

October 29, 2021

Project No.: 941-80-21-68
SENT VIA: EMAIL

Peter Kavounas, PE
General Manager
Chino Basin Watermaster
Rancho Cucamonga, CA 91730

SUBJECT: Supplemental Scope and Budget for Fiscal Year 2021/2022 Task 7614: Support Implementation of the Safe Yield Court Order

Dear Mr. Kavounas:

On September 23, 2021, the Board of the Chino Basin Watermaster (Watermaster) approved a budget amendment for Task 7614 (Support Implementation of the Safe Yield Court Order) for the 2021/2022 fiscal year Engineering Budget. Watermaster's Engineer (West Yost) wrote a letter describing the budget amendment approved on September 23, 2021.¹ This budget amendment was prepared following a meeting on August 3, 2021 between Watermaster, West Yost, and representatives of the Appropriative Pool (Thomas Harder and Ron Craig). The Appropriative Pool hired Mr. Harder to review the proposed scope and budget for Task 7614 and provide feedback to the Watermaster Engineer and the Appropriative Pool. The August 3rd meeting resulted in agreement on the following regarding certain subtasks of Task 7614 to update the update the Safe Yield (SY) Reset methodology:

- A peer review meeting should be conducted following the effort to define the initial conceptual approaches to address the various sources of modeling uncertainty. This peer review meeting will allow the technical representatives of the Parties to provide feedback on the sources of uncertainty that should be addressed and the nature of the effort necessary to address them.
- Following the initial peer review meeting, West Yost will prepare responses to the comments in the peer review meeting and conduct a brief follow-up meeting if necessary.
- Once the peer review comments have been addressed, West Yost will develop a supplemental scope and budget for the process to define and document the proposed approaches to address model uncertainty. The supplemental scope will be outside of the approved scope and budget (i.e., the current budget as of September 23, 2021) for the task to update the Safe Yield Reset

¹ This letter is Attachment 1 to Watermaster's Staff Report for Agenda item I.A. of the August 19, 2021 Advisory Committee meeting's package: [link](#)

methodology. Watermaster will introduce this supplemental scope and budget as a budget amendment to be approved through the Watermaster process.

- The timely review and approval of the supplemental scope and budget is vital to meeting the deadline to recalculate the Safe Yield as set by the Court.

The current budget reflects the above points. On October 26, 2021, Watermaster hosted a peer review meeting where West Yost and technical representatives of the Parties discussed initial conceptual approaches to address various sources of modeling uncertainty which were documented in an initial technical memorandum (TM1).² The feedback from the peer review meeting is summarized and discussed below.

COMMENTS AND RESPONSES FROM THE OCTOBER 26, 2021 PEER REVIEW MEETING

The peer review meeting was attended in person by four technical representatives of the Parties,³ as well as staff from Watermaster and West Yost. There were over 20 virtual attendees. The following is a summary of the major feedback from the peer review committee and our responses:

- 1) **Comment:** Ensure that the process to develop and implement the updated SY Reset methodology be cost-effective. Quantifying and addressing uncertainty in the updated SY Reset methodology should remain focused on adding value to the SY calculation to inform better management and understanding of risks.

Response: *We agree. A comparison of costs and benefits of several potential SY Reset methodologies will be presented in a technical memorandum (see Task 1.16 in Exhibit A) that will be circulated for peer review.*

- 2) **Comment:** Uncertainty in historical data does not need to be considered in the update of the SY Reset methodology

Response: *We agree. We will not include tasks to characterize or quantify the uncertainty in historical data in the updated SY Reset methodology.*

- 3) **Comment:** In the uncertainty analysis, indicate which sources of uncertainty are related to one another.

