

Draft VA Governance and Science Description

Updated: Aug. 12, 2022, by Compass Resource Management (Facilitator for Systemwide Action Team)

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Version History

The table below lists the major versions to date of the VA governance description. Document links are to the SWAT SharePoint. Contact srudd@compassrm.com if you are having issues with accessing the SharePoint.

Major Version Name / Link to Version folder on SharePoint	Notes about this version
Draft Governance Description – Aug. 12, 2022, version	Version approved by the Systemwide Action Team at their August 12, 2022 meeting. Compared to the previous version, this version incorporates some minor clarifying edits to the Funding section.
Draft Governance Description – Aug. 10, 2022, version (16 pages) – version for Aug. 12 SWAT meeting. Link to SharePoint Tracked changes version shows changes from July 27 version (version reviewed for July 29 SWAT meeting).	This version was produced by Compass Resource Management, acting as facilitator of the Systemwide Action Team. It incorporates significant changes to Sections 1.2.2 and 1.3.2 as a result of the SWAT July 29 meeting discussion and Voting Sub-group discussions on Aug. 5 and 9, 2022. In addition, substantive additions/changes have been made as a result of DWR engagement of the State tribal liaison, but ultimately this is a larger topic that will need further discussion and elaboration in future versions. Minor clarifying edits were also received and incorporated into this draft, including clarifying edits and reviews on Section 1.6 (Funding).
Draft Governance Description – July 27, 2022, version (16 pages) Link to SharePoint	This version was produced by Compass Resource Management. It integrates written comments on the July 11, 2022 version from SLDMWA and Valley Water, as well as discussion from the July 15 SWAT meeting. Sections that have more substantive edits compared to the previous version are: 1.3.2 and 1.4.2.
Draft Governance Description – July 11, 2022, version (16 pages) Link to SharePoint	This version was produced by Compass Resource Management. It integrates written comments on the June 9, 2022 version from Yuba Water Agency and Frances Brewster (Valley Water), as well as discussion from June 17 and July 1 SWAT meetings.
Draft Governance Description – June 9, 2022, version (16 pages) Draft GovernanceAndScience Section 9June2022.pdf	This version was produced by Compass Resource Management. It builds on the governance description in Section 3 of the Draft VA Project Description, which was developed by the Governance, Science and Adaptive Management Working Group (GSAM WG) in 2019. This document updates the 2019 governance description to make it consistent with the Term Sheet to the Memorandum of Understanding (especially Section 9) signed on March 29, 2022, and to make the document more concise overall. Roger Patterson/SWC also provided updates to the funding section. This document also includes the Science Program description that was included in the Section 3 of the Draft VA Project Description (December 2019 version), but no updates to the science description have been made except for updating section numbering references.
Section 9 of the Term Sheet advanced by the March 29,	Section 9 of the Term Sheet describes a VA Governance Program and the MOU was signed by many of the participants of the SWAT.

Major Version Name / Link to Version folder on SharePoint	Notes about this version
2022, Memorandum of Understanding (MOU) / 2022_03_29_VA_MOU_and_Term_Sheet.pdf	
March 18, 2021 VA Governance Framework Principles / 2021_03_18_VA_Governance_framework.pdf	This document was developed by PWAs and has many similarities to Section 9 of the Term Sheet.
Section 3 of the Draft VA Project Description (December 2019 version) / 2019_12_Draft_GovernanceAndScienceSection_DEC_REVISE	This is the latest version of Section 3 of the VA Project Description developed by the Governance, Science and Adaptive Management (GSAM) Working Group in 2019. Compass facilitated the GSAM Working Group from April through June to advance the governance and science program descriptions in Section 3. The GSAM WG Co-chairs (Jennifer Pierre and Steve Rothert) then further advanced Section 3, with December 2019 being the latest version. The governance system described in this document was the basis for the governance section in the Term Sheet and provides a more detailed description of how VA governance would work. Not all content in this document achieved full agreement from the VA parties.

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Definitions

The table below is intended as an updated working version of the relevant definitions for the VA governance and science program descriptions.

Term and Definition	Relationship to definitions in Dec 2019 version of Project Description
<p>“Bay-Delta Plan” means the plan prepared and updated by the State Water Resources Control Board which establishes water quality control measures and flow requirements needed to provide reasonable protection of beneficial uses in the Bay-Delta watershed.</p>	No change
<p>“Bay-Delta Watershed” means the area extending nearly 500 miles from the Cascade Range in the north to the Tehachapi Mountains in the south, and is bounded by the Sierra Mountain Range to the east and the Coast Range to the west that drains through the Sacramento River, the San Joaquin River, and their tributaries through the Delta to the Pacific Ocean through the Golden Gate Strait.</p>	No change
<p>“Best Available Science” for a given decision is consistent with the following criteria, as defined in Appendix C of the 2013 Delta Plan, and consistent with NRC 2004 (see citation in text): <i>Relevance</i> to the Bay-Delta ecosystem or analogous systems; <i>Inclusiveness</i> with respect to relevant information and analyses across relevant disciplines; <i>Objectivity</i> with respect to the standards of the scientific method and the lack of non-scientific influences and considerations; <i>Transparency</i> of sources, methods, models, limitations, and uncertainties; <i>Timeliness</i> of the information with respect to current situations and sufficiency of analysis for the needs of management decisions; and extent and quality of <i>Peer Review</i> of the information.</p>	No change
<p>A California Native American tribe is a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the Native American Heritage Commission.</p>	New term
<p>“Conceptual Model” means the narrative and/or graphical hypothesized relationship between (1) ecosystem drivers, processes, and system response and/or (2) between actions and expected outcomes, including relevant ecosystem responses.</p>	No change
<p>“CVP” means the Central Valley Project as defined in 3403(d) of Title XXXIV of Public Law 102-575.</p>	No change
<p>“Delta” means the Sacramento-San Joaquin Delta (including Suisun Marsh) as defined in Water Code Sec. 85058.</p>	No change
<p>“CDWR” means the California Department of Water Resources, a department of the California Natural Resources Agency.</p>	No change
<p>“CDFW” means the California Department of Fish and Wildlife, a department of the California Natural Resources Agency.</p>	No change

Term and Definition	Relationship to definitions in Dec 2019 version of Project Description
“ Flow Measures ” means VA flows as described in Appendix 1 of the Term Sheet.	New term used in the Term Sheet
“ Funding ” means money provided from sources such as party contributions to water or science, available public funding, or both. “ VA funds ” refers only to the new funding generated through the VA.	No change
“ Governance Entities ” refers to all institutional arrangements identified for the effective implementation and governance of the VA.	No change
“ Hypothesis ” describes a potential relationship between an action and an expected outcome that can be tested through monitoring and potentially refuted. Linked hypotheses form the structure of conceptual models.	No change
“ Non-flow Measures ” means habitat restoration measures as described in Appendix 2 of the Term Sheet and other measures (e.g., funding for science).	New term used in the Term Sheet
“ Outcomes ” are specified as either the “desired”, “expected” or “measured” biological or environmental results of the flow and non-flow measures deployed by the VA Program. Desired outcomes are the Bay-Delta narrative objectives related to the protection of native fish or more specific means-objectives that will advance these narrative objectives. Expected outcomes are predictions based on hypotheses built from the best available information of what the result of an action or suite of actions will be. Measured outcomes are on-the-ground or in-the-water results based on monitoring and other data.	No change
“ Participants ” refers to VA Parties, California Native American tribes, non-governmental organizations, and other interested parties that together participate in the VA Governance Program.	Addition to reflect anticipated role for interested parties while maintaining distinction between “VA Parties”.
“ VA Parties ” means the signatories to the Voluntary Agreements (including the March 29, 2022 Term Sheet) which will be state and federal agencies, Public Water Agencies (PWAs) and other water purveyors.	Updated for consistency with definition in March 29, 2022 Term Sheet
“ Public Water Agencies ” or “water purveyors” mean VA Parties that are water suppliers and distributors for agricultural, municipal, industrial, hydropower, recreational and environmental use.	Updated
“ Reclamation ” means the Bureau of Reclamation, an agency of the Department of Interior.	No change
“ State Water Board ” means the State Water Resources Control Board.	No change
“ SWP ” means the State Water Project as authorized by Water Code sections 12930 et seq. and Water Code sections 11100 et seq. and operated by DWR.	No change

Term and Definition	Relationship to definitions in Dec 2019 version of Project Description
<p>“Structured Decision Making” is a collection of practices rooted in decision theory that provides a rational, organized framework for developing and evaluating management alternatives against consistent and explicit quantifiable objectives, encourages clear articulation of anticipated effects, and transparent consideration of trade-offs and uncertainty.</p>	No change
<p>“Systemwide Measures” are the flow and non-flow measures, such as water, funds, or other resources (staff, equipment, etc.) whose use is not tightly constrained, and therefore whose use can be deployed for the greatest overall benefit as assessed at the scale of the Bay-Delta Watershed by the Systemwide Governance Committee.</p>	Updated for terminology used in the March 29, 2022 Term Sheet
<p>“System Operator” refers to the organizations that control their respective water operations.</p>	No change
<p>“Systemwide” is the same scale as the Bay-Delta Watershed.</p>	No change
<p>“Tributary/Delta-specific Measures” are the flow and non-flow measures that can be implemented at the discretion of the VA Party that committed the measures as long as that implementation is consistent with the Voluntary Agreements.</p>	Updated for consistency with terms in March 29, 2022 Term Sheet
<p>“Voluntary Agreements” or “VA” means the package of agreements, including the Enforcement Agreement, Tributary or Delta Specific Agreements, and Government Code Section 11415.60 Agreements, among entities which comprise both Flow and Non-flow Measures intended to achieve reasonable protection of beneficial uses and provide for the implementation of the Program.</p>	Updated to reflect specific agreements, consistent with March 29 Term Sheet
<p>“VA Governance Program” refers to the roles, responsibilities, and processes to support the implementation of the VA.</p>	Updated for consistency with definition in March 29, 2022 Term Sheet
<p>“VA Program” refers to the the comprehensive and integrated set of activities and measures undertaken to implement the VA.</p>	No change
<p>“VA Program Office” – see description in Section 1.2.7.</p>	No change
<p>“VA Science Program” means a comprehensive program to inform the implementation of both VA flow and non-flow measures and to track progress toward VA goals and targets.</p>	No change
<p>“Water Users” refers to Public Water Agencies and water companies.</p>	No change

1 Draft VA Governance Description

The VA Governance Program will be established to direct flows and habitat restoration, conduct assessments, develop strategic plans and annual reports, implement a systemwide science program, and hire staff and contractors, consistent with applicable provisions of the Voluntary Agreements.

