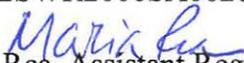


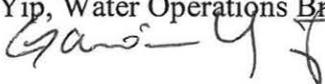


UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
650 Capitol Mall, Suite 5-100
Sacramento, California 95814-4700

Effective Date: January 15, 2016

MEMORANDUM FOR: Administrative Record for the Designation of a Nonessential Population of Central Valley Spring-run Chinook Salmon Below Friant Dam in the San Joaquin River, California (ARN: 151422SWR2010SA00361) and the Biological and Conference Opinion on the Long-term Operations of the Central Valley Project and State Water Project (CVP/SWP Opinion); ARN: 151422SWR2006SA00268)¹

TO:  Maria Rea, Assistant Regional Administrator, California Central Valley Office (CCVO), West Coast Region

THROUGH: Garwin Yip, Water Operations Branch Chief, CCVO, West Coast Region 

FROM: Rhonda Reed, San Joaquin Branch Chief, CCVO, West Coast Region 

SUBJECT: 2016 (January 2016 – December 2016) Technical Memorandum Regarding the Accounting of San Joaquin River Spring-run Chinook Salmon at the Central Valley Project and State Water Project Sacramento-San Joaquin Delta Fish Collection Facilities

NMFS has prepared this Technical Memorandum (Tech Memo) to fulfill the following three purposes:

- 1) Fulfill one of the requirements of the *Designation of a Nonessential Experimental Population of Central Valley Spring-run Chinook Salmon Below Friant Dam in the San Joaquin River, California* (70 FR 79622, December 31, 2013) to release an annual technical memorandum to “calculate and document the proportionate contribution of Central Valley (CV) spring-run Chinook salmon originating from the reintroduction to the San Joaquin River (San Joaquin River) and deduct or otherwise adjust for share of CV spring-run Chinook salmon take when applying the operational triggers and incidental take statements associated with the NMFS 2009 Biological and Conference Opinion on the Long-term Operations of the Central Valley Project and State Water Project (CVP/SWP Opinion) or subsequent future biological opinions, or Section 10 permits.”

Cite as: ¹NMFS. 2016. Technical Memorandum to Account for Reintroduced San Joaquin River Spring-Run Chinook Salmon per CFR 233.301(b)(5)(ii): 7



- 2) Present the methodology that will be employed in 2016 to identify reintroduced spring-run Chinook salmon (*Oncorhynchus tshawytscha*) from the San Joaquin River and the deduction or adjustment for such reintroduced spring-run Chinook salmon in the operations of the Central Valley Project (CVP) and State Water Project (SWP) such that the reintroduction will not impose more than *de minimus* water supply reductions, additional storage releases, or bypass flows on unwilling third parties as defined in P.L. 111-11, Title X, section 10011(c)(1).
- 3) Present the spring-run Chinook salmon release and monitoring plans for 2016. There will not be any naturally-produced juvenile spring-run Chinook salmon emigrating from the San Joaquin River Restoration Program Area (Restoration Area) of a size to be mistaken for juvenile winter-run Chinook salmon in 2016.

2015 Tech Memo Implementation Summary

Elements of the 2015 Tech Memo were implemented as follows. The San Joaquin River Restoration Program (Program) released 54,924 Feather River Hatchery spring-run Chinook salmon juveniles to the San Joaquin River just upstream of the confluence with the Merced River on February 26, 2015. All juvenile spring-run Chinook salmon released were adipose fin-clipped and coded wire tagged (CWT) with a common tag identifier (No. 06-04-60). All of the downstream sampling efforts and fish facilities were informed of the presence of these fish and their CWT identifier. Two of these fish were recaptured in the Mossdale trawl on March 16, 2015. None of these fish were captured at other downstream locations, *e.g.*, the fish facilities or Chipps Island trawl. All recaptured fish were sacrificed at the point of capture for CWT identification as per protocol. None of the juvenile spring-run Chinook salmon released were acoustically or passive integrative technology (PIT)-tagged.

No spring-run Chinook salmon broodstock from the San Joaquin River Conservation and Research Facility (SCARF) were released to the river.