Response: *This comment was covered to the extent possible in the peer review meeting presentation. Beyond the general relationships between uncertainties discussed in the peer review meeting, a detailed quantification of the relationships between sources of uncertainty can be described in the ultimate implementation of the updated SY Reset methodology.*

² TM1 can be found on the Watermaster website: [link](#)

³ Technical representatives were the following: Thomas Harder (Thomas Harder and Company), Jim Van de Water (Thomas Harder and Company), Richard Rees (State of California), and Bill Schwartz (Monte Vista Water District)

- 4) **Comment:** Instead of a Monte Carlo analysis to quantify the uncertainty of Chino Valley Model (CVM) model parameters, consider using PESTPP-IES⁴ to improve the efficiency of this process.

Response: *Thank you for the suggestion. We will consider the use of PESTPP-IES in the development of the updated SY Reset methodology.*

- 5) **Comment:** If West Yost chooses a subset of parameter values with which to conduct an uncertainty analysis (using either Monte Carlo or PESTPP-IES), then justification for choosing the parameters and the boundaries that are applied to the chosen parameters should be provided.

Response: *We agree. Parameters will be chosen following the sensitivity analysis in the future recalibration of the model necessary to implement the updated SY Reset methodology. We will provide thorough detail and references in the documentation of any of the choices of parameters and/or parameter boundaries we choose in the uncertainty analysis. This documentation will be presented for peer review.*

- 6) **Comment:** If practical and depending on the process and method chosen to quantify the uncertainty of model parameters, develop a unit cost for addressing each parameter to aid in the understanding of the costs and benefits of a more detailed uncertainty analysis.

Response: *A transparent comparison of costs and benefits of several potential updated SY Reset methodologies will be presented in a technical memorandum that will be circulated for peer review. This comment will be considered when developing this cost analysis for the methods to quantify the uncertainty of model parameters. This comment will also be considered in more detail when developing a scope and budget for the implementation of the updated methodology.*

- 7) Multiple comments regarding how to handle future climate projections:

- a) **Comment:** Recommend using the California Department of Water Resources (DWR) change factors for future climate. These are already implemented in the CVM and are the standard practice across the State. The range of change factors that the DWR provided should be used to simulate the range of future climate scenarios. Using alternative gridded climate datasets from the updated climate models should only be considered if the added cost is minimal.

Response: *Noted. The supplemental scope and budget will include efforts to perform a high-level comparison of the costs and benefits of various approaches using the climate data sets that are currently available.*

- b) **Comment:** Recommend using the latest climate projection data in the SY Reset methodology. Not using the latest climate projections risks missing updates that may be important to the SY Reset.

Response: *See response above.*

- 8) **Comment:** Consider the uncertainty of losses from municipal water supply systems in the uncertainty analysis.

⁴ White, J.T. (2018). *A model-independent iterative ensemble smoother for efficient history-matching and uncertainty quantification in very high dimensions*. Environmental Modelling & Software (109): 191-201.

Response: *Noted. In 2018, at the request of Watermaster, Wildermuth Environmental investigated the feasibility of quantifying the magnitude and location of municipal supply system losses (system losses) and potential applications in the Chino Basin groundwater model. Wildermuth Environmental concluded that it was not practical to include system losses in the Chino Basin groundwater model due to the lack of information available to quantify the magnitude and location of the system losses that reach the groundwater table. That said, the CVM is a well-calibrated model, hence, system losses are implicitly included in the calibrated estimates of total recharge to the Chino Basin. Since system losses are not a specific recharge component in the CVM, it is not appropriate to include them in the uncertainty analysis.*

- 9) **Comment:** West Yost should compare actual water supply and demands to past projections to determine how they compare and use this comparison to quantify the uncertainty in these projections.