1.1 VA Governance Principles

Participants agree to keep the following principles in the forefront to guide how the VA Governance Program is developed and implemented:

- Inclusiveness and Collaboration
- Transparency
- Accountability to Outcomes
- Respecting Rights and Authorities
- Certainty and Adaptability
- Consensus-seeking
- Informed Decision Making
- Efficiency

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Inclusiveness and Collaboration

For long-term success, the VA Governance Program must be supported by all Participants. The VA Governance Program will be inclusive, involving Participants in all aspects of planning and implementation. The Participants commit to working together in good faith, with integrity and a spirit of collaboration. They recognize each others' constraints, acknowledge the need to address capacity limitations and the inherent uncertainty of biological outcomes, and will work together in a manner that acknowledges both their shared and individual interests.

Transparency

Transparency, on multiple fronts, will be a key means of building trust among the Participants and integrity in the VA Governance Program. Transparency will be reflected in all aspects of the VA Governance Program – decision making, science, budgeting and accounting. With respect to decision making and science activities, transparency means that information is accessible to the public with respect to: (1) decision-making processes, (2) the information or evidence used to inform decisions, and (3) the rationale for decisions. California Native American tribes shall have full control regarding the use and disclosure of cultural, traditional, proprietary, ecological knowledge, or any other tribal information they deem sensitive. In the VA Governance Program's budgeting and accounting activities, transparency means that information is accessible to the public on: (1) who contributes to VA funds, (2) who receives VA funds, and (3) the use of the funds and current balance of unused funds.

Accountability to Outcomes

Participants acknowledge that time is of the essence and they are committed to achieving ecologically relevant outcomes to help halt and reverse the decline of native fish and wildlife, and contribute towards achieving viable populations of native species. The VA Governance Program will be action-oriented with a focus on deploying the portfolio of Flow and Non-flow Measures over the 8-year term of the VA to contribute to the Bay-Delta Plan's Narrative Salmon Objectives and the proposed Narrative Viability Objective.

Respecting Rights, Authorities, and Obligations

The VA Governance Program creates new responsibilities or obligations but does not alter existing legal rights, authorities, or obligations. It will be consistent with all discretionary and administrative authority. Nothing in the VA Governance Program will be interpreted as requiring the Federal Parties, California Native American tribes, the State agencies, or any other party to implement any action that is not authorized by, or is in conflict with, applicable law, State or federal regulation, or where sufficient funds have not been appropriated or provided for that purpose. The VA Parties expressly reserve all rights not granted, recognized, or relinquished in this agreement.

Certainty and Adaptability

The VA Governance Program provides assurance and certainty regarding regulatory obligations over the 8-year VA term. This certainty is coupled with a commitment of Flow Measures to be adaptively managed within the scope and terms of the VA, and according to defined planning and decision-making processes. A formal commitment to learning and adaptation over time is expected to lead to better, innovative, long-term solutions and outcomes for native fish and wildlife. Prior to the end of the 8-year term, the knowledge gained through the implementation of the VA is expected to inform either a renewal of the VA Program and/or a Bay-Delta Plan update.

Consensus-seeking

Building on the principle of collaboration, the VA governance processes will be consensus-seeking, recognizing that consensus among the Participants facilitates implementation of management actions to contribute to the Bay-Delta Plan's Narrative Salmon Objectives and the proposed Narrative Viability Objective.

Informed Decision Making

To the extent consistent with existing statutory and regulatory requirements, all plans and decisions in the VA Governance Program will be evidence-based, values-based and defensible. Evidence-based means that decisions are based on the best available research and information available at the time of the decision. Values-based means respecting and considering what values Participants believe are important in the decision and acknowledging that trade-offs and tough choices will have to be made. Evidence-based and values-based decision making are expected to lead to greater defensibility, whereby decisions can stand up to both technical and public scrutiny.

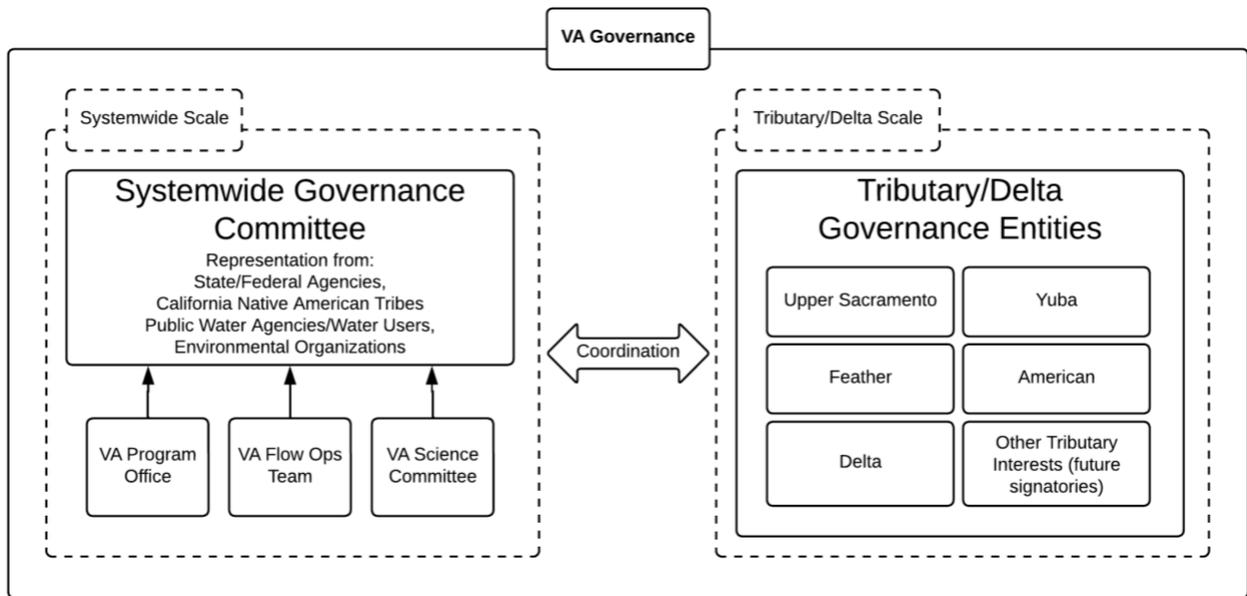
Efficiency

Broadly, being efficient means achieving the greatest benefit with the resources available, making timely decisions and avoiding duplication of effort. The Participants acknowledge that there are numerous existing entities across the Bay-Delta Watershed that have planning processes and science programs in place. To the extent possible, the VA Governance Program will coordinate with existing entities to avoid duplication and be resource efficient.

1.2 Systemwide and Tributary/Delta Governance Entities

VA Participants will establish a Systemwide Governance Committee to govern implementation of the Voluntary Agreements. In addition, the parties to each Tributary/Delta Specific Agreement will establish or identify a Tributary/Delta Governance Entity (Figure 1). The Systemwide Governance Committee will be supported by a Program Office, Flow Operations Team, and a Science Committee. The roles and responsibilities for the VA governance entities and supporting entities are described further in the following sub-sections.

Figure 1: VA Governance Structure



1.2.1 Implementing Organizations

Implementing Organizations will be the legal entities that have the necessary authorities to implement a particular VA Flow or Non-flow Measure (e.g., through legislation, permits, licenses and/or other mechanisms).

The Implementing Organization will vary depending on the measure being deployed.

VA Parties that will be Implementing Organizations for Flow and Non-flow Measures include: the U.S. Bureau of Reclamation, the California Department of Water Resources, the Yuba Water Agency, and other Public Water Agencies or water purveyors with legal authority to implement measures.

1.2.2 Systemwide Governance Committee

The primary responsibilities of the Systemwide Governance Committee will be:

- **Decision Making:**
 - Manage the VA Science Program and Systemwide Measures, consistent with the terms of applicable Voluntary Agreements.
 - Make recommendations to an Implementing Organization for deployment of Tributary/Delta-specific Measures.
 - Make administrative decisions regarding the Program Office (e.g., Executive Director hiring, Program Office budgets).
- **Reporting:** Oversee Triennial Reports in Years 3 and 6 (and potentially Years 9 and 12, if the Voluntary Agreements are renewed) as provided in Section 1.5.
- **Strategic Planning:** Update the Strategic Plan on the deployment of Flow and Non-flow Measures and science priorities and provide oversight for the implementation of the Strategic Plan (see Section 1.4 for a description of the strategic planning process).

