Workshop on Draft Sacramento/Delta Updates to the Bay-Delta Water Quality Control Plan

December 3, 2024
Morning Session

CALIFORNIA
Water Boards

State Water Resources Control Board

Presentation Overview

- Workshop overview
- Description of draft VA habitat accounting provisions
- Next steps and opportunities for public input

Workshop Overview

Purpose

To receive public input on the draft Sacramento/Delta updates to the Bay-Delta Plan released on October 25, 2024

Format

Five workshop days focused on specific topics

Agenda

Staff presentations, topic-specific panel presentations, and topic-specific individual comments

Workshop Topics

November 20	Draft Sacramento/Delta Regulatory Provisions
November 22	Draft Sacramento/Delta Voluntary Agreement (VA)* Provisions **Also referred to as the Healthy Rivers and Landscapes proposal*
December 3	VA Habitat Accounting (Half Day) and Tribal Focused Topics (Half Day)
December 12	VA Flow Accounting (Beginning of Day) and General Comments* (End of Day) **Comments not specific to a workshop topic*
January 23	Potential Provision to Protect Base Delta Outflows During Drought Periods (Alternative 5a) and Potential Provision to Protect VA Flows and the Base They Are Added to From New Projects (Alternative 6a)

December 3 Agenda – Morning Session

Topic: VA Habitat Accounting	Panel: California Natural Resources Agency, Department of Water Resources, Department of Fish and Wildlife, Yuba Water Agency, and CBEC Eco Engineering
	Topic-specific individual comments (VA habitat accounting)

Discussion of tribal-focused topics will occur after lunch today.

Habitat Accounting in VA MOU

- Excerpts from VA Memorandum of Understanding (MOU) Appendix 4:
  - **"Implementation criteria: Quantitative metrics will be developed to ascertain whether VA commitments are met. Implementation criteria will be established to ensure actions are taken to provide** (1) flow volumes by water year type above baseline as specified in Appendix 1, and **(2) non-flow assets, including instream and floodplain habitat projects, that meet design criteria, acreage, and other targets."**
  - **"Monitoring:…In coordination with the SWB and other VA Parties, CDWR and the U.S. Bureau of Reclamation will develop accounting procedures to assure that** flows and **habitat restoration provided under the VAs are additional contributions above baseline conditions as defined in Section 4 of this Term Sheet. These procedures will be** incorporated into the Implementation Agreements and **subject to approval by the State Water Board."**

Habitat Accounting Purpose

- Count the number of acres each project contributes toward the VA MOU habitat restoration commitments
- Count habitat acres, and exclude non-habitat acres (e.g., access roads or other areas unsuitable as habitat)
- Ensure consistency with VA benefit analyses in Scientific Basis Report Supplement

Location	Restoration (acres)			
	Spawning	Instream Rearing	Floodplain	Tidal Wetland
Sacramento	113.5	137.5		
Sutter Bypass, Butte Sink, and Colusa Basin			20,000 + 20,000 food production	
Feather	15	5.25	1,655	
Yuba		50	100	
American	25	75		
Mokelumne		1	25	
Putah	1.4			
North Delta Arc and Suisun Marsh			5227.5	

Habitat Accounting Overview

- Edits from VA party proposals to ensure consistency with VA MOU and with Scientific Basis Report Supplement
- Habitat accounting follows 3 main steps:
  1. Determine if project is additive to VA habitat baseline
  2. Determine number of acres of qualifying projects that meet all applicable design criteria
  3. Habitat verification to confirm constructed habitat conforms with or provides equivalent benefits to the flow-habitat relationships provided by VA parties for assessment of the benefits of the VAs (only applicable to tributary spawning, instream rearing, and floodplain rearing projects)

1. Habitat Accounting Baseline

- VA MOU section 4.2
  - The habitat restoration measures described in Appendix 2 would be additive to physical conditions and regulatory requirements existing as of December 2018
- Draft Bay-Delta Plan would credit VA habitat projects that:
  i. Restore habitat in areas that are unsuitable under pre-project conditions;
  ii. Are not used to fulfill any other regulatory requirements, required mitigation, or other requirements that existed as of December 2018 or earlier; and
  iii. Construction started after December 2018 and is completed by the end of year eight of the VAs.