Response: *As part of Task 2 and 3 of Task 7614, West Yost is beginning an annual process to collect and evaluate historical data. This effort includes a comparison of historical data to the projections used in the 2020 Safe Yield Recalculation Report. West Yost will consider these comparisons in the uncertainty analysis of water supply and demand projections. Beginning on November 16, 2021, Watermaster will be facilitating several workshops to present and discuss the findings of this effort. These workshops are open to all, and we invite your input.*

REVISED NARRATIVE AND SECOND BUDGET AMENDMENT

The technical representatives at the peer review meeting did not request a follow-up meeting. West Yost has developed a supplemental scope and budget to augment Task 1 to include the steps necessary to propose an updated SY Reset methodology, incorporating the feedback from the peer review meeting. A breakdown of the revised subtasks and budget for Task 7614 with the supplemental scope and budget, including a comparison to the original and adopted budgets, is included as Exhibit A. The supplemental scope comprises the following subtasks:

- Subtask 1.07: West Yost will complete a survey of the state-of-the-art approaches to address the sources of uncertainty identified in TM1 (i.e., model parameters, water supply/demand projections, and climate projections). This will include the alternative approaches and datasets suggested in the peer review meeting (comments 4 and 7 above). West Yost will determine the applicability and value of these approaches to the SY Reset. West Yost will choose up to three approaches for each source of uncertainty to define in the next step.
- Subtask 1.10: West Yost will define a method for each of the approaches selected in the prior subtask. Each method will consist of detailed steps for implementation and application of the models for the SY Reset.
- Subtask 1.13: West Yost will quantify the feasibility of the methods defined in the previous subtask. This will involve the following steps: 1) testing out the chosen methods and amending them as needed; 2) determining the necessary computational capabilities to implement the methods (e.g., parallel computing); 3) developing a general analysis of costs (e.g., staff time, computational resources) and /benefits for each of the proposed methods. Steps 1 and 2 pertain to parameter uncertainty only. These estimates will aid in a comparison and selection of a preferred updated SY Reset methodology.

- Subtasks 1.14 and 1.15: West Yost will document the findings in subtasks 1.07, 1.10, and 1.13 in a technical memorandum, which will be reviewed with Watermaster staff. This technical memorandum will serve as a foundation for the initial technical memorandum presenting the proposed SY Reset methodologies in Subtask 1.16.
- The cost estimate for this supplemental scope is \$86,504.

In addition to the revised scope and budget, we have updated the budget narrative as shown in Exhibit B. Please contact me if you have any questions on the supplemental scope and budget. Thank you for the opportunity to contribute to this important work.

Sincerely,
WEST YOST



Garrett Rapp, PE
Associate Engineer
RCE #86007



Eric Chiang, PhD
Principal Engineer



Lauren Sather, PhD
Staff Scientist



Andy Malone, PG
Principal Geologist

Exhibit A: Comparison of Subtasks and Budgets for Task 7614

Exhibit B: Revised Engineering Budget Narrative for Task 7614

Comparison of Subtasks and Budgets for Task 7614

Exhibit A. Comparison of Subtasks and Budgets for Task 7614: Support Implementation of the Safe Yield Court Order