- **Coordination:** Provide a venue for the overall coordination of the VA Governance Program.
- **Consistency:** Assure that implementation of the VA Governance Program is consistent with the terms of applicable Voluntary Agreements.

A Charter for the Systemwide Governance Committee will be developed. This Charter will, among other things, (a) identify the goals and objectives of the VA Governance Program (b) describe the membership of the Committee, (c) establish procedures for adding and removing members, (d) establish meeting guidelines, a schedule, and other related content, and (e) identify the Tributary/Delta measures for which the Systemwide Governance Committee will make recommendations.

Consistent with the VA Governance Principles of inclusiveness, collaboration, transparency, accountability to outcomes, consensus-seeking, and informed decision making, a wide range of VA Parties, California Native American tribes, non-governmental organizations, and other interested parties will be eligible for membership in the Systemwide Governance Committee.¹ A requirement for becoming a member will be to sign the Systemwide Governance Committee Charter. The State Water Board will designate a representative to participate in the Systemwide Governance Committee as an advisory resource but will not be a voting member.²

Membership on the Systemwide Governance Committee will not trigger or otherwise cause a delegation of authority or obligation from a member of the Systemwide Governance Committee to the Systemwide Governance Committee or any member of the Systemwide Governance Committee. The specific roles and level of involvement in implementing actions are defined either by existing statutory or regulatory authorities of each member or by provisions set out in the Voluntary Agreements. For many of the actions, a specific Tributary/Delta Governance Entity or Implementing Organization will have the sole responsibility for implementation; for other actions and commitments established by the Voluntary Agreements, the Systemwide Governance Committee may be jointly and severally responsible for their implementation.

1.2.3 Tributary/Delta Governance Entities

The parties to each respective Tributary/Delta Voluntary Agreement will establish its governance structure. The primary responsibilities of the respective Tributary/Delta Governance Entities will be:

- **Implementation:** Implement the Voluntary Agreements for which that entity is responsible.
- **Reporting:** Provide reports annually to the Systemwide Governance Committee and the State Water Board as provided in Section 1.5. Reports may also be provided directly to the State Water Board as it pertains to specific permits or requirements for that tributary separate from VA implementation and commitments.
- **Decision making:** Participate actively in the Systemwide Governance Committee and provide background and status of resources and projects to inform and improve overall strategic planning and systemwide decision making.

Tributary/Delta Governance Entities will coordinate with the Systemwide Governance Committee as necessary. The structures of the Tributary/Delta Governance Entities will vary as summarized in Table 1 and each Tributary/Delta Governance Entity will exercise varying degrees of influence over how each

¹ The specific process for determining who is eligible to become a member will be defined in the Systemwide Governance Charter.

² State Water Board oversight and enforcement of the Voluntary Agreement is as described in the Plan of Implementation and through the Government Code Agreement.

Implementing Organization will deploy the Flow and Non-flow Measures it controls. Some of these entities are existing entities that will expand their current scope of activities to include implementation of the Voluntary Agreements.

Table 1. Tributary/Delta VA Governance Entities

Tributary/Delta	Current Status of Tributary/Delta Governance Entity
Sacramento River	On the Sacramento River, there are several different organizations that are engaged and active, however, none of those currently have broad representation and decision making structure. The Sacramento River Settlement Contractors (SRSC) have been working toward formation of a governance body that would include water users, government agencies and interested parties.
Feather River	Upon issuance of the FERC license for the Oroville Facilities, DWR will be required to create a Feather River Operations Group (FROG) that will be composed of representatives from at least DWR, NMFS, USFWS, and CDFW. One objective of the FROG is to provide recommendations for coordination of Feather River flows, flows with fish releases, and flows for green sturgeon. The FROG could function as an appropriate forum to make release recommendations for the VA Flow Measures. However, a governance body would still need to be formed to include water users and interested parties and to implement VA Non-flow Measures, consistent with VA governance principles.
Yuba River	For the Tributary Specific Agreement Flow Measures, the Yuba Accord provides the background framework for planning, management, and verification of Yuba River flows. The Tributary Specific Agreement structure and process will be consistent with the Yuba Accord Water Purchase Agreement accounting and coordination provisions, with the primary parties being the Yuba Water Agency (YWA) and CDWR. YWA, CDWR and CDFW will establish a management team for Tributary Specific Agreement Non-flow Measures. A Yuba River Habitat group may be created to provide advice regarding implementation of the VA.
American River	For the American River, VA implementation will involve the existing Water Forum governance, which was established with the Water Forum Agreement (2000). The Water Forum makes decisions through a quad-cameral supermajority of their Water, Environmental, Public, and Business Caucuses.
Sacramento-San Joaquin Delta	The Collaborative Science and Adaptive Management Program’s (CSAMP) Collaborative Adaptive Management Team (CAMT) is one potential Delta Governance Entity for the VA. CAMT includes water users, agencies, and interested parties, and currently supports science and structured decision-making activities.

1.2.4 Science Committee

The primary role of the Science Committee will be to guide and support the implementation of the Systemwide Governance Committee’s science and technical priorities. The Science Committee will report to the Systemwide Governance Committee. The Science Committee will be composed of senior technical and science representatives of all Systemwide Governance Committee members and will form subcommittees or technical task teams as needed.

The primary responsibilities of the Science Committee will be:

- **Strategic Planning:** Provide scientific and technical analysis support to the Systemwide Governance Committee's strategic planning process (as described in Section 1.4) and Tributary/Delta Governance Entity planning processes as applicable.
- **Science Program:** Under the direction of the Systemwide Governance Committee, and in close coordination with the Program Office, plan and coordinate the systemwide science activities in the VA Science Program in accordance with the Strategic Plan, Tributary/Delta-specific science plans, and in coordination with existing entities.
- **Reporting:** Coordinate and synthesize all systemwide monitoring and research under the VA Science Program, assess progress relative to implementation metrics and habitat suitability and utilization metrics, review and synthesize results to inform ongoing adaptive management and Strategic Plan updates.

1.2.5 Flow Operations Team

The Flow Operations Team will be composed of tributary and systemwide Implementing Organizations with a role in implementing or coordinating Systemwide Flow Measures. The Flow Operations Team will report to the Systemwide Governance Committee.

The Flow Operations Team's primary responsibilities will be:

- **Planning:** Provide advice to the Systemwide Governance Committee and the Tributary/Delta Governance Entities on the feasibility, options and risks of possible deployments of Systemwide Flow Measures based on water supply conditions and system operations constraints.
- **Coordination:** Support coordination of Systemwide Flow Measures in real-time operations, and provide supporting accounting and documentation of Systemwide Flow Measure deployment on an annual basis.

1.2.6 State Water Board

State Water Board staff will participate in the Systemwide Governance Committee but will not be a voting member. State Water Board staff will also provide technical staff to participate in the Science Committee and the Flow Operations Team. The State Water Board will ensure compliance of the VA with the Bay-Delta Water Quality Control Plan.

The State Water Board will incorporate the annual and triennial reporting and the Strategic Plan developed by the Systemwide Governance Committee into their triennial review to meet requirements of the Federal Clean Water Act (33 U.S.C., § 1313, subd. (c)(1)) and Water Code section 13240, the Central Valley Regional Water Quality Control Board (Regional Water Board).

1.2.7 Program Office

The Program Office will report directly to the Systemwide Governance Committee and will be an independent entity responsible for the ongoing implementation and administration of the systemwide VA Governance Program. The Program Office will have an Executive Director who has the authority to hire staff as necessary, subject to budget limitations as set by the Systemwide Governance Committee. The Program Office will also have a Science Manager who will support the Science Committee to implement the VA Science Program. Other supporting staff positions could be developed as required.

The primary responsibilities of the Program Office will be:

- **Strategic Planning:** Coordinate development of the Strategic Plan and provide guidance to the Systemwide Governance Committee, with Science Committee support, on science, adaptive management, and structured decision making. Coordination on plans, permitting for non-flow measures and activities will be needed across Tributary/Delta Governance Entities and the VA Science Program.
- **Systemwide Governance Committee Meeting support:** Provide administrative and facilitation services for all Systemwide Governance Committee meetings, including meetings of Systemwide Governance Committee's sub-committees/teams (e.g., Science Committee, Flow Ops Team) and any other meetings/workshops convened by the Systemwide Governance Committee.
- **Work planning and financial administration:** Develop Program Office annual work plans and budgets for Systemwide Governance Committee approval and administer the Program Office's budget to implement work plans, including managing staff and contracts.
- **Reporting:** Develop consolidated annual and triennial reports incorporating input from the Tributary/Delta Governance Entities for Systemwide Governance Committee approval and for submittal to the State Water Board.
- **Issue Management:** Document systemwide issues constraining schedule and effective implementation of Systemwide Measures, for use in making recommendations to the Systemwide Governance Committee.

1.3 Governance Procedures

1.3.1 Systemwide Governance Committee Consensus-seeking Procedures

The Systemwide Governance Committee will be consensus-seeking for all decisions and recommendations. Consensus-seeking means that the Systemwide Governance Committee members will strive for, but not require, unanimous agreement. The Systemwide Governance Committee members acknowledge that there are tough choices to be made and that full agreement may not always be possible. Systemwide Governance Committee members will first and foremost work in good faith to reach full agreement. If full agreement is not reached after reasonable effort, alternative decision-making processes will be used that are described in Section 1.3.2 and are consistent with existing legal rights, authorities, and obligations.

