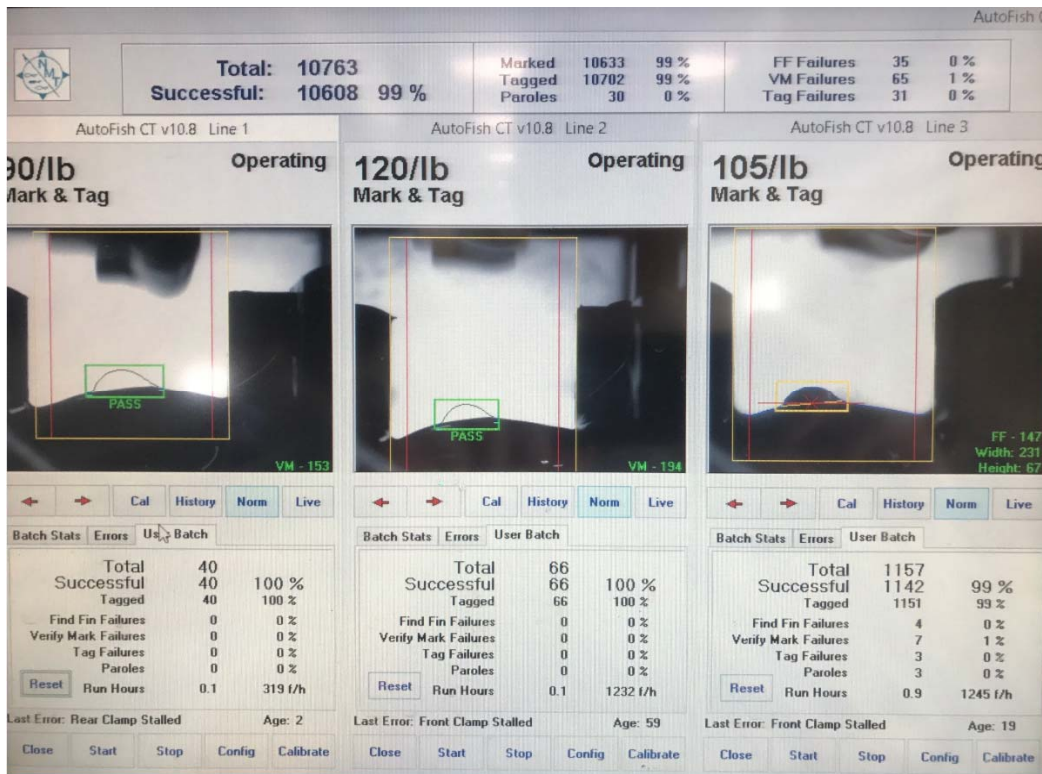


Central Valley Salmon and Steelhead Marking/Coded-wire Tagging Program

Fall-run Chinook Salmon
Spring-run Chinook Salmon
Steelhead

2017 Marking Season



Prepared by:

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Abstract

The Central Valley Constant Fractional Marking/Tagging Program (CFM) was initiated in the spring of 2007 following the purchase of four automated fish tagging trailers (AutoFish Systems). Planning studies indicated that the optimal marking/tagging rate for the Central Valley CFM program was 25% of the fall-run Chinook salmon production releases. For each production release (fish released at the same time and location), the program therefore targeted marking with an adipose fin-clip and coded-wire tagging a representative 25% of each release of fall-run Chinook salmon from the Central Valley hatcheries in 2007 through 2017. The program was conducted at Coleman National Fish Hatchery, Feather River Fish Hatchery, Nimbus Fish Hatchery, and Mokelumne River Fish Hatchery in these years. We assisted with the manual tagging operations at Friant Fish Hatchery and Merced River Fish Hatchery during the 2017 tagging season.

The AutoFish Trailers were also used in the 2011 through 2017 seasons to adipose fin-clip and coded-wire tag 100% of the spring-run Chinook salmon reared at the Feather River Fish Hatchery, and adipose fin-clip 100% of the steelhead reared at Coleman National Fish Hatchery, Feather River Fish Hatchery, Mokelumne River Fish Hatchery, and Nimbus Fish Hatchery.

This report includes the marking/tagging activities conducted with the AutoFish Systems and manual marking trailers at the seven Central Valley hatcheries in 2017 (Brood Year 2016 fall-run Chinook salmon, spring-run Chinook salmon, and steelhead). The program successfully processed 100% of the production releases of fall-run Chinook salmon through the automated and manual marking trailers, 27,603,460 fish. Of the fall-run Chinook salmon total, approximately 33.25% were coded-wire tagged and adipose fin-clipped (9,177,405 fish). In addition, the program marked and coded-wire tagged 100% of the spring-run Chinook salmon produced at the Feather River Fish Hatchery and Friant Fish Hatchery