| Subtask Number | Subtask Description | Estimated Fee | | | | Total Budget with Proposed Second Amendment |
|----------------|--|--------------------------|------------------------------|-----------------------------------|----------------------------------|---|
| | | Original Budget Proposal | July 22, 2021 Adopted Budget | September 23, 2021 Adopted Budget | Proposed Second Budget Amendment | |
| 1.01 | Define initial conceptual approaches to address modeling uncertainty | \$ 16,136 | \$ 16,136 | \$ 19,040 | | \$ 19,040 |
| 1.02 | Prepare internal TM based on findings in previous subtask | \$ 7,038 | \$ 7,038 | \$ 7,818 | | \$ 7,818 |
| 1.03 | Review TM with WM staff | \$ 1,778 | \$ 1,778 | \$ 1,778 | | \$ 1,778 |
| 1.04 | Revise and finalize TM, send to Watermaster Parties | | | \$ 4,280 | | \$ 4,280 |
| 3.01 | Prepare powerpoint presentation and agenda for peer review scoping workshop | | | \$ 3,014 | | \$ 3,014 |
| 3.02 | Review powerpoint with WM staff | | | \$ 1,778 | | \$ 1,778 |
| 3.03 | Revise and finalize powerpoint | | | \$ 1,507 | | \$ 1,507 |
| 3.04 | Conduct peer review scoping workshop | | | \$ 3,656 | | \$ 3,656 |
| 1.05 | Prepare responses to peer review comments and develop supplemental scope and budget | | | \$ 5,594 | | \$ 5,594 |
| 3.05 | Review responses to peer review comments and proposed supplemental scope and budget with WM staff | | | \$ 1,778 | | \$ 1,778 |
| 1.06 | Finalize responses to comments and supplemental scope/budget for refining the proposed methodology in a TM | | | \$ 3,280 | | \$ 3,280 |
| 1.07 | Complete survey of state-of-the-art approaches to address sources of uncertainty identified in TM | \$ 26,024 | | | \$ 18,792 | \$ 18,792 |
| 1.08 | Prepare internal TM documenting survey and comparison of approaches as they relate to the Chino Basin Safe Yield | \$ 13,012 | | | \$ - | \$ - |
| 1.09 | Review TM with WM staff | \$ 1,778 | \$ 1,778 | | \$ - | \$ - |
| 1.10 | Define methods for addressing uncertainty and implementation approaches to recalculate Safe Yield | \$ 21,080 | \$ 21,080 | | \$ 18,012 | \$ 18,012 |
| 1.11 | Prepare internal TM documenting alternatives developed in prior subtask | \$ 10,218 | \$ 10,218 | | \$ - | \$ - |
| 1.12 | Review TM with WM staff | \$ 3,556 | \$ 3,556 | | \$ - | \$ - |
| 1.13 | Quantify feasibility of proposed approaches | \$ 34,204 | | | \$ 29,144 | \$ 29,144 |
| 1.14 | Prepare internal TM documenting findings from prior subtasks ¹ | \$ 8,766 | | | \$ 17,000 | \$ 17,000 |
| 1.15 | Review TM with WM staff ¹ | \$ 1,778 | \$ 1,778 | | \$ 3,556 | \$ 3,556 |
| 1.16 | Prepare draft methodology TM #1 for peer review | \$ 15,408 | \$ 15,408 | \$ 15,408 | | \$ 15,408 |
| 1.17 | Review TM with WM staff | \$ 3,556 | \$ 3,556 | \$ 3,556 | | \$ 3,556 |
| 1.18 | Revise and finalize TM, send to Watermaster Parties | \$ 4,582 | \$ 4,582 | \$ 4,582 | | \$ 4,582 |