The Program Office will play a critical role in facilitating consensus through presenting proposals or options to the Systemwide Governance Committee that incorporate the viewpoints of all members and through iteratively improving proposals/options to better address competing interests.

The Systemwide Governance Committee will engage in two types of decision making: (1) decisions on recommendations to other governance entities that will have authority for implementing Tributary/Delta Measures (e.g., recommendations to Tributary/Delta Governance Entities and/or Implementing Organizations); and (2) decisions related to Systemwide Measures where the Implementing Organization for these measures will be taking direction from the Systemwide Governance Committee. In either type of decision making, or when appropriate, the Systemwide Governance Committee will seek to build consensus on a preferred course of action among all members. To promote efficiency, informal methods to identify the range of underlying interests and iteratively develop solutions will suffice for most Systemwide Governance Committee decisions. However, for decisions to establish or adjust long-term strategic priorities and plan actions to fulfill them (e.g., in developing the Strategic Plan), the Systemwide Governance Committee may build consensus through a Structured Decision Making process.

1.3.2 Systemwide Governance Committee alternative decision-making procedures in the event of non-consensus

The expectation is that non-consensus will be rare because Systemwide Governance Committee members will participate in accordance with the governance principles that emphasize inclusiveness, collaboration, consensus-seeking and informed decision making. However, if after reasonable effort, consensus on a decision cannot be reached, the Systemwide Governance Committee will undertake the alternative decision-making processes. “Reasonable effort” means that the Systemwide Governance Committee members have made honest and earnest attempts, commensurate with the magnitude of the decision, to address the specifically identified deficiencies of a proposal relative to the underlying interests of all members. Usually this requires some degree of iteration through identification of the interests, development of solutions to better address them, and re-assessment of the proposal.

The alternative decision-making procedure will occur within 7 business days of the failure to reach consensus. The alternative decision-making procedure used depends on the nature of the proposal. If an agreement cannot be reached for:

- **Recommendations on Proposals for Tributary/Delta Measures** → proposals will go back to the Tributary/Delta group responsible without a recommendation. The Program Office will document the perspectives of the Systemwide Governance Committee and provide the information to the Tributary/Delta organization to inform their decision-making process.
- **Decisions on Proposals for Non-flow Measures funded through alternative funding sources** → decision goes back to entity that is provider of funding. The Program Office will document the perspectives of the Systemwide Governance Committee and provide the information to the funding entity to inform their decision-making process.
- **Decisions on Proposals for Systemwide Flow and Non-flow Measures, Science and Habitat Fund and All Other Systemwide Decisions** → decisions will go to a vote by the Systemwide Governance Committee to determine whether the proposal is accepted. The specifics and requirements of the voting procedure will be defined in the Systemwide Governance Committee Charter. The Charter will describe and ensure an inclusive membership in the Systemwide Governance Committee and a fair and equitable voting process.

1.3.3 Resolution of Disputes between Systemwide Governance Committee and Tributary/Delta Governance Entities or Implementing Organizations for Systemwide Measures

For the purposes of this section, a “dispute” shall be deemed to have arisen when a disagreement between the Systemwide Governance Committee and Tributary/Delta Governance Entities or Implementing Organizations still exists related to Systemwide Measures after they have attempted to resolve the disagreement through the standard decision-making procedures. In the event of such a dispute, the following process will be employed to resolve the dispute.

The Dispute Resolution process will in no way limit any legal or equitable processes or remedies otherwise available to the parties. The Dispute Resolution process will in no way bind or limit the discretion afforded to any party by law, internal resolution, or policy.

When a Tributary/Delta Governance Entity or Implementing Organization determines it cannot implement a Systemwide Measure consistent with the direction of the Systemwide Governance Committee and meet a legal or regulatory obligation, the Tributary/Delta Governance Entity or Implementing Organization shall notify the Systemwide Governance Committee and request a meeting to discuss the matter. The meeting shall include representatives of the Tributary/Delta Governance Entity or Implementing Organization and members of the Systemwide Governance Committee as determined by

the Program Office. At the meeting, the respective parties will identify options to resolve the matter. If no resolution is found, then the respective parties may jointly consult the regulatory agency responsible for the requirement and ask that regulatory agency to consider the recommended Systemwide Governance Committee action and determine if it is possible to implement the action in a manner that complies with the obligation while also achieving the desired purpose of the Systemwide Measure.

If the regulatory agency responsible for the obligation determines that the Systemwide Measure cannot be implemented as directed by the Systemwide Governance Committee without affecting compliance, then the direction of the Systemwide Governance Committee will not be implemented.

If the regulatory agency with authority over the obligation determines that the Systemwide Governance Committee direction can be implemented without affecting compliance, then the Systemwide Measure will be implemented in the manner directed by the Systemwide Governance Committee, provided no other overriding public concern exists such as public safety.

1.4 Strategic Plans

The Participants will propose an initial Strategic Plan for approval in the update to the Bay-Delta Plan, along with other elements of the VAs. The Strategic Plan will provide multi-year guidance for the implementation of Flow and Non-flow measures, set priorities to guide the Science Program, and establish reporting procedures. The Strategic Plan will be consistent with applicable terms of Voluntary Agreements. The VA Parties will request that the State Water Board approve the initial Strategic Plan as an element of the Program of Implementation.

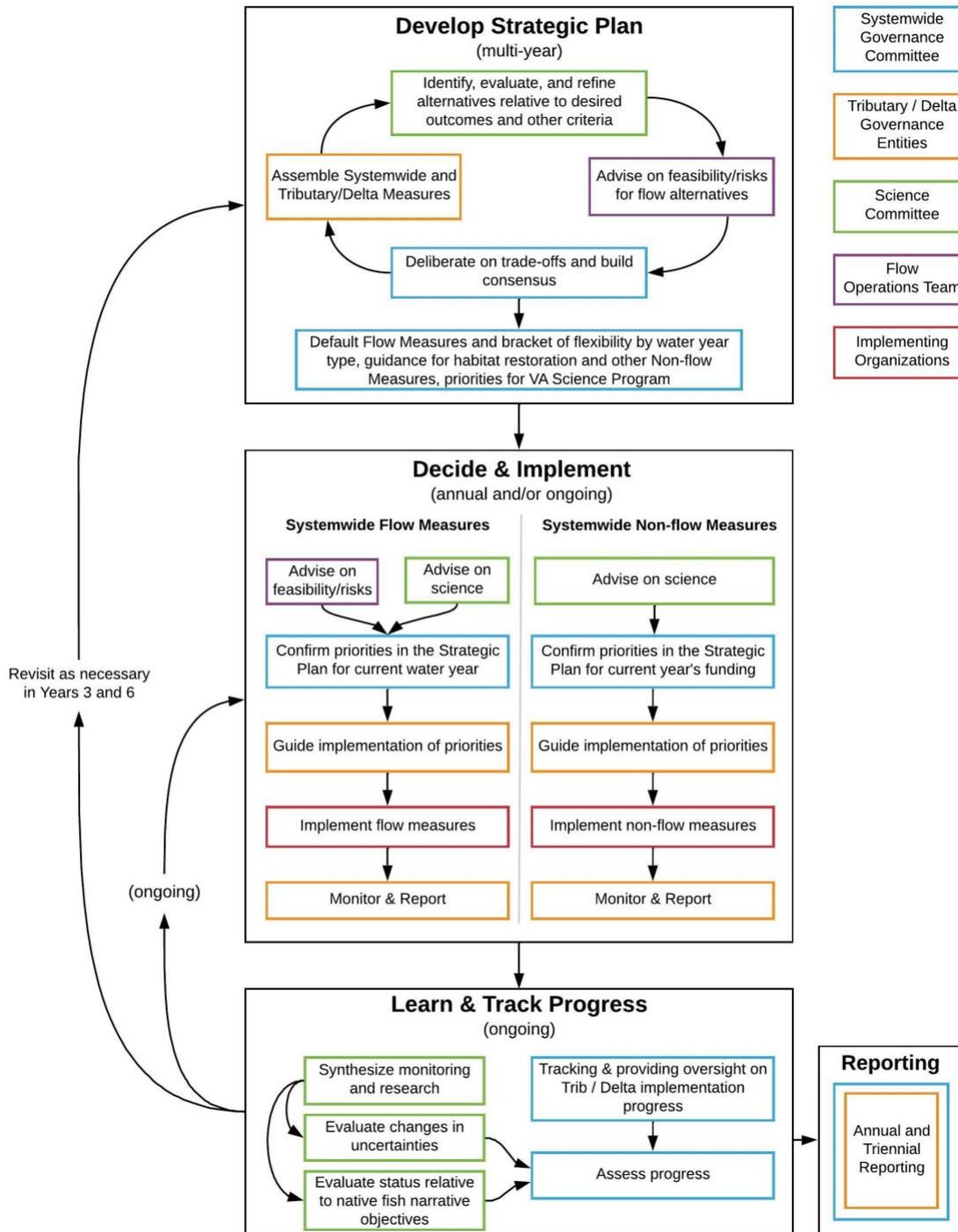
The following sub-sections describe the VA Strategic Planning Cycle, which involves four broad tasks: (1) setting multi-year systemwide guidance through the development of the Strategic Plan, (2) deciding on and implementing Flow and Non-flow Measures on an annual, seasonal, and ongoing basis, (3) synthesizing monitoring and science activities on an ongoing basis to inform Systemwide and Tributary/Delta decision making and the adaptive management of Flow and Non-flow Measures, and (4) reporting annually and triennially on progress relative to the implementation metrics and habitat suitability and utilization metrics (Figure 2).

