*** will be used by USEPA OPP, the regulated industry, and other interested public parties to generate field scenario inputs for use in pesticide aquatic assessments using PWC and/or SAM.

a. Please comment on the clarity and level of documentation for the input parameters, their sources, and the data extraction and manipulation (calculation) methods described in the input document. Please identify any documentation that is not clear to follow and suggest alternative language for clarity.
b. Because of the number of model inputs and the sizes of the national databases used to derive the inputs, USEPA OPP used automated processes to facilitate the extraction and processing of inputs for large numbers of scenarios. The code needed for this extraction will be available for interested parties and needs to be sufficiently documented for use. Please comment on the documentation of the Python code used to extract and process data to generate the necessary data inputs used to generate field scenarios.

2. **Questions on Specific Inputs:** While the national databases for soils, land cover, and weather are well documented, several inputs (listed below) had minimal background documentation (data sources, references) in previous PRZM manuals (Carousel et al, 2005; Young and Fry, 2016). Where possible, USEPA OPP attempted to better document the data sources and methods for these inputs. In some cases, USEPA OPP used default methods and/or inputs in the absence of better data. Please comment on the methods described in the input parameter document and, if available, provide recommendations for better methods of estimating the following parameters:
   a. **Default agronomic practices:** USEPA OPP assumes contour plowing with some residue left on the surface as the default agronomic practice for determining the runoff curve numbers and USLE P (usle_p) factor. Please comment on the default assumption.
   b. **Crop emergence and maximum canopy cover dates:** USEPA OPP used USDA NASS (2006, 2007, and 2010) for planting and harvest dates. Dates for emergence and for maximum canopy cover are estimated from these dates. Please comment on this approach.
   c. **Missing crop planting and harvest dates:** In instances in which the crop occurs in a state, but no date ranges are reported in USDA NASS (2006, 2007, and 2010), dates are estimated by identifying the nearest neighbor state (similar in latitude) which had data for the given crop. Please comment on the approach.
   d. **Equivalent dates for planting/emergence and harvest dates for perennials:** The current defaults for perennial crops (alfalfa, grass hay, orchards, some fruits) are to assume 1) the curve number does not vary over time, except during crop harvest and emergence; and 2) the maximum canopy cover and the maximum root depth do not vary spatially for any particular crop. Equivalent dates for emergence (beginning of active growth/leafing), maximum canopy cover (full cover before harvest, maximum leaf canopy for orchards), and harvest (crop removal, leaf-drop) would not only require data sources beyond USDA NASS (2006, 2007, and 2010), but would need reliable data for different runoff curve numbers. Please comment on the adequacy of these default assumptions.
   e. **Crops with multiple growing seasons in a year:** In some areas (particularly California, Florida, and Texas), vegetables can be grown more than once in a year – up to four seasons according to USDA NASS (2007). In many cases, different vegetables may be rotated on the same fields in a given year. For these crops/states, USEPA OPP proposes developing generic vegetable scenarios with 2, 3, or 4 growing seasons, based on USDA NASS (2007). Please comment on the proposed method

f. **USLE cover management (C) factor:** USEPA OPP relies on factors provided by USDA NRCS for scenarios in use in 2000. The C factors compiled by USDA NRCS are based on feedback from local/regional offices. The approach is based on the RUSLE model released in 1992, but values for specific crop scenarios are not well-documented. The background and data tables are available in the spreadsheet *Crop Input Data.xlsx*. Please provide any recommendations on available data sources and/or methods of deriving a minimum and maximum C factor for each crop group identified in Addendum B.

g. **Irrigation inputs:** In the current plan, USEPA OPP will develop non-irrigated PWC field scenarios. As described in the Irrigation Inputs section of the input parameters document, irrigation rates are intended to minimize the potential for runoff. To minimize runoff, the maximum application rate will be set so that it does not exceed the maximum amount of water that will trigger runoff from the curve number method. Please comment on the proposed use of greater than 40% crop acres irrigated in a state as a trigger for the irrigation routine and on the proposal to cap the irrigation rate on the maximum amount of water that will not result in runoff by the curve number method.

3. **Methods for Ranking and Selecting Scenarios:** The process USEPA OPP proposes to replace existing PWC field scenarios with new scenarios for PWC that have well-defined levels of vulnerability is described in the draft document ***Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments***. This describes the methods used to generate scenario inputs for all soil-land cover-weather combinations, to process and rank these scenarios by crop and region, and to identify field scenarios with similar levels of vulnerability for use in aquatic exposure assessments. Once finalized, this document will provide a framework for generating and updating new PWC scenarios.

   a. Because pesticide concentrations in water estimated from PWC depend not only on the field and weather properties but also on the interaction of chemical properties with the environmental parameters, the "vulnerability" of field scenarios can be defined in a number of ways. USEPA OPP has elected to base field scenario vulnerability on the water body concentration (EEC) that results from running the field scenario with USEPA OPP's receiving water body (index reservoir). Different scenarios will be selected based on the relative mobility of the chemical (represented by K_{oc}). These classes reflect differences in the inherent vulnerability of the site to off-site transport dominated by surface water runoff and/or by erosion/sediment transport. Please comment on the suitability of estimated concentration as an indicator of scenario vulnerability and on the selection of different sets of scenarios based on K_{oc} classes.

   b. For each crop, field scenarios are ranked within National Hydrography Dataset Regions (HUC-2, major river basins) by magnitude of estimated concentration, weighted by land area. Scenarios will be comparable across HUC-2 regions by percentile rankings (e.g., 95th, 90th, 75th, 50th). Please comment on the suitability of this approach for selecting an appropriate scenario at some level of vulnerability to represent a HUC2 region.

   c. USEPA OPP provided two examples for ranking and comparing scenarios using corn and wheat to illustrate how new PWC scenarios will be generated using the methods in the draft document. Please comment on how well the examples illustrate the methods described in the draft

documents. In what ways can USEPA OPP improve the clarity and level of documentation in the methods for generating new PWC scenarios?

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA. Charge to the Peer Review Panel:

USEPA OPP is proposing to use a "distributional approach" for applying PCA and PCT to DWA. The following Charge Questions:

1. **Clarity and reproducibility of the Proposal in the attached White Paper to use the full distribution of watershed PCAs:**
    a. Please comment on the clarity and level of documentation and on how well it can be reproduced by others with an understanding in risk assessments.
    b. USEPA defines a pesticide concentration below which no human dietary risk is likely. This drinking water level of concern (DWLOC) represents an exposure value which can be compared against modeled concentrations of pesticides in CWS watersheds. Typically, USEPA considers an EDWC developed using a maximum national or regional PCA. This new approach will use all CWS watershed specific PCAs to identify which areas within a geographic region (e.g. HUC2) are below the DWLOC and which are above and need further refinement. Please comment on the scientific soundness of identifying sub-regions of HUC2 watersheds needing further refinement by comparing the ratio of EDWC to DWLOC to define the threshold for comparison with each PCA.
    c. Please comment on methods for applying the PCA approach for pesticides with multiple agricultural uses.
    d. Please comment on the methods for applying a similar PCA-like approach to address non-agricultural uses.
2. **Clarity and reproducibility of the Proposal described in the attached White Paper to use PCT as a refinement to the PCA distributional approach in Question 1:**
    a. Please comment on the clarity and level of documentation for the proposed PCT approach on how well it can be reproduced by others with an understanding in risk assessments.
    b. Please comment on the proposed approach to account for multiple use sites and PCT in OPP's DWA as a refinement to the proposed PCA approach.
    c. Unlike agricultural uses, non-agricultural uses of pesticides have less robust usage data and for the most part estimates of usage and PCT are only available at the state level. USEPA OPP has developed a case study on how state level PCT can be used to refine EDWC at the HUC2 scale. Please comment on OPP's proposed approach to account for non-agricultural PCT in the OPP proposed PCA approach.
    d. Please comment on the appropriateness and utility of assuming a uniform distribution of treated area across an entire state when determining the acres treated in a watershed. Are there alternative assumptions that would provide a more appropriate and informative mid-range estimate of watershed-scale PCT based on state-level data?
    e. Please comment on alternative approaches for determining areas more or less likely to be treated with a pesticide.

F. DELIVERABLES AND DUE DATES

Scope of work for each project to be completed within the approximate four (4) month timeline after initiation of this Task Order as detailed in the table below. Completion of each task should be documented in Contractor status reports.

As per the Task Order or request for a proposal, the Contractor shall provide the Agency with a proposal within the timeframe specified for this Task Order. The EPA Contracting Officer (CO), CORs, or panel members will review the proposal and provide the Contractor with an approval or disapproval, and revision (if necessary) in writing. The timelines involved, will proceed as stipulated in the request for a proposal or Contract.

The contractor shall prepare a Quality Assurance Project Plan for this Task Order. [HYPERLINK "http://www.epa.gov/quality/epa-qar-5-epa-requirements-quality-assurance-project-plans"]_before award as part of the proposal for approval.

Task	Subtask	Timeline (Days After Award)	Comments
1 – Prepare Proposal	N/A	N/A	N/A
2 – Identify and Select Reviewers	2.a - Clarify Scope	5	N/A
	2.b – Select Panelists and a Chair	15	Accounts for likely conflicts of interest, availability, etc. along with 10-day period for substitute review, if needed
3 – Logistics and Preparation	3.a – Provide Invitation Letters and Materials	20	N/A
	3.b – Schedule calls and other panel interactions	20	
4 – Peer Review Process	4.a – Conduct orientation	30	Discuss roles, responsibilities, provide overview of materials
	4.b – Clarify materials	45	Allow reviewers to seek clarification on materials
	4.c – Initiate Draft Report	60	Panel is to plan how draft report will be prepared over writing period
	4.d – Initiate Final Report	95	Panel is to plan how final report will be prepared over writing period

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

Task	Subtask	Timeline (Days After Award)	Comments
5 – Report Preparation	5.a – Prepare and Disseminate Draft Report	75	15-day period to prepare a draft report after process is initiated at day 60
	5.b – Receive Written Comments	95	Contractor will coordinate comments from reviewers and provide to panel members at end of 15-day review period
	5.c – Prepare and disseminate Final Report	110	Contractor will coordinate with peer review panel on how comments will be addressed and prepare a final report
6 – Post Review Activities	6.a. – Complete Fiduciary Responsibilities	NA	TBD based on final contract agreement

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

QUALITY ASSURANCE SURVEILLANCE PLAN

PERFORMANCE REQUIREMENT	PERFORMANCE MEASURE (PM)	PERFORMANCE STANDARD	SURVEILLANCE METHOD	INCENTIVES & DISINCENTIVES
MANAGEMENT & COMMUNICATION: The contractor shall maintain contact with the EPA CO, PO, and TOPO throughout the performance of the contract.	Contractor shall immediately bring potential problems to the appropriate EPA personnel and shall recommend actions that would mitigate or resolve the problem.	Issues that impact project schedules and costs shall be brought to the attention of the EPA within 3-days of occurrence.	All active task orders will be reviewed by the EPA to identify unreported issues.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation of Business Relations in the NIH Performance Evaluation System.
TIMELINESS: For every Task Order awarded establishing a firm, specific delivery date for the generation of a report, the contractor shall deliver such report to the PO, TOPO and CO no later than the time specified in the order's PWS.	Deliverables and related work must comply with contractual timeliness requirements. The contractor will be evaluated on its responsiveness to all task orders.	100% of all deliverables and related work shall be completed on time within task schedule and/or tech. direction requirements.	100% inspection of all deliverables and related work by the COR; COR will document the timeliness of all work requirements.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation of Timeliness in the NIH Performance Evaluation System.
COST MANAGEMENT & CONTROL: For every cost and time-and-material Task Order awarded, the contractor shall assign appropriate levels and skilled personnel; practice and encourage time management; and ensure accurate and appropriate cost controls and reporting.	The contractor shall demonstrate a high level of productivity and efficiency in maintaining costs.	Failure to manage and control costs cannot result in an overrun of more than 5% of the total estimated costs of each cost and time-and-material task order.	Active cost type and time-and-material type task orders' costs will be reviewed by the COR monthly using progress reports and vouchers to compare actual versus projected expenditures.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation in the category of Cost Control in the NIH Performance Evaluation System.
TECHNICAL QUALITY: For every task order awarded, the analyses conducted by the contractor shall be factual, defensible, credible, and based on sound scientific methods. All data shall be collected from reputable sources and quality assurance measures shall be conducted in accordance with the agency requirements outlined in the task orders.	All deliverables and related work must be complete, accurate, thorough, and professionally credible.	Data are 100% accurate; review demonstrates a high level of expertise and credibility about personnel and use of scientific methodology. Projects shall be conducted in strict conformance with approved project and QA plans. Outputs shall withstand internal review by the US EPA and outside scientific reviewers.	COR will conduct periodic reviews of work in progress and evaluations based on a sampling of internal and external customers.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation in the category of Quality of Product or Service in the NIH Performance Evaluation System.

ED_004856A_00001231-00018

G.ADDITIONAL REFERENCES CITED

Project 1: Improved Method for Developing Pesticide in Water Calculator Scenarios.

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Fry, M.M., G. Rothman, D.F. Young, and N. Thurman. 2016. Daily gridded weather for exposure modeling. Environmental Modelling & Software, 82, 167-173, doi.org/10.1016/j.envsoft.2016.04.008

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USDA National Agricultural Statistics Service Cropland Data Layer. 2010-2017. Published crop-specific data layer [Online]. Available at https://nassgeodata.gmu.edu/CropScape/ (accessed 9/25/2018). USDA-NASS, Washington, DC.

USDA Natural Resources Conservation Service Soil Survey Staff (USDA NRCS SSS). 2018. Gridded Soil Survey Geographic (gSSURGO) Database. United States Department of Agriculture, Natural Resources Conservation Service. Available online at http://datagateway.nrcs.usda.gov/. October 11-12, 2018 (FY2018 official release).

U.S. Environmental Protection Agency Office of Pesticide Programs (USEPA OPP). 2015. Development of a Spatial Aquatic Model (SAM) for Pesticide Risk Assessments. Presented to the FIFRA Scientific Advisory Panel, September 15-17, 2015. Available in the public e-docket, Docket No. EPA-HQ-OPP-2015-0424, accessible through the docket portal: http://wv.rw.regulations.gov.

U.S. Environmental Protection Agency Office of Pesticide Programs (USEPA OPP). 2019. Framework for Conducting Pesticide Drinking Water Assessments for Surface Water, August 28, 2019. Available in the public e-docket, TBD

Young, D.F. and Fry, M.M. 2016. PRZM5: A Model for Predicting Pesticide in Runoff, Erosion, and Leachate. Revision A. USEPA/OPP 734S16001, U.S. Environmental Protection Agency, Washington, DC. Available for download with the Pesticide in Water Calculator from the USEPA OPP Water Models web site at https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/models-pesticide-risk-assessment#aquatic

Message

From: Becker, Jonathan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CC74340798E549A1B3E20BD8BCC233DA-JONATHAN BECKER]
Sent: 8/29/2019 8:48:58 PM
To: Suarez, Mark [Suarez.Mark@epa.gov]
Subject: FW: Need your help developing initial crop-related inputs for field scenarios
Attachments: 2019-08-28 DRAFT Combined External Peer Review Proposal for PWC Scenarios and PCA PCT.docx

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From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Thursday, August 29, 2019 4:05 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>; Matuszko, Jan <Matuszko.Jan@epa.gov>
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

I've attached our draft proposal for contract peer review for the scenarios project and the PCA/PCT project. We sent it to contracts yesterday, but we have some time before we need to finalize it.

Please take a look at the charge questions for each project to make sure we're in agreement. The Scenarios questions are very similar to the questions we worked on with you last year. They start on page 12.

Thanks. I hope you had a wonderful vacation!

Lee

From: Kyle, Lee
Sent: Thursday, August 22, 2019 1:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: RE: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha and Jonathan,

- Attached is the crop matrix spreadsheet I mentioned
- Jonathan, please review the curve number table (Table 1) in the Input Parameters document. We developed the groupings based largely on curve number
- You've both been invited to the DD briefing on the 4th. I'll ask them about finding another day since you'll be out next week
- I'll talk to Jan about inviting you to the USDA briefing on the 17th

Jonathan, as you suggested we will ask USDA if the groupings are sufficient for the purposes of the modeling effort, in addition to asking them to enter the planting dates.

Thanks!

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:33 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Subject: FW: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

Kimberly just informed me you'll be out all next week. If it's okay with you, Nelson and I can work with your staff/Jonathan on much of this next week.

I scheduled a quick check in with you tomorrow at noon.

Best,

Lee

From: Kyle, Lee
Sent: Wednesday, August 21, 2019 4:04 PM
To: Kaul, Monisha <Kaul.Monisha@epa.gov>
Cc: Nelson Thurman (Thurman.Nelson@epa.gov) <Thurman.Nelson@epa.gov>
Subject: Need your help developing initial crop-related inputs for field scenarios

Hi Monisha,

The PWC scenarios project you helped us with last year is one of three drinking water projects that OPP needs to complete in time to be used in next year's chlorpyrifos risk assessment.

We need your help developing initial crop-related inputs for the current generic agricultural cover classes USEPA OPP will use to develop field scenarios – corn, cotton, rice, soybeans, wheat, vegetables and ground fruit, grapes, citrus, other orchards, other grains, other row crops, other cultivated crops, and pasture/hay/forage. Since the critical crop-related inputs pertain to factors that impact the use of pesticides and subsequent fate/transport from the field – such as significant differences in time of plant or harvest or extent of cover as it pertains to runoff (curve number) or erosion (particularly USLE C factor) – general crop groups provide sufficient, viable distinctions for the purpose of pesticide fate and transport modeling. For instance, it is more critical to distinguish between vegetable crops and orchards than between apple and peach orchards or tomatoes and peppers. Distinctions between these general groups can be made in future scenario development if specific management, soil, or environmental factors that would impact the management and transport of pesticides differ.

Marietta and Kimberly have tasked us with presenting our initial inputs to them on September 4th. This will help us prepare for a meeting we've got scheduled with USDA on the 17th. I wanted to give you a heads up on this, and can follow up with details next week.

Lee

From: Arnold, Elyssa <Arnold.Elyssa@epa.gov>
Sent: Tuesday, August 20, 2019 3:51 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/20

Drinking Water Projects Meeting Notes – Action items
August 20, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson, Lee

Contractor Peer Review

- Jan talked to Brian Katz, confirmed that we will use a single vehicle. They are ready to go, just waiting on us.
- Performance Work Statement for PCT/PCA was reviewed by Josh, Bill, Nelson, Lee, Claire (?)
    - Mark will clean up (address Nelson's comments) and send to Anna tomorrow for review by noon on Friday (gave Anna a heads up already).
    - Marietta can review it on Friday afternoon and then Lee can send to LaTangila.
    - Mark or Lee will combine the PCA/PCT and Scenarios documents before sending to Marietta.

Scenarios

- Nelson sent Input Parameters document to Jan on Friday.
    - Jan will review by the first week in September (Nelson is at ACS next week)
- Methods document – still on schedule
    - Demo of batch runs to PFTTT on Wednesday
- Scenario grouping for chlorpyrifos
    - Nelson and Dirk are going to focus on uses/management factors that result in different pest management approaches
- Jan scheduled an EFED/BEAD DD briefing for 9/4
- Lee and Nelson will send something to Monisha this week to prepare her for the briefing

PCA/PCT

- Have been focusing on the contract document
- Will share the white paper outline by the end of next week for early feedback

Ex. 5 Deliberative Process (DP)

Monitoring

- Team met with Anna this morning to work on refining the questions
    - Adding a question on the case study challenges
    - Removing redundancies
- White paper, case studies, framework, and SOP to OSCP for the docket next week.
    - Marietta wants to see a draft of the questions before signing the transmittal memo.
- Next week will work on finalizing the questions (Rochelle will be back)
    - Send Marietta the questions to share with Rick
    - Update Alex on the questions prior to posting

USDA Briefing – Sept 17

- Outline
    - Intro/purpose of briefing slide
    - 3 projects (in AA briefing – slides attached)
    - Monitoring: 2-3 slides
        - Conclusions slide from AA briefing
        - Timeline
    - PCA/PCT: ~10 slides
        - Can use material from peer review document
        - PCA – 4-5 slides from previous briefings (Karen presented to PFTTT on TPTH – check if that assessment is public yet)
        - PCT – Kris has ESA slides we can modify

        - Industry has submitted comments for ESA PCT approach – contracted with Stone for malathion case study to get below state level – CLA presented to us (Mark S. was there). Marietta will send around CLA's comments.
        - Input we need from USDA – have something similar we prepared for BEAD to pull from
    - Scenarios: ~10 slides
        - Use same slides as previous briefings (EMPM?) to explain the concept
        - Input we need from USDA
- Aim to get Marietta draft slides by 9/3 for her general with Rick on 9/4 (if not possible then Marietta can use an outline)
- Elyssa will pull the slides together into one presentation
- Clean up slides and send to USDA by 9/10
- Send asks for scenarios dates to USDA by 9/10 – Need to write up the spreadsheet process clearly for their feedback – Lee and Nelson will follow up on whether someone else can help on this.

Next week – Dana, Nelson, and Elyssa will be out. Jan will leave the meeting on the calendar for Lee and Mark to talk about the contractor document if needed.