No rotary screw traps were deployed within the Restoration Area due to low river flows, but juvenile capture weirs were tested at four locations in Reach 1 using fall-run Chinook salmon.

Genetic tissue samples were taken at the Feather River Hatchery from the parents of the released juvenile spring-run Chinook salmon for use in parentage analysis. Tissue samples were also collected from all adult fall-run Chinook salmon captured in the Restoration Area. In addition, a few of the naturally-produced (unclipped) juvenile fall-run Chinook salmon captured in the juvenile traps were kept for genetic analysis.

No changes in water operations were experienced as a result of the juvenile spring-run Chinook salmon releases.

NMFS has committed to developing this Tech Memo, to the greatest extent possible, in coordination with interested parties and has formed a working group for this purpose. The focus of the 2015 Tech Memo working group process was to consolidate the technical information regarding accounting of naturally-produced San Joaquin River spring-run Chinook salmon in order to complete the Guidance Document for Methods to Assess San Joaquin River Spring-Run Chinook Salmon in Relation to CVP/SWP Delta Facilities Operational Triggers and Incidental Take Limits (Guidance Document). NMFS and the Program will use the Guidance Document to determine which methodology or combination of methodologies will be implemented. The finalized Guidance Document was distributed in October 2015 and was taken into consideration in the development of the 2015/2016 monitoring plan for the Program; elements of these methods will be investigated in 2016, as described in the following section.

2016 Implementation

River conditions within the Restoration Area will dictate the implementation of fish releases and fisheries monitoring. The Program will monitor river and climate conditions and may cancel or modify fisheries monitoring and/or fish release activities depending on expected conditions in the system.

In 2016, the Program will further investigate the use of two methods to account for San Joaquin River spring-run Chinook salmon at the CVP/SWP Delta Facilities; surrogates (representative batches or mass marking) and genetic identification. Steps of this investigation are outlined here:

A. Juvenile growth rate assessment

- Identify the monitoring necessary and feasible to determine whether naturally-produced San Joaquin River spring-run Chinook salmon from the San Joaquin River are of the same size and migration timing as winter-run Chinook salmon in the Delta.

B. Feasibility and accuracy of using surrogates for accounting

- Determine appropriate fish to use: size, run, hatchery vs. wild
- Identify fish capture (if appropriate) and release locations
- Identify appropriate fish mark type(s)

C. Genetic identification for accounting

- Determine adequacy of current genetic testing at the CVP/SWP Delta Facilities
- Identify and resolve (to the extent of our control) potential issues with using genetic identification for meeting *de minimus* requirement – process timing, chain of custody, necessary agencies' commitment

If conditions and logistics allow, juvenile fall-run Chinook salmon may be released with juvenile spring-run Chinook salmon to assess the sentinel/surrogate methodology (Investigation B above) and to improve downstream detection of San Joaquin River origin Chinook salmon. The Program will continue to evaluate the feasibility of mass marking Central Valley spring-run Chinook produced by the SJRRP through the evaluation of juvenile collection methods. Genetic samples will be collected from all adult fall-run Chinook salmon returning to the Restoration Area for the parental-based tagging effort. In addition, all naturally-produced (unmarked) juvenile Chinook salmon captured in the rotary screw traps or other juvenile traps, including weirs or fyke nets, will be genetically sampled for the parental inference analysis. These techniques are described further in the genetics analysis section of this Tech Memo. The Program will continue to estimate juvenile Chinook salmon survival, which is a key element for developing a juvenile production estimate (JPE), even though we are not pursuing the development of a JPE at this time. Egg survival will be monitored with emergence traps, juvenile emigration survival in the Restoration Area will be estimated using acoustic tags and juvenile traps, and juvenile migration to the Delta will be estimated from recapture of coded-wire tagged fall- and spring-run Chinook salmon in the Mossdale Trawl, Chipps Island trawl, and at the Delta fish collection facilities.

1. Calculation of incidental take:

a. Incidental take –

Incidental take calculations and adjustments to the incidental take estimates pursuant to the CVP/SWP Opinion are unnecessary for 2016 because all of the CV spring-run Chinook salmon released into the San Joaquin River will be adipose fin-clipped and CWTed.

b. Operational triggers –

Adjustment to the juvenile salmon take estimates used to develop operational triggers pursuant to the CVP/SWP Opinion are unnecessary for 2016 because all of the spring-run Chinook salmon released into the San Joaquin River will be adipose fin-clipped and CWTed.