Prior to the signing of the VA, Flow and Non-flow Measures ready for immediate implementation may be deployed as part of the early implementation of the VA. Such measures will be accorded credit for implementation of the appropriate VAs and will be incorporated into the Strategic Plan and Periodic Reporting by the Systemwide Governance Committee.

Systemwide Measures and Tributary/Delta-specific Measures in Strategic Planning Process

While the Strategic Plan will provide guidance for all Flow and Non-flow Measures, the strategic planning process will treat Systemwide Measures and Tributary/Delta-specific Measures differently in recognition that the VA Parties that commit Tributary/Delta-specific Measures have decision making authority over how these measures are deployed, consistent with the Voluntary Agreements. The strategic planning process of the Systemwide Governance Committee will focus evaluation and deliberation on those measures and science activities that are appropriate for planning at the systemwide-scale (i.e., Systemwide Measures and science, and any Tributary/Delta-specific Measures that are being offered for planning at the systemwide-scale) and are necessary for accomplishing systemwide metrics and outcomes.

Figure 2: VA Strategic Planning Cycle



1.4.1 Develop Strategic Plan

The Strategic Plan will be developed based on the Flow and Non-flow Measures identified in the Voluntary Agreements and will contain multi-year guidance in the following format:

1. A default plan for deployment of Systemwide and Tributary/Delta Flow Measures in each water year type along with a bracket of flexibility for deploying the Systemwide Flow Measures;
2. A targeted schedule and process for the deployment of Systemwide and Tributary/Delta Non-flow Measures (independent of water year type and of Flow Measures);
3. Priorities for the VA Science Program and a description of the monitoring and science activities for Flow and Non-flow measures.

The identification and assessment of any alternatives during the development of the initial Strategic Plan will focus on those Flow and Non-flow Measures and science activities that are appropriate for planning at the systemwide-scale (i.e., Systemwide Measures and science, and any Tributary/Delta-specific Measures that are being offered for planning at the systemwide-scale). Any assessment of alternatives may need to consider, among other criteria, the expected environmental and biological outcomes for a variety of species, uncertainty of the effects associated with various actions, cost of implementation and monitoring, the potential to learn and reduce key uncertainties, Tributary/Delta priorities, and constraints on the use of measures as defined in the VAs. Some of these criteria may conflict with one another; the Systemwide Governance Committee will need to consider these trade-offs in developing the initial Strategic Plan. Alternative methods of deploying Flow and Non-flow Measures may be evaluated using Structured Decision Making, and deliberation about the trade-offs will lead to iterative refinement and improvement of the deployment of the measures.

1.4.2 Decision Making and Implementation

On an annual basis, decisions about the deployment of Systemwide Measures will be made and documented in concise workplans that follow closely from the multi-year guidance in the Strategic Plan. Decision processes for the deployment of Systemwide Measures are described below.

Systemwide Flow Measures

The quantity of available flow measures changes year to year according to water year type assessments made during early winter through spring. Deployment of Systemwide Flow Measures on an annual basis will be done through the following steps (note that the timing below is approximate and may vary across tributaries and in the Delta):

1. **September to February:** The Science Committee synthesizes the available information on available water supply, assesses progress relative to implementation metrics and habitat suitability and utilization metrics and relative to uncertainties, and provides recommendations to the Systemwide Governance Committee and Flow Operations Team regarding any refinements to the default Plan for Flow Measures in each water year type and paired monitoring and science activities.
2. **February through April:** Beginning with the first Bulletin 120 forecast in February, the Flow Operations Team communicates with Tributary/Delta Governance Entities and with the Systemwide Governance Committee regarding the forecast water year type and implications for implementing Systemwide Flow Measures as recommended by the Science Committee and produces specific recommendations to the Systemwide Governance Committee in accordance with the Strategic Plan. As successive Bulletin 120 forecasts, and forecasts developed by Tributary Entities, become available, the Flow Operations Team will update the Systemwide Governance Committee and Tributary Entities and Implementing Organizations for considering adjustments to Flow Measure deployment as appropriate. Once the April forecasts become available, plans for deploying Systemwide Flow

Measures will be finalized by the Systemwide Governance Committee in consultation with the Flow Operations Team, Tributary/Delta Governance Entities and Implementing Organizations.

3. **Spring to Fall:** Throughout the implementation of Flow Measures, Implementing Organizations communicate with Tributary/Delta Governance Entities and with the Systemwide Governance Committee on real-time monitoring and tracking of the deployment of Flow Measures and any deviations in implementing Flow Measures from the deployment plan finalized after the April forecasts.
4. **Late Fall:** On an annual basis, Implementing Organizations will provide a brief report on the details of the implemented flow action as necessary to support the reporting process described in Section 1.5. These reports will have to follow clear accounting procedures to ensure that the flow action counts as a VA Flow Measure.

It is expected that most Flow Measures will be deployed within the boundaries anticipated by the Strategic Plan. There may, however, be one-off situations that precipitate consideration of Flow Measures outside of the flexibility or adaptive management limits established in the Strategic Plan. These situations are hard to predict in advance of any given water year and will require quick decision making and a streamlined SWB approval process.

[Note: Flow Accounting procedures are being developed and will be referenced or included here.]

Systemwide Non-flow Measures

For Systemwide Non-flow Measures, annual funding availability will determine the number and size of measures and associated science activities that can occur each year.³ On an annual and/or ongoing basis as appropriate, deployment of Systemwide Non-flow Measures will be done through the following steps:

1. The Science Committee synthesizes the available information, assesses progress relative to implementation metrics and habitat suitability and utilization metrics and relative to uncertainties, and provides recommendations to the Systemwide Governance Committee for the use of Non-flow Measures and paired monitoring and science activities.
2. The Systemwide Governance Committee works with Tributary/Delta Governance Entities to select projects based on guidance in the Strategic Plan (consistent with VA commitments) and available and applicable funding streams (including, for example, the Science and Structural Habitat Fund, state bonds, and/or other public and private funds), and identifies funding and implementation partners to leverage additional capacity.
3. Prior to implementation, the Program Office works with Tributary/Delta Governance Entities to coordinate the necessary permitting, monitoring and science activities among existing science programs wherever possible.

For some Non-flow Measures, an Implementing Organization will not be identified in the VA. For example, a VA Party or a Tributary/Delta Governance Entity will need to partner with an Implementing Organization that has the necessary permits/authorities to implement a Non-flow Measure. In these cases, upon completion of the above steps, a Tributary/Delta Governance Entity will identify and guide an Implementing Organization to implement the Non-flow Measure. Where the Implementing Organization deviates from the annual workplans or implementation protocols, rationale for those decisions would be

³ Note that many non-flow measures may take multiple years to implement and will require multi-year funding to ensure successful implementation. Similarly, some non-flow measures may require larger amounts of funding that could require carryover from previous years to enable them to be implemented, or additional funding from outside of the VA Program.

documented and reported to the Tributary/Delta Governance Entity and Systemwide Governance Committee.

1.4.3 Learning and Adaptive Management

The Science Committee and the Program Office will be responsible for coordinating the science activities through the VA Science Program needed to implement the science priorities identified in the Strategic Plan. On an ongoing basis, the Science Committee and the Program Office will be responsible for tracking the results of monitoring and studies and synthesizing learning. Tributary/Delta-specific science programs will also be tracking and synthesizing the results of monitoring and studies and providing these results to the Science Committee as appropriate. Activities and learnings will be captured in annual and triennial progress reports (See Section 1.5 for more detail on reports and Section 2 for more detail on the VA Science Program).

The Systemwide Governance Committee will use the learning syntheses, annual reports and triennial reports to assess the degree to which the VAs are achieving their stated intent. This assessment provides the Systemwide Governance Committee, Tributary/Delta Governance Entities, and Implementing Organizations with the opportunity to make small adaptive management adjustments on an annual basis (shown through the ongoing loop to Decide & Implement in Figure 2).

1.4.4 Strategic Plan Updates

The Systemwide Governance Committee may revise the initial Strategic Plan for the purpose of Years 3 and 6, and subsequently as applicable, subject to the State Water Board's review and approval of any adaptive management outside of the limits established in the initial Strategic Plan. The State Water Board may also request that the Systemwide Governance Committee updates the Strategic Plan.

1.5 Annual and Triennial Reports

The Tributary/Delta Governance Entities will prepare Annual Reports of their implementation of the VAs in the preceding year. The Systemwide Governance Committee will compile and integrate these reports for annual submittal to the State Water Board.

The annual reports will:

- inform adaptive management.
- be technical in nature, identify actions taken, monitoring results, and milestones achieved.
- document status and trends of native fish.
- document whether commitments for VA Flow and Non-flow measures are being met. Commitments will be documented using a State approved accounting methodology and validated to be true and correct by a third party independent registered professional engineer.
- document progress toward completion of VA habitat restoration projects. Each report will document permit success in terms of applications submitted, processing timelines, and permits obtained.
- document efforts to seek new funding to support program.

In Years 3 and 6, and subsequently as applicable, the Systemwide Governance Committee will prepare a Triennial Report to analyze progress across the Delta watershed and, in coordination with the Tributary/Delta Governance Entities, will submit these reports to the State Water Board.