From: Arnold, Elyssa
Sent: Monday, August 12, 2019 3:56 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Brian Anderson <Anderson.Brian@epa.gov>; Echeverria, Marietta <echeverria.marietta@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Thurman, Nelson <Thurman.Nelson@epa.gov>
Subject: Drinking Water Assessment Update - meeting notes 8/12

Drinking Water Projects Meeting Notes – Action items
August 12, 2019
Attendance: Elyssa, Marietta, Jan, Mark, Dana, Nelson

Contractor Peer Review

- Mark updated the draft of the contractor statement of work from Lee with the PCA/PCT details – added to PCA/PCT folder on ERB6 SharePoint site
- Clarified that there will be 2 separate reviews on 2 timelines with one Task Order to minimize process and overhead
- Need to review the charge questions (these are fairly general right now) and expertise
- This week – review by Josh, Nelson, Claire (will discuss at PCA/PCT meeting tomorrow)
- Next week – review by Anna and Lee (both out this week)
- Jan will follow up on Lee's email to LaTangila with Brian Katz to highlight our priorities

Scenarios

- Input Parameters document – Team comments were due on Friday, Nelson will clean it up this week and send it to Jan for review
- Methods document – describes how inputs are processed and scenarios selected, what was done and why
    - Sept 19: First part will describe the methods, currently being written
    - Oct 15: Will include examples for corn and wheat – including generation and running of the scenarios
        - Previous runs for corn had curve numbers read backwards, currently fixing and testing
        - Corn will be done before wheat
- Overall Executive Summary needed in plain language
- Chlorpyrifos scenarios – Nelson sent an edited version of Rochelle's list before the meeting with the status for each crop/scenario (one typo – grapes will be separate from orchards)
    - Scenario Grouping (e.g., generic orchard, vineyard, vegetable) – will be charge questions for peer review; we will also ask for input from USDA

        - BEAD input – Lee will talk to Monisha next week and send her the list of scenarios. We will have a DD briefing with Kimberly before the USDA meeting to make sure EFED and BEAD are on the same page. Jan will get a DD briefing on the calendar first week in Sept.
    - Planting dates
        - Perennials
            - Rick had a generic proposal
            - Another idea – can we use bud or beginning bloom as a proxy for "emergence"?
            - Need to get USDA input
        - Annuals
            - Need USDA input on the method for filling in planting dates for state/crop combinations not covered in the Planting and Harvesting Guides (Rick's method – has been shared with BEAD)
            - USDA could do additional work on this beyond the top 16 (e.g., vegetables) instead of PFTTT. Scenarios could be ready to process within a couple weeks after getting the dates. Could be ready for Rochelle to run 1-2 months after getting dates.
        - Nelson will continue working on the SOP for dates, will work with Rick. Need to add context for why the dates are important (big impact on model output). Rick's document is ~30 pages. Goal is to share with USDA at the briefing in Sept.
        - First week of Sept – Marietta will call Sheryl with a heads up about the ask to help fill in the planting dates
- Processing scenarios – will do continually as dates are complete
    - Lee met with CCOE about using contractor computing power – will get an update when he is back in the office

PCA/PCT

- Got the 2012-2016 chlorpyrifos PCT data from BEAD – they don't think that an update will add a lot of value
- White paper outline is drafted
    - This week – will discuss with the team tomorrow and then finalize the outline
    - Next week – will start to drop in text
- Be prepared to address issues quickly (e.g., non-ag)
- Prioritize questions for USDA and scenarios that will impact chlorpyrifos

USDA Briefing

- Marietta has emailed Sheryl with the potential dates and has not gotten a response yet
- Rick wants to see the slides in advance, but does not need us to brief him first

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From: Arnold, Elyssa
Sent: Monday, August 05, 2019 4:02 PM
To: Matuszko, Jan <Matuszko.Jan@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Echeverria, Marietta <Echeverria.Marietta@epa.gov>
Subject: RE: Drinking Water Assessment Update - meeting notes

Drinking Water Projects Meeting Notes – Action items
August 5, 2019

Contractor Peer Review

- Lee will send latest draft of the contractor statement of work to Mark
- Mark will add the PCT/PCA sections and charge questions into that document with the possible goal of having 1 task order rather than 2
- Mark will have a first draft to share by next week's meeting, 8/12

- Need to be aware of possible end of fiscal year delays in the contracting office in Cincinnati
- Jan will talk to Brian Katz to make sure he is aware of our priorities

Scenarios

- Input Parameters document will be completed this week
- Methods White Paper – current dates are below, but may need to tighten these up to allow for internal review time of up to 2 months depending on document length
    - Sept 19 framework complete (all parts except results)
    - Oct 15 entire paper complete – not including internal review
- Need to initiate project with Rick to add dates for perennials
- Peer review planned by end of February, then expect at least a month for re-runs
- Will need management briefings to decide which centile to use
- For next week, 8/12 – Lee will get a plan in place for prioritizing the chlorpyrifos scenarios (Nelson can report back next week when Lee is out)
- Lee will talk to LaTangila about a contractor for processing the scenarios
    - Stone or Waterborne may be options – Lee can call them and ask if they are reachable on any EPA contracts

PCA/PCT

- Mark C. will check in with Mark S. on getting the 2012-2016 chlorpyrifos PCT data
- Will also ask about whether they plan on an updated SUUM per Marietta's conversation with Kimberly
- Holding weekly project meetings every Tuesday

USDA Briefing

- Marietta will talk to Rick about the briefing tomorrow at their general before emailing Sheryl, we may need to brief Rick first
- Everyone should have their asks for USDA ready by the last week in August
    - For PCT – USDA input on non-ag data sources

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

A. ADMINISTRATION

1. **Period of Performance:** Award as soon as possible with performance period of four months

2. **Title:** External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

3. **Technical Experts**
   Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs
   Dirk Young, PhD Email: [HYPERLINK "mailto:young.dirk@epa.gov"]
   Nelson Thurman, PhD Email: thurman.nelson@epa.gov
   Lee Kyle, Chief Email: kyle.lee@epa.gov
   U.S. EPA/OSCPP/OPP

   Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA
   Karen Milians, PhD Email: [HYPERLINK "mailto:milians.karen@epa.gov"]
   Joshua Antoline, PhD Email: [HYPERLINK "mailto:antoline.joshua@epa.gov"]
   William Eckel, PhD Email: [HYPERLINK "mailto:eckel.william@epa.gov"]
   Mark Corbin, Chief Email: corbin.mark@epa.gov
   U.S. EPA/OSCPP/OPP

4. **Task Order CO's Representative (TOCOR)**

   Alternate TOCOR

5. **Mailing Address**
   1200 Pennsylvania Ave
   Washington, DC 20460
   Mail code 7502P

6. **Shipping Address**
   1200 Pennsylvania Ave
   Washington, DC 20460
   Mail code 7502P

B. BACKGROUND

Federal law requires that pesticide products be registered for sale in the United States with the United States Environmental Protection Agency (USEPA). Several statutes establish the regulations under which this process

occurs. The FFDCA (Federal Food Drug and Cosmetic Act), as amended by the Food Quality Protection Act (FQPA), the FIFRA (Federal Insecticide Fungicide and Rodenticide Act), and the Pesticide Registration Improvement Act (PRIA) are the primary legislation which govern this process. The process used to decide whether pesticide products can be legally marketed is risk-based and risk assessments for pesticides are developed using the framework outlined by the National Academy of Science criteria for risk assessment in the Federal Government. As a part of the requirements for new pesticide registration and for periodic (every 15 years) review of existing registrations, USEPA Office of Pesticide Programs (OPP) conducts aquatic exposure assessments to determine whether pesticides that are applied according to label directions can result in surface and/or groundwater water concentrations that may adversely impact human health or aquatic organisms.

OPP's Environmental Fate and Effects Division's (EFED) risk assessors have the responsibility for conducting Drinking Water Assessments (DWA), which include an analysis of the potential for pesticide occurrence in both surface water and groundwater sources of drinking water. USEPA OPP employs a robust DWA process via a tiered approach that is designed to screen out less risky pesticides from those requiring more highly refined methods. Successive tiers incorporate refinements that draw on more focused chemical, spatial, temporal, and agronomic information coupled with consideration of available monitoring data to refine risk estimates for human health assessments and inform risk management decisions. The tiered approach uses model scenarios that represents conditions vulnerable to pesticide movement to water. Assessments at higher tiers use more refined fate data, spatial analyses, and germane pesticide usage information. For additional information on USEPA OPP's tiered approach, see *Framework for Conducting Pesticide Drinking Water Assessments for Surface Water* in USEPA OPP, 2019).

Project 1: <u>Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs</u>

The Pesticide in Water Calculator (PWC) is a model that uses field, watershed, and waterbody properties to simulate environmental conditions. In PWC, both field and waterbody parameters define an environmental *scenario*. Underlying the PWC, the Pesticide Root Zone Model, PRZM5 (Young and Fry, 2016) simulates pesticide fate and transport in the field for defined pesticide applications, estimating pesticide loads to both surface water bodies and ground water aquifers. The unqualified word *scenario* refers to the combination of field and waterbody parameters that describe the combined environment of the field and the waterbody simulated in PWC. With the qualifier, *field scenario* is synonymous with the *field parameter set* which contains only the parameters that describe the field (environmental conditions) used in PRZM5.

USEPA OPP currently has more than 125 field scenarios that are used in Tier 2 (medium-level of the tiered approach) aquatic exposure assessments. They have been used for both human health (drinking water) and aquatic ecological assessments. These scenarios were developed over two decades using professional judgement and the available data at the time of development. While the goal was usually to develop a combination of soil, hydrology, agronomic practices, and weather conditions that resulted in "high-end" estimated water concentrations, not all scenarios were developed consistently. Differences in purpose (for instance, some scenarios were developed for cumulative drinking water assessments for human health under

FFDCA while others were developed for use in endangered species assessments) and in available data over time have led to inconsistencies such that existing scenarios do not have well-defined levels of vulnerability relative to pesticides being transported into water bodies. With efforts to improve its tiered drinking water assessment approach (USEPA OPP, 2019), USEPA OPP plans to develop new scenarios for PWC using a well described and transparent process with the most recent data sources and technologies. These scenarios will have well-defined levels of vulnerability.

To generate new field scenarios, USEPA OPP first identified all possible soil-land cover-weather combinations for the conterminous 48 U.S. states by overlaying spatial data layers for soil map units from USDA's Soil Survey Geographic (SSURGO) database (USDA NRCS SSS, 2018), the latest five years of land cover/crop groups from the USDA's Cropland Data Layer (CDL) (USDA NASS, 2010-2018), and meteorological files/weather station grids generated from NOAA data (Fry et al, 2016). Field scenario input data are extracted for each soil-land cover-weather grid combination and the resulting data matrix contains all necessary input parameters for each soil-land cover-weather grid combination. Because of the size of the national data sets and the volume of data generated – millions of separate combinations – the data extraction and calculation process has been automated using Python code. The draft document ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM*** describes the field inputs required for the aquatic models, the data sources used, and the methods for generating field scenario combinations and for extracting and processing the input data. This includes documentation for the Python code used to automate the process.

The new scenario inputs will also be used in the Spatial Aquatic Model (SAM) (USEPA OPP, 2015) that USEPA OPP is developing to address the need for more spatial specificity in aquatic exposure assessments at a Tier 4 level (highest level of the tiered approach) described in USEPA OPP (2019). The peer review of this project will benefit both efforts.

Because the actual percentile of vulnerability for the current PWC scenarios is unknown, a process is needed to compare and rank the millions of new scenarios (combinations of soil-land cover-weather) in order to evaluate their potential for use in Tier 2 assessments. Selection of the new PWC scenarios will be based on clear, reproducible, consistent method and will offer the flexibility to choose a policy-defined percentile of vulnerability (e.g., 90th %-ile vulnerability). The draft document ***Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments*** describes how USEPA OPP generated estimated concentrations for each major crop and/or grouping of crops (described in Addendum B of ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM***) and ranked them by concentration with an area-weighted approach.

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

In estimating pesticide concentrations in drinking water, OPP also relies on pesticide use and usage data. Use data typically refers to what is on the pesticide label (e.g. apply to corn at 1 lb/acre by ground equipment) while usage data refers to information on what is actually applied by growers/applicators.

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

Watersheds large enough to support a drinking water facility are generally not comprised of only one land cover type, nor planted completely with a single crop. In order to account for this variability, the USEPA OPP uses percent cropped area (PCA) adjustment factors to reflect the percentage of a watershed that is covered by a particular land cover type as a surrogate for agricultural crops and non-agricultural uses. Currently, modeled concentrations of pesticides in surface waters are multiplied by a PCA factor that accounts for the areal fraction of a watershed with a land cover (*e.g.*, crops) that may be treated with a particular pesticide based on the pesticide's registered use patterns. The PCA-adjusted concentrations are used as the estimated drinking water concentrations (EDWCs) in human health dietary risk assessment.

The USEPA OPP initiated a peer review of an earlier version of how it develops and uses PCA in a document titled: "Development of Community Water System Drinking Water Intake Percent Cropped Area Adjustment Factors for use in Drinking Water Exposure Assessments, dated 10/10/2012." Consistent with USEPA's Peer Review guidelines, the feedback from reviewers was carefully considered and USEPA OPP updated the document accordingly. This current approach will not change the existing PCAs but will seek to leverage the full suite of watershed PCAs by defining a process to identify areas within each HUC2 which pass and which need further refinement. Detail on the current approach for utilizing PCA in OPP DWA may be found at the following website.

[HYPERLINK "https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/development-community-water-system-drinking-water"]

OPP also uses pesticide usage data for both human health and ecological risk assessments to better characterize how and where pesticides are most likely to be applied. Specifically, Percent Crop Treated (PCT) is the fraction of an area planted with a particular crop or group of crops that usage data suggests has been actually treated with a specific pesticide. Due to the nature of available pesticide usage data, PCTs are generally calculated at the state level. OPP pesticide usage data is derived from proprietary survey information with a statistical design that is aggregated at the Crop Reporting District (CRD). USEPA OPP has determined that aggregating usage data below the state level limits the n size of the reported values and thus reduces the confidence of the estimates of use below the state level. Because of this, USEPA OPP has historically not used PCT for refining EDWCs because of uncertainties in applying state-level summaries to community water system (CWS) watersheds that are much smaller in area.

Recently, USEPA OPP has proposed a process incorporating PCT data into Endangered Species Act (ESA) assessments. The proposed approach explores the ability to calculate the fraction of a given area that is likely to overlap with an endangered species with treated acres calculated from a PCT. The process relies on a comparison of acres treated with the acreage of a species range (as defined by a mappable polygon). Since a species range and a CWS watershed are essentially mappable polygons, the proposed PCT method can serve as a starting point for developing a method to apply PCT data to refined DWA.

C. PURPOSE

Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs

The objectives of the New PWC Scenario Generation project are to:

- Update methods for developing field scenarios using available geospatial data to generate candidate PWC field scenarios for each crop/crop group within each of the 18 hydrologic unit code-2 (HUC2) regions located in the conterminous U.S. This will allow USEPA OPP to generate field scenarios with consistent properties and agronomic practices.
- Derive methods for standardizing and automating the percentile distributions of PWC field scenarios for each crop/crop group within each HUC2 region. This will provide USEPA OPP with a means of selecting scenarios for use in drinking water assessments that are consistent in terms of relative vulnerability to pesticides being transported into water bodies.
- Develop initial examples that apply the methods described in the draft documents to develop new field scenarios for use aquatic exposure modeling.

Consistent with USEPA peer review policies, the methods for systematically generating new PWC scenarios and associated draft documents are being submitted for peer review through an independent contractor in accordance with the 4th Edition of the Peer Review Handbook ([HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"]). Specifically, this work assignment addresses the assembly and conduct of a panel whose purpose is to complete an independent peer review of the PWC scenario development methods and associated materials, including examples of their application and the Python code used to generate field scenario inputs. The goal is to have the panel members review these materials in a manner that is consistent with the ***Charge to the New PWC Scenario Development Peer Review Panel*** in Section E of this work assignment.

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

The Percent Cropped Area (PCA) & Percent Crop Treated (PCT) Project has developed an approach to apply usage data to refine USEPA OPP DWA in higher-tier assessments for agricultural and non-agricultural uses individually or in combinations of uses. USEPA OPP currently uses the maximum PCA for total agriculture, selected major crops (corn, soybeans, wheat, cotton), crop groups (vegetables, orchards), crop combinations (*e.g.*, corn-wheat, soybeans-wheat), and turf for each of the 18 Hydrologic Unit Code 2 (HUC-2) boundaries in the continental US for which the use sites associated with pesticide only where it may be used. The HUC2 scale was selected as a means to regionally organize the PCA values for each CWS watershed within that boundary. In the current DWA approach any use being assessed (e.g. corn, turf) will have an associated landcover class with an associated maximum PCA at both the national and regional (e.g. HUC2) scale. However, these maximum values are a conservative value and are selected from the full distribution of PCAs for all mapped CWS watersheds within each HUC2. The proposed approach being evaluated in this

update will consider each PCA individually in a tiered approach to focus refinements on only those CWS watersheds that don't pass the DWLOC at each successive refinement step.

This current approach will not change the existing PCAs but will seek to leverage the full suite of watershed PCAs by defining a process to identify areas within each HUC2 which pass and which need further refinement. By identifying areas within a HUC2 that don't pass a drinking water level of concern (DWLOC) will allow for more focused and spatially explicit refinements (e.g. local conservation practices) within each HUC2. OPP will identify watersheds that need further refinement as those where EDWCs remain above a DWLOC. USEPA OPP will focus on regions and groups in these CWS watersheds within each HUC-2 that remain a potential concern and will require more spatially-focused refinements and mitigation.

The proposed PCT project will incorporate the percent area treated (also known as percent crop treated, or PCT) approach in DWA. This project will determine if state-level estimates of PCT can be used to refine exposure estimates that previously relied on the maximum PCA approach used currently by USEPA OPP for DWA. In addition, USEPA OPP will consider options to estimates of PCT at the sub-state level (CRD and County Level) including alternative ideas submitted to USEPA OPP in public comments on the proposed approach to use PCT in ESA. State level PCT will be converted into an area (e.g. treated acres of a use site) and that areal extent will be compared to the area of a drinking water watershed. When the calculated treated area is less than total area where the crop or group of crops is grown in a CWS watershed, the EDWC would be adjusted to account for the partial treatment.

Both the PCA and PCT projects will require an evaluation phase where modeled EDWCs are compared with relevant monitoring data. Ultimately, the PCA and PCT portions of the project could link up into a single automated process that allows for quick and seamless consideration of refinements to DWA that do not require additional modeling.

Consistent with USEPA peer review policies, the methods for systematically generating PCA/PCT and associated draft documents are being submitted for peer review through an independent contractor in accordance with the 4th Edition of the Peer Review Handbook ([HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"]). Specifically, this work assignment addresses the assembly and conduct of a panel whose purpose is to complete an independent peer review of the PCA/PCT methods and associated materials. The goal is to have the panel members review these materials in a manner that is consistent with the ***Charge to the PCA/PCT Development Peer Review Panel*** in Section E of this work assignment.

D. SCOPE OF WORK

Project 1: <u>Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs</u>

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

The focus of this project is on the clarity and reproducibility of the field scenario inputs and on the methods for generating and evaluating field scenarios for use in PWC. The models described in this document have already undergone review. The original PRZM documents have also been reviewed. The new input guidance document updates the data sources and automates processing data.

USEPA OPP requests peer review of two major draft documents and their supporting materials:

- ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM***, including the data collection, extraction, and processing code, written in Python, and code documentation. Additional crop input datasets used for scenario development are also provided.
- ***Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments***, which includes two examples illustrating the scenario ranking process for corn and wheat.

The Contractor shall conduct the tasks listed below to accomplish the peer review of new PWC scenario development methods based on the framework outlined in the ***Charge to the New PWC Scenario Development Peer Review Panel*** (Section E).

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

The focus of this project is on the evaluation of a refinement step for OPP DWA. This step will utilize the full distribution of drinking water watersheds and their associated percent crop area (PCA) and Percent Crop Treated (PCT).

USEPA OPP requests peer review of two draft documents and their supporting materials:

- ***Approach to Use the Full Distribution of PCA values for Pesticide Drinking Water Assessments (DWA)***, which considers how OPP's current approach using national and regional maximum PCAs can be modified to account for all PCAs on a HUC-2 basis.
- ***Approach to Integrate PCTs into a Refined DWA Process***, which includes an example illustrating how a PCT is derived, how it is calculated and applied to a watershed, the range of values available for consideration, and a proposed approach to refine DWA after consideration of the PCA distribution.

The Contractor shall conduct the following tasks to accomplish the peer review of PCA/PCT development methods based on the framework outlined in the ***Charge to the PCA/PCT Development Peer Review Panel*** (Section E).

Tasks that apply to each project

For each project, the goal is to provide a consensus review. The Contractor shall select recognized peer reviewers with appropriate expertise, determine potential conflicts of interest, establish schedules, conduct the peer review, and prepare and submit the expert panel review report. Peer reviewers shall provide an independent review of the draft documents and pertinent supporting materials. The peer review shall be conducted by email and use conference calls for panel discussions as appropriate. The peer reviewers shall be

recognized scientists with demonstrated expertise related to the scope of work outlined in Section 2.b. The objective is to recruit 5 to 6 panel members for each project who are willing to participate and have broad disciplinary experience and a demonstrated professional history in technical areas related to these topics.

The Contractor shall attempt to balance the group of experts by selecting reviewers from academia, government, and the private sector. For each project, the output of this task order shall be an expert panel report that conveys the independent scientific judgment of each of the peer reviewers within the specific framework of the charge to the panel. Each panel will also be required to develop a synopsis of the findings of each reviewer and describe where consensus was achieved, with consensus being the goal, related to each element of the charge to the panel. It is also critically important that panelists reserve written commentary to areas within their demonstrated areas of expertise. All work to be done under this Task Order shall be in compliance with EPA's [HYPERLINK "http://www2.epa.gov/osa/peer-review-handbook-4th-edition-2015-0"] (Fourth Edition; 2015). The requirements of each specific task are outlined below. An overall schedule is presented below in **Section F: Deliverables and Due Dates.**

Task 1. Prepare a Proposal

The Contractor shall initially prepare a proposal that includes the proposed firm fixed price (FFP), with an indication of the breakdown of the level of effort and other items that comprise the FFP proposed. The price proposal shall be submitted to the Contract Specialist (CS), Project Officer (PO) and the Task Order Project Officer (TOPO) within the specified time. The proposal will address not only the technical conduct of the work but also how panel members are to be managed and how the outcome will be summarized with a focus on the charge to the panel and whether consensus has been attained.

Task 2. Identify and Select Reviewers

Task 2.a – Clarify Scope: Within five (5) working days of the Task Order (TO) award the Contractor, with all their applicable staff, shall schedule a conference call with the TOPO and other appropriate USEPA OPP staff to clarify outstanding questions and confirm the schedule and specific tasks. The Contractor shall provide status updates to the TOPO on at least a bi-weekly basis. The Contractor shall initiate additional timely communication with the TOPO should developments arise that will affect the conduct or schedule of this peer review.

Task 2.b – Select Panelists and a Chair: For each project, the Contractor shall identify a pool of at least 10 potential experts from which 5-6 reviewers shall be selected by the Contractor. The experts shall be recognized scientists with demonstrated expertise covering each of the following scientific disciplines:

Project 1: <u>Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs</u>

- Agronomy/soils/hydrology/chemical transport with specialization in crop growth and management, erosion control, and/or irrigation (two or three panelists)

- Aquatic modeling, with a focus on pesticide aquatic exposure assessments (two or three panelists)
- Computer programming/data management (specifically fluency in Python), preferably with an understanding of the disciplines mentioned above (one panelist).

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA

- Agronomy/soils/hydrology with specialization in pesticide use, pesticide fate and transport, and watershed modeling (one or two panelist).
- Pesticide risk assessment with emphasis on aquatic exposure and modeling for human health risk assessment, with a focus on pesticide aquatic exposure assessments (one or two panelists).
- Spatial analysis including GIS (one panelist).
- Economist and agronomists familiar with pest management, pesticide use and pesticide usage data (two or three panelists).

Ideally, for each project panelists would have demonstrated experience in multiple disciplines listed above. The search and selection criteria shall include the consideration of experience and demonstrated expertise in their respective field, professional record as demonstrated by peer-reviewed publications, professional awards, service to relevant professional societies, and affiliations (academic, consulting firm, industry, government, public interest, and environmental organizations). Service on prior peer review panels is a benefit. The reviewers shall have scientific credentials equivalent to a Ph.D. or comparable experience and shall be regarded as experts in their field. The Contractor shall not select reviewers from the USEPA OPP or individuals listed as contributors or authors for the materials presented to the panels. In addition, the Contractor shall not select scientists or consultants who have provided comments during review of materials which could have a bearing on the use of the models which would be developed as an outcome of this peer review process – i.e., the Contractor shall evaluate panelists for potential conflicts of interest. The Contractor shall not compensate or reimburse Federal personnel for service on the peer review panel. Provisions for compensation and reimbursement of Contractor-secured state personnel vary by state. Prior to the Contractor entering into formal agreements with any of the experts, the proposed list of experts, including *curriculum vitae* (CV) and other supporting information, shall be submitted to the COR for review to ensure adherence to the technical requirements of the task order. Each peer reviewer's work experiences, publication history, and CV must demonstrate that they are respected in their specialty/field(s) and have published extensively in their areas of expertise. The Contracting Officer Representative (COR) can provide comments to the Contractor regarding the expertise and potential conflicts of interest of the proposed reviewers. If USEPA OPP determines that the reviewers are unqualified for the specific review, the Contractor shall have ten (10) business days to submit substitutes for review. The final selection of reviewers will be the responsibility of the Contractor. The final panel for each project shall include at least one reviewer with expertise in each of the disciplines listed above in this section and in section C.

For each project, the Contractor shall designate one of the panelists as the panel chair. This individual shall be broadly knowledgeable in the critical scientific disciplines noted above and have the demonstrated ability in

leading a scientific group. The Contractor should also ensure that there is a broad representation in areas of expertise within the group to ensure each aspect of the PWC new scenario development process can be adequately reviewed given the scope of the charge to the panel.