| 3.06 | Prepare powerpoint presentation and agenda for first peer review workshops | \$ 6,028 | \$ 6,028 | \$ 6,028 | | \$ 6,028 |
| 3.07 | Review powerpoints with WM staff | \$ 1,778 | \$ 1,778 | \$ 1,778 | | \$ 1,778 |
| 3.08 | Revise and finalize powerpoint | \$ 2,743 | \$ 2,743 | \$ 2,743 | | \$ 2,743 |
| 3.09 | Conduct peer review workshops #1/2 | \$ 7,612 | \$ 7,612 | \$ 7,612 | | \$ 7,612 |
| 1.19 | Prepare draft responses to peer review comments | \$ 4,034 | \$ 4,034 | \$ 4,034 | | \$ 4,034 |
| 1.20 | Review responses with WM staff ² | \$ 3,556 | \$ 3,556 | \$ 1,778 | | \$ 1,778 |
| 1.21 | Finalize responses to peer review comments | \$ 3,014 | \$ 3,014 | \$ 3,014 | | \$ 3,014 |
| 2.01 | Inventory existing data and typical data needs from Parties | \$ 1,962 | \$ 1,962 | \$ 1,962 | | \$ 1,962 |
| 2.02 | Collect and tabulate data from AP Parties' 2020 UWMPs | \$ 15,016 | \$ 15,016 | \$ 15,016 | | \$ 15,016 |
| 3.10 | Coordinate with WM staff for stakeholder meetings | \$ 5,634 | \$ 5,634 | \$ 5,634 | | \$ 5,634 |
| 3.11 | Prepare materials for stakeholder meetings | \$ 14,643 | \$ 14,643 | \$ 14,643 | | \$ 14,643 |
| 3.12 | Conduct stakeholder meetings/workshops | \$ 16,216 | \$ 16,216 | \$ 16,216 | | \$ 16,216 |
| 3.13 | Debrief with WM staff after stakeholder meetings | \$ 4,487 | \$ 4,487 | \$ 4,487 | | \$ 4,487 |
| 2.03 | Coordinate with WM to develop documentation on groundwater pumping records and estimates | | | | | |
| 2.04 | Collect current land use data and associated supporting data and information | \$ 11,960 | \$ 11,960 | \$ 11,960 | | \$ 11,960 |
| 2.05 | Compare current land use data to projections from 2020 SYR | \$ 11,008 | | \$ 11,008 | | \$ 11,008 |
| 2.06 | Prepare technical memorandum characterizing land use data | \$ 10,816 | \$ 10,816 | \$ 10,816 | | \$ 10,816 |
| 2.07 | Collect data on water use practices | \$ 9,448 | \$ 9,448 | \$ 9,448 | | \$ 9,448 |
| 2.08 | Prepare exhibits and text characterizing water use data | \$ 6,828 | \$ 6,828 | \$ 6,828 | | \$ 6,828 |
| 2.09 | Collect groundwater pumping data | | | | | |
| 2.10 | Prepare exhibits and text comparing historical groundwater pumping to past projections | \$ 9,036 | | \$ 9,036 | | \$ 9,036 |
| 2.11 | Collect data to update status of regional water infrastructure | \$ 6,760 | \$ 6,760 | \$ 6,760 | | \$ 6,760 |
| 2.12 | Prepare exhibits and text to describe regional infrastructure | \$ 6,318 | \$ 6,318 | \$ 6,318 | | \$ 6,318 |
| 2.13 | Develop draft report | \$ 24,128 | \$ 24,128 | \$ 24,128 | | \$ 24,128 |
| 3.14 | Prepare for and conduct peer review meetings on report | \$ 5,782 | \$ 5,782 | \$ 5,782 | | \$ 5,782 |
| 2.14 | Respond to comments on report | \$ 3,956 | \$ 3,956 | \$ 3,956 | | \$ 3,956 |
| 2.15 | Complete final report | \$ 5,216 | \$ 5,216 | \$ 5,216 | | \$ 5,216 |
| 4.01 | Project management | \$ 11,918 | \$ 11,918 | \$ 11,918 | | \$ 11,918 |
| Total | | \$ 378,811 | \$ 276,761 | \$ 285,188 | \$ 86,504 | \$ 371,692 |