The State Water Board will hold a public informational workshop on the VAs following receipt of each Triennial Report.

1.6 Funding

The extent of the detail regarding funding and revenues agreed to thus far is articulated in the March 29, 2022 MOU and Term Sheet and any applicable amendments. Further specificity will be provided through the development of the Voluntary Agreements.

Revenues to support the VA program will be generated from multiple sources over the term of the agreement, including from DWR, Reclamation, public water agencies, bond and other state funding, and other sources. Revenues and disbursement of funds to support the VA will be managed by a financial entity as described below. Revenues will be generated to support the acquisition of water and to support science and habitat projects. Figure 3 depicts how funds would be collected, directed, and disbursed.

1.6.1 Revenues

Revenues Generated by Public Water Agencies

Public water agencies will establish two revolving funds: one to compensate farmers in the Sacramento River basin who fallow land to contribute water for tributary flows and Delta outflow as well as other water acquisitions; and one to support science investigations and structural habitat projects. The water purchase revolving fund (“Water Fund”) will be funded through the collection of a surcharge on water diverted by public water agencies.⁴ Additionally, public water agencies would contribute to a revolving fund to support science and structural habitat projects (“Science and Habitat Fund”). Collection of the water purchase and science surcharges would begin and would be collected for each year of this agreement. Funds generated for these revolving funds will be used by the Systemwide Governance Committee to implement the VAs and would be complemented by revenues generated by California and the United States. Table 2 summarizes the funding from each type of public water agency. In addition to collection of surcharges from participating public water agencies, DWR will also collect \$10 per every acre-foot of water that is moved through unused capacity as part of fair compensation under Water Code Section 1810. Based on recent historical diversions, it is expected that public water agency contributions to the Water Fund would be approximately \$407M (which includes \$80M of CVPIA funding), and contributions to the Science and Habitat Fund would be approximately \$141M.

Table 2. Contribution to Revolving Funds based on Diverted Water⁵

Delivered Water	Contribution to Water Fund	Contribution to Habitat and Science Fund
CVP/SWP project water, except CVP water originating from Millerton Lake	\$8/acre-foot	\$2/acre-foot
Non-project water diverted by the Sacramento River Settlement Contractors and Feather River Diversion Agreement Parties		\$1/acre-foot

⁴ After year 5 of the VA, the CVP and SWP will reconvene to determine if the surcharge needs to be adjusted to ensure the revolving fund can support future payments for water.

⁵ Specific allocations of surcharges will be defined in applicable Tributary Specific Agreements.

Non-project water diverted by party contributing water under this agreement (Putah, Yuba, non-CVP American River water agencies)		\$2/acre-foot
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Revenues Contributed by California and United States

State general fund and bond revenues can be used to contribute to the acquisition of water, implement non-flow actions, and conduct scientific studies. The State government will pursue bond money and seek any necessary legislation to provide additional funds to implement the VAs. Participating Federal agencies will utilize their authorities to support implementation. This includes an outlay of directed and competitive funding opportunities from various sources, totaling over \$900 million, which would be in addition to the funding provided through public water agency surcharges described above. Federal funds from various programs would be \$740M over 8 years.

1.6.2 Collection of Funds

Collection of SWP Funds: DWR, subject to authority, will place both surcharges (total of \$10 per acre foot diverted) on the Statement of Charges in proportion to each State Water Contractor’s Table A allocation and the SWP public water agencies commit to pay these surcharges. Because not all water diverted is delivered in the same year, DWR will charge the water and science surcharge as water is delivered. This will ensure that over time the total diversions are being charged but the charges are assigned to those who use it. SWP contractors will pay this surcharge to DWR, and DWR, subject to authority, will provide the collected funds to the financial entity described below.

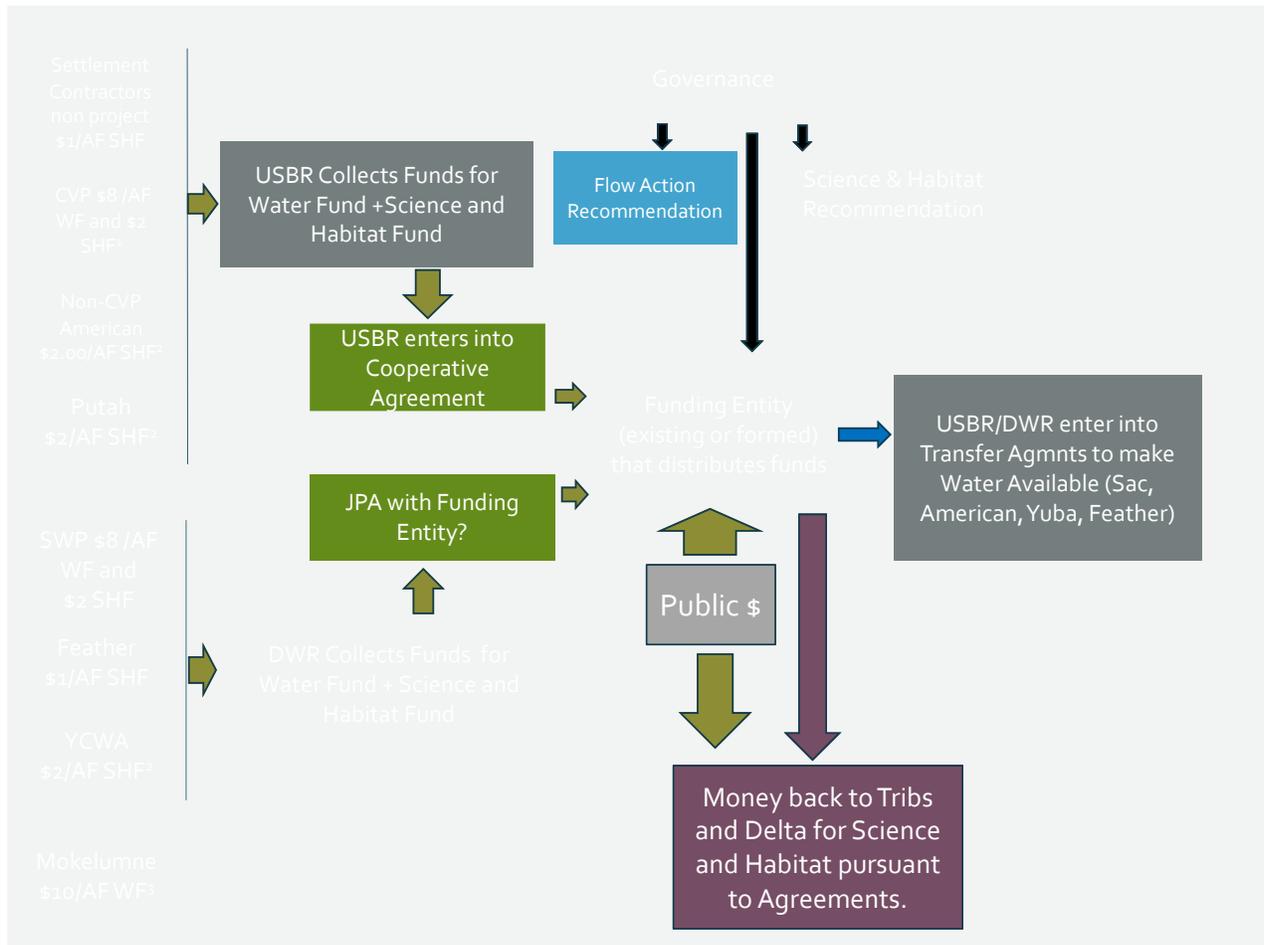
Collection of CVP Funds: Similarly, Reclamation, subject to authority, will collect surcharges from CVP and Solano Project (Putah Creek) contractors consistent with Table 2 and Figure 3. Reclamation, subject to authority, will provide the collected funds to the financial entity described below.

Collection of Funds from Yuba and the Mokelumne: DWR will assist in collecting funds from Yuba Water Agency and East Bay MUD, through party-specific agreements established as part of the VA. The collected funds will be provided to the financial entity described below.

1.6.3 Financial Management Entity

A financial management entity would be used to collect and disburse funds and contract for services as directed by the Systemwide Governance Committee through the Program Office. The financial entity will need to have the ability to collect monies under the VAs as well as grant funds. Additionally, this entity will need to adopt contracting principles and maintain clear financial records.

Figure 3: Preliminary diagram on how funds would be collected, directed, and disbursed for the VAs.

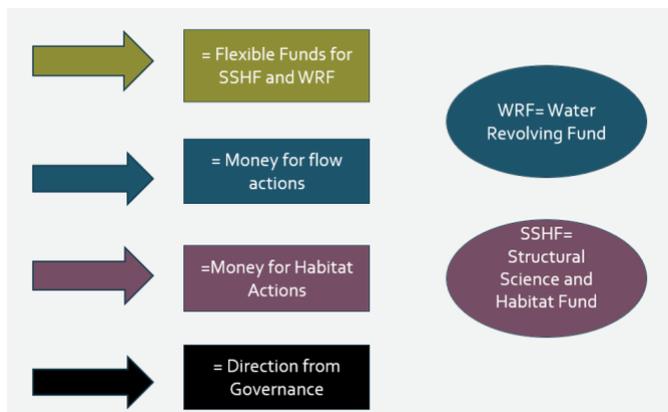


¹ Not applicable to CVP water originating from Millerton Lake

² DWR, Reclamation, and/or the Program Office would work to assist the responsible agencies for collecting, distributing, and tracking expenditures, as appropriate

³ Mechanism to collect funds from the Mokelumne is still to be determined but may include DWR, BOR, or another entity.