Each Panel Chair shall review relevant materials, lead the discussion with the panelists for the review, and submit review comments to the Contractor in electronic format. They shall assist in the initiation of the draft panel report by receiving and organizing the comments of the other panelists and distributing these comments to all panelists prior to scheduled meetings. They will also work to resolve any conflicts and guide the preparation of a final report. In the preparation of the final report, the Panel Chair will also ensure milestones are met with regard to deliverables and will notify the Contractor in cases where milestones and appropriate resolution are not achieved. Additionally, the Panel Chair will ensure that the panel report responds to each element in the charge to the panel and the report accurately reflects consensus among the panel on each element or lack thereof. In cases where consensus is not achieved, the Panel Chair will ensure all findings are documented in detail in the panel report.

On each project, the other panelists shall review the provided documents/materials and submit their comments to the Chair and Contractor in electronic format prior to the peer review panel discussion/report preparation. The panelists shall study the comments from the other reviewers to facilitate active participation in discussions. The panelists shall also study other comments received (e.g., clarification from EPA staff) to facilitate an effective review process. They shall also contribute to the preparation of the draft and final reports of the peer review panel. Panelists will provide expert opinions within their specific fields of expertise and provide their input regarding the overall technical concepts outlined in the materials provided. Panelists will also be required to actively pursue consensus-building efforts and will assist in the development of a report, which documents their consensus? expert opinions to each of the designated charges provided by the Agency. In cases where dichotomous opinions exist, and consensus cannot be achieved, panelists will also ensure that the opinions of all panel members are accurately reflected in the final report to the Agency.

Task 3. Logistics and Preparation

Task 3.a – Provide Invitation Letters and Materials: The Contractor shall send an electronic package to each peer reviewer (including any Federal participants) which include letters of invitation and all key materials required for the review. The materials in this package will be defined by the USEPA OPP TOPO and the charge to participants; these shall include the documents and appropriate supporting materials under review. Copies of all packages shall also be sent to the TOPO and to the Deputy PO.

Task 3.b – Schedule Conference Calls and Other Appropriate Panel Interactions: The Contractor will arrange multiple conference calls and other appropriate interactions with: (1) USEPA OPP to ensure that all necessary information has been provided and is adequately understood by the Contractor and (2) panelists prior to initiation of and during the peer review process.

Task 4. Peer Review Process

Within five (5) working days of providing the invitation letters and key materials (Task 3.a), the Contractor will initiate the peer review process. Each panelist is required to first independently provide comments that address each of the charge questions relevant to a panelist's expertise, then work with the entire panel to prepare a report and build consensus wherever possible.

The Contractor shall receive and compile the reviewers' comments in a draft document with input from the Panel Chair as described above (Task 2.b). The Contractor shall review the comments to ensure that the reviewers have fulfilled their responsibilities under their agreement with the Contractor. The Contractor shall not edit or rearrange comments but provide them in an electronic format (MS Word 2016 and other formats as deemed appropriate by USEPA OPP) as they are sent in the original form with reviewers' cover/comment letter. The compiled comments shall be provided to the TOPO and all panelists to prepare for panel discussions as outlined below.

Task 4.a – Conduct Orientation: The panel members will be given an overview of the provided materials, scope of the project, their assigned charge, and anticipated schedule.

Task 4.b – Clarify Materials: The panel members will be given an opportunity to seek clarification regarding technical or other topical issues after they have had at least two weeks to review the provided materials. USEPA OPP sponsors will also participate as appropriate.

Task 4.c - Initiate Draft Report: The Panel members should provide individual comments to address each element of the charge, seek consensus on each element of the charge, and prepare the draft report at this phase of the project.

Task 4.d – Initiate Final Report: The panel will review comments on the draft report and edit the document to prepare a final report, which ensures responses to USEPA OPP, so the reviewer comments are properly reflected in the document.

Task 5. Report Preparation

Task 5.a – Prepare and Disseminate Draft Report: The Contractor shall prepare, with the help of the Panel Chair, a draft Expert Panel Report. The draft report must include a succinct statement of the Panel's conclusions and recommendations, input from each panelist on the charge questions, and a summary of any pertinent panel discussions up to that point. Comments from each panelist should be appended to the draft report as well.

The Contractor shall send an electronic copy of the draft expert panel report (MS Word 2016 and other formats as deemed appropriate by USEPA OPP) to the TOPO, deputy PO, CO, and each panelist for review and comment once the document is compiled.

Task 5.b – Receive Written Comments on the Draft Report: All reviewers will provide written comments on the draft Expert Panel Report to the Contractor who shall provide to and discuss the comments on the draft report with the TOPO before finalizing the Expert Panel report. The Contractor shall not edit or rearrange comments but provide them in a bound document and electronic version (MS Word 2016 and other formats as deemed appropriate by USEPA OPP), as they are sent in the original form with the reviewers' cover/comment letter. The Contractor may, however, format the comments for consistency.

Task 5.c – Prepare and Disseminate Final Report: The Contractor shall receive and compile reviewers' final, post-meeting, edits into a final document. The Contractor shall supply the COR and TOPO with an electronic copy of the report. The final Expert Panel Report shall also be sent to the peer review panel members by the Contractor. An electronic version (MS Word 2016 and/or other formats as deemed appropriate by USEPA OPP) shall be sent.

The Contractor is expected to exercise quality control measures to ensure proper completion of the document. The Contractor is also responsible for editing the final report content to ensure appropriate quality control findings are reflected in the document.

Task 6. Post Review Activities

Task 6.a – Complete Fiduciary Responsibilities: The Contractor shall be responsible for paying the expert's expenses and fees (except Federal personnel) and provide copies of the final report, as appropriate.

E. SPECIAL CONDITIONS

Along with the scope of the task order described above, it is necessary that the following technical charge be addressed by the peer review panel. This should include developing responses to and achieving consensus, to the extent possible, by the panel to each issue outlined in the charge. It should also include providing all necessary records (e.g., written documentation and computer files) associated with this effort. The charge questions are as follows:

Project 1: Improved Method for Developing Field Scenarios for Use in Models that Estimate Pesticide Concentrations for DWAs. Charge to the Peer Review Panel:

1. **Clarity and reproducibility of the Field Scenario Input Guidance Document:** It is important that the input sources, data extraction methods, and any processing and/or calculations performed on the data are adequately documented and clear to follow for readers with backgrounds in pesticide risk assessments and aquatic modeling. This applies to both written documentation and the resulting Python code used to automate the process. Once finalized, the draft document ***Estimating Field and Watershed Parameters Used in PWC/PRZM and SAM*** will be used by USEPA OPP, the regulated industry, and other interested public parties to generate field scenario inputs for use in pesticide aquatic assessments using PWC and/or SAM.

a. Please comment on the clarity and level of documentation for the input parameters, their sources, and the data extraction and manipulation (calculation) methods described in the input document. Please identify any documentation that is not clear to follow and suggest alternative language for clarity.
b. Because of the number of model inputs and the sizes of the national databases used to derive the inputs, USEPA OPP used automated processes to facilitate the extraction and processing of inputs for large numbers of scenarios. The code needed for this extraction will be available for interested parties and needs to be sufficiently documented for use. Please comment on the documentation of the Python code used to extract and process data to generate the necessary data inputs used to generate field scenarios.

2. **Questions on Specific Inputs:** While the national databases for soils, land cover, and weather are well documented, several inputs (listed below) had minimal background documentation (data sources, references) in previous PRZM manuals (Carousel et al, 2005; Young and Fry, 2016). Where possible, USEPA OPP attempted to better document the data sources and methods for these inputs. In some cases, USEPA OPP used default methods and/or inputs in the absence of better data. Please comment on the methods described in the input parameter document and, if available, provide recommendations for better methods of estimating the following parameters:
   a. **Default agronomic practices:** USEPA OPP assumes contour plowing with some residue left on the surface as the default agronomic practice for determining the runoff curve numbers and USLE P (usle_p) factor. Please comment on the default assumption.
   b. **Crop emergence and maximum canopy cover dates:** USEPA OPP used USDA NASS (2006, 2007, and 2010) for planting and harvest dates. Dates for emergence and for maximum canopy cover are estimated from these dates. Please comment on this approach.
   c. **Missing crop planting and harvest dates:** In instances in which the crop occurs in a state, but no date ranges are reported in USDA NASS (2006, 2007, and 2010), dates are estimated by identifying the nearest neighbor state (similar in latitude) which had data for the given crop. Please comment on the approach.
   d. **Equivalent dates for planting/emergence and harvest dates for perennials:** The current defaults for perennial crops (alfalfa, grass hay, orchards, some fruits) are to assume 1) the curve number does not vary over time, except during crop harvest and emergence; and 2) the maximum canopy cover and the maximum root depth do not vary spatially for any particular crop. Equivalent dates for emergence (beginning of active growth/leafing), maximum canopy cover (full cover before harvest, maximum leaf canopy for orchards), and harvest (crop removal, leaf-drop) would not only require data sources beyond USDA NASS (2006, 2007, and 2010), but would need reliable data for different runoff curve numbers. Please comment on the adequacy of these default assumptions.
   e. **Crops with multiple growing seasons in a year:** In some areas (particularly California, Florida, and Texas), vegetables can be grown more than once in a year – up to four seasons according to USDA NASS (2007). In many cases, different vegetables may be rotated on the same fields in a given year. For these crops/states, USEPA OPP proposes developing generic vegetable scenarios with 2, 3, or 4 growing seasons, based on USDA NASS (2007). Please comment on the proposed method

f. **USLE cover management (C) factor:** USEPA OPP relies on factors provided by USDA NRCS for scenarios in use in 2000. The C factors compiled by USDA NRCS are based on feedback from local/regional offices. The approach is based on the RUSLE model released in 1992, but values for specific crop scenarios are not well-documented. The background and data tables are available in the spreadsheet *Crop Input Data.xlsx*. Please provide any recommendations on available data sources and/or methods of deriving a minimum and maximum C factor for each crop group identified in Addendum B.

g. **Irrigation inputs:** In the current plan, USEPA OPP will develop non-irrigated PWC field scenarios. As described in the Irrigation Inputs section of the input parameters document, irrigation rates are intended to minimize the potential for runoff. To minimize runoff, the maximum application rate will be set so that it does not exceed the maximum amount of water that will trigger runoff from the curve number method. Please comment on the proposed use of greater than 40% crop acres irrigated in a state as a trigger for the irrigation routine and on the proposal to cap the irrigation rate on the maximum amount of water that will not result in runoff by the curve number method.

3. **Methods for Ranking and Selecting Scenarios:** The process USEPA OPP proposes to replace existing PWC field scenarios with new scenarios for PWC that have well-defined levels of vulnerability is described in the draft document ***Generating New PWC Scenarios for Use in Pesticide Aquatic Exposure Assessments***. This describes the methods used to generate scenario inputs for all soil-land cover-weather combinations, to process and rank these scenarios by crop and region, and to identify field scenarios with similar levels of vulnerability for use in aquatic exposure assessments. Once finalized, this document will provide a framework for generating and updating new PWC scenarios.

   a. Because pesticide concentrations in water estimated from PWC depend not only on the field and weather properties but also on the interaction of chemical properties with the environmental parameters, the "vulnerability" of field scenarios can be defined in a number of ways. USEPA OPP has elected to base field scenario vulnerability on the water body concentration (EEC) that results from running the field scenario with USEPA OPP's receiving water body (index reservoir). Different scenarios will be selected based on the relative mobility of the chemical (represented by K_{oc}). These classes reflect differences in the inherent vulnerability of the site to off-site transport dominated by surface water runoff and/or by erosion/sediment transport. Please comment on the suitability of estimated concentration as an indicator of scenario vulnerability and on the selection of different sets of scenarios based on K_{oc} classes.

   b. For each crop, field scenarios are ranked within National Hydrography Dataset Regions (HUC-2, major river basins) by magnitude of estimated concentration, weighted by land area. Scenarios will be comparable across HUC-2 regions by percentile rankings (e.g., 95th, 90th, 75th, 50th). Please comment on the suitability of this approach for selecting an appropriate scenario at some level of vulnerability to represent a HUC2 region.

   c. USEPA OPP provided two examples for ranking and comparing scenarios using corn and wheat to illustrate how new PWC scenarios will be generated using the methods in the draft document. Please comment on how well the examples illustrate the methods described in the draft

documents. In what ways can USEPA OPP improve the clarity and level of documentation in the methods for generating new PWC scenarios?

Project 2: Integrating a Distributional Approach to Using Percent Crop Area (PCA) and Percent Crop Treated (PCT) into DWA. Charge to the Peer Review Panel:

USEPA OPP is proposing to use a "distributional approach" for applying PCA and PCT to DWA. The following Charge Questions:

1. **Clarity and reproducibility of the Proposal in the attached White Paper to use the full distribution of watershed PCAs:**
    a. Please comment on the clarity and level of documentation and on how well it can be reproduced by others with an understanding in risk assessments.
    b. USEPA defines a pesticide concentration below which no human dietary risk is likely. This drinking water level of concern (DWLOC) represents an exposure value which can be compared against modeled concentrations of pesticides in CWS watersheds. Typically, USEPA considers an EDWC developed using a maximum national or regional PCA. This new approach will use all CWS watershed specific PCAs to identify which areas within a geographic region (e.g. HUC2) are below the DWLOC and which are above and need further refinement. Please comment on the scientific soundness of identifying sub-regions of HUC2 watersheds needing further refinement by comparing the ratio of EDWC to DWLOC to define the threshold for comparison with each PCA.
    c. Please comment on methods for applying the PCA approach for pesticides with multiple agricultural uses.
    d. Please comment on the methods for applying a similar PCA-like approach to address non-agricultural uses.
2. **Clarity and reproducibility of the Proposal described in the attached White Paper to use PCT as a refinement to the PCA distributional approach in Question 1:**
    a. Please comment on the clarity and level of documentation for the proposed PCT approach on how well it can be reproduced by others with an understanding in risk assessments.
    b. Please comment on the proposed approach to account for multiple use sites and PCT in OPP's DWA as a refinement to the proposed PCA approach.
    c. Unlike agricultural uses, non-agricultural uses of pesticides have less robust usage data and for the most part estimates of usage and PCT are only available at the state level. USEPA OPP has developed a case study on how state level PCT can be used to refine EDWC at the HUC2 scale. Please comment on OPP's proposed approach to account for non-agricultural PCT in the OPP proposed PCA approach.
    d. Please comment on the appropriateness and utility of assuming a uniform distribution of treated area across an entire state when determining the acres treated in a watershed. Are there alternative assumptions that would provide a more appropriate and informative mid-range estimate of watershed-scale PCT based on state-level data?
    e. Please comment on alternative approaches for determining areas more or less likely to be treated with a pesticide.

F. DELIVERABLES AND DUE DATES

Scope of work for each project to be completed within the approximate four (4) month timeline after initiation of this Task Order as detailed in the table below. Completion of each task should be documented in Contractor status reports.

As per the Task Order or request for a proposal, the Contractor shall provide the Agency with a proposal within the timeframe specified for this Task Order. The EPA Contracting Officer (CO), CORs, or panel members will review the proposal and provide the Contractor with an approval or disapproval, and revision (if necessary) in writing. The timelines involved, will proceed as stipulated in the request for a proposal or Contract.

The contractor shall prepare a Quality Assurance Project Plan for this Task Order. [HYPERLINK "http://www.epa.gov/quality/epa-qar-5-epa-requirements-quality-assurance-project-plans"]_before award as part of the proposal for approval.

Task	Subtask	Timeline (Days After Award)	Comments
1 – Prepare Proposal	N/A	N/A	N/A
2 – Identify and Select Reviewers	2.a - Clarify Scope	5	N/A
	2.b – Select Panelists and a Chair	15	Accounts for likely conflicts of interest, availability, etc. along with 10-day period for substitute review, if needed
3 – Logistics and Preparation	3.a – Provide Invitation Letters and Materials	20	N/A
	3.b – Schedule calls and other panel interactions	20	
4 – Peer Review Process	4.a – Conduct orientation	30	Discuss roles, responsibilities, provide overview of materials
	4.b – Clarify materials	45	Allow reviewers to seek clarification on materials
	4.c – Initiate Draft Report	60	Panel is to plan how draft report will be prepared over writing period
	4.d – Initiate Final Report	95	Panel is to plan how final report will be prepared over writing period

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

Task	Subtask	Timeline (Days After Award)	Comments
5 – Report Preparation	5.a – Prepare and Disseminate Draft Report	75	15-day period to prepare a draft report after process is initiated at day 60
	5.b – Receive Written Comments	95	Contractor will coordinate comments from reviewers and provide to panel members at end of 15-day review period
	5.c – Prepare and disseminate Final Report	110	Contractor will coordinate with peer review panel on how comments will be addressed and prepare a final report
6 – Post Review Activities	6.a. – Complete Fiduciary Responsibilities	NA	TBD based on final contract agreement

TITLE: External Peer Review of Two Methods for Improving Pesticide Drinking Water Assessments (DWA)

QUALITY ASSURANCE SURVEILLANCE PLAN

PERFORMANCE REQUIREMENT	PERFORMANCE MEASURE (PM)	PERFORMANCE STANDARD	SURVEILLANCE METHOD	INCENTIVES & DISINCENTIVES
MANAGEMENT & COMMUNICATION: The contractor shall maintain contact with the EPA CO, PO, and TOPO throughout the performance of the contract.	Contractor shall immediately bring potential problems to the appropriate EPA personnel and shall recommend actions that would mitigate or resolve the problem.	Issues that impact project schedules and costs shall be brought to the attention of the EPA within 3-days of occurrence.	All active task orders will be reviewed by the EPA to identify unreported issues.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation of Business Relations in the NIH Performance Evaluation System.
TIMELINESS: For every Task Order awarded establishing a firm, specific delivery date for the generation of a report, the contractor shall deliver such report to the PO, TOPO and CO no later than the time specified in the order's PWS.	Deliverables and related work must comply with contractual timeliness requirements. The contractor will be evaluated on its responsiveness to all task orders.	100% of all deliverables and related work shall be completed on time within task schedule and/or tech. direction requirements.	100% inspection of all deliverables and related work by the COR; COR will document the timeliness of all work requirements.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation of Timeliness in the NIH Performance Evaluation System.
COST MANAGEMENT & CONTROL: For every cost and time-and-material Task Order awarded, the contractor shall assign appropriate levels and skilled personnel; practice and encourage time management; and ensure accurate and appropriate cost controls and reporting.	The contractor shall demonstrate a high level of productivity and efficiency in maintaining costs.	Failure to manage and control costs cannot result in an overrun of more than 5% of the total estimated costs of each cost and time-and-material task order.	Active cost type and time-and-material type task orders' costs will be reviewed by the COR monthly using progress reports and vouchers to compare actual versus projected expenditures.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation in the category of Cost Control in the NIH Performance Evaluation System.
TECHNICAL QUALITY: For every task order awarded, the analyses conducted by the contractor shall be factual, defensible, credible, and based on sound scientific methods. All data shall be collected from reputable sources and quality assurance measures shall be conducted in accordance with the agency requirements outlined in the task orders.	All deliverables and related work must be complete, accurate, thorough, and professionally credible.	Data are 100% accurate; review demonstrates a high level of expertise and credibility about personnel and use of scientific methodology. Projects shall be conducted in strict conformance with approved project and QA plans. Outputs shall withstand internal review by the US EPA and outside scientific reviewers.	COR will conduct periodic reviews of work in progress and evaluations based on a sampling of internal and external customers.	Performance will be considered in the award of subsequent task orders and will be factored into the annual evaluation in the category of Quality of Product or Service in the NIH Performance Evaluation System.

G.ADDITIONAL REFERENCES CITED

Project 1: Improved Method for Developing Pesticide in Water Calculator Scenarios.

Carousel, R.F., J.C. Imhoff, P.R. Hummel, J.M. Cheplick, A.S. Donigian, Jr., and L.A. Suárez. 2005. PRZM-3, A Model for Predicting Pesticide and Nitrogen Fate in the Crop Root and Unsaturated Soil Zones: Users Manual for Release 3.12.2. Center for Exposure Assessment Modeling (CEAM), National Exposure Research Laboratory - Ecosystems Research Division, Office of Research and Development (ORD), U.S. Environmental Protection Agency (U.S. EPA).

Fry, M.M., G. Rothman, D.F. Young, and N. Thurman. 2016. Daily gridded weather for exposure modeling. Environmental Modelling & Software, 82, 167-173, doi.org/10.1016/j.envsoft.2016.04.008

USDA National Agricultural Statistics Service (USDA NASS). 2006. Fruit and Tree Nuts: Blooming, Harvesting, and Marketing Dates. Agricultural Handbook Number 729. December 2006.

USDA National Agricultural Statistics Service (USDA NASS). 2007. Vegetables: Usual Planting and Harvesting Dates. Agricultural Handbook Number 507. May 2007.

USDA National Agricultural Statistics Service (USDA NASS). 2010. Field Crops: Usual Planting and Harvesting Dates. Agricultural Handbook Number 628. October 2010.

USDA National Agricultural Statistics Service Cropland Data Layer. 2010-2017. Published crop-specific data layer [Online]. Available at https://nassgeodata.gmu.edu/CropScape/ (accessed 9/25/2018). USDA-NASS, Washington, DC.

USDA Natural Resources Conservation Service Soil Survey Staff (USDA NRCS SSS). 2018. Gridded Soil Survey Geographic (gSSURGO) Database. United States Department of Agriculture, Natural Resources Conservation Service. Available online at http://datagateway.nrcs.usda.gov/. October 11-12, 2018 (FY2018 official release).

U.S. Environmental Protection Agency Office of Pesticide Programs (USEPA OPP). 2015. Development of a Spatial Aquatic Model (SAM) for Pesticide Risk Assessments. Presented to the FIFRA Scientific Advisory Panel, September 15-17, 2015. Available in the public e-docket, Docket No. EPA-HQ-OPP-2015-0424, accessible through the docket portal: http://wv.rw.regulations.gov.

U.S. Environmental Protection Agency Office of Pesticide Programs (USEPA OPP). 2019. Framework for Conducting Pesticide Drinking Water Assessments for Surface Water, August 28, 2019. Available in the public e-docket, TBD

Young, D.F. and Fry, M.M. 2016. PRZM5: A Model for Predicting Pesticide in Runoff, Erosion, and Leachate. Revision A. USEPA/OPP 734S16001, U.S. Environmental Protection Agency, Washington, DC. Available for download with the Pesticide in Water Calculator from the USEPA OPP Water Models web site at https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/models-pesticide-risk-assessment#aquatic

Message

From: Becker, Jonathan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CC74340798E549A1B3E20BD8BCC233DA-JONATHAN BECKER]
Sent: 2/15/2018 5:57:49 PM
To: Garber, Kristina [Garber.Kristina@epa.gov]
Subject: RE: discuss draft method for incorporating usage data (PCT) into ESA method

Ex. 6 Personal Privacy (PP)

From: Garber, Kristina
Sent: Thursday, February 15, 2018 12:57 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Panger, Melissa <Panger.Melissa@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Lennartz, Steven <Lennartz.Steven@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Blankinship, Amy <Blankinship.Amy@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Eckel, William <Eckel.William@epa.gov>; White, Katrina <White.Katrina@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Atwood, Donald <Atwood.Donald@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Myers, Clayton <Myers.Clayton@epa.gov>
Cc: Spatz, Dana <Spatz.Dana@epa.gov>; Stebbins, Katherine <Stebbins.Katherine@epa.gov>; Jones, Arnet <Jones.Arnet@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>
Subject: RE: discuss draft method for incorporating usage data (PCT) into ESA method

OOPS! Monday is a holiday. Please provide comments COB Tuesday.