2. Design Criteria

- Pre-defined for tributary spawning, instream rearing, and floodplain habitat
- Not defined for bypass floodplain or tidal wetland habitat
- Proposals for bypass or tidal wetland criteria, or for variances to pre-defined tributary criteria, to be submitted to the Executive Director and DFW for approval, modification, or rejection, including:
  i. Scientific evidence that the proposed design criteria define suitable habitat for the species and life stage the restoration project is intended to benefit;
  ii. A justification for why modifications are needed to the design criteria, and how the modified design criteria would provide equivalent or greater protections for the species and life stage the project is intended to benefit; and
  iii. Appropriate reference materials, such as scientific literature used to support the proposed project-specific modifications to the design criteria.
- Variances for early implementation could also be considered

2. Tributary Depth, Velocity, and Substrate Criteria

- Defined and justified in final draft Scientific Basis Report Supplement (Appendix G2 to draft Staff Report)
- Same criteria appear in VA habitat accounting documents
- Same depth and velocity criteria used by VA parties in constructing the flow-habitat relationships provided to State Water Board staff for analysis of benefits in the Scientific Basis Report Supplement

Habitat type	Water depth (ft)	Water velocity (fps)	Substrate
Spawning	1.0 – 2.5	1.0 – 4.0	Dominant substrate size 2–10 centimeters (0.75–4.0 inches)
Instream or floodplain rearing	0.5 – 4.0	0.0 – 3.0	

2. Tributary Cover Criterion

- Cover is a key defining attribute of suitable salmon rearing habitat, may be more important than depth and velocity (San Joaquin River Restoration Program 2012; peer reviews of final draft Scientific Basis Report supplement)
- Minimum 20% areal coverage of cover features that have a Habitat Suitability Index ≥ 0.5 supported by the scientific literature, with no buffer applied
  - Consistent with final draft Scientific Basis Report Supplement, first draft VA Strategic Plan (September 2023), and with section 2.2 of the latest draft VA Non-Flow Measure Accounting (October 2024)
  - Not fully consistent with section 2.3.6 of the latest draft VA Non-Flow Measure Accounting (October 2024), which adds a 3-foot buffer around all cover features before calculating 20% coverage metric

2. Tributary Cover Criterion Justification

- 20% coverage is the lowest amount of cover deemed suitable in the scientific literature
  - Raleigh et al. 1986: 20% of the stream area should provide cover
  - Whipple et al. 2019: 75% cover of combined structural elements or daily turbidity > 20 Nephelometric Turbidity Units (NTU)
- Many studies have found that juvenile salmon forage within 3 feet of cover features, but there is no scientific literature for the suitability of 20% areal coverage of 3-foot buffered cover features

2. Tributary Cover Features

Cover Feature Type	Description
Woody debris	Fine woody vegetation and overhead cover, branches (2.5–30.5 centimeters diameter) and logs (> 30.5 centimeters diameter)
Boulder	Small-medium (12–48 inches) and large (> 34 inches) boulders
Grass/herbaceous	Emergent rooted aquatic grass and sedges, and tall (> 3 feet) dense grass
Willow and other riparian vegetation	Trees, bushes, willow riparian, willow scrub, and other riparian vegetation, taller than 2 feet above the ground
Undercut bank	Undercut at least 0.5 feet
Aquatic vegetation	Non-emergent rooted aquatic vegetation
Overhanging vegetation	Near or touching water
Root wad, logjam/submerged brush pile and large wood	Logs and root wads greater than 9 inches in diameter

2. Tributary Cover Features, cont.

- Cobble <12 inches diameter not included as a suitable cover feature, although it is included in VA accounting documents
  - VA documents cite WDFW 2004 to support cobble as cover
  - Beecher and Caldwall 2022, the updated version of WDFW 2004, includes cobble as a substrate that juvenile salmon can be found near when no cover is available
  - Also includes a statement that it should not be used without written agreement of WDFW or Ecology instream flow biologists
- Other studies have found that juvenile salmon do not prefer cobble over no cover (Hampton 1988; Gard 2006) or do not include cobble in lists of suitable cover features (San Joaquin River Restoration Program 2012; Whipple et al. 2019)

2. Tributary Floodplain Inundation Criterion

- Purpose: ensure floodplain habitats receive sufficient inundation to benefit rearing salmonids
- Suitable inundation events during times that provide benefit for rearing salmonids in two out of every three years
  - Suitable inundation events defined as two inundation periods of at least 21 days' duration or another period providing equivalent or greater benefits according to the science summarized in the Scientific Basis Report Supplement or updated scientific information as approved by the Executive Director
- Evaluated using modeled hydrology on a long-term basis using a new methodology in Appendix B