Figure Legend:



2 Draft VA Science Program Description

[No revisions of this section – work will follow completion of the Governance Description in Section 1]

The VA Science Program will support the following responsibilities of the VA governance system:

- (1) **VA assets and VA Targets:** Planning, decision making, and implementation related to VA assets guided by VA Targets; and,
- (2) **Reporting:** Preparing and submitting reports to the State Water Board to demonstrate progress and compliance.

The VA Science Program will consist of a network of people and groups whose collective responsibilities and activities will support the scientific needs of the VA Program. Existing science programs developed and implemented by tributaries and in the Delta will be part of the VA Science Program's network and will maintain their decision-making authority in determining how they will contribute to the VA Science Program. Coordination between these existing science programs and the VA Science Program will be strengthened by virtue of significant overlap between the agencies participating in the VA Science Program (through the VA Science and Technical Committee, which will be composed of senior technical and science representatives of all Systemwide Governance Committee members) and the agencies participating in these existing science programs.

The priorities for the VA Science Program will be developed by the VAST Committee in recognition of high priority science questions about the management of assets articulated by the Systemwide Governance Committee (with support from the VAST Committee). These science priorities will be approved by the Systemwide Governance Committee and will be documented in the Strategic Plan.

The VAST Committee will also develop a VA Science Plan (described further in Section 2.3.1) that will identify the specific scientific activities (i.e., monitoring and studies) that the Science Program will undertake to respond to the science priorities in the Strategic Plan. These priorities are broadly expected to include tracking and analyzing progress relative to VA Targets and providing information on scientific uncertainties. The VA Program Office will support the VAST Committee in developing the VA Science Plan.

The implementation of science activities agreed to in the VA Science Plan will be done in a coordinated and efficient manner by leveraging the existing science efforts throughout the tributaries and the Delta and through benefiting from the local knowledge in Trib/Delta GEs (Table 3). Science activities agreed to under the VA Science Program will complement ongoing science efforts focused on regulatory compliance with other requirements (e.g., the WQCP, FERC, etc.). Where existing science efforts cannot fulfill the needs identified in the VA Science Plan, the VAST Committee and the VA Program Office will work to fill these gaps through the resources of the VA Program.

This section establishes guiding principles, core functions, and key products of the VA Science Program.

Notes:

- *The State Water Board's role in the VA governance system as a whole is an active topic of discussion; how that role intersects with the Science Program is a key part of that discussion. In particular, the Board's role in development and any approval of the Science Plan and annual plans, updates to those plans, and decision making around specific science activities, are all part of that conversation.*
- *Portions of the above introductory section could be placed in Section 1 (Introduction) of the Project Description under a subsection title "Overview of the VA Science Program". As well the following paragraph, with refinements as appropriate, could be added to Section 1 to provide early context for*

the ambition, scope, and intent of the VA Science Program relative to the rest of the VA Program: “The VA Science Program will be a foundational component of the VA Program, and a key area for collaboration among the VA Parties. While the Parties are united in their goal to deploy VA assets in a manner that will best achieve VA Biological and Environmental Targets (VA Targets), they also recognize that there are uncertainties about the most efficient and effective use of some of the assets to achieve desired biological and environmental outcomes. Decisions about the deployment of assets will be made despite this uncertainty, and the Parties recognize that the use of assets presents an opportunity to learn about how to more efficiently and effectively advance desired environmental and biological outcomes over time.”

Table 3. Trib/Delta Science Program Descriptions

Tributary/Delta	Current Status of Trib/Delta Science Program
American River	<i>[Content for this table to be developed to describe current science programs and anticipated points of coordination with anticipated VA science activities.]</i>
Yuba River	
Mokelumne River	
Tuolumne River	
Sacramento-San Joaquin Delta	

Note: This table will be expanded as this document develops.

2.1 Guiding Principles for the VA Science Program

In addition to the VA governance principles (Section 1.1), the following principles will guide the activities of the VA Science Program.

Use of Best Available Science and Technical Information

The VA Science Program will provide the Systemwide Governance Committee and the Tributary/Delta GEs with the best available science⁶ and technical information to inform choices on how to deploy VA assets, monitor progress in relation to VA Targets, and reduce critical scientific uncertainties.

Efficiency

The VA Science Program will strive to maximize learning and minimize the cost of scientific activities through incorporating science done elsewhere and leveraging existing science programs and resources wherever possible.

Forward-looking

The VA Science Program will strive to anticipate the learning opportunities that natural conditions and events provide (e.g., very wet or very dry years), and will establish plans and maintain resources to take advantage of these opportunities to serve the science priorities outlined in the VA Strategic Plan.

Shared Risk-taking in Reducing Uncertainty

The VA Science Program will undertake innovative experiments and studies to reduce uncertainties that have the potential for large benefits but that may also come with risks. Decisions to pursue these experiments will be made in a way that weighs those risks against the possible benefits of greater

⁶ This term is defined in Appendix 1 and used here in a manner consistent with NRC 2004, found at: http://www.nap.edu/catalog.php?record_id=11045#toc. Last Accessed June 2, 2019.

understanding. These risks could include some likelihood that actions will fail to create the intended benefits, and/or some likelihood that the action will require substantial resources and not significantly improve our understanding. The VA Science Program will strive to create a space where some risk-taking is supported and no single Party is blamed if actions fail to create the intended benefits. Collaboration among the VA Parties will help create the support needed for the VA Science Program to take reasonable risks with large potential benefits.

Transparency and Communication

The VA Science Program's data and analyses will be open and accessible to the public, and the findings and achievements of the VA Science Program will be communicated in plain language summaries.

Collaboration

To the extent possible, the design of monitoring and studies through the VA Science Program will engage all VA Parties to maximize the acceptability, applicability, comparability, and utility of the results to support decision making by Trib/Delta GEs, the Systemwide Governance Committee and Implementing Organizations. This includes taking advantage of the local knowledge in Trib/Delta GEs and other available expertise, and working together on science of interest across the system. The extent of this engagement will need to be balanced with achieving efficiency and timeliness.

Timeliness

The information generated through the VA Science Program will be communicated in a regular and timely manner to facilitate responsive decision making.

2.2 Functions of the Science Program

The Science Program will have four core functions:

1. Inform decision making by the Systemwide Governance Committee, Trib/Delta GEs, and Implementing Organizations;
2. Track and report progress relative to VA Biological and Environmental Targets;
3. Reduce management-relevant uncertainty through active investigation; and,
4. Provide recommendations on adjusting management actions as appropriate.

#1: Inform decision making by the Systemwide Governance Committee, Trib/Delta GEs, and Implementing Organizations

In order to make informed decisions about the deployment of VA assets, both the Systemwide Governance Committee, Trib/Delta GEs, and Implementing Organizations need access to the best available science. Informing VA decisions will involve:

- Providing scientific and technical advice on the use of VA assets to achieve VA Targets at both a tributary/Delta-scale and a systemwide-scale; and,
- Characterizing the predicted biological and environmental effects and associated uncertainties for the deployment of assets, including characterizing the opportunity costs or trade-offs of alternative uses of VA assets.

#2: Track and report progress relative to VA Biological and Environmental Targets

Tracking and reporting progress relative to VA Targets is critically important to demonstrate accountability and compliance to the State Water Board. The Systemwide Governance Committee, Trib/Delta GEs, and Implementing Organizations are responsible for such tracking and reporting (described in Section 1.5). The VA Science Program will support tracking and reporting by:

- Coordinating monitoring activities relevant to evaluating the effects of VA assets, including establishing consistent methods to enable systemwide and tributary/Delta-scale tracking of progress relative to VA Targets;
- Providing regular assessments of progress toward the VA Targets, and of progress toward reducing critical uncertainties;
- Compiling and communicating results of non-VA studies and long-term monitoring programs (e.g., GrandTab, Delta Smelt monitoring, steelhead tagging studies, Delta salinity monitoring, etc.)
- Coordinating analyses, syntheses and timely communication of monitoring data, targeted studies, and experiments; and,

Note: The VA Biological and Environmental Targets are being developed in advance of implementation of the VA. As the Science Program develops over the term of the VA, the Science Program will have a role in evaluating VA Targets, and potentially in updating the Targets. However, the prospect of updating Targets has significant policy implications relevant to the foundational agreements – whether and how Targets are updated (and the scope of any role for the Science Program in that effort) is an issue in need of further discussion.

The monitoring activities for tracking the effects of VA assets will be documented in the VA Science Plan and reflect coordination with the monitoring efforts of existing science programs where opportunities exist. See Section 2.3.1 for more information on the VA Science Plan.

#3: Reduce management-relevant uncertainty through active investigation

In the VA context, management-relevant uncertainties are gaps in knowledge that impede informed decision making on how to best achieve VA Targets with the deployment of VA assets. *Priority science questions* representing priority management-relevant uncertainties will be identified and prioritized in the Strategic Plan. The VA Science Program will actively address priority science questions in the Strategic Plan by:

- Maintaining (and creating, as necessary) relevant, mutually acceptable conceptual models and quantitative predictive models that will serve as tools to predict the effects of VA assets on desired biological and environmental outcomes;
- Evaluating predictions against measured outcomes to support the continuous improvement of conceptual models and quantitative predictive models; and
- Designing and implementing targeted studies, modeling exercises, experiments, expert judgment processes, or other methods of reducing uncertainty.