From: Garber, Kristina
Sent: Thursday, February 15, 2018 12:44 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Panger, Melissa <Panger.Melissa@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Lennartz, Steven <Lennartz.Steven@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Blankinship, Amy <Blankinship.Amy@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Eckel, William <Eckel.William@epa.gov>; White, Katrina <White.Katrina@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Atwood, Donald <Atwood.Donald@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Anderson, Brian <anderson.brian@epa.gov>; Becker, Jonathan <Becker.Jonathan@epa.gov>; Myers, Clayton <Myers.Clayton@epa.gov>
Cc: Spatz, Dana <Spatz.Dana@epa.gov>; Stebbins, Katherine <Stebbins.Katherine@epa.gov>; Jones, Arnet <Jones.Arnet@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>
Subject: discuss draft method for incorporating usage data (PCT) into ESA method

Thank you all for taking the time to talk today. Attached is the slide deck that I presented today. If you have any major comments, please provide them by COB Monday.

Kris

Kris Garber, Senior Science Advisor
Environmental Fate and Effects Division
Office of Pesticide Programs
US Environmental Protection Agency

Mail Code: 7507P
1200 Pennsylvania Ave NW
Washington DC 20460-0001

Phone: 703-347-8940

Message

From: Becker, Jonathan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CC74340798E549A1B3E20BD8BCC233DA-JONATHAN BECKER]
Sent: 2/15/2018 5:57:01 PM
To: Garber, Kristina [Garber.Kristina@epa.gov]; Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Panger, Melissa [Panger.Melissa@epa.gov]; Peck, Charles [Peck.Charles@epa.gov]; Lennartz, Steven [Lennartz.Steven@epa.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Blankinship, Amy [Blankinship.Amy@epa.gov]; Donovan, Elizabeth [Donovan.Elizabeth@epa.gov]; Eckel, William [Eckel.William@epa.gov]; White, Katrina [White.Katrina@epa.gov]; Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Atwood, Donald [Atwood.Donald@epa.gov]; Sims, Diann [Sims.Diann@epa.gov]; Corbin, Mark [Corbin.Mark@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Myers, Clayton [Myers.Clayton@epa.gov]
CC: Spatz, Dana [Spatz.Dana@epa.gov]; Stebbins, Katherine [Stebbins.Katherine@epa.gov]; Jones, Arnet [Jones.Arnet@epa.gov]; Kiely, Timothy [Kiely.Timothy@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Wyatt, TJ [Wyatt.Tj@epa.gov]; Suarez, Mark [Suarez.Mark@epa.gov]; Chism, William [Chism.Bill@epa.gov]; Berwald, Derek [Berwald.Derek@epa.gov]; Miller, Wynne [Miller.Wynne@epa.gov]
Subject: RE: discuss draft method for incorporating usage data (PCT) into ESA method

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Cc: Spatz, Dana <Spatz.Dana@epa.gov>; Stebbins, Katherine <Stebbins.Katherine@epa.gov>; Jones, Arnet <Jones.Arnet@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Kaul, Monisha <Kaul.Monisha@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Chism, William <Chism.Bill@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>
Subject: discuss draft method for incorporating usage data (PCT) into ESA method

Thank you all for taking the time to talk today. Attached is the slide deck that I presented today. If you have any major comments, please provide them by COB Monday.

Kris

Kris Garber, Senior Science Advisor
Environmental Fate and Effects Division
Office of Pesticide Programs
US Environmental Protection Agency
Mail Code: 7507P
1200 Pennsylvania Ave NW
Washington DC 20460-0001

Phone: 703-347-8940

Message

From: Becker, Jonathan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CC74340798E549A1B3E20BD8BCC233DA-JONATHAN BECKER]
Sent: 2/12/2018 6:24:06 PM
To: Sims, Diann [Sims.Diann@epa.gov]
Subject: RE: Draft Agenda for the Feb 26th Meeting

Hi Diann,

If EFED provides us a summary today, then it should work.

Jonathan

From: Sims, Diann
Sent: Monday, February 12, 2018 1:04 PM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>
Subject: RE: Draft Agenda for the Feb 26th Meeting

Ex. 5 Deliberative Process (DP)

From: Becker, Jonathan
Sent: Monday, February 12, 2018 12:54 PM
To: Sims, Diann <Sims.Diann@epa.gov>
Cc: Kaul, Monisha <Kaul.Monisha@epa.gov>; Kiely, Timothy <Kiely.Timothy@epa.gov>; Miller, Wynne <Miller.Wynne@epa.gov>; Jones, Arnet <Jones.Arnet@epa.gov>; Myers, Clayton <Myers.Clayton@epa.gov>; Berwald, Derek <Berwald.Derek@epa.gov>; Wyatt, TJ <Wyatt.Tj@epa.gov>; Suarez, Mark <Suarez.Mark@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Cook, Colwell <cook.colwell@epa.gov>; Chism, William <Chism.Bill@epa.gov>
Subject: RE: Draft Agenda for the Feb 26th Meeting

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Jonathan

Ex. 5 Deliberative Process (DP)

From: Sims, Diann
Sent: Monday, February 12, 2018 9:06 AM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>
Subject: RE: Draft Agenda for the Feb 26th Meeting

Ex. 5 Deliberative Process (DP)

From: Becker, Jonathan
Sent: Monday, February 12, 2018 9:06 AM
To: Sims, Diann <Sims.Diann@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Subject: RE: Draft Agenda for the Feb 26th Meeting

Ex. 5 Deliberative Process (DP)

From: Sims, Diann
Sent: Monday, February 12, 2018 8:42 AM

To: Becker, Jonathan <Becker.Jonathan@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>
Subject: Fwd: Draft Agenda for the Feb 26th Meeting

FYI
I haven't seen the questions yet.
Sent from my iPhone

Begin forwarded message:

> **From:** "Pease, Anita" <Pease.Anita@epa.gov>
> **Date:** February 10, 2018 at 8:27:21 AM EST
> **To:** "Miller, Wynne" <Miller.Wynne@epa.gov>, "Sims, Diann" <Sims.Diann@epa.gov>
> **Subject: Fwd: Draft Agenda for the Feb 26th Meeting**
>
> FYI...
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** "Ashfield, Patrice" <patrice_ashfield@fws.gov>
> > **Date:** February 9, 2018 at 5:58:29 PM EST
> > **To:** Anita Pease <Pease.Anita@epa.gov>, "Aubrey, Craig" <craig_aubrey@fws.gov>, Brian Anderson <Anderson.Brian@epa.gov>, Cathy Tortorici <cathy.tortorici@noaa.gov>, diane sims <sims.diann@epa.gov>, Gina Shultz <gina_shultz@fws.gov>, "Guilaran, Yu-Ting" <Guilaran.Yu-Ting@epa.gov>, Marietta Echeverria <echeverria.marietta@epa.gov>, Philip Villanueva <Villanueva.Philip@epa.gov>, Sheryl Kunickis <Sheryl.Kunickis@osec.usda.gov>, Tracy Perry <Perry.Tracy@epa.gov>
> > **Subject: Draft Agenda for the Feb 26th Meeting**

Ex. 5 Deliberative Process (DP)

Patrice

Patrice M. Ashfield
Branch Chief for National Pesticide Consultations
Headquarters, Fish and Wildlife Service
5275 Leesburg Pike, MS:ES
Falls Church, VA 22041
(703) 358-2478 office

Message

From: Becker, Jonathan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CC74340798E549A1B3E20BD8BCC233DA-JONATHAN BECKER]
Sent: 2/7/2018 6:40:44 PM
To: Garber, Kristina [Garber.Kristina@epa.gov]
Subject: RE: discuss draft method for incorporating usage data (PCT) into ESA method

Thanks Kris.

From: Garber, Kristina
Sent: Wednesday, February 07, 2018 1:37 PM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>
Subject: RE: discuss draft method for incorporating usage data (PCT) into ESA method

Ex. 5 Deliberative Process (DP)

-----Original Appointment-----
From: Becker, Jonathan
Sent: Wednesday, February 07, 2018 1:36 PM
To: Garber, Kristina
Subject: Accepted: discuss draft method for incorporating usage data (PCT) into ESA method
When: Thursday, February 15, 2018 9:00 AM-10:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomPYS7100/Potomac-Yard-One

Ex. 5 Deliberative Process (DP)

Message

From: Becker, Jonathan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CC74340798E549A1B3E20BD8BCC233DA-JONATHAN BECKER]
Sent: 3/9/2018 6:52:25 PM
To: Garber, Kristina [Garber.Kristina@epa.gov]
CC: Paisley-Jones, Claire [Paisley-Jones.Claire@epa.gov]; Sims, Diann [Sims.Diann@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Lennartz, Steven [Lennartz.Steven@epa.gov]; Panger, Melissa [Panger.Melissa@epa.gov]; Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Peck, Charles [Peck.Charles@epa.gov]
BCC: Kiely, Timothy [Kiely.Timothy@epa.gov]; Kaul, Monisha [Kaul.Monisha@epa.gov]; Miller, Wynne [Miller.Wynne@epa.gov]
Subject: RE: usage assumptions for unsurveyed crops

Ex. 5 Deliberative Process (DP)

From: Garber, Kristina
Sent: Friday, March 09, 2018 12:03 PM
To: Becker, Jonathan <Becker.Jonathan@epa.gov>
Cc: Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Sims, Diann <Sims.Diann@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Lennartz, Steven <Lennartz.Steven@epa.gov>; Panger, Melissa <Panger.Melissa@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>
Subject: usage assumptions for unsurveyed crops

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Kris Garber, Senior Science Advisor
Environmental Fate and Effects Division
Office of Pesticide Programs
US Environmental Protection Agency
Mail Code: 7507P
1200 Pennsylvania Ave NW
Washington DC 20460-0001

Phone: 703-347-8940

Message

From: Anderson, Brian [Anderson.Brian@epa.gov]
Sent: 6/4/2020 1:06:32 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: For Review: Propazine aggregated PCTs

Thanks Jen!

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, June 04, 2020 9:03 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Doucoure, Cynthia <Doucoure.Cynthia@epa.gov>; Otte, Briana <otte.briana@epa.gov>
Cc: Farruggia, Frank <Farruggia.Frank@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Wait, Monica <Wait.Monica@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Louie-Juzwiak, Rosanna <Louie-Juzwiak.Rosanna@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Subject: For Review: Propazine aggregated PCTs

Hi BEAD team,

I've attached the propazine aggregated PCTs for your review. These are on the ESA SharePoint site. If you there is anyone that needs access to the site not on this email let me know.

In the Excel file the UsageTable_PCTs_wSurrogates tab is the input table used to generated the aggregated PCTs. This is the table you likely want to spend the most time with.

The table includes the crops/PCTs from the SUUM, supplemented with crop information from the Census of Ag for crops found in the UDL but not on the SUUM, and the surrogate PCTs for un-surveyed state/crops. The other tabs in this workbook preceding this table include the materials used to generated the table. The crosswalk between the Census of Ag, SUUM and UDLs is available as a stand-alone. I find the full table to be overwhelming at times. The last tab in the workbook is the presence/absence table for propazine.

The resulting aggregated PCTs are also attached as individual spreadsheets.

In these tables I used 2.5% as the floor for the PCT. This was used if a state was surveyed but no usage reported or if the usage values was below 2.5. For crops that aren't registered 0's are used for the PCTs. If a crop is not grown per the Census and there isn't information in the SUUM I left the PCT as 0. We had discussed using 2.5, but when I multiply the result would be 0. If you have thoughts or feedback on any of these assumption let me know.

The states where the area of sorghum is undisclosed include, Connecticut, Maine, Massachusetts, Nevada, New Hampshire, and Washington.

If you can provide feedback by COB next Thursday 6/11 that would be great. Let me know if you have any question as review. We can probably use some of the time during the meeting next Tuesday for questions if that is helpful.

Thank you!

Jen

****
Jennifer Connolly, Senior Scientist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 5/6/2020 1:38:13 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: PCA/PCT Documentation Version 2

Sure, thank you Jen!!
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, May 6, 2020 9:37 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA/PCT Documentation Version 2

Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Wednesday, May 6, 2020 9:30 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: PCA/PCT Documentation Version 2

Ex. 5 Deliberative Process (DP)

Thank you—Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, May 4, 2020 8:19 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared "PCAPCT_Automation_v4" with you.

Hey Sumathy,

Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, April 20, 2020 9:56 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: Sinnathamby, Sumathy shared "PCAPCT_Automation_v4" with you.

Ex. 5 Deliberative Process (DP)

Message

From: Muela, Stephen [muela.stephen@epa.gov]
Sent: 5/20/2020 2:52:37 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Subject: RE: Aggregated PCTs

That sounds great for me!

Stephen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, May 20, 2020 10:13 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: RE: Aggregated PCTs

Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Wednesday, May 20, 2020 8:39 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: RE: Aggregated PCTs

I am almost done with Chlorpyrifos aggregated PCT. I think it would be nice if we can meet tomorrow.
Thanks Jen!
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, May 20, 2020 8:37 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: Aggregated PCTs

Oops I should have added on the other email. But how is the aggregated PCT going? Did you guys want to meet to talk more about it tomorrow?

Jen

****

Jennifer Connolly, Senior Scientist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405

fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 5/20/2020 2:13:55 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Muela, Stephen [muela.stephen@epa.gov]
Subject: RE: Aggregated PCTs

Sure, Jen!

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, May 20, 2020 10:13 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: RE: Aggregated PCTs

Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Wednesday, May 20, 2020 8:39 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: RE: Aggregated PCTs

I am almost done with Chlorpyrifos aggregated PCT. I think it would be nice if we can meet tomorrow.
Thanks Jen!
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, May 20, 2020 8:37 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: Aggregated PCTs

Oops I should have added on the other email. But how is the aggregated PCT going? Did you guys want to meet to talk more about it tomorrow?

Jen

****

Jennifer Connolly, Senior Scientist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619

e-mail: connolly.jennifer@epa.gov
****

Message

From: Crews, Kristy [crews.kristy@epa.gov]
Sent: 5/18/2020 7:07:13 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Peck, Charles [Peck.Charles@epa.gov]; Farruggia, Frank [Farruggia.Frank@epa.gov]; Kiernan, Brian [Kiernan.Brian@epa.gov]; Wait, Monica [Wait.Monica@epa.gov]; Corbin, Mark [Corbin.Mark@epa.gov]
CC: Kyle, Lee [Kyle.Lee@epa.gov]; Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]; Muela, Stephen [muela.stephen@epa.gov]
Subject: RE: Propazine - aggregated PCT tables

Flag: Follow up

Ex. 5 Deliberative Process (DP)

Kristy Crews, *Ph.D.*
Chemist
U.S. EPA
OCSPP/OPP/EFED/ERB 6
Phone: (703) 347-0583

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, May 15, 2020 7:17 PM
To: Peck, Charles <Peck.Charles@epa.gov>; Crews, Kristy <crews.kristy@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Kiernan, Brian <Kiernan.Brian@epa.gov>; Wait, Monica <Wait.Monica@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>
Cc: Kyle, Lee <Kyle.Lee@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: Propazine - aggregated PCT tables

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Jennifer Connolly, Senior Scientist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]
Sent: 5/18/2020 2:09:14 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]; Muela, Stephen [muela.stephen@epa.gov]
CC: Kyle, Lee [Kyle.Lee@epa.gov]; Donovan, Elizabeth [Donovan.Elizabeth@epa.gov]
Subject: RE: Usage Workflow - Generate tables

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, May 18, 2020 9:38 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Cc: Kyle, Lee <Kyle.Lee@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: Usage Workflow - Generate tables

Ex. 5 Deliberative Process (DP)

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Monday, May 18, 2020 9:29 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Cc: Kyle, Lee <Kyle.Lee@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: Usage Workflow - Generate tables

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, May 18, 2020 9:23 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Cc: Kyle, Lee <Kyle.Lee@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: Usage Workflow - Generate tables

Ex. 5 Deliberative Process (DP)

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Monday, May 18, 2020 9:22 AM

To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Cc: Kyle, Lee <Kyle.Lee@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: Usage Workflow - Generate tables

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, May 18, 2020 8:42 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Cc: Kyle, Lee <Kyle.Lee@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: Usage Workflow - Generate tables

Ex. 5 Deliberative Process (DP)

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Ex. 5 Deliberative Process (DP)

Cre

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 4/14/2020 12:01:57 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: PCA/PCT update

Thank you Jen! Tomorrow 11 will work fine.
I will look through the codes. And I also think we can provide outputs this week.

Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, April 14, 2020 7:59 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: PCA/PCT update

Hi Sumathy,

Ex. 5 Deliberative Process (DP)

For the PCA/PCT meeting today if they ask us for a status, I think we an talk through what we will need help with from the team related to QC. We can outline the inputs we are working on. And we can also offer to show them the two different final outputs later this week. How does that sound?

Jen

****
Jennifer Connolly, Senior Scientist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Pollack, Sara J [sara_pollack@fws.gov]
Sent: 5/27/2020 6:07:34 PM
To: Areda, Asefa T [asefa_areda@fws.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]
CC: Chhetri, Dilip K [DILIP_CHHETRI@FWS.GOV]
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Hi Asefa,

Ex. 5 Deliberative Process (DP)

Thank You!

Sara

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Wednesday, May 27, 2020 12:51 PM
To: Pollack, Sara J <sara_pollack@fws.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Hey Sara,

Ex. 5 Deliberative Process (DP)

Thanks,

Asefa

From: Pollack, Sara J <sara_pollack@fws.gov>
Sent: Wednesday, May 27, 2020 12:14 PM
To: Areda, Asefa T <asefa_areda@fws.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Hi Jen and Asefa,

Quick question for you both:

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thank You!

Sara

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Wednesday, May 27, 2020 7:39 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Hello Jen,

Ex. 5 Deliberative Process (DP)

Thanks!

Asefa

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 26, 2020 10:06 AM
To: Pollack, Sara J <sara_pollack@fws.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Sorry I missed you initially. I just sent.

From: Pollack, Sara J <sara_pollack@fws.gov>
Sent: Tuesday, May 26, 2020 9:59 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

HI Jen,

I have not received the skype invite yet, are we still meeting at 10?

Sara

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 26, 2020 8:50 AM
To: Pollack, Sara J <sara_pollack@fws.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Sounds good, I'll send out they skype invite for 10.

Jen

From: Pollack, Sara J <sara_pollack@fws.gov>
Sent: Tuesday, May 26, 2020 8:42 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Hi Jen

Good morning and hope you had a nice relaxing weekend. Thank you for providing these updates.

I will go through the tables you uploaded (2013-2015) to the sharepoint site this morning. Are they in the same folder, "output from Jen"? Ex. 5 Deliberative Process (DP)
that up to Asefa as well.

I
s Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

I do have some questions so I think keeping our 10 am meeting today still works for me and others I hope as well.

Thanks and talk to you at 10 am!

Sara

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 26, 2020 8:18 AM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

All,

Ex. 5 Deliberative Process (DP)

One I finish with all the tables I will load the all of the input files I used. I've updated the use look-up table, the species look-up tables, and the acres tables.

Ex. 5 Deliberative Process (DP)

Let me know if you want to meet this morning, or we can meet tomorrow so you have time to look at tables. Right now I have 10am this morning blocked, but I'm free tomorrow (Wed) at 1 if that will give you sometime to review the tables.

Jen

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Thursday, May 21, 2020 4:42 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sara Pollack <sara_pollack@fws.gov>

Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Hey Jen,

The remaining overlap results and political Boundaries are now uploaded.

Please, let me know if you have any questions once you downloaded the data.

Thanks!

Asefa

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, May 21, 2020 8:31 AM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

That works, I can start with those years.

Ex. 5 Deliberative Process (DP)

I'll keep you guys posted on progress today.

Jen

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Thursday, May 21, 2020 7:22 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sara Pollack <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Good morning Jen,

The overlap results - both species overlap and political boundaries have been completed and uploaded to the sharepoint site for 2013, 2014 & 2015. The species overlap is uploaded for 2017.
What remains - the Political boundaries for both 2016 and 2017 as well as species overlap for 2016 will be uploaded before noon today. Unfortunately, I forgot to take the machine I was using off the WiFi to avoid the Wednesday reboot which killed the processes for the two years.

Thanks,

Asefa

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, May 20, 2020 4:10 PM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Hey Asefa,

Do you have the intermediate geodatabase where extraneous union columns are still present? If so can you upload that too? If not I will re-create the file.

Thanks!
Jen

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Wednesday, May 20, 2020 2:10 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sara Pollack <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Hello Jen,

I uploaded the the Union Files for Conifers and Ferns here. I manually cleaned up the issues with Conifers and the species show up only in zones their range covers and not all over. The issue remains with Ferns. I will let you know when the overlap results get uploaded later today.

Thanks,

Asefa

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, May 20, 2020 9:21 AM
To: Pollack, Sara J <sara_pollack@fws.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Great! It sound like most of these are purposeful. Any species we need to check on, it is possible that are in the analysis but not on the acres table. We can check the species look-up tables.

Jen

From: Pollack, Sara J <sara_pollack@fws.gov>
Sent: Wednesday, May 20, 2020 7:56 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Hi Jen,

Thanks for going through all of those analyses! I checked the table you provided to look into some of the species:

Ex. 5 Deliberative Process (DP)

Sara

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 19, 2020 6:53 PM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Talk to you tomorrow!

Jen

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Tuesday, May 19, 2020 10:13 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sara Pollack <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Hey Jen,

Ex. 5 Deliberative Process (DP)

Thanks,

Asefa

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 19, 2020 8:34 AM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: [EXTERNAL] RE: ESA/GIS continued discussion

Asefa,

Ex. 5 Deliberative Process (DP)

Jen

From: Connolly, Jennifer
Sent: Monday, May 18, 2020 8:06 PM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: RE: ESA/GIS continued discussion

Asefa,

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Jen

-----Original Appointment-----
From: Connolly, Jennifer
Sent: Thursday, May 14, 2020 2:51 PM
To: Connolly, Jennifer; Areda, Asefa T; Pollack, Sara J
Cc: Chhetri, Dilip K
Subject: ESA/GIS continued discussion
When: Monday, May 18, 2020 1:00 PM-2:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Skype Meeting

Agenda

- Finalizing the overlap table – check the high % overlap species
- HUC crosswalk

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll numbe **Ex. 6 – Conference Code** English (United States)

Find a local number

Ex. 6 – Conference Code

Forgot your dial-in PIN? | Help

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 5/14/2020 4:24:55 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: PCA/PCT Documentation Version 2

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, May 14, 2020 12:17 PM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA/PCT Documentation Version 2

Ex. 5 Deliberative Process (DP)

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Wednesday, May 6, 2020 9:30 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: PCA/PCT Documentation Version 2

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, May 4, 2020 8:19 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared "PCAPCT_Automation_v4" with you.

Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, April 20, 2020 9:56 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: Sinnathamby, Sumathy shared "PCAPCT_Automation_v4" with you.

Ex. 5 Deliberative Process (DP)

Message

From: Areda, Asefa T [asefa_areda@fws.gov]
Sent: 5/27/2020 4:51:05 PM
To: Sara Pollack [sara_pollack@fws.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]
CC: Chhetri, Dilip K [DILIP_CHHETRI@FWS.GOV]
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion
Attachments: ATT00001.txt

Hey Sara,

Ex. 5 Deliberative Process (DP)

Thanks,

Asefa

From: Pollack, Sara J <sara_pollack@fws.gov>
Sent: Wednesday, May 27, 2020 12:14 PM
To: Areda, Asefa T <asefa_areda@fws.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Hi Jen and Asefa,

Quick question for you both:

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thank You!

Sara

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Wednesday, May 27, 2020 7:39 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Hello Jen,

Ex. 5 Deliberative Process (DP)

Thanks!

Asefa

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 26, 2020 10:06 AM
To: Pollack, Sara J <sara_pollack@fws.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Sorry I missed you initially. I just sent.