¹ In the original budget proposal, the TM and meeting in Subtasks 1.14 and 1.15 only covered the results of Task 1.13. In the second budget amendment, Subtasks 1.14 and 1.15 cover the results of Subtasks 1.07, 1.10, and 1.13.

² An arithmetic error in the original budget resulted in an overestimate of the original budget for this subtask. The first budget amendment includes an adjustment for the error.

Exhibit B

Revised Engineering Budget Narrative for Task 7614

7614³² – PE8/9: Storage Management/Conjunctive Use

Support Implementation of the Safe Yield Court Order

| | |
|--------------------|----------------------|
| | Cost Estimate |
| Consultant Labor | \$369,492 |
| Other Direct Costs | <u>\$2,200</u> |
| Total | \$371,692 |

Rationale

The Safe Yield of the Chino Basin was recalculated in May 2020 pursuant to the methodology approved by the Court on April 28, 2017. The Court adopted a Safe Yield of 131,000 acre-feet per year for the period of fiscal year 2020/21 through 2029/30. The Court-approved methodology was outlined in a Court Order from April 28, 2017. The Court Order also included the following requirements, listed below verbatim:

- 4.4 – Safe Yield Reset Methodology. The Safe Yield has been reset effective July 1, 2010 and shall be subsequently evaluated pursuant to the methodology set forth in the Reset Technical Memorandum [2013 Chino Basin Groundwater Model Update and Recalculation of Safe Yield Pursuant to the Peace Agreement (WEI, 2015)]. [...] In furtherance of the goal of maximizing the beneficial use of the waters of the Chino Basin, Watermaster, with the recommendation and advice of the Pools and Advisory Committee, may supplement the Reset Technical Memorandum’s methodology to incorporate future advances in best management practices and hydrologic science as they evolve over the term of this order.
- 4.5 – Annual Data Collection and Evaluation. In support of its obligations to undertake the reset in accordance with the Reset Technical Memorandum and this order, Watermaster shall annually undertake the following actions:
 - a. Ensure that, unless a Party to the Judgment is excluded from reporting, all production by all Parties to the Judgment is metered, reported, and reflected in Watermaster’s approved Assessment Packages;
 - b. Collect data concerning cultural conditions annually with cultural conditions including, but not limited to, land use, water use practices, production, and facilities for the production, generation, storage, recharge, treatment, or transmission of water;
 - c. Evaluate potential need for prudent management discretion to avoid or mitigate undesirable results including, but not limited to, subsidence, water quality degradation, and unreasonable pump lifts. Where evaluation of available data suggests that there has been or will be a material change from existing and projected conditions or threatened undesirable results, then a more significant evaluation, including modeling, as described in the Reset Technical Memorandum, will be undertaken; and,
 - d. As part of its regular budgeting process, develop a budget for the annual data collection, data evaluation, and any scheduled modeling efforts, including the methodology for the allocation of expenses among the Parties to the Judgment. Such budget development shall be consistent with section 5.4(a) of the Peace Agreement.
- 4.6 – Modeling. Watermaster shall use the Basin Model to be updated and a model evaluation of the Safe Yield, in a manner consistent with the Reset Technical Memorandum, to be initiated no later than January 1, 2024, in order to ensure that the same may be completed by June 30, 2025.

³² New Watermaster account for FY 2021/22.



- 4.7 – Peer Review. The Pools shall be provided with reasonable opportunity, no less frequently than annually, for peer review of the collection of data and the application of data collected in regard to the activities described in Paragraphs 4.4, 4.5, and 4.6 above.

Scope of Work

The Consultant drafted a proposed process to comply with Paragraphs 4.4 through 4.7 of the Court Order, which was presented for comment to the Pools and Advisory Committee in August 2020. Following the tasks and schedule outlined in this process, the following work will be performed in fiscal year 2021/22:

- Task 1 – Update Safe Yield methodology. Pursuant to Paragraph 4.4 of the Court Order, the Consultant will update the methodology based on the state-of-the-art and comments provided during the 2020 SYR and reset process. This is assumed to take place from September 1, 2021 through April 30, 2022. The scope of Task 1 assumes the following:
 - The Consultant will define various sources of modeling uncertainty that should be considered and addressed in the updated Safe Yield methodology. The Consultant will develop a technical memorandum (TM) outlining these sources and related questions necessary to answer when updating the Safe Yield methodology. The Consultant will submit the TM to the Parties for review and comment.
 - The Consultant will conduct a peer review meeting (included in Task 3) to discuss the content of the TM described above. The Consultant will gather feedback from the peer review committee to inform the development of a process to define the proposed approaches to address the sources of model uncertainty in the Safe Yield methodology update. The Consultant will prepare responses to the comments from the peer review meeting and conduct a brief follow-up meeting if necessary.
 - After the comments from the first peer review meeting have been addressed, the Consultant will develop a supplemental scope and budget for the process to define and document the proposed approaches to address model uncertainty. The supplemental scope will be outside of the approved scope and budget for Task 1. Watermaster will introduce this supplemental scope and budget as a budget amendment to be approved through the Watermaster process.
 - The supplemental scope includes the following intermediate steps: 1) completing a survey of the state-of-the-art approaches to address the sources of uncertainty; 2) defining a method to implement each of the selected approaches, and 3) quantifying the feasibility of the defined methods. The Consultant will document the results of these steps in an internal TM, which will be reviewed with Watermaster staff.
 - Pursuant to the findings of the work conducted within the supplemental scope, the Consultant will prepare a draft and final TM describing the proposed methodology and associated technical work, including the steps, cost, and schedule to implement it. It is assumed that responding to comments will not involve additional computational experiments or any significant changes to the initial proposed methodology. The draft TM will be completed by April 30, 2022, and the TM is expected to be finalized in fiscal year 2022/23 after Task 3 is complete.
 - Feedback on the methodology will be obtained through the Peer Review process in Task 3.
- Task 2 – Annual data collection and evaluation. Pursuant to Paragraph 4.5 of the Court Order, Task 2 includes collecting data from the Parties and other sources and analyzing the data in the context of the Consultant’s groundwater modeling. Data collection will begin on July 1, 2021 for fiscal year 2020/21. The scope of Task 2 assumes the following:
 - Existing data collection efforts (e.g., groundwater pumping measurements) will be collected via other Watermaster efforts and are not included in this scope.



- The consultant will follow the data collection and evaluation process described in the proposed process to comply with Paragraphs 4.4 through 4.7 of the Court Order that was presented to the Pools and Advisory Committee in August 2020.
- The Consultant will develop exhibits to compare the collected data to previous historical and modeling data as necessary to document the data collection in an annual report and present the data to the Peer Review committee as part of Task 3.
- The Consultant will prepare a draft and final data collection report. The draft report will be reviewed with the Peer Review committee, comments will be incorporated, and the final report will be submitted to the Court no later than June 30, 2022.
- Task 3 – Support Peer Review Process. Pursuant to Paragraph 4.7 of the Court Order, Task 3 includes support to Watermaster staff in conducting peer review meetings. The scope of Task 3 assumes the following:
 - The Safe Yield methodology review will be conducted pursuant to Paragraph 4.7 of the Court Order and the steps outlined in Task 1.
 - One half-day peer review meeting will be conducted within the first several months of fiscal year 2021/22 to gather feedback on the sources of uncertainty that should be considered in the updated Safe Yield methodology. This will assist the developing a scope and budget to refine the proposed updated methodology.
 - The review of the draft updated methodology will be done in multiple half-day technical workshops to present the proposed methodology and receive comments and suggestions, and to respond to the comments and suggestions.
 - The Consultant will coordinate with Watermaster staff to organize the technical workshops.
 - It is assumed that three half-day workshops will take place in fiscal year 2021/22.
 - The Consultant will organize and conduct four meetings with the Parties to present the results of the data collection and interpretation. These meetings are assumed to last one to two hours.

Deliverables

- The Consultant’s primary deliverables will be four draft technical memoranda/reports:
 - A draft and final TM defining the initial conceptual approaches to address the sources of modeling uncertainty that should be addressed in the updated Safe Yield methodology. The final TM will be disseminated to the Parties in advance of the first peer review workshop.
 - A draft and final letter documenting the comments provided in the first peer review workshop and the supplemental scope and budget to develop a proposed update of the Safe Yield methodology.
 - A draft TM describing one or more proposed methodologies and associated technical work, including the steps, cost, and schedule to implement it. The draft TM describing the proposed methodology will be refined and finalized in fiscal year 2022/23.
 - A draft and final report documenting the data collection process and the data collected for fiscal year 2020/21.
- The Consultant will prepare other deliverables as needed to support the technical workshops and meetings in Task 3.