The range of scientific activities that could be done to reduce uncertainties will have varying degrees of costs, time requirements, and effectiveness. The trade-offs associated with alternative science activities will be considered in the development and updating of the VA Science Plan, a process in which the Systemwide Governance Committee, Trib/Delta GEs and/or Implementing Organizations will need to make decisions on their preferred science activities in consideration of associated trade-offs and available resources.

A Structured Decision Making approach to selecting science activities to reduce uncertainties would follow five high level steps:

1. Clarify the criteria for prioritizing science activities (i.e. monitoring and studies) to guide evaluation of and deliberation about the trade-offs that alternative science activities may present (e.g., degree to which uncertainty could be reduced, cost, timeliness of results, etc.);

2. Characterize significance of the uncertainties in terms of their biological relevance, their degree of relevance to the use of VA assets, and the degree of uncertainty;
3. Develop options for science activities to address uncertainties;
4. Evaluate options for science activities against criteria, deliberate on trade-offs, and prioritize the available science activities; and,
5. Document the prioritized science activities in the VA Science Plan and implement.

See Box 1 for an illustrative example of possible management-relevant uncertainties. See Section 2.3.1 for more information on the VA Science Plan.

#4: Provide recommendations on adjusting management actions

A key function of the VA Science Program will be to translate new science to the Systemwide Governance Committee to facilitate active learning, and to recommend adjustments to flexible management actions (within the scope of the VA) as the best available science evolves. In addition, the Science Program will play a key role in articulating broader lessons about the effectiveness of the VA assets at the midway review (Year 8) and the end of the VA term. This will involve integrating these new lessons into planning and decision making for VA assets through:

- Recommending adjustments to the implementation of specific flow and non-flow management actions based on comparisons between expected and observed outcomes; and,
- Recommending updates to Strategic Plan priorities, based on observed effects of implemented priorities.

#5: Other functions

Other functions will be articulated and directed by the Systemwide Governance Committee on an as-needed basis, but could include:

- Coordinating independent science review of conceptual models and hypotheses, monitoring protocols, modelling and analysis tools, results of monitoring and targeted studies, and/or inference and interpretation of synthesized results; and,
- Conducting workshops for VA Parties.

2.3 Products of the VA Science Program

The VA Science Program will produce or contribute to a number of products to support its core functions as described above, including: a long-term VA Science Plan, annual science plans, periodic science syntheses, VA progress reports, and protocols and guidelines. The products in this section are not an exhaustive list of possible VA Science Program products. On an as needed basis, other products will be added and the ones identified here may be modified.

2.3.1 VA Science Plan

The Strategic Plan will set multi-year direction for the deployment of VA assets and for priority science questions. The VA Science Plan will be a long-term plan that identifies specific scientific activities to track progress relative to VA Targets and to respond to the priority science questions identified in the Strategic Plan. The VA Science Plan will be developed by the VAST Committee with support from the VA Program Office. The information contained in the Science Plan will also enable the VAST Committee to provide technical support to the SDM process and other planning and decision processes of the VA.

Specifically, the VA Science Plan will include:

- Conceptual descriptions of the links between flow/non-flow management actions and their anticipated biological and environmental effects;
- Descriptions of the existing or additional monitoring and studies to track progress relative to VA Targets and to address priority science questions, including monitoring and studies that anticipate opportunities for learning based on unique situations;
- Identification of existing and new models to be reviewed by the VAST Committee, and if appropriate and mutually acceptable, used in assessing expected outcomes of VA asset implementation and information needs to improve the predictions of the models;
- Explicit opportunities for coordination with other groups and initiatives; and,
- Procedures for updating the VA Science Plan as new information becomes available regarding conceptual models, evidence to support or refute current hypotheses, or changes to other major Science Plan components.

Studies and analyses identified in the VA Science Plan could include laboratory experiments, mesocosm experiments, large-scale management experiments, synthesis studies of existing information and/or other types of studies.

To implement the VA Science Plan, the VAST Committee and the VA Program Office will follow a logical process to ensure efficient implementation of each science activity identified in the plan. For any specific science activity, the VA Program Office, in coordination with the VAST Committee, will work to: identify whether the relevant data is already being collected by an existing science program, and if it is not, then inquire with the appropriate existing science program if they would be willing to undertake an additional monitoring or study activity. Where existing science programs are not able to fill the needs of the VA Program, the VA Program Office will work with hired consultants, through academic partnerships, and/or other entities as appropriate, to fill the need.

For any of the avenues above, a key role of the VA Program Office's Science Manager will be to help coordinate with existing entities and help coordinate contracting and permitting (e.g., fish take permits).

2.3.2 Annual Science Plans

Both the Systemwide Governance Committee and the Trib/Delta GEs will undertake annual science planning, which will consist of operationally-focused plans to support annual budgeting and work planning. Annual science plans will be focused on implementing the VA Science Plan and will identify any near-term changes to monitoring and targeted studies to respond to emerging scientific understanding or unique circumstances for learning anticipated during that year.

2.3.3 Periodic Science Syntheses

To pair with the forward-looking VA Science Plan, periodic science syntheses will help to collate, summarize, and analyze the best available science in a way that is relevant to the management of VA assets. These syntheses could include:

- Summarized results of project performance relative to hypothesized outcomes and targets;
- Descriptions of new or ongoing knowledge gaps, uncertainties, and scientific disagreements, and proposed scientific approaches (e.g., monitoring and synthesis studies) intended to resolve these needs;

- Topical syntheses as the state of knowledge on a particular topic is appreciably advanced; and,
- Recommendations for revisions and adaptation of planned management actions, monitoring/research elements of the VA Science Plan, conceptual/quantitative predictive models, and working hypotheses.

2.3.4 VA Progress Reports

The VA Science Program will be a key source of information for the preparation of annual and triennial reports on VA progress and effectiveness (see Section 1.5 for more on VA reports). The VA Program Office's Science Manager will coordinate the VA Science Program's contributions to these reports.

2.3.5 Protocols & Guidelines

To facilitate consistency in methods and approaches among tributary, Delta and systemwide actions and only to the extent that it proves useful to the VA Program, the VAST Committee could also develop or identify best practices for monitoring protocols, non-flow (i.e., habitat restoration, predator control, etc.) implementation guidelines, analysis methods, project-specific monitoring plans, restoration plans, adaptive management plans, etc.

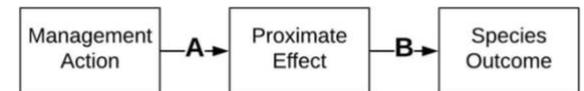
DRAFT

Box 1: Illustrative Process for identifying and prioritizing science questions for the VA Science Program

This is an illustration of the process for identifying and prioritizing management-relevant science questions for the VA Science Program. The examples provided below do not represent commitments to pursue these questions – rather, they are provided to demonstrate the kinds of questions at the science/policy interface that the Science Program is intended to address. Additionally, because these examples were developed only as examples, information provided in the table and rationales may not be fully correct.

The process shown here provides a foundation for deliberation on the relative merits of pursuing one line of research and monitoring over another, given that resources (time and funds) will be limited. These deliberations should be based on: (1) clearly articulated and specific questions; (2) a set of consistent criteria for evaluating the merits of each question that might include the degree of uncertainty, the relevance of the question to specific VA assets, the ability to meaningfully reduce uncertainty, and/or cost; and (3) trade-offs across these criteria.

Articulate a question and define the type of relationship: All candidate priority science questions should relate to hypothesized cause-effect relationships linking management actions to changes in the physical environment (type A) or linking changes in the environment to species outcomes (type B).



Rate the degree of uncertainty: Each question will receive a rating describing the level of uncertainty using a well-defined scale. The scale (and the ratings) will consider the balance of applicable evidence and its utility in making useful and meaningful predictions of management effects.

Rate the relevance to VA assets: Each question will also receive a rating describing the management relevance – that is, the degree to which answering that question would initiate a change in the use of specific assets (high relevance) or whether the use of assets is unlikely to change in response to the new information (low relevance).

Illustrative Priority Science Question	Type	Degree of Uncertainty	Relevance to Management of VA Assets	Rationale
What are the effects of summer/fall flow conditions on environmental conditions in the Delta that support beneficial uses (e.g. water quality, food availability, etc.)?	A/B	Moderate	Moderate: <ul style="list-style-type: none"> – Summer: 160-195 TAF maximum from the Sacramento, Feather, & Mokelumne – Fall: 10-45 TAF maximum from Mokelumne 	There are uncertainties and competing hypotheses regarding the role of flow in Delta Smelt habitat in summer and fall.

Illustrative Priority Science Question	Type	Degree of Uncertainty	Relevance to Management of VA Assets	Rationale
Does addition of new off-channel and/or side channel rearing habitat for Chinook Salmon: 1) produce measurable changes in the overall quantity and quality of available habitat; or 2) result in a measurable increase in in-river productivity (e.g., annual biomass of outmigrant Chinook salmon per spawning female)?	A/B	Moderate	High: <ul style="list-style-type: none"> - Sacramento: < 3,225 ac, Feather: 2,877+ ac, Yuba: 100 ac, American: 150 ac, Mokelumne: 60 ac, Tuolumne: 115 ac. 	There are uncertainties and competing hypotheses regarding the relative benefits in habitat quantity and quality and thus in-river productivity that may result from increased tributary habitat supply.