From: Pollack, Sara J <sara_pollack@fws.gov>
Sent: Tuesday, May 26, 2020 9:59 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

HI Jen,

I have not received the skype invite yet, are we still meeting at 10?

Sara

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 26, 2020 8:50 AM
To: Pollack, Sara J <sara_pollack@fws.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Sounds good, I'll send out they skype invite for 10.

Jen

From: Pollack, Sara J <sara_pollack@fws.gov>
Sent: Tuesday, May 26, 2020 8:42 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Hi Jen

Good morning and hope you had a nice relaxing weekend. Thank you for providing these updates.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks and talk to you at 10 am!

Sara

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 26, 2020 8:18 AM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

All,

Ex. 5 Deliberative Process (DP)

One I finish with all the tables I will load the all of the input files I used. I've updated the use look-up table, the species look-up tables, and the acres tables.

Ex. 5 Deliberative Process (DP)

Let me know if you want to meet this morning, or we can meet tomorrow so you have time to look at tables. Right now I have 10am this morning blocked, but I'm free tomorrow (Wed) at 1 if that will give you sometime to review the tables.

Jen

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Thursday, May 21, 2020 4:42 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sara Pollack <sara_pollack@fws.gov>

Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Hey Jen,

The remaining overlap results and political Boundaries are now uploaded.

Please, let me know if you have any questions once you downloaded the data.

Thanks!

Asefa

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, May 21, 2020 8:31 AM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

That works, I can start with those years.

Ex. 5 Deliberative Process (DP)

I'll keep you guys posted on progress today.

Jen

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Thursday, May 21, 2020 7:22 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sara Pollack <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Good morning Jen,

Ex. 5 Deliberative Process (DP)

Thanks,

Asefa

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, May 20, 2020 4:10 PM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Hey Asefa,

Do you have the intermediate geodatabase where extraneous union columns are still present? If so can you upload that too? If not I will re-create the file.

Thanks!
Jen

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Wednesday, May 20, 2020 2:10 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sara Pollack <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Hello Jen,

Ex. 5 Deliberative Process (DP)

Thanks,

Asefa

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, May 20, 2020 9:21 AM
To: Pollack, Sara J <sara_pollack@fws.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Great! It sound like most of these are purposeful. Any species we need to check on, it is possible that are in the analysis but not on the acres table. We can check the species look-up tables.

Jen

From: Pollack, Sara J <sara_pollack@fws.gov>
Sent: Wednesday, May 20, 2020 7:56 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Areda, Asefa T <asefa_areda@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Hi Jen,

Thanks for going through all of those analyses! I checked the table you provided to look into some of the species:

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 19, 2020 6:53 PM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: RE: [EXTERNAL] RE: ESA/GIS continued discussion

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Talk to you tomorrow!

Jen

From: Areda, Asefa T <asefa_areda@fws.gov>
Sent: Tuesday, May 19, 2020 10:13 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sara Pollack <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: Re: [EXTERNAL] RE: ESA/GIS continued discussion

Hey Jen,

Ex. 5 Deliberative Process (DP)

I will be running a process to update this useLayers and will let you know as soon as they are ready.

Thanks,

Asefa

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 19, 2020 8:34 AM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <dilip_chhetri@fws.gov>
Subject: [EXTERNAL] RE: ESA/GIS continued discussion

Asefa,

Ex. 5 Deliberative Process (DP)

Jen

From: Connolly, Jennifer
Sent: Monday, May 18, 2020 8:06 PM
To: Areda, Asefa T <asefa_areda@fws.gov>; Pollack, Sara J <sara_pollack@fws.gov>
Cc: Chhetri, Dilip K <DILIP_CHHETRI@FWS.GOV>
Subject: RE: ESA/GIS continued discussion

Asefa,

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Jen

-----Original Appointment-----
From: Connolly, Jennifer
Sent: Thursday, May 14, 2020 2:51 PM
To: Connolly, Jennifer; Areda, Asefa T; Pollack, Sara J
Cc: Chhetri, Dilip K
Subject: ESA/GIS continued discussion
When: Monday, May 18, 2020 1:00 PM-2:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Skype Meeting

Agenda

- Finalizing the overlap table – check the high % overlap species
- HUC crosswalk

Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Toll number: **Ex. 6 – Conference Code** English (United States)

Find a local number

Conferenc Ex. 6 – Conference Code

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Message

From: Kyle, Lee [Kyle.Lee@epa.gov]
Sent: 5/12/2020 8:58:59 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
CC: Anderson, Brian [Anderson.Brian@epa.gov]
Subject: RE: Connolly - Major tasks this week

This is super helpful

Thanks

Lee

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, May 12, 2020 12:59 PM
To: Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>
Subject: Connolly - Major tasks this week

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

****
Jennifer Connolly, Senior Scientist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Sent: 5/7/2020 8:00:58 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Kyle, Lee [Kyle.Lee@epa.gov]; Anderson, Brian [Anderson.Brian@epa.gov]
Subject: General-Jen - 5/7/2020

Notes for today

Link to meeting notes: General-Jen - 5/7/2020 (Web view)

General-Jen - 5/7/2020

Tuesday, May 5, 2020
8:56 AM

Meeting Date: 5/7/2020 4:00 PM
Location: Branch Chief's Office
Link to Outlook Item: *click here*
Invitation Message
Participants

- Connolly, Jennifer (Meeting Organizer)
- Kyle, Lee (Accepted in Outlook)
- Anderson, Brian (Accepted in Outlook)

Notes

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Created with Microsoft OneNote 2016.

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 2/24/2020 6:19:24 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: PCA tables
Attachments: Step2b_AdjustSpeciesbyState_TabArea_CENSUS_PCAPCT_dwa_v1.py; Carbaryl_cws_avg_20190627_Final.csv; r_amphib_CONUS_CDL_1317_10x2_euc_census_max.csv

Hi Jen,
I formatted pca table, pulled crop_pca/crop_area, compare pca/pct and used that final pca/pct to calculate uniform, Lower and upper species range. I have attached codes, input and output. Moving to look total.
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 10:32 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Feel free to re-format the table as needed.

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 10:03 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Hi Jen,

Ex. 5 Deliberative Process (DP)

Then I will call you to discuss on how I am going to calculate total.

Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 8:21 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Good Morning!

Great questions ☺

1. It seems both GEOID and FIPS contain 5 digits, representing State and County? In ESA we have GEOID in state/county overlap and here we have FIPS. Is it OK if I change FIPS to GEOID?
    a. Yes, the GEOID and FIPS are interchangeable. They are calculated the same way, but are called different things. I haven't quite tracked down why, but my guess it is different data sources.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP) if

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 8:00 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Good morning Jen,

Ex. 5 Deliberative Process (DP)

Please call me at 703-347-8132 if that is easy.

Thank you,
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 21, 2020 7:57 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: PCA tables

Sumathy,

You can grab the PCA I've been cleaning up from my OneDrive, file name is PCA_Spreadsheet.xlsx. You have the PCAs with the area of crop by watershed, and I ran the intersection with the counties. The last couple of tabs give you the census of ag by county from 2007, and the NLCD by county.

The PCA tables by state/county will replace the species overlap input tables. You'll need to weight the treated acres using the NLCD values for the county. The census of AG tables can replace the state/county overlap. Once you have the treated acres by watershed you can calculated the PCA/PCT value to compare to the PCA value, and then apply the conditional statement to select which value should be used to adjust the DW-LOC.

Ex. 5 Deliberative Process (DP)

The last piece, we'll need to incorporate is the masking table, but we don't have that input yet.

Good luck! Talk to you on Monday.

Jen

****
Jennifer Connolly, GIS Biologist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 2/24/2020 1:54:46 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: PCA tables

Thank you Jen. I will look everything again and call you this afternoon.
Thank you, Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 8:21 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Good Morning!

Great questions ☺

Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 8:00 AM

To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Good morning Jen,

Ex. 5 Deliberative Process (DP)

Please call me at 703-347-8132 if that is easy.

Thank you,
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 21, 2020 7:57 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: PCA tables

Sumathy,

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The PCA tables by state/county will replace the species overlap input tables. You'll need to weight the treated acres using the NLCD values for the county. The census of AG tables can replace the state/county overlap. Once you have the treated acres by watershed you can calculated the PCA/PCT value to compare to the PCA value, and then apply the conditional statement to select which value should be used to adjust the DW-LOC.

Ex. 5 Deliberative Process (DP)

Good luck! Talk to you on Monday.

Jen

****

Jennifer Connolly, GIS Biologist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460

phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 2/24/2020 11:42:58 AM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: PCA tables

Okay! Thanks Jen!!
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 21, 2020 2:34 PM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP)

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Friday, February 21, 2020 2:17 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Jen

Ex. 5 Deliberative Process (DP)

I saw some differences.
e.g. Developed vs Urban

Other Orchards –Orchards

Thank you,
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 21, 2020 7:57 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: PCA tables

Sumathy,

You can grab the PCA I've been cleaning up from my OneDrive, file name is PCA_Spreadsheet.xlsx. You have the PCAs with the area of crop by watershed, and I ran the intersection with the counties. The last couple of tabs give you the census of ag by county from 2007, and the NLCD by county.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Good luck! Talk to you on Monday.

Jen

****
Jennifer Connolly, GIS Biologist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Suarez, Mark [Suarez.Mark@epa.gov]
Sent: 2/3/2020 1:18:46 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
CC: Johnson, Hope [Johnson.Hope@epa.gov]
Subject: RE: Example format - PCT inputs

Thank you for letting me know.
I'll bring up the errors here to make sure that the team is paying closer attention.

I think that the additional review of the final table in BEAD sounds like a good idea. Hopefully, delivering the data in the format you want will nearly eliminate extraction errors.

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 03, 2020 8:12 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>
Subject: RE: Example format - PCT inputs

Hey Mark,

Ex. 5 Deliberative Process (DP)

Jen

From: Suarez, Mark <Suarez.Mark@epa.gov>
Sent: Friday, January 31, 2020 8:05 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Example format - PCT inputs

Jen,

Ex. 5 Deliberative Process (DP)

Mark

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, January 30, 2020 9:10 AM

To: Suarez, Mark <Suarez.Mark@epa.gov>
Subject: RE: Example format - PCT inputs

Hey Mark,

Ex. 5 Deliberative Process (DP)

Jen

From: Connolly, Jennifer
Sent: Friday, January 24, 2020 9:48 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>
Subject: Example format - PCT inputs

Hey Mark,

I was looking through my notes from meetings and realized I forgot to send you of how I formated the data from the SUUM to generate the inputs for ESA and not PCT. Sorry for the delay!

Ex. 5 Deliberative Process (DP)

Let me know if you want to have a quick chat about this next week.

Jen

****
Jennifer Connolly, GIS Biologist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Corbin, Mark [Corbin.Mark@epa.gov]
Sent: 1/22/2020 12:28:10 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Kyle, Lee [Kyle.Lee@epa.gov]
CC: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Subject: RE: can you send the QAPP for ESA we can use on PCA/PCT?

Any time this week if fine. Our first priority is to get you guys our document on the automation process/flow

---

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, January 21, 2020 6:01 PM
To: Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: can you send the QAPP for ESA we can use on PCA/PCT?

It is rolled in to the ESA tools "quality manual" that we are wrapping up review on now. This is not a QAPP by the strict definition, because it was not done before tool development. The suggestion to use "quality manual" came from Denise when she review the document.

I was hoping to get through your comments on this document today, but the day was derailed. I can send the document to Mark as is or once I incorporate the final comments. I have high hope of addressing comment tomorrow, unless it goes like today.

Jen

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Tuesday, January 21, 2020 2:06 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: can you send the QAPP for ESA we can use on PCA/PCT?

Is there a QC plan for the PCT work done for ESA? If so, Mark would like to see if he/we can use it to help us develop a QC plan for the PCA/PCT project.

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, January 21, 2020 1:59 PM
To: Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: can you send the QAPP for ESA we can use on PCA/PCT?

I don't understand what you are asking.

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Tuesday, January 21, 2020 1:30 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: can you send the QAPP for ESA we can use on PCA/PCT?

Does this make sense?

Lee Kyle, Chief
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs
United States Environmental Protection Agency
703-347-0521

Message

From: Suarez, Mark [Suarez.Mark@epa.gov]
Sent: 1/31/2020 1:04:59 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: Example format - PCT inputs
Attachments: Copy of Methomyl SUUM update_Interim Draft Final_JC_MS.xlsx

Flag: Follow up

Jen,

Ex. 5 Deliberative Process (DP)

Mark

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, January 30, 2020 9:10 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>
Subject: RE: Example format - PCT inputs

Hey Mark,

Ex. 5 Deliberative Process (DP)

Jen

From: Connolly, Jennifer
Sent: Friday, January 24, 2020 9:48 AM
To: Suarez, Mark <Suarez.Mark@epa.gov>
Subject: Example format - PCT inputs

Hey Mark,

I was looking through my notes from meetings and realized I forgot to send you of how I formated the data from the SUUM to generate the inputs for ESA and not PCT. Sorry for the delay!

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Let me know if you want to have a quick chat about this next week.

Jen

****
Jennifer Connolly, GIS Biologist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]
Sent: 2/19/2020 3:52:44 AM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: interagency slides

So I thought I sent this hours ago. :)-

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, February 18, 2020 5:41 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

Brian and Kris were just asking me about this list. This is chaos!

Ex. 5 Deliberative Process (DP)

Do you have what you need?

EntityID	Common Name	Scientific Name	NL48_Methomyl AA_0	NL48_Methomyl AA_305	NL48_Methomyl AA_792
3876	Newcomb's Tree snail	Newcombia cumingi	0	0	0.1195
9469	Oahu tree snail	Achatinella lorata	0	0	0.013248
9477	Oahu tree snail	Achatinella turgida	0	0	0.130279

And the CH for the vole

EntityID	Common Name	Scientific Name	CONUS_Methomyl AA_0	CONUS_Methomyl AA_305	CONUS_Methomyl AA_792
28	Amargosa vole	Microtus californicus scirpensis	0	0	0.024164

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Tuesday, February 18, 2020 5:22 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Hi Jen –

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Range
1202
1208
2782
9963
CH
1196
1197
1205
1208
1211
2268

Ex. 5 Deliberative Process (DP)

3876 Newcomb's Tree snail
9469 Oahu tree snail
9477 Oahu tree snail
28 Amargosa vole

Ex. 5 Deliberative Process (DP) add

Thanks!
Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, February 18, 2020 1:44 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

Hey Colleen,

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Tuesday, February 18, 2020 6:36 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Hi Jen –

Attached is the current list I have for 0 and <1 % overlap if you are able to take a look at it and let me know if something

Ex. 5 Deliberative Process (DP)

Thanks –
Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 17, 2020 8:25 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Monday, February 17, 2020 7:21 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Hi Jen –

Ex. 6 Personal Privacy (PP)

Ex. 5 Deliberative Process (DP)

Ex. 6 Personal Privacy (PP)

Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Sunday, February 16, 2020 12:36 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

Hey Colleen,

Ex. 6 Personal Privacy (PP)

Ex. 5 Deliberative Process (DP)

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Friday, February 14, 2020 10:49 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Hey Jen –

I totally get what you are saying about glossing over the GIS – and it is so important! I emailed Brian and he agreed – would you be able to do a couple slides on the GIS output that we could do before we start talking about the examples/MAGtool output? It basically would be the first part of the outputs section. You could just talk generally about the layers and how the overlap is done, maybe touch on the PCT calcs and aggregation?? Like maybe about how the overlap produced for on-site and then at drift increments and how feeds into MAGtool. I don't know – I am sure you have your own ideas! What do you think? I know the problem is it is Friday and we are going over slides on Tuesday. :) But we don't need them until Tuesday morning, the ones I am working on won't be done today either.

Thanks -
Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, February 13, 2020 10:03 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

I'm happy to help with slide in any way you need. Just let me know.

Ex. 5 Deliberative Process (DP)

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Thursday, February 13, 2020 2:00 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Ex. 6 Personal Privacy (PP)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

From: Rossmeisl, Colleen
Sent: Thursday, February 13, 2020 11:16 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

OK I am still looking and pulling some, just trying to find ones that meet the criteria...

Are you coming to the 1130 meeting? I want to talk about how folks are coordinating with BEAD and would be good to get your 2 cents.

From: Rossmeisl, Colleen
Sent: Thursday, February 13, 2020 10:43 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Hey –
I am looking at slides and your species spreadsheet now – maybe we can chat at 11 am. Brian just stopped by so he may stop to chat with you. I had proposed maybe you could present some too, or at a minimum be at the table with me to be actively engaged.
Thanks –
Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, February 13, 2020 8:25 AM
To: Garber, Kristina <Garber.Kristina@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: interagency slides

I'm happy to help with slides in any way I can but based on the conversation yesterday I don't see myself having a role. If there is something I should focus on let me know otherwise I'm going to focus on other work that needs to get done.

Jen

From: Garber, Kristina <Garber.Kristina@epa.gov>
Sent: Thursday, February 13, 2020 7:35 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: Re: interagency slides

The walk through time on Tuesday sounds fine

On Feb 13, 2020, at 7:30 AM, Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov> wrote:

Ex. 5 Deliberative Process (DP)

The walk through time Tuesday sounds reasonable to me.

From: Anderson, Brian <Anderson.Brian@epa.gov>
Sent: Thursday, February 13, 2020 7:26 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

Brian

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Thursday, February 13, 2020 7:11 AM
To: Peck, Charles <Peck.Charles@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: interagency slides

Ex. 6 Personal Privacy (PP) ve

I will block off an hour this morning to just focus on this when I get in the office – I had a meeting cancelled so will use that slot... I also want to be able to coordinate with Jen for her input.
Thanks!

From: Peck, Charles <Peck.Charles@epa.gov>
Sent: Thursday, February 13, 2020 7:03 AM
To: Anderson, Brian <Anderson.Brian@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

From: Anderson, Brian <Anderson.Brian@epa.gov>
Sent: Thursday, February 13, 2020 6:58 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: interagency slides

Hi guys,

Ex. 5 Deliberative Process (DP)

Thanks

Brian

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 2/28/2020 6:28:14 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.
Attachments: watershed_state_df_pca_pct_statecrop.csv; Step2b_AdjustSpeciesbyState_TabArea_CENSUS_PCAPCT_dwa_v2ss.py

Sending script and output again. I was doing esa page most of the time and couldn't finish the comparison.
I will look that Monday as first thing.

Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 28, 2020 11:30 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Great! I'm going to try to get you a draft email for the PCA team before you leave. But if I can't I'll send it out, and we can always add to it on Monday.

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Friday, February 28, 2020 11:28 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

OK. I am trying to add that in our script and make pca/pct comp too.
I will send my script before I leave today.
Thank you—sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 28, 2020 11:22 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

I think that makes sense. We can talk to the PCA team about it too on Tuesday.

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Friday, February 28, 2020 10:48 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 28, 2020 9:45 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Try STATEFP, I was running it in the console not as a standalone so sometimes the merges compound on each other ☺

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Friday, February 28, 2020 9:43 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 28, 2020 9:20 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

I just sent them! Let me know if you have any issues with the attachments.

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Friday, February 28, 2020 9:18 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

I looked at your new version. Thanks so much for doing that.
Could you please share CWS_Cnties.csv and PCA_20190627_Final.csv
I couldn't them in OneDrive for some reason.

Thank you again, Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 28, 2020 8:58 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Hi Sumathy,

I saved a new version of the script and made some updates:
Step2b_AdjustSpeciesbyState_TabArea_CENSUS_PCAPCT_dwa_v1_JC.py

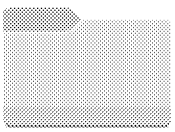
Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Thursday, February 27, 2020 4:10 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Ex. 5 Deliberative Process (DP)

This link only works for the direct recipients of this message.



Scripts

Open

Microsoft OneDrive

Sender will be notified when you open this link for the first time.

Microsoft respects your privacy. To learn more, please read our Privacy Statement.
Microsoft Corporation, One Microsoft Way, Redmond, WA 98052

Message

From: Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]
Sent: 2/18/2020 3:40:42 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

Feel free to add your slides, we can cut mine if they are redundant.

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, February 18, 2020 9:16 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

Jen

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Subject: RE: interagency slides

Hi Jen –

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Thanks –
Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 17, 2020 8:25 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

We can chat about the species list tomorrow. I pull the new and delisted species so we can highlight them.

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Monday, February 17, 2020 7:21 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Hi Jen –

Ex. 6 Personal Privacy (PP)

Ex. 5 Deliberative Process (DP)

Ex. 6 Personal Privacy (PP)

Colleen

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Subject: RE: interagency slides

Hey Colleen,

Ex. 6 Personal Privacy (PP)

Ex. 5 Deliberative Process (DP)

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
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Ex. 5 Deliberative Process (DP)

Thanks -
Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
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To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

I'm happy to help with slide in any way you need. Just let me know.

Ex. 5 Deliberative Process (DP)

Ex. 6 Personal Privacy (PP)

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
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To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
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Ex. 6 Personal Privacy (PP)

Ex. 5 Deliberative Process (DP)

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Sent: Thursday, February 13, 2020 8:25 AM
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Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: interagency slides

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To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: Re: interagency slides

The walk through time on Tuesday sounds fine

On Feb 13, 2020, at 7:30 AM, Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov> wrote:

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Ex. 5 Deliberative Process (DP)

Brian

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Ex. 6 Personal Privacy (PP)

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Ex. 5 Deliberative Process (DP)

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Subject: interagency slides

Hi guys,

Ex. 5 Deliberative Process (DP)

Thanks

Brian

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 2/28/2020 2:47:13 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Thank you!

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 28, 2020 9:45 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Ex. 5 Deliberative Process (DP)

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Jen

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Hi Sumathy,

Ex. 5 Deliberative Process (DP)

Jen

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Subject: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Ex. 5 Deliberative Process (DP)

This link only works for the direct recipients of this message.

Scripts

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Microsoft Corporation, One Microsoft Way, Redmond, WA 98052

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 2/28/2020 2:47:00 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Yes!! I did that and it was working.

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 28, 2020 9:45 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Ex. 5 Deliberative Process (DP)

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Friday, February 28, 2020 9:43 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 28, 2020 9:20 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

I just sent them! Let me know if you have any issues with the attachments.

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Friday, February 28, 2020 9:18 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Ex. 5 Deliberative Process (DP)

Thank you again, Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 28, 2020 8:58 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Hi Sumathy,

Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Thursday, February 27, 2020 4:10 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: Sinnathamby, Sumathy shared the folder "Scripts" with you.

Ex. 5 Deliberative Process (DP)

This link only works for the direct recipients of this message.

Scripts

Open

Microsoft OneDrive

Sender will be notified when you open this link for the first time.

Microsoft respects your privacy. To learn more, please read our Privacy Statement.
Microsoft Corporation, One Microsoft Way, Redmond, WA 98052

Message

From: Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]
Sent: 2/18/2020 11:36:05 AM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: interagency slides
Attachments: zero and less than 1percent species.xlsx

Hi Jen –

Ex. 5 Deliberative Process (DP)

Thanks –
Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 17, 2020 8:25 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Monday, February 17, 2020 7:21 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Hi Jen –

Ex. 6 Personal Privacy (PP)

Ex. 5 Deliberative Process (DP)

Ex. 6 Personal Privacy (PP)

Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Sunday, February 16, 2020 12:36 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

Hey Colleen,

Ex. 6 Personal Privacy (PP)

Ex. 5 Deliberative Process (DP)

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Friday, February 14, 2020 10:49 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Hey Jen –

Ex. 5 Deliberative Process (DP)

Thanks -
Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, February 13, 2020 10:03 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: interagency slides

I'm happy to help with slide in any way you need. Just let me know.