2. Inundation Criterion Justification

- Based on Meaningful Floodplain Event (MFE) criteria in Scientific Basis Report Supplement
- To provide optimal benefits, floodplain must be inundated for sufficient time to allow food web to activate and reach peak productivity
  - Floodplain productivity peaks after 21 days of inundation (Grosholz and Gallo 2006; Yarnell et al. 2015)
  - Salmon spend 30-56 days on the floodplain on average (Sommer et al. 2005) and longer inundation provides greater benefits for life history diversity and growth (Goertler et al. 2018)

2. Inundation Criterion Justification, cont.

- Repeated flood pulses renew productivity and passage and reduce prey mismatch, so most productive inundation pattern is multiple long-duration inundation events (Whipple et al. 2019; Grosholz and Gallo 2006)
- Inundation is needed at least every 1.3 to 4 years, most beneficial every year (Whipple et al. 2019; Yarnell et al. 2015; Matella and Merenlender 2015)
  - Requirement for 2/3 years (Williams et al. 2009) balances this and accounts for variation in salmon cohorts among years

2. Bypass and Tidal Wetland Criteria

- Would require scientific evidence that proposed design criteria constitute suitable habitat for the species and life stages the project is intended to benefit
- Projects to be designed to address aquatic ecosystem stressors in Scientific Basis Report Supplement
- Provisions needed for fish access and habitat for salmon rearing and/or other fishes such as Sturgeon, Splittail, and Longfin smelt
- Bypass criteria to be proposed alongside proposal for amount of incremental improvement needed for an enhancement project acre to count toward the commitments

3. Tributary Habitat Verification

- Confirm acreage of habitat meeting design criteria across a range of flows conforms with or provides equivalent benefits to the flow-habitat relationships provided by VA parties for assessment of the benefits of the VAs (i.e., from Scientific Basis Report Supplement)
- Since habitat is flow-dependent, these flow-habitat relationships were a necessary elaboration on the single number in the VA MOU to define their habitat commitments for analysis of benefits
- Verification provided to Executive Director and DFW for approval
- Necessary to ensure habitat commitments are met and that flow-habitat relationships provided by VA parties can be assumed with reasonable certainty in Scientific Basis Report Supplement analyses

Tributary Habitat Accounting Protocol

- A detailed protocol to apply accounting to qualifying VA tributary habitat restoration projects is available in Appendix B
- Modified from the VA party protocol released in advance of the April 2024 VA workshop
- Modifications intended to increase clarity, ensure consistency with draft Bay-Delta Plan accounting requirements, and develop protocols that allow for proportional counting of habitat acres rather than pass/fail tests on entire projects
- Removed provision that would allow same acres to count toward multiple habitat categories
- Habitat accounting procedures for bypass floodplain and tidal wetland projects would follow similar protocols
- May be refined by Executive Director as part of annual and periodic review processes after public review and comment

Accounting Information

- For each restoration project proposed to apply toward VAs, the following information would be required to be submitted:
  - Lead implementing agency and any collaborating agencies and the roles of each agency;
  - Final project design as constructed, including the actual areal extent of substrate and cover elements by type;
  - Raster data providing spatial data of adequate resolution of the areas conforming to the depth, velocity, cover, and substrate criteria at each design flow, and shapefiles of the actual areal spatial extent of each cover and substrate type at each design flow; and
  - Any other information necessary to conduct accounting assessments or as requested by the Executive Director.

Major Next Steps

Receive public comments in writing and orally at multiday workshop

Develop a revised draft of proposed updates to Bay-Delta Plan based on public comments

Continue to review comments on draft Staff Report and develop final Staff Report

Board meeting to consider adoption of Sacramento/ Delta updates to Bay-Delta Plan and final Staff Report

Resources and Contact Information

- Sacramento/Delta Update to Bay-Delta Plan: waterboards.ca.gov/bay_delta/comp_review.html
- Proposed VAs: waterboards.ca.gov/bay_delta/proposed_voluntary_agreements.html
- Bay-Delta Watershed: waterboards.ca.gov/bay_delta/
- Email: SacDeltaComments@waterboards.ca.gov

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