2. Accounting Methodology:

a. Physical Marking –

All juvenile spring-run Chinook salmon released into the San Joaquin River as part of the Program will be adipose fin-clipped and CWTed with a code unique to Program fish so that they can be distinguished from any other juvenile Chinook salmon release group. Because these fish will be adipose fin-clipped, they are exempted from take prohibitions under the 4(d) rule for West Coast threatened

salmonids (70 FR 37160, June 28, 2005). As a result, reintroduced spring-run Chinook salmon will not be counted toward the incidental take limits and trigger levels provided under all applicable biological opinions and Endangered Species Act section 10 research permits for operation of any and all facilities of the CVP/SWP (outside of the Friant Division of the CVP).

Biologists at the CVP/SWP Delta Facilities will record, measure, and sacrifice all adipose fin-clipped fish with a positive CWT detection (as currently undertaken via facility Standard Operating Procedures). CWTed fish will be processed (tag code read) by staff at the CVP/SWP Delta Facilities within 24 hours and reported to the California Department of Fish and Wildlife (CDFW), which will then report the CWT data to the Data Assessment Team (DAT) and Delta Operations for Salmonids and Sturgeon (DOSS) group within 24 hours. The CWT data will also be provided to the San Joaquin River spring-run Tech Memo group.

b. Genetic Analysis -

The Program is establishing a parentage based tagging (PBT) program for the San Joaquin River Chinook salmon populations. PBT involves the annual sampling and genotyping of adult Chinook salmon returning to the Restoration Area; these data are being used to create a database of their genotypes for future parentage assignment of their progeny. Genetic sampling of the San Joaquin River fall-run Chinook salmon population began in 2013. All adult Chinook salmon returning to the Restoration Area in 2015/16 will be tissue sampled for genetic testing.

In addition, all natural origin (unmarked) juvenile Chinook salmon captured in the rotary screw traps or other juvenile traps deployed in 2016 will be tissue sampled for genetic analysis as part of the parental inference analysis. Parental inference analysis will include identification of both parents of each individual, estimation of the number of crosses that took place in the river, family line contribution, and identification of crosses not attributable to the Program.

Genetic analysis of Chinook salmon at the CVP/SWP Delta Facilities may be a more definitive method to distinguish San Joaquin River spring-run Chinook salmon from other runs of Chinook salmon once natural production is occurring within the San Joaquin River and adipose fin-clipping all juvenile spring-run Chinook salmon reintroduced to the San Joaquin River is no longer possible. With the present operational triggers, the key concern is whether reintroduced San Joaquin River spring-run Chinook salmon would be of the same size, and mis-identified as larger winter-run juveniles in the salvage facilities. At this time, genetic testing of larger juvenile fish needs only to determine whether the fish is genetically a winter-run Chinook salmon juvenile, so it is not necessary to specifically identify the genetic origins of the “not winter-run” fish for the operational triggers to be applied correctly. The CVP/SWP biological opinion is

subject to annual scientific review which could have the potential to modify operational triggers to protect winter-run Chinook salmon. Consequently, the Program will coordinate with the winter-run Chinook salmon genetic sampling effort planned for 2016 at the CVP/SWP Delta Facilities to ensure that the methods being employed could be used for distinguishing San Joaquin River spring-run Chinook salmon from Sacramento River winter-run Chinook salmon starting as early as spring 2017, should it be deemed necessary. Currently, all non-adipose clipped Chinook salmon captured at the CVP/SWP Delta Facilities are genetically sampled unless the numbers of fish are too large to process.