Ex. 5 Deliberative Process (DP)

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Ex. 6 Personal Privacy (PP)

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Thursday, February 13, 2020 2:00 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

From: Rossmeisl, Colleen
Sent: Thursday, February 13, 2020 11:16 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

Are you coming to the 1130 meeting? I want to talk about how folks are coordinating with BEAD and would be good to get your 2 cents.

From: Rossmeisl, Colleen
Sent: Thursday, February 13, 2020 10:43 AM

To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: interagency slides

Hey –
I am looking at slides and your species spreadsheet now – maybe we can chat at 11 am. Brian just stopped by so he may stop to chat with you. I had proposed maybe you could present some too, or at a minimum be at the table with me to be actively engaged.
Thanks –
Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, February 13, 2020 8:25 AM
To: Garber, Kristina <Garber.Kristina@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: interagency slides

I'm happy to help with slides in any way I can but based on the conversation yesterday I don't see myself having a role. If there is something I should focus on let me know otherwise I'm going to focus on other work that needs to get done.

Jen

From: Garber, Kristina <Garber.Kristina@epa.gov>
Sent: Thursday, February 13, 2020 7:35 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: Re: interagency slides

The walk through time on Tuesday sounds fine

On Feb 13, 2020, at 7:30 AM, Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov> wrote:

Ex. 5 Deliberative Process (DP)

From: Anderson, Brian <Anderson.Brian@epa.gov>
Sent: Thursday, February 13, 2020 7:26 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Brian

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Thursday, February 13, 2020 7:11 AM
To: Peck, Charles <Peck.Charles@epa.gov>; Anderson, Brian <Anderson.Brian@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: interagency slides

Ex. 6 Personal Privacy (PP)

From: Peck, Charles <Peck.Charles@epa.gov>
Sent: Thursday, February 13, 2020 7:03 AM
To: Anderson, Brian <Anderson.Brian@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: interagency slides

Ex. 5 Deliberative Process (DP)

From: Anderson, Brian <Anderson.Brian@epa.gov>
Sent: Thursday, February 13, 2020 6:58 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: interagency slides

Hi guys,

Ex. 5 Deliberative Process (DP)

Thanks

Brian

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 2/26/2020 11:23:09 AM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP)

Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, February 25, 2020 6:05 PM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Sounds good! I will take a look in the morning. I don't think I'll need all 3 hour for formatting but worse case we can meet during the PFTTT.

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Tuesday, February 25, 2020 3:24 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Hi Jen,

Ex. 5 Deliberative Process (DP)

Please take a look at your convenience.
I will talk to you tomorrow.

Thank you, Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, February 25, 2020 8:38 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Here is the county area table.

Ex. 5 Deliberative Process (DP)

Ex. 6 Personal Privacy (PP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Tuesday, February 25, 2020 7:29 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP)

Thank you for helping me to show progress.

Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, February 25, 2020 7:27 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

I can send you the county area file when I get to the office.

Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Tuesday, February 25, 2020 7:18 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Good morning Jen,

Do you have county area table already? Or shall I create one?
And hope census crop area is in acres (unit).

Ex. 5 Deliberative Process (DP)

Thank you,
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 2:19 PM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

I can call your desk. I mute auto on the Skype and we can just use it for a screen share.

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 2:18 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Sure, I don't have headphone. Could you please call via skype and I will try to answer using phone?

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 2:17 PM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

I just sent the email I was working on. Are you ready to chat?

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 1:57 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Sure, take your time.
Thank you very much!
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 1:56 PM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Does 2:15 work? I'm need about 10 minutes to wrap something up I'm working on. You can reach me on my cell. 508-450-0933. We can do a screen share on Skype if we want to look at the tables together.

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 1:53 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Can I call you? Please let me know if you are free.

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 1:50 PM

To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP)

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 1:33 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP)

From: Sinnathamby, Sumathy
Sent: Monday, February 24, 2020 1:28 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 10:32 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Feel free to re-format the table as needed.

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 10:03 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Hi Jen,

Ex. 5 Deliberative Process (DP)

Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 8:21 AM

To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Good Morning!

Great questions ☺

Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 8:00 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Good morning Jen,

Ex. 5 Deliberative Process (DP)

Please call me at 703-347-8132 if that is easy.

Thank you,
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 21, 2020 7:57 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: PCA tables

Sumathy,

Ex. 5 Deliberative Process (DP)

Good luck! Talk to you on Monday.

Jen

****
Jennifer Connolly, GIS Biologist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 2/25/2020 8:24:04 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: PCA tables
Attachments: Step2b_AdjustSpeciesbyState_TabArea_CENSUS_PCAPCT_dwa_v1.py

Hi Jen,

Ex. 5 Deliberative Process (DP)

Please take a look at your convenience.
I will talk to you tomorrow.

Thank you, Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, February 25, 2020 8:38 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Here is the county area table.

Ex. 5 Deliberative Process (DP)

Ex. 6 Personal Privacy (PP)

Jen

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Sent: Tuesday, February 25, 2020 7:29 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP)

Thank you for helping me to show progress.

Sumathy

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Sent: Tuesday, February 25, 2020 7:27 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

I can send you the county area file when I get to the office.

Yes the ag census is in acres.

Right now I would include both cropland and harvested crop land in the table. We can delete them later if we don't need them.

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Tuesday, February 25, 2020 7:18 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Good morning Jen,

Ex. 5 Deliberative Process (DP) ed

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Sumathy

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Subject: RE: PCA tables

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Sure, take your time.
Thank you very much!
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 1:56 PM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Does 2:15 work? I'm need about 10 minutes to wrap something up I'm working on. You can reach me on my cell. 508-450-0933. We can do a screen share on Skype if we want to look at the tables together.

Jen

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Sent: Monday, February 24, 2020 1:53 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

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From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 1:50 PM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP)

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Ex. 5 Deliberative Process (DP)

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Good morning Jen,

Quick questions:

Ex. 5 Deliberative Process (DP)

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Sent: Friday, February 21, 2020 7:57 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: PCA tables

Sumathy,

You can grab the PCA I've been cleaning up from my OneDrive, file name is PCA_Spreadsheet.xlsx. You have the PCAs with the area of crop by watershed, and I ran the intersection with the counties. The last couple of tabs give you the census of ag by county from 2007, and the NLCD by county.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Good luck! Talk to you on Monday.

Jen

****
Jennifer Connolly, GIS Biologist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 2/25/2020 1:39:26 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: PCA tables

Sure, I will do that.
Thanks Jen! I will meet you when you are here. Take care!
Sumathy

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Ex. 5 Deliberative Process (DP)

Jen

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Ex. 5 Deliberative Process (DP)

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Ex. 5 Deliberative Process (DP)

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To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
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Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP) en

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 1:33 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP)

From: Sinnathamby, Sumathy
Sent: Monday, February 24, 2020 1:28 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 10:32 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Feel free to re-format the table as needed.

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 10:03 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Hi Jen,

Ex. 5 Deliberative Process (DP)

Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, February 24, 2020 8:21 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: PCA tables

Good Morning!

Great questions ☺

Ex. 5 Deliberative Process (DP)

Jen

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, February 24, 2020 8:00 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA tables

Good morning Jen,

Ex. 5 Deliberative Process (DP)

Please call me at 703-347-8132 if that is easy.

Thank you,
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Friday, February 21, 2020 7:57 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: PCA tables

Sumathy,

You can grab the PCA I've been cleaning up from my OneDrive, file name is PCA_Spreadsheet.xlsx. You have the PCAs with the area of crop by watershed, and I ran the intersection with the counties. The last couple of tabs give you the census of ag by county from 2007, and the NLCD by county.

Ex. 5 Deliberative Process (DP)

Good luck! Talk to you on Monday.

Jen

****

Jennifer Connolly, GIS Biologist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov

****

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 5/6/2020 1:29:44 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: PCA/PCT Documentation Version 2
Attachments: PCA_PCT_Automation_Tool_Documentation_v2_ss.docx; PCA_PCT_Automation_Tool_Documentation_appendix.docx; PCA_PCAT_Automation_Outputs_Documentation_samples.xlsx

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, May 4, 2020 8:19 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Sinnathamby, Sumathy shared "PCAPCT_Automation_v4" with you.

Ex. 5 Deliberative Process (DP)

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Monday, April 20, 2020 9:56 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: Sinnathamby, Sumathy shared "PCAPCT_Automation_v4" with you.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Message

From: Anderson, Brian [Anderson.Brian@epa.gov]
Sent: 5/5/2020 1:56:19 PM
To: Donovan, Elizabeth [Donovan.Elizabeth@epa.gov]
CC: Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: ESA Leads

Ex. 5 Deliberative Process (DP)

Brian

From: Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Sent: Tuesday, May 05, 2020 9:50 AM
To: Anderson, Brian <Anderson.Brian@epa.gov>
Cc: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: ESA Leads

Ex. 5 Deliberative Process (DP)

e

Elizabeth Donovan
Senior Biologist, ERB 3
Environmental Fate and Effects Division
United States Environmental Protection Agency
703.347.0227

Message

From: Kyle, Lee [Kyle.Lee@epa.gov]
Sent: 6/17/2020 1:44:11 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: PCA/PCT

Thanks, this is very helpful.

Since we have time we'll discuss it with the Models Team

And it's good to get another perspective on Sumathy. You're doing a great job helping her!

Lee

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, June 17, 2020 9:41 AM
To: Kyle, Lee <Kyle.Lee@epa.gov>
Subject: RE: PCA/PCT

Ex. 6 – Conference Code

Sumathy is working extra hours because she is feeling the pressure of ESA, just so you are aware when new task need to come up. Some of this is because she wants to do a good job and she is being thorough in reviewing and re-reviewing her results.

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Wednesday, June 17, 2020 9:29 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: PCA/PCT

Ex. 6 – Conference Code

Lee

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, June 17, 2020 9:13 AM

To: Kyle, Lee <Kyle.Lee@epa.gov>
Subject: FW: PCA/PCT

Lee,

Ex. 6 Personal Privacy (PP)

Ex. 5 Deliberative Process (DP)

Jen

From: Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>
Sent: Wednesday, June 17, 2020 9:00 AM
To: Peck, Charles <Peck.Charles@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Shelby, Andrew <Shelby.Andrew@epa.gov>; Antoline, Joshua <antoline.joshua@epa.gov>; Eckel, William <Eckel.William@epa.gov>
Cc: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

I have everything I need for chlorpyrifos. All my suggestions relate to future applications.

From: Peck, Charles <Peck.Charles@epa.gov>
Sent: Wednesday, June 17, 2020 7:47 AM
To: Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Shelby, Andrew <Shelby.Andrew@epa.gov>; Antoline, Joshua <antoline.joshua@epa.gov>; Eckel, William <Eckel.William@epa.gov>
Cc: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

All,

Ex. 5 Deliberative Process (DP)

Thanks!

Chuck

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Wednesday, June 17, 2020 6:48 AM
To: Corbin, Mark <Corbin.Mark@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Bohaty, Rochelle

<Bohaty.Rochelle@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Shelby, Andrew <Shelby.Andrew@epa.gov>; Antoline, Joshua <antoline.joshua@epa.gov>; Eckel, William <Eckel.William@epa.gov>
Cc: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

I concur. Sumathy can test the code.

Lee

From: Corbin, Mark <Corbin.Mark@epa.gov>
Sent: Tuesday, June 16, 2020 11:06 AM
To: Peck, Charles <Peck.Charles@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Shelby, Andrew <Shelby.Andrew@epa.gov>; Antoline, Joshua <antoline.joshua@epa.gov>; Eckel, William <Eckel.William@epa.gov>
Cc: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

Seems like a good plan.

Lee, do you concur?

From: Peck, Charles <Peck.Charles@epa.gov>
Sent: Tuesday, June 16, 2020 11:00 AM
To: Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Shelby, Andrew <Shelby.Andrew@epa.gov>; Antoline, Joshua <antoline.joshua@epa.gov>; Eckel, William <Eckel.William@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

Hi Rochelle,

Ex. 5 Deliberative Process (DP)

Chuck Peck
OPP/EFED/ERB VI
Potomac Yard South
Crystal City, VA
Room 10244
(703) 347-8064
peck.charles@epa.gov

From: Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>
Sent: Monday, June 15, 2020 6:59 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>; Shelby, Andrew <Shelby.Andrew@epa.gov>; Antoline, Joshua <antoline.joshua@epa.gov>; Eckel, William <Eckel.William@epa.gov>

Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

All,

Thank you for your work on these tools and methods. My comments below relate to implementation of the tool and methods on a boarder scale (more than just chlorpyrifos). I was able to get what I need for the chlorpyrifos work or at least it is ongoing. Thanks again! Below are my observations and suggestions based on completing the PCA/PCT process so far.

Aggregation Tool

The aggregation tool uses terms Tier 1 and Tier 2. It might be helpful to use option 1/step 1 or option 2/step 2 instead so there is no confusion that the use of this tool is intended for higher tiered assessments.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Rochelle

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, June 8, 2020 4:06 PM
To: Spatz, Dana <Spatz.Dana@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

Hey Rochelle,

Ex. 5 Deliberative Process (DP)

Let us know if you have any questions or if you need anything else.

Jen

From: Connolly, Jennifer
Sent: Monday, June 8, 2020 9:09 AM
To: Spatz, Dana <Spatz.Dana@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

Rochelle,

A quick update for you. I ran the script against the updated inputs on Friday and did some initial checks of the results. All and all things looked good.

Sumathy and I will do some additional check on the results, and organize all of the inputs we used this morning. We'll send you the results and the chlorpyrifos inputs we used later today.

Jen

From: Spatz, Dana <Spatz.Dana@epa.gov>
Sent: Thursday, June 4, 2020 3:39 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

Jen/Sumathy,

Thanks for the update and for your continued support on this project.

Dana Spatz | Branch Chief
Environmental Risk Branch 3
Environmental Fate and Effects Division
Office of Pesticide Programs

Currently working from home. I can be reached at spatz.dana@epa.gov, Microsoft Teams, (Ex. 6 – Personal Phone **an** Ex. 6 – Personal Phone

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From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, June 04, 2020 2:56 PM
To: Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

Hey Rochelle,

Sumathy and I met this afternoon and here are our thoughts.

I'm reviewing the aggregated PCTs, and they are looking good. I need to updated the watershed table to account for the changes we made to the misc ag. I can do this later today. Once we have these inputs, we'll be ready to generate the output you need.

Technically, both Sumathy and I are compressed tomorrow, but I will be working a couple of hours so I said I would test the tool to make sure the edits we made to our inputs didn't cause any problems. Monday morning her and I check the results, and assuming nothing has blown up we can send it to you Monday afternoon. To expatiate this process I've been focusing my review on the crops you indicated.

Ex. 5 Deliberative Process (DP)

How does that sound?

Jen

From: Connolly, Jennifer
Sent: Thursday, June 4, 2020 11:44 AM
To: Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

OK, Sumathy and I meeting at 1 today let me get back to you after that meeting. This is the first Sumathy and I are hearing of a June 11 date, I didn't know it was so close. I apologize for that. There is not a ton left for us to do, we've just been prioritizing the BE work over this.

You can give use feedback on the documentation after the runs, just know that depending on that feedback it might change the results.

Jen

From: Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>
Sent: Thursday, June 4, 2020 11:34 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

Jen,

The schedule has me completing the PCT analysis by June 11 (next Thursday) and we are also scheduled to meet with Marietta on June 11 with an update on the progress on the assessment. We meet with PRD the following week. I am scheduled to give EDWCs to HED on June 16 with the DWA beginning the review process mid-July. We allocated about 2

weeks to do the PCT work and that is when I thought Josh was going to be able to help. I don't know how long it takes to process the PCT data using the aggregation tool. With all that said, I need to have the PCT data ASAP to incorporate it and stay on track to meet the due dates. I don't have any flexibility in the schedule and any built in fluff time has been squeezed out of the timeline.

I don't have any additional comments at this time on the tool/documentation. However, once I am actually working with the data I may have additional comments. If there are parts of the documentation that you want me to specifically look at because it impacts your work let me know those specific parts and I can focus on that.

Rochelle

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, June 4, 2020 11:08 AM
To: Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

Rochelle,

We don't need the crops by HUC, but thank you for offering that. I also want to clarify, the PCA/PCT are summarized to the PCA crop groups so you will receive a tables for Orchards, Cotton, Soybeans, Wheat, Vegetables, and Misc. Ag.

In order to generate these tables I need finish making the updates to the watersheds inputs to account for the changes we made to the Misc. Ag. Sumathy is putting the final touches on the aggregated PCTs. She sent them to me for review.

When do you need these by? I know you are in a holding pattern until you get them, but when do you need them to meet your deadline. We trying to prioritize work as Sumathy and I are investing most of our time right now to the herbicide BEs as those GIS due dates for those are rapidly approaching.

Also, if you have any feedback on the tool documentation let us know, as it might impact these tables.

Jen

From: Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>
Sent: Thursday, June 4, 2020 10:53 AM
To: Kyle, Lee <Kyle.Lee@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Corbin, Mark <Corbin.Mark@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: RE: PCA/PCT

Lee,

I need the final PCA/PCT table for all the crops included in the chlorpyrifos assessment:

T1.
Alfalfa
Citrus
Cotton
Soybean
Sugar Beet
Spring Wheat
Winter wheat

Added crops.
Asparagus
Apple
Cherry
Peach
Strawberry

I think I have them all. I may have had a typo or left a couple off in a previous email.

Attached is the example I received for soybean and wheat on 5/28.

I can provide you will a list of these crops by HUC if that makes things easier.

Rochelle

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Thursday, June 4, 2020 10:07 AM
To: Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Bohaty, Rochelle <Bohaty.Rochelle@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Negron-Encarnacion, Ideliz <Negron-Encarnacion.Ideliz@epa.gov>
Subject: PCA/PCT

Hi Dana,

We're trying to juggle our priority projects and want to make sure we're meeting your needs.

Can you specify what you need from EISB, and by when, for the PCA/PCT components of your chlorpyrifos assessment?

Lee Kyle, Chief
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs
United States Environmental Protection Agency
703-347-0521

Message

From: Kyle, Lee [Kyle.Lee@epa.gov]
Sent: 6/25/2020 5:29:16 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: atrazine and simazine non-ag PCTs

Well done Jen!

Lee

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, June 25, 2020 12:52 PM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Doucoure, Cynthia <Doucoure.Cynthia@epa.gov>; Otte, Briana <otte.briana@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>; Hafner, Sarah <hafner.sarah@epa.gov>; Louie-Juzwiak, Rosanna <Louie-Juzwiak.Rosanna@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>
Subject: atrazine and simazine non-ag PCTs

BEAD Team,

Ex. 5 Deliberative Process (DP)

Moving forward other for chemicals, if this information is available we will use it. But if the information is not available we can fall back on the estimates based on pound applied, the different label rates, and acres from the UDLs.

We're going to finalize the chemical specfic inputs for the atrazine, simazine and propazine spatial analysis, including these aggregated PCTs, over the next couple of days. If you have any concerns let me know.

Thank you for your feedback!

Jen

****

Jennifer Connolly, Senior Scientist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405

fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Doucoure, Cynthia [Doucoure.Cynthia@epa.gov]
Sent: 6/25/2020 5:15:33 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: atrazine and simazine non-ag PCTs

Thanks Jennifer! Change to avg PCT noted.

Cynthia Doucoure
Environmental Protection Agency
OCSPP/OPP/BEAD, 7503P
Potomac Yard S-9331
(703) 308-8133

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, June 25, 2020 12:52 PM
To: Suarez, Mark <Suarez.Mark@epa.gov>; Paisley-Jones, Claire <Paisley-Jones.Claire@epa.gov>; Doucoure, Cynthia <Doucoure.Cynthia@epa.gov>; Otte, Briana <otte.briana@epa.gov>; Crowley, Matthew <Crowley.Matthew@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>; Garber, Kristina <Garber.Kristina@epa.gov>; Farruggia, Frank <Farruggia.Frank@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>; Hafner, Sarah <hafner.sarah@epa.gov>; Louie-Juzwiak, Rosanna <Louie-Juzwiak.Rosanna@epa.gov>; Peck, Charles <Peck.Charles@epa.gov>
Subject: atrazine and simazine non-ag PCTs

BEAD Team,

Ex. 5 Deliberative Process (DP)

Moving forward other for chemicals, if this information is available we will use it. But if the information is not available we can fall back on the estimates based on pound applied, the different label rates, and acres from the UDLs.

We're going to finalize the chemical specfic inputs for the atrazine, simazine and propazine spatial analysis, including these aggregated PCTs, over the next couple of days. If you have any concerns let me know.

Thank you for your feedback!

Jen

****

Jennifer Connolly, Senior Scientist
Environmental Information Support Branch

Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Sent: 6/22/2020 2:31:12 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Muela, Stephen [muela.stephen@epa.gov]; Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
CC: Kyle, Lee [Kyle.Lee@epa.gov]; Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Donovan, Elizabeth [Donovan.Elizabeth@epa.gov]; Thompson, Pamela [Thompson.Pamela@epa.gov]
Subject: Herbicide - BE- GIS - overlap next step

ESA/GIS – Chemical Dependent Overlap

Steps Chemical Dependent Overlap

These series of scripts will be completed twice, once for the usage results and once for the usage and habitat/elevation results.

Step1_AdjustSpeciesbyState_TabAREA_CENUS.py - This is the script that will take the chemical independent overlap results and apply the PCT information.

- The suffix input identifies which overlap scenarios you want to run
- If you are running the usage result alone the suffixes being considered will be ['noadjust']
- If you are running usage and habitat the suffixes being considered will be ['noadjust', 'adjHab']
- If you are running usage and habitat the suffixes being considered will be ['noadjust', 'adjHab']
- If you are running usage, habitat and elevation the suffixes being considered will be ['noadjust', 'adjEle','_adjEleHab','_adjHab']

- Based on the user input this script will take the chemical independent overlap generate all of the overlap scenarios indicated
  - Overlap scenario include - no adjustment, PCT, PCT redundancy, PCT on/off, PCT on/off habitat, PCT on/off elevation, PCT on/off habitat and elevation
  - By default the 'noadjust' will run the PCT, PCT redundancy, PCT on/off scenarios for each of the PCT indicated by the user
  - The additional scenarios related to habitat and elevation are optional
- This script is run independently for critical habitat and ranges -however critical habitat is never adjusted for habitat or elevation
- For each scenario:
  - Chemical pres/abs mask is applied to the species overlap results by joining the species results broken down by county to the pres/abs mask tables. Overlap, direct overlap or on site overlap (VALUE_0) and drift (VALUE_30- VALUE_1500) found in a county with not registered uses is updated to 0. This table is then summarized to species overlap by state
  - For the PCT scenario
    - After applying the mask and summarize the result to species and state the tables are joined to the PCT inputs and the direct overlap or on site overlap (VALUE_0) adjusted using each of our treated acres assumptions (Upper, lower, and uniform)
    - Drift **is not** adjusted by the PCT
- Process for scripts:
  - Preps inputs - presence absences and state fp table same for all scenarios
  - For each pct group

        - Preps pct table
        - Preps use look-up tables - to confirm which uses should be included
    - Create output directories
    - Loops each pct and suffix group to process the chemical dependent results for each csv results
        - This script will skip over previously created tables - can be started and stopped; delete to recreate
        - Loads in the results for the political boundaries results for a uses and applies presence absence
        - Loads in the corresponding species results based on the use suffix in the file name and applies the presences absence
        - Merges the species table with the PCT information and then the state results (Species and state results have been adjusted by presences absences)
        - Applies PCT and calculates the different treated acres distributions

Step2_Sum_uses_byState.py - merges all the species group table for each scenarios by use; script will skip over existing tables - delete to recreate
Step3_Species_Drift_intervals_TabArea_POverlap.py - creates the percents overlap tables; this script does not skip existing tables

- When running the on/off field this will be run multiple times using the different species acres tables - full range, and the on/off field acres tables removing those areas
- To speed this up you can run each pct group individually

Step4_SummarizeBE - generate the summary table that summarizes results to drift limits from input tables

- When running the on/off field this will be run multiple times using the different species acres tables - full range, and the on/off field interval tables

MAGtool tables
Step1a_Tables_overlap - Step 1 MAGtool tables summarized
Step1b_DriftInvervals - Step 1 MAGtool table -drift intervals
Step2a_Tables_overlap - Step 2 MAGtool tables summarized

- Applies on off field adjust based on input spreadsheet - verify which on/off categories are applicable to chemical

Step2b_DriftInvervals - Step 2 MAGtool Table - drift intervals (currently we do not use these but we still generate them)

- Applies on off field adjust based on input spreadsheet - verify which on/off categories are applicable to chemical

Created with Microsoft OneNote 2016

Message

From: Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]
Sent: 6/8/2020 2:01:12 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: Connolly Major task- week of 6/8

Ex. 5 Deliberative Process (DP)

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, June 08, 2020 9:50 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: RE: Connolly Major task- week of 6/8

If you are just checking setting you can do that while things are running. You won't mess anything up.

Okay, well that sounds good. What Brian and I discussed was wrapping up the triazines by the end of the month, and have the aggregated PCTs for glyphosate in review with BEAD. I'll be out the first two full weeks of July. I can run glyphosate when I get back after incorporating BEAD's feedback. I don't want to lose momentum with BEAD so I want to make sure we start their review before I leave.

But hopefully this might give us a little breathing room on the QC. I know if I wait to run glyphosate until July that helps with the QC of the added module for the drift layer.

It sounds like that should work. Yes?

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Monday, June 8, 2020 9:42 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Connolly Major task- week of 6/8

Awesome, thanks! If we get back on and you have a break from using Earth, I want to check something on the way Excel is set up on there. It is having memory issues on FIRE, which is a total joke since I can run it on my feeble machine, but my internet research (yes, dangerous) directed me to some of the settings in Excel and how it calculates. I wanted to see what it was set on in EARTH since that seemed to work fine.

Also, I am getting a better sense of how long it will take to run the MAGtool and I think we have an excessive buffer built into the back end of our schedule. I have brought it up with Brian, as I think the teams/methods/GIS folks should have a little more breathing room... maybe will discuss more tomorrow.

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, June 08, 2020 9:34 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: FW: Connolly Major task- week of 6/8

FYI

From: Muela, Stephen <muela.stephen@epa.gov>
Sent: Monday, June 8, 2020 9:16 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Hook, James (Trip) <Hook.James@epa.gov>
Subject: RE: Connolly Major task- week of 6/8

Hi all,

I confirmed, looks like only wind and water are online right now. Earth is offline and fire is inaccessible. I'll try and coordinate with EISD to see if they can take a look in person. I'm hoping its something simple like an update or a machine went to sleep (although that shouldn't of happened).

I'll pass along any updates,

Stephen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, June 8, 2020 8:30 AM
To: Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Hook, James (Trip) <Hook.James@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: RE: Connolly Major task- week of 6/8

Colleen and I have notified Stephen of the issue. I don't know what the process is beyond that. I ask Stephen to let me know what the next steps would be for trouble shooting.

From: Kyle, Lee <Kyle.Lee@epa.gov>
Sent: Monday, June 8, 2020 8:27 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Hook, James (Trip) <Hook.James@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: RE: Connolly Major task- week of 6/8

Thanks Jen. Can Stephen or Trip help you access the lab computers, or have you put in a work ticket?

Lee

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, June 8, 2020 8:24 AM
To: Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>
Subject: Connolly Major task- week of 6/8

Note – Colleen and I lost remote access to the lab computers – I do not know if the run I had going completed or if I lost the two days over the weekend

Due this week:

ESA – national BEs

- Prep for BEAD meeting NL48 glyphosate and CONUS all chemicals- next week is the last scheduled meeting we can extend them
- Send BEAD atrazine and simazine PCTs for review
- Support for Stephen and Sumathy while work on the non-ag PCTs for their chemicals and generate the AAs

- Start chemical independent runs for any new UDLs for the 4 herbicides
- Finish NL48 UDLS for glyphosate – on laptop
- Drift Layer for glyphosate – NL48
- Draft aggregated PCTs for glyphosate
- Provide some training to Stephen and Sumathy on using the AA scripts
- Fix no call species- I found an issue as I QC'ed
- QC – Drift layer prep
- Generate AA and Ag composite for propazine

General support: - Rochelle has a hard deadline of June 11 to complete her work so this will be a higher priority than ESA for Sumathy and equal priority for me

- Support Sumathy on finalize PCA/PCT file for Rochelle and address any questions from Rochelle
- Provide write up for on the process for misc ag

No deliverable due but support required this week on:

- SharePoint questions and support – Lots of questions coming in from the new tech team co-chairs
- Question from Sara at FWS arrived today – but it is more directed to David
- Questions related meeting with the Services and USDA
- Meeting with PRD related to commitment letters

****
Jennifer Connolly, Senior Scientist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Kyle, Lee [Kyle.Lee@epa.gov]
Sent: 6/8/2020 1:17:08 PM
To: Muela, Stephen [muela.stephen@epa.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]
CC: Anderson, Brian [Anderson.Brian@epa.gov]; Hook, James (Trip) [Hook.James@epa.gov]
Subject: RE: Connolly Major task- week of 6/8

Thanks Stephen, please cc Trip and me when you put in a work ticket

Lee

From: Muela, Stephen <muela.stephen@epa.gov>
Sent: Monday, June 8, 2020 9:16 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Hook, James (Trip) <Hook.James@epa.gov>
Subject: RE: Connolly Major task- week of 6/8

Hi all,

I confirmed, looks like only wind and water are online right now. Earth is offline and fire is inaccessible. I'll try and coordinate with EISD to see if they can take a look in person. I'm hoping its something simple like an update or a machine went to sleep (although that shouldn't of happened).

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Sent: Monday, June 8, 2020 8:30 AM
To: Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Hook, James (Trip) <Hook.James@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: RE: Connolly Major task- week of 6/8

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Sent: Monday, June 8, 2020 8:27 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Hook, James (Trip) <Hook.James@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Subject: RE: Connolly Major task- week of 6/8

Thanks Jen. Can Stephen or Trip help you access the lab computers, or have you put in a work ticket?

Lee

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, June 8, 2020 8:24 AM

To: Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>
Subject: Connolly Major task- week of 6/8

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General support: - Rochelle has a hard deadline of June 11 to complete her work so this will be a higher priority than ESA for Sumathy and equal priority for me

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No deliverable due but support required this week on:

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- Question from Sara at FWS arrived today – but it is more directed to David
- Questions related meeting with the Services and USDA
- Meeting with PRD related to commitment letters

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Jennifer Connolly, Senior Scientist
Environmental Information Support Branch
Environmental Fate and Effects Division
Office of Pesticide Programs, U.S. EPA
1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov
****

Message

From: Thompson, Pamela [Thompson.Pamela@epa.gov]
Sent: 6/11/2020 8:46:18 PM
To: Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Donovan, Elizabeth [Donovan.Elizabeth@epa.gov]
Subject: RE: species for propazine

Hi, yes, let me see where we are with GAP for beach species and touch base with Jerrett and Tamara. If we need it done by next Friday, then they should probably know before Tuesday, but I think a lot of the primaries are done, so its doable. FYI, I am off tomorrow.
Thanks,
Pam

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Thursday, June 11, 2020 1:02 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Thompson, Pamela <Thompson.Pamela@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: species for propazine

Sorry Jen – by secondary, I guess that would actually be tertiary? They have all been reviewed for GAP by someone else other than you... this would be another person in addition.

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, June 11, 2020 12:35 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Thompson, Pamela <Thompson.Pamela@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: species for propazine

If we don't complete a secondary review of the beach species I think we should chat quick on whether or not they should be included. Those have never been looked at by anyone other than me, and species specific information was not considered. I had a list of beach habitats I extracted and all of them were applied to the species on the beach species list I was provided.

Ex. 6 Personal Privacy (PP)

Oh yes I agree, I see the BEAD maybe needing more time. But if so I'm hoping to get Stephen and Sumathy comfortable so if they can swap out this input while I'm out of the office. But I'm going to think happy thoughts and say BEAD will provide feedback to us in a week ☺

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Thursday, June 11, 2020 12:27 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Thompson, Pamela <Thompson.Pamela@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: species for propazine

Yes I think that makes sense. Pam, maybe we can talk about this on Tuesday at the meeting if folks would be able to focus on doing at least a brief secondary on beach species that were done for GAP? I know we were unsure if we would have time to do full secondaries on all the beach species.

I think the schedule sounds good Jen. Are you out the 29th to the 10th? As a heads up, I don't see the triazines being run until the middle of July after you are back, in case there are any hanging issues that you would need to check on in overlap. I could see the turn-around time on the PCT tables from BEAD being a possible issue, but maybe not!

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, June 11, 2020 12:18 PM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Thompson, Pamela <Thompson.Pamela@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: species for propazine

I think that makes sense, this way all of the tables will be the same across the chemicals. There is nothing pressing us to do the propazine overlap next week.

My plan will be to run the chemical dependent overlap for propazine on the 22nd so if you can get be the GAP species and the updated on/off table by COB the 19th that would be great. Atrazine and simazine will follow a little later in the week.

Just as an FYI, Stephen and Sumathy are wrapping up the aggregated PCTs for their chemicals. Atrazine will likely go to BEAD today, and simazine early next week. Next week I will work with Stephen and Sumathy to generate the remain overlap inputs, and get them familiar with the scripts. I'll also be doing the chemical independent runs for any of our new UDLs. This way once we incorporate BEADs feedback on the aggregate PCTs Sumathy and Stephen will be ready to do their chemical runs later in the week of the 22nd.

Pam, I know you have expressed interested in hearing how the overlap is done, and specifically how the GAP is incorporated. I'm happy to invite you to those meeting next week if you are interested.

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Thursday, June 11, 2020 12:07 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Thompson, Pamela <Thompson.Pamela@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: species for propazine

So I was thinking of trying to prioritize species, but I am inclined to say that we do all the overlaps the week of the 22nd. In that sense, we can continue with the GAP and on/off until then, but after that point will not change any more of the ON/Off so all the results are consistent (Jen, you might not be in the loop there, as we are going to species files for some of the ancillary WoE stuff, we have been trying to fill in the "NE – not evaluated" On/off calls while we are at it).

That way we are just cutting off those updates for that information for all those chemicals at the same time. We can still continue to update the remaining species for flags as we won't need that until we run the MAGtool.

The list was not going to be exhaustive anyway... and since this is a continuing discussion of whose database we use for species information, no sense outdoing ourselves.

Make sense?
Colleen

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, June 11, 2020 11:53 AM
To: Thompson, Pamela <Thompson.Pamela@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan,

Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: species for propazine

I just saw Colleen's earlier email. Even though the UDLs are limited to the three states the analysis runs nationally on all species.

If you are trying to prioritize species I can look for the species in those states. I just need to connect to the lab computer to check the updated species input files.

The overlap for the other triazines will start the week of the 22nd, so if it make more sense to delay the propazine overlap and finish all species that is just fine too.

From: Connolly, Jennifer
Sent: Thursday, June 11, 2020 11:44 AM
To: Thompson, Pamela <Thompson.Pamela@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: species for propazine

I should be ready to run the overlap for propazine on Monday. If all goes well the GAP part could be applied as early as Tuesday or Wednesday. But I know this is a little earlier than we planned so if you need more time that is fine.

The overlap for atrazine and simazine won't be far behind. The overlap for those chemicals will likely run the week of the 22nd.

Jen

From: Thompson, Pamela <Thompson.Pamela@epa.gov>
Sent: Thursday, June 11, 2020 11:08 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>
Subject: RE: species for propazine

Hi All,

Just a quick question—when do we need the GAP species done by for propazine? I can try to look at the list of the 100 species and beach species that are in those three states, but if you already have that list, let me know!

Ex. 5 Deliberative Process (DP)

Thanks!
Pam

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Thursday, June 11, 2020 10:57 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Thompson, Pamela <Thompson.Pamela@epa.gov>
Subject: RE: species for propazine

I don't have a problem with that, was just wondering. I felt like we had talked about it before.
Thanks!

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Thursday, June 11, 2020 10:50 AM
To: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Thompson, Pamela <Thompson.Pamela@epa.gov>
Subject: RE: species for propazine

Ex. 5 Deliberative Process (DP)

Jen

From: Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Sent: Thursday, June 11, 2020 10:28 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Thompson, Pamela <Thompson.Pamela@epa.gov>
Subject: RE: species for propazine

Ex. 5 Deliberative Process (DP)

From: Rossmeisl, Colleen
Sent: Thursday, June 11, 2020 10:22 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Thompson, Pamela <Thompson.Pamela@epa.gov>
Subject: species for propazine

Hi all –

Starting this discussion with larger group so Pam and I aren't duplicating efforts here. I filtered for the species I think are in the 3 states to see where we are at. Jen, just as a confirmation, can you send the list you see as being in these states? I am coming up with 130 species. I think a handle of them we are still working on parameters for – either GAP or On/Off review. I was going to check the most recent version of the WoE spreadsheet to see where they are. The GAP looked like there were just a couple in there.

Thanks!
Colleen

Message

From: Anderson, Brian [Anderson.Brian@epa.gov]
Sent: 6/10/2020 9:00:13 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]; Corbin, Mark [Corbin.Mark@epa.gov]; Spatz, Dana [Spatz.Dana@epa.gov]
CC: Kyle, Lee [Kyle.Lee@epa.gov]; Rossmeisl, Colleen [Rossmeisl.Colleen@epa.gov]; Donovan, Elizabeth [Donovan.Elizabeth@epa.gov]; Louie-Juzwiak, Rosanna [Louie-Juzwiak.Rosanna@epa.gov]; Wait, Monica [Wait.Monica@epa.gov]
Subject: RE: Herbicide SUUMs update?

Thanks Jen – this is helpful.

Brian

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, June 10, 2020 4:10 PM
To: Corbin, Mark <Corbin.Mark@epa.gov>; Spatz, Dana <Spatz.Dana@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Louie-Juzwiak, Rosanna <Louie-Juzwiak.Rosanna@epa.gov>; Wait, Monica <Wait.Monica@epa.gov>
Subject: RE: Herbicide SUUMs update?

Thank you. If the updates are limited to things we've discussed at the BEAD meetings, I don't think it will be problematic. We've been trying to incorporate those as we go.

Once we have the updated SUUMs we can take a look and if there is new information in the SUUM that would delay use on the overlap, we'll need to talk. Sumathy is very close with the atrazine PCTs, I think those will go to BEAD tomorrow. Stephen is also working hard to finish up simazine, those might go to BEAD early next week. There is still some time to make updates, but not much.

Ex. 5 Deliberative Process (DP)

Jen

From: Corbin, Mark <Corbin.Mark@epa.gov>
Sent: Wednesday, June 10, 2020 2:38 PM
To: Spatz, Dana <Spatz.Dana@epa.gov>; Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Louie-Juzwiak, Rosanna <Louie-Juzwiak.Rosanna@epa.gov>; Wait, Monica <Wait.Monica@epa.gov>
Subject: RE: Herbicide SUUMs update?

That is consistent with my recollection.

Don't recall 100% but was there a discussion about the 0% vs <2.5% PCT still in play?

mark

From: Spatz, Dana <Spatz.Dana@epa.gov>
Sent: Wednesday, June 10, 2020 2:36 PM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Louie-Juzwiak, Rosanna <Louie-Juzwiak.Rosanna@epa.gov>; Wait, Monica <Wait.Monica@epa.gov>
Subject: RE: Herbicide SUUMs update?

Here is what Matt just emailed.....

"Atrazine and simazine, yes. No updates to propazine and glyphosate.

I think recent conversations between the ESA team and SIAB staff (Cynthia, etc.) are what led to the SUUM updates for atrazine and simazine. For example simazine's "nursery" use and clarifying pastureland as conservation reserve program land."

Is this problematic? Do we need to talk?

Dana Spatz | Branch Chief
Environmental Risk Branch 3
Environmental Fate and Effects Division
Office of Pesticide Programs

Currently working from home. I can be reached at spatz.dana@epa.gov, Microsoft Teams, Ex. 6 – Personal Phone **and** Ex. 6 – Personal Phone

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Wednesday, June 10, 2020 1:23 PM
To: Spatz, Dana <Spatz.Dana@epa.gov>; Corbin, Mark <Corbin.Mark@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>; Kyle, Lee <Kyle.Lee@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Louie-Juzwiak, Rosanna <Louie-Juzwiak.Rosanna@epa.gov>; Wait, Monica <Wait.Monica@epa.gov>
Subject: Herbicide SUUMs update?

Dana and Mark,

Ex. 5 Deliberative Process (DP)

I'm hoping this is not an expectation and we incorporate the updates in the final BE. We are close to wrapping up the aggregated PCTs for the triazines. The re-work, time and impact to the timeline would be dependent on the number of updates but it could be significant.

Jen

****

Jennifer Connolly, Senior Scientist
Environmental Information Support Branch
Environmental Fate and Effects Division
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1200 Pennsylvania Avenue, NW (7507P)
Washington, DC 20460
phone: (703) 347-0405
fax: (703) 305-0619
e-mail: connolly.jennifer@epa.gov

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Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 6/9/2020 3:12:29 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: Usage Workflow - Generate tables

Hi Jen,
I need

1. Open space developed (limited to the warm season grass boundary-can't use Stephen's as it doesn't have FL)
2. Open space developed (conus)
3. Other crops (limited to the warm season grass boundary)
4. Right of way tabulated area (OK).

I am loading my zipped udls (non_ag_atrazine.gdb) in the SharePoint. I will let you know when it is done.

Thanks Jen!
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, June 9, 2020 10:24 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Usage Workflow - Generate tables

Thanks, I'll run them for you. Thank you for trying to help! ☺

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Tuesday, June 9, 2020 10:17 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Usage Workflow - Generate tables

Sorry Jen! I get it now. I will load all non ag areas in SP and let you know.

Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, June 9, 2020 9:51 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Usage Workflow - Generate tables

Ex. 5 Deliberative Process (DP)

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Tuesday, June 9, 2020 9:41 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Usage Workflow - Generate tables

Hi Jen,

I am using zonal statistics to calculate udl area for non ag.
I total areas using warm season clipped county boundaries as zonal area and udl as my rasters.
I am doing this for open space, developed and other cropped areas.
Just want to check with you.
Thank you!
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, June 8, 2020 8:13 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Cc: Kyle, Lee <Kyle.Lee@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: Usage Workflow - Generate tables

All,

I've updated the steps and the usage workflow to include some additional details on the Non-Ag. We will discuss this during our meeting.

Usage Workflow - Generate tables

Friday, May 15, 2020
5:17 PM

Ex. 5 Deliberative Process (DP)

PCT tables:
Master table will all state/crop combinations from the Census of Ag 2012. This was generated from Census (2012) Crops Areas and Operations (interim draft for esa_11-15-18).xlsx. Add the NL48 regions and DC not found in the Census of Ag tables with an acres value of -9999

- <<ParentTable_national_20181217.csv>>

Example workbook from Propazine- current version can be found on the ESA SharePoint site

- <<propazine_usage_v1.xlsx>>

Steps:

- Complete the Label/SUUM/Census/GIS crosswalk and send to the team for review. Wait for agreement before moving on.
- Track your work in a spreadsheet, in case you need to back-track to account for an error or request for a change from the chemical team
- Load a copy of the Label/SUUM/Census/GIS crosswalk, the pertinent tables from the SUUM and all state/crop combination found in the ParentTable_national_20181217.csv above.
    - Using the reviewed Label/SUUM/Census/GIS crosswalk, generate a lookup to identify which Census of Ag crops are Registered and Not Registered. All crops should have a category.
    - For the registered crop, using the Label/SUUM/Census/GIS crosswalks to identify, identify which UDLs are applicable
    - For each UDL with at least one registered use, identify the Census of Ag crops that are not registered but found in the UDL this is the NationalCensusOfAg_2012 tab

- Generate the Registered_NotRegistered crosswalk for your table

- Using the National Census of Ag table you just added the registration status and UDL information filter to the registered UDLs, with all Census of Ag crops that are both Registered and Not Registered
- Columns to include in this table:
  -

Census of Ag crop name	UDLs with registered uses	Registration

  -
  - This give you a list of all Census of Ag crops found in the registered UDLs
- Once you are comfortable with Registered_NotRegistered crosswalk you can start the working on the Presences Absences table - steps below

- Generate your UsageTable_AggregatePCTs table
  - Start with the list of all Census of Ag crops found in the registered UDLs broken out by state - this is the NationalCensusOfAg_2012 tab
  - Load the following columns using your Registered_NotRegistered crosswalk :

UseLayer Lookup	CompositeClass

    - Confirm the UDL for the NL48 are correct (if applicable) - this will just be AG and not the individual UDL
    - Populate the Regions columns with CONUS or NL48 for each state
  - Extract the usage and acreage information for states and crops with reported usage from Table 2 of the SUUM using your Label/SUUM/Census/GIS crosswalk
    - Populate the States with Reported Usage_Final with the list of states that have reported usage separated by commas
    - Populate the acres sources column for these records with SUUM
  - Extract the states/crop that were survey but no usage reported from Table 2 of the SUUM using your Label/SUUM/Census/GIS crosswalk
    - Populate the States with Reported Usage_Final with Surveyed but No Usage Reported for these records
    - Extract the acres for these record based on the acres reported in Census of Ag from the NationalCensusOfAg_2012 tab
    - Populate the acres sources column for these records with Census
  - Extract the state/crop that are registered and not survey
    - Populate the States with Reported Usage_Final with Not Surveyed for these records
    - Extract the acres for these record based on the acres reported in Census of Ag from the NationalCensusOfAg_2012 tab
    - Populate the acres sources column for these records with Census
  - For any state crop combination that has 0 acres reported from Census updated the States with Reported Usage_Final to Not Grown
  - For all state crop combination identified as Not Registered or Not Grown update all 3 PCT columns to 0
  - The PCTs Records identified as Surveyed but No Usage Reported and Not Surveyed will be blank - this will be populated by surrogate when you run the ESA surrogate PCT script
  - For NL48 Ag crops - work with BEAD to come up with PCT estimates or surrogates
    - For the acres value - extract from the Ag UDL these are reported in the example workbook
    - Populate the acres sources column for these records with UDL
    - Make a note of this
  - Load Federal Lands, and NonAg records for all states and applicable layers
    - For non-ag layers
      - If average annual treated acres are available in the SUUM this is used for the estimate the max PCT
        - The total area for the use is estimated using the area of the UDL
        - Estimated aggregated max PCT = average annual treated acres from the SUUM/ area of the UDL
        - Avg and min PCT are estimated using the max and min label rates and the avg pounds applied to estimate the treated area

        - Estimated Avg treated acres = avg pounds applied / (max label rate + min label rate (the chemical team can provide this or we can use the PLUS))/2
        - Estimated aggregated avg PCT = Estimated Avg treated acres =/ area of the UDL
        - Estimate aggregated min PCT is the same as the avg but using the max label rate from the SUUM
    - If average annual treated acres are not available in the SUUM
        - Look for usage information from other sources eg forest service, aphis etc
        - Estimate it used pounds applied and label rate similar to the avg and min
        - Estimated max treated acres = avg pounds applied / min label rate (the chemical team can provide this or we can use the PLUS)
    - This will be estimate for the states/regions/or nationally depending on how the usage is reported in the SUUM
    - All NonAg are added to the PCT table for all CONUS States
    - NL48 states should be estimated separately - if usage is not available we have taken the max observed from CONUS

- Load acres for this layers based on the area from the UDL - see example workbook
- Leave the PCT for Federal Lands blank
- Work with chemical team and BEAD to develop non-ag PCTs and load into the table for use site state combo
    - Populate the States with Reported Usage_Final using the same categories for the Ag sites
    - For Federal Lands use NA
- Similar to ag if there is no PCT for the use site / state combo leave this blank - it will be populated with the ESA surrogate PCT script
- If you have questions that you need help from the chemical - send this work to the team to review outline question
    - Common place where feedback is need- finalizing the Registered and Not Registered crosswalk
    - When you send this to team - recommend sharing the presences absence table too if you are ready to share this

- Populate Surrogate PCTs - wait to start this until you are comfortable with the initial tables - seek help from the chemical team as needed
    - Example from propazine
        - <<propazine_findsurrogate_v1.csv>>
    - Using the information in your UsageTable_AggregatePCTs table place it in the format from the example above
    - For records that with reported usage for the crop and state from the SUUM populate the Surrogate PCT to No
    - Populate AA column - all use other than Federal Land should be marked as Action Area, Federal lands should be blank
    - Populate the Surrogate PCT for Not Registered and Not Grown as Not Registered or Not Grown
    - Populate the Surrogate PCT for Federal Lands to No
    - All other records will require an surrogate PCT and the Surrogate PCT should be Yes
    - Update the 3 PCTs Federal Lands for all records to -1
    - Confirm the PCTs for all Not Grown as Not Registered records are 0
    - Confirm records where Surrogate PCT = No have values
        - Crops should match the values in the SUUM
        - Federal Lands should be -1
    - Update the 3 PCTs records where Surrogate PCT = Yes to -1
    - All rows should now values in all of the PCT columns
    - The only column that can have blank records

        - Non-Crop Regional Treated/Total Acres Region, Notes, AA, Ag Composite, and Avg. Annual Total Lbs. AI Applied a
- Run the check for missing script: C_CheckCropsTableForMissing
    - in_table - find surrogate table you just finalized
    - census_parent - ParentTable_national_20181217.xlsx
    - Check the Census_State_Missing_ table to see if any state/crop combination from the Census of Ag are missing
        - Uppdate all tables as needed
- After confirming all state/crop combination from the Census of Ag are account for run the D_ID_Unsurveyed.py script to identify the surrogates
        - path = your find surrogate tables
        - out_table_name = name of the output
        - surrogate_value = -1 - the value loaded above for records that need a surrogate
    - Open output
        - Populate the 3 PCT cols for CONUS records using the first surrogate value that is greater than -1
        - Populate the 3 PCT cols for NL48 records using the first surrogate value that is greater than -1 or based on recommendation from the team
        - Populate all Federal Land PCT values to 100
        - NOTE PCTs must range from 1%-100% - they should not be in decimal form
    - Load table with surrogate values into the chemical workbook
- Create the PCT tables but running the E_ReformatBEAD_Tables.py and E_ReformatBEAD_Tables_ag.py
        - chemical = chemical name
        - in_long_table = your with surrogate PCT table
        - outlocation = out location
    - Script will create an folder with the chemical name in your out location and create all tables
    - Combine the max/min/avg with the max_ag/min_ag/avg_ag
    - Update the Action Area AgComposite and NonAgComposite to the Chemical name AA, Chemical name AA Ag, and Chemical name AA NonAg format used in the presence absence table
    - The UDL names in these PCT table **MUST match** the term used in the Presence Absence table - confirm this
    - The table flagged with _treated go to colleen on the PCTs are final- this is in an input for the MAGtool
    - The other table are working table to track our work - keep these but they don't need to be loaded to SharePoint site
- Load all final table - chemical workbook, presence absence workbook, PCT CSVs, treated CSVs to the SharePoint site

Presence Absence:

- Master table from BEAD: Census (2012) Crops Areas and Operations (interim draft for esa_11-15-18).xlsx

Example workbook from Propazine - current version can be found on the ESA SharePoint site

    - <<Propazine_Pre_Ab_Workbook_20200515.xlsx>>

Steps:

- Identify which census crops are registered - I generally keep track of my steps in an Excel workbook so I have my Steps Captures in case I make a mistake and need to back track
    - Transform the table so the counties are along the columns and crops are rows
    - Add several columns to beginning
    - Use Vlookup to identify the UDL and the States with Report Usage from the UsageTable_AggregatePCTs for each of the Census Crops
    - Remove all un-registered crops from the table, the can be identified from the UDL and States with Report Usage
    - Save as a csv
        - This is the table that should be used as the cnty_mask in the F_Groupby_state

- Run the F_Groupby_state script
  - Other parameters
    - cnty_not_in_census
      - <<Cnty_NotInCensus.csv>>
    - cnty_lookup
      - <<Cnty_St_ANSI_Lookup.csv>>
    - col_to_include = ['Action Area', 'Action Area Ag', 'Action Area NonAg' ,'Federal Lands']
      - These are the UDLs not in the Census only include the UDL pertinent to your chemical
  - Output
    - udl_cnty_mask.csv - this table will provide the number of register crops per county by UDL
    - Cnty_Mask_[date]_[name of table used for the cnty_mask] - this is the table that will be used the Presence Absence mask after some reformating
      - Reformatting
        - Update Action Area Column names to Chemical name AA, Chemical name AA Ag, and Chemical name AA NonAg
        - Remove the row index column
        - Duplicate the GEOID col and name it FIPS this should be the first col
        - Add any NonAg and NL48 UDLs - these get '1s' for all counties
      - Re-Order Columns
        - FIPS, UDL, All Action Area Cols, All UDL cols, Federal Lands, State ANSI,County ANSI,Location,GEOID,Notes
        - See example in workbook

- Load final table into the Chemical Workbook for team review/access

Created with Microsoft OneNote 2016

Message

From: Sinnathamby, Sumathy [sinnathamby.sumathy@epa.gov]
Sent: 6/9/2020 2:14:24 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
Subject: RE: Usage Workflow - Generate tables

<!--[if lte mso 15 || CheckWebRef]-->

Sinnathamby, Sumathy has shared a OneDrive for Business file with you. To view it, click the link below.

atrazine_nonag.xlsx

<!--[endif]-->

I started doing it. I have county area for now. I need to replace this with udl area. Do we have tabulated area for these? I can give a call if that is easy (or we can discuss at 2). Please let me know.

Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Tuesday, June 9, 2020 9:51 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Subject: RE: Usage Workflow - Generate tables

Ex. 5 Deliberative Process (DP)

From: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>
Sent: Tuesday, June 9, 2020 9:41 AM
To: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Subject: RE: Usage Workflow - Generate tables

Hi Jen,
I am using zonal statistics to calculate udl area for non ag.
I total areas using warm season clipped county boundaries as zonal area and udl as my rasters.
I am doing this for open space, developed and other cropped areas.
Just want to check with you.
Thank you!
Sumathy

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, June 8, 2020 8:13 AM
To: Sinnathamby, Sumathy <sinnathamby.sumathy@epa.gov>; Muela, Stephen <muela.stephen@epa.gov>
Cc: Kyle, Lee <Kyle.Lee@epa.gov>; Donovan, Elizabeth <Donovan.Elizabeth@epa.gov>; Rossmeisl, Colleen <Rossmeisl.Colleen@epa.gov>
Subject: Usage Workflow - Generate tables

All,

I've updated the steps and the usage workflow to include some additional details on the Non-Ag. We will discuss this during our meeting.

Usage Workflow - Generate tables

Friday, May 15, 2020
5:17 PM

Goal: To create the aggregated PCTs for the chemical and the presence/absence to refine the use site location if the census of ag indicates no registered crops are grown in a county. Inputs for MAGtool related to treated area by UDL are generated with the PCTs.

PCT tables:
Master table will all state/crop combinations from the Census of Ag 2012. This was generated from Census (2012) Crops Areas and Operations (interim draft for esa_11-15-18).xlsx. Add the NL48 regions and DC not found in the Census of Ag tables with an acres value of -9999

- <<ParentTable_national_20181217.csv>>

Example workbook from Propazine- current version can be found on the ESA SharePoint site

- <<propazine_usage_v1.xlsx>>

Steps:

- Complete the Label/SUUM/Census/GIS crosswalk and send to the team for review. Wait for agreement before moving on.
- Track your work in a spreadsheet, in case you need to back-track to account for an error or request for a change from the chemical team
- Load a copy of the Label/SUUM/Census/GIS crosswalk, the pertinent tables from the SUUM and all state/crop combination found in the ParentTable_national_20181217.csv above.
    - Using the reviewed Label/SUUM/Census/GIS crosswalk, generate a lookup to identify which Census of Ag crops are Registered and Not Registered. All crops should have a category.
    - For the registered crop, using the Label/SUUM/Census/GIS crosswalks to identify, identify which UDLs are applicable
    - For each UDL with at least one registered use, identify the Census of Ag crops that are not registered but found in the UDL this is the NationalCensusOfAg_2012 tab

- Generate the Registered_NotRegistered crosswalk for your table
    - Using the National Census of Ag table you just added the registration status and UDL information filter to the registered UDLs, with all Census of Ag crops that are both Registered and Not Registered
    - Columns to include in this table:
        -

Census of Ag crop name	UDLs with registered uses	Registration

        -
        - This give you a list of all Census of Ag crops found in the registered UDLs
    - Once you are comfortable with Registered_NotRegistered crosswalk you can start the working on the Presences Absences table - steps below
- Generate your UsageTable_AggregatePCTs table
    - Start with the list of all Census of Ag crops found in the registered UDLs broken out by state - this is the NationalCensusOfAg_2012 tab
    - Load the following columns using your Registered_NotRegistered crosswalk :

○ UseLayer Lookup	CompositeClass

    - Confirm the UDL for the NL48 are correct (if applicable) - this will just be AG and not the individual UDL
    - Populate the Regions columns with CONUS or NL48 for each state
  - Extract the usage and acreage information for states and crops with reported usage from Table 2 of the SUUM using your Label/SUUM/Census/GIS crosswalk
    - Populate the States with Reported Usage_Final with the list of states that have reported usage separated by commas
    - Populate the acres sources column for these records with SUUM
  - Extract the states/crop that were survey but no usage reported from Table 2 of the SUUM using your Label/SUUM/Census/GIS crosswalk
    - Populate the States with Reported Usage_Final with Surveyed but No Usage Reported for these records
    - Extract the acres for these record based on the acres reported in Census of Ag from the NationalCensusOfAg_2012 tab
    - Populate the acres sources column for these records with Census
  - Extract the state/crop that are registered and not survey
    - Populate the States with Reported Usage_Final with Not Surveyed for these records
    - Extract the acres for these record based on the acres reported in Census of Ag from the NationalCensusOfAg_2012 tab
    - Populate the acres sources column for these records with Census
  - For any state crop combination that has 0 acres reported from Census updated the States with Reported Usage_Final to Not Grown
  - For all state crop combination identified as Not Registered or Not Grown update all 3 PCT columns to 0
  - The PCTs Records identified as Surveyed but No Usage Reported and Not Surveyed will be blank - this will be populated by surrogate when you run the ESA surrogate PCT script
  - For NL48 Ag crops - work with BEAD to come up with PCT estimates or surrogates
    - For the acres value - extract from the Ag UDL these are reported in the example workbook
    - Populate the acres sources column for these records with UDL
    - Make a note of this
  - Load Federal Lands, and NonAg records for all states and applicable layers
    - For non-ag layers
      - If average annual treated acres are available in the SUUM this is used for the estimate the max PCT
        - The total area for the use is estimated using the area of the UDL
        - Estimated aggregated max PCT = average annual treated acres from the SUUM/ area of the UDL
        - Avg and min PCT are estimated using the max and min label rates and the avg pounds applied to estimate the treated area
        - Estimated Avg treated acres = avg pounds applied / (max label rate + min label rate (the chemical team can provide this or we can use the PLUS))/2
        - Estimated aggregated avg PCT = Estimated Avg treated acres =/ area of the UDL
        - Estimate aggregated min PCT is the same as the avg but using the max label rate from the SUUM
      - If average annual treated acres are not available in the SUUM
        - Look for usage information from other sources eg forest service, aphis etc
        - Estimate it used pounds applied and label rate similar to the avg and min
        - Estimated max treated acres = avg pounds applied / min label rate (the chemical team can provide this or we can use the PLUS)
      - This will be estimate for the states/regions/or nationally depending on how the usage is reported in the SUUM
      - All NonAg are added to the PCT table for all CONUS States
      - NL48 states should be estimated separately - if usage is not available we have taken the max observed from CONUS

- Load acres for this layers based on the area from the UDL - see example workbook
- Leave the PCT for Federal Lands blank
- Work with chemical team and BEAD to develop non-ag PCTs and load into the table for use site state combo
  - Populate the States with Reported Usage_Final using the same categories for the Ag sites
  - For Federal Lands use NA
- Similar to ag if there is no PCT for the use site / state combo leave this blank - it will be populated with the ESA surrogate PCT script
- If you have questions that you need help from the chemical - send this work to the team to review outline question
  - Common place where feedback is need- finalizing the Registered and Not Registered crosswalk
  - When you send this to team - recommend sharing the presences absence table too if you are ready to share this

- Populate Surrogate PCTs - wait to start this until you are comfortable with the initial tables - seek help from the chemical team as needed
  - Example from propazine
    - <<propazine_findsurrogate_v1.csv>>
  - Using the information in your UsageTable_AggregatePCTs table place it in the format from the example above
  - For records that with reported usage for the crop and state from the SUUM populate the Surrogate PCT to No
  - Populate AA column - all use other than Federal Land should be marked as Action Area, Federal lands should be blank
  - Populate the Surrogate PCT for Not Registered and Not Grown as Not Registered or Not Grown
  - Populate the Surrogate PCT for Federal Lands to No
  - All other records will require an surrogate PCT and the Surrogate PCT should be Yes
  - Update the 3 PCTs Federal Lands for all records to -1
  - Confirm the PCTs for all Not Grown as Not Registered records are 0
  - Confirm records where Surrogate PCT = No have values
    - Crops should match the values in the SUUM
    - Federal Lands should be -1
  - Update the 3 PCTs records where Surrogate PCT = Yes to -1
  - All rows should now values in all of the PCT columns
  - The only column that can have blank records
    - Non-Crop Regional Treated/Total Acres Region, Notes, AA, Ag Composite, and Avg. Annual Total Lbs. AI Applied a
- Run the check for missing script: C_CheckCropsTableForMissing
  - in_table - find surrogate table you just finalized
  - census_parent - ParentTable_national_20181217.xlsx
  - Check the Census_State_Missing_ table to see if any state/crop combination from the Census of Ag are missing
    - Uppdate all tables as needed
- After confirming all state/crop combination from the Census of Ag are account for run the D_ID_Unsurveyed.py script to identify the surrogates
    - path = your find surrogate tables
    - out_table_name = name of the output
    - surrogate_value = -1 - the value loaded above for records that need a surrogate
  - Open output
    - Populate the 3 PCT cols for CONUS records using the first surrogate value that is greater than -1

        - Populate the 3 PCT cols for NL48 records using the first surrogate value that is greater than -1 or based on recommendation from the team
        - Populate all Federal Land PCT values to 100
        - NOTE PCTs must range from 1%-100% - they should not be in decimal form
    - Load table with surrogate values into the chemical workbook
- Create the PCT tables but running the E_ReformatBEAD_Tables.py and E_ReformatBEAD_Tables_ag.py
        - chemical = chemical name
        - in_long_table = your with surrogate PCT table
        - outlocation = out location
    - Script will create an folder with the chemical name in your out location and create all tables
    - Combine the max/min/avg with the max_ag/min_ag/avg_ag
    - Update the Action Area AgComposite and NonAgComposite to the Chemical name AA, Chemical name AA Ag, and Chemical name AA NonAg format used in the presence absence table
    - The UDL names in these PCT table **MUST match** the term used in the Presence Absence table - confirm this
    - The table flagged with _treated go to colleen on the PCTs are final- this is in an input for the MAGtool
    - The other table are working table to track our work - keep these but they don't need to be loaded to SharePoint site
- Load all final table - chemical workbook, presence absence workbook, PCT CSVs, treated CSVs to the SharePoint site

Presence Absence:

- Master table from BEAD: Census (2012) Crops Areas and Operations (interim draft for esa_11-15-18).xlsx

Example workbook from Propazine - current version can be found on the ESA SharePoint site

    - <<Propazine_Pre_Ab_Workbook_20200515.xlsx>>

Steps:

- Identify which census crops are registered - I generally keep track of my steps in an Excel workbook so I have my Steps Captures in case I make a mistake and need to back track
    - Transform the table so the counties are along the columns and crops are rows
    - Add several columns to beginning
    - Use Vlookup to identify the UDL and the States with Report Usage from the UsageTable_AggregatePCTs for each of the Census Crops
    - Remove all un-registered crops from the table, the can be identified from the UDL and States with Report Usage
    - Save as a csv
        - This is the table that should be used as the cnty_mask in the F_Groupby_state
    - Run the F_Groupby_state script
        - Other parameters
            - cnty_not_in_census
                - <<Cnty_NotInCensus.csv>>
            - cnty_lookup
                - <<Cnty_St_ANSI_Lookup.csv>>
            - col_to_include = ['Action Area', 'Action Area Ag', 'Action Area NonAg' ,'Federal Lands']
                - These are the UDLs not in the Census only include the UDL pertinent to your chemical
        - Output
            - udl_cnty_mask.csv - this table will provide the number of register crops per county by UDL
            - Cnty_Mask_[date]_[name of table used for the cnty_mask] - this is the table that will be used the Presence Absence mask after some reformating
                - Reformatting
                - Update Action Area Column names to Chemical name AA, Chemical name AA Ag, and Chemical name AA NonAg

        - Remove the row index column
        - Duplicate the GEOID col and name it FIPS this should be the first col
        - Add any NonAg and NL48 UDLs - these get '1s' for all counties
    - Re-Order Columns
        - FIPS, UDL, All Action Area Cols, All UDL cols, Federal Lands, State ANSI,County ANSI,Location,GEOID,Notes
        - See example in workbook

- Load final table into the Chemical Workbook for team review/access

Created with Microsoft OneNote 2016.

Message

From: Kyle, Lee [Kyle.Lee@epa.gov]
Sent: 6/8/2020 6:19:21 PM
To: Connolly, Jennifer [Connolly.Jennifer@epa.gov]
CC: Anderson, Brian [Anderson.Brian@epa.gov]
Subject: RE: Comp time/work load

Yes, please! Wanna put something on my calendar?

Lee

From: Connolly, Jennifer <Connolly.Jennifer@epa.gov>
Sent: Monday, June 8, 2020 2:19 PM
To: Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>
Subject: Comp time/work load

Lee,

Did you want to meet today to discuss this as it related to comp time? I thought you indicated yes, but I don't see anything on my calendar for this afternoon.

Also kind if related to all of this but not…

Ex. 6 Personal Privacy (PP)

Jen

From: Connolly, Jennifer
Sent: Monday, June 8, 2020 8:24 AM
To: Kyle, Lee <Kyle.Lee@epa.gov>
Cc: Anderson, Brian <Anderson.Brian@epa.gov>
Subject: Connolly Major task- week of 6/8

Note – Colleen and I lost remote access to the lab computers – I do not know if the run I had going completed or if I lost the two days over the weekend

Due this week:

ESA – national BEs

- Prep for BEAD meeting NL48 glyphosate and CONUS all chemicals- next week is the last scheduled meeting we can extend them
- Send BEAD atrazine and simazine PCTs for review

- Support for Stephen and Sumathy while work on the non-ag PCTs for their chemicals and generate the AAs
- Start chemical independent runs for any new UDLs for the 4 herbicides
- Finish NL48 UDLS for glyphosate – on laptop
- Drift Layer for glyphosate – NL48
- Draft aggregated PCTs for glyphosate
- Provide some training to Stephen and Sumathy on using the AA scripts
- Fix no call species- I found an issue as I QC'ed
- QC – Drift layer prep
- Generate AA and Ag composite for propazine

General support: - Rochelle has a hard deadline of June 11 to complete her work so this will be a higher priority than ESA for Sumathy and equal priority for me

- Support Sumathy on finalize PCA/PCT file for Rochelle and address any questions from Rochelle
- Provide write up for on the process for misc ag

No deliverable due but support required this week on:

- SharePoint questions and support – Lots of questions coming in from the new tech team co-chairs
- Question from Sara at FWS arrived today – but it is more directed to David
- Questions related meeting with the Services and USDA
- Meeting with PRD related to commitment letters

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Message

From: Kyle, Lee [Kyle.Lee@epa.gov]
Sent: 9/18/2019 12:14:42 PM
To: OPP EFED EISB [OPP_EFED_EISB@epa.gov]
Subject: Branch meeting

Topics to discuss at today's branch meeting

- Welcome Pam!
- Steve is in the building
- 2020 training request -- send me your training requests, best if tied to your IDP
- Volunteers to Help OPPT with TSCA New Chemical Health Reports
- Updates on projects

Notes from my meeting with Marietta yesterday

Post- meeting: Updates in GREEN, Actions in RED

People/Branch

--Andrew, Christine, Dewillsee, Dirk, Jen, Kurt, Melissa, Nelson, Steve, Trip, Ven--

- Pam Thompson -- welcome! Primary focus will be on GAP analysis
- Steve -- starts in OLEM on 9/30. Transitioning his duties
- Nick -- addressed branch peer review comments on triticonazole DRA, out until 30th
- I will attend EFED training on 25th

Hires

- Scientist/GIS analyst -- Sumathy Sinnathamby October 15th
  - Sumathy -- Backup to Jen, backup on Steve's ESA work. GitHub if time
- Scientist/data modeler -- Houbao Li September 29th
  - Houbao -- Models team, Information Management team
- Whether/when to have new EISB scientists learn chemical risk assessments? It depends

Projects

- Scenarios
  - USDA presentation
  - Documents
    - Field and Watershed Input Parameters document
      - Nelson editing -- send to USDA next week
    - Methods Paper -- Team is reviewing, Dirk asked for input by Tuesday
      - This week -- draft sections not dependent on results
        - Send to Jan this week
      - By 10/15 -- complete, with EISB review
    - External Peer Review Proposal (with charge questions and IGCE)
      - Sent 2nd Draft proposal to CCOE last Thursday
  - PFTTT project
    - Volunteers: Chuck, Patricia, Katrina, Sarah, A'ja, Taimei, Rick
    - By 9/20 -- complete wheat runs (a few days ahead of schedule), corn is done
- PWC
  - Goal: release latest version of PWC in the Spring
    - Has been tweaked since testing last year
    - Modifying it to meet Chuck's need for wetland waterbody for PAT
    - Schedule PWC briefing with Marietta soon
- File room

    - Questionnaire v2, will send to BCs. Nick and I will discuss with them on 30th
    - Reached out to Diane Dixon to use her contractor to scan DISHs
- ESA
- Contractor support
    - ~$120K (IGCE estimate) -- Versar contract peer review for Scenarios and PCT/PCA
        - Paid by IO?
    - $TBD -- GDIT database work
    - ? $TBD -- CDM Smith/Versar/Summatec -- to re-run scenarios, if necessary, based on peer review feedback
        - To do: rethink scale of support to put in place
    - CDM Smith
        - Honey bee larval study stats analysis -- provided detailed direction yesterday
        - Plant Variability Project -- identified 144 seedling emergence studies, putting into .mdb file, est 188 hrs work by contractor
- BLT

Teams

- Statistics/CETIS
- Information Management
    - Pollinator retrospective analysis
        - Provided EFED input to GDIT yesterday (a little late), goal is to complete draft by EOM, will discuss with them on Thursday
    - Honeybee tracking project -- Nick is developing a plan with short-term and long-term goals. Review plan with Sujatha and Frank. Brief Marietta by early October (she meets with Rick on 9th)
- Models
- GIS
- Documents
    - Draft SOP for writing EFED SOPs is being reviewed by Documents team
- Misc

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