3. Reintroduction Process:

a. Release Plans –

A total of approximately 120,000 juvenile spring-run Chinook will be released into the San Joaquin River upstream of the Merced River confluence in spring 2016 as part of the Program. There will be roughly 60,800 salmon from the Feather River Fish Hatchery with the remaining juveniles coming from the SCARF. Also, 2-year-old broodstock from the SCARF will be released into Reach 1, although the exact numbers for release are currently unknown; these fish will have CWTs and PIT tags and have their adipose fins clipped. Additionally, the Program is planning to monitor Reach 5 for returning spring-run Chinook salmon 2-year-olds from 2014 juvenile releases. If those adults are captured, they will be genetically sampled, tagged with an acoustic transmitter, and released in Reach 1. These adults and the SCARF broodstock releases could spawn naturally in the Restoration Area in 2016, and juveniles would be outmigrating as early as January 2017.

The exact release location, date, number of release groups, and numbers of fish per release group are dependent on water year type, physical river conditions within the Restoration Area (the San Joaquin River from Friant Dam to the Merced River confluence), and fish source, availability, and size, which will not be known until early spring. Target release timing, location and numbers of fish per release will be identified and posted on the Program website (<http://restoreSanJoaquinRiver.net>) when determined.

The U.S. Fish and Wildlife Service (USFWS) will issue pre-release notifications via email to interested stakeholders and agencies approximately one week prior to fish release. A second notification will be made to the same list immediately after the fish release. A memorandum summarizing the hatchery releases will be prepared for the DOSS group with details regarding the releases, marks, and CWT codes. Release information will also be reported to the Regional Mark Processing Center website (<http://www.rmpec.org>).

b. Monitoring Plan -

Juvenile spring-run Chinook salmon released through the Program will be monitored throughout the San Joaquin River to determine migration timing, route selection, and juvenile survival and size. The scope of monitoring will depend on where fish are released within the Restoration Area and river conditions.

Rotary screw traps and/or juvenile capture weirs may be placed in one to four locations within the Program Restoration Area and operated when sufficient velocities allow for drum rotation and operations are safe for field personnel.

Juvenile traps will likely be installed in the following general areas: upstream of Highway 99 in Reach 1, and at the San Mateo Crossing in Reach 2B (these are potential locations only and may change due to conditions, permitting or access and vandalism issues). An additional screw trap may be deployed near the bottom of Reach 5 or the Highway 99 screw trap may be reallocated to this location to assess survival, migration, and growth rates within Reach 5. The rotary screw traps are anticipated to be deployed prior to the release of Program tagged juvenile spring-run Chinook salmon into the river and operated until Program study activities are completed. Mark-recapture studies using juvenile fall-run Chinook salmon are planned for spring 2016 by the Program to set the groundwork for determining rotary screw trap efficiencies, which may enable use of the rotary screw trap data for Chinook salmon abundance calculations and/or development of a JPE.

The Program also plans to implement an additional year of testing juvenile trap and transport methods to move juvenile fall-run Chinook salmon past areas where there is not river connectivity in 2016.

Based on discussions with members of the Tech Memo working group, NMFS has determined that tracking juvenile salmon migration through the lower San Joaquin River beyond the current monitoring efforts in place by other programs does not have value this year. There are two current monitoring efforts that will track juvenile salmon in the lower San Joaquin River; beach seining conducted by the USFWS and trawling at Mossdale conducted by the CDFW/USFWS.

4. Timeline:

Once final juvenile San Joaquin River CV spring-run Chinook salmon release information is available, this information will be posted to the Program website at www.restoreSanJoaquinRiver.net. Beginning in February 2016, NMFS will hold monthly meetings to discuss implementation of this 2016 Tech Memo and to develop the 2017 Tech Memo. NMFS will also focus the meetings on implementation of the

techniques developed in the Guidance Document and creating a framework for effectively identifying and distinguishing juvenile spring-run Chinook salmon produced in the San Joaquin River from winter-run Chinook salmon that may be collected in the SWP and CVP Delta Facilities fish salvage operations, once natural production is occurring in the San Joaquin River, likely beginning in spring 2017.

5. Revision:

NMFS developed this memorandum to govern activities for one year only. As a result, it will not be in effect after January 15, 2017. NMFS intends to prepare a new memorandum by January 15, 2017, to govern activities during 2017.

6. Adjustments to the CVP/SWP Opinion:

No adjustments are needed in 2016 to the CVP/SWP Opinion because all reintroduced juvenile spring-run Chinook salmon will be adipose fin-clipped and these will not be included in the operational triggers or incidental take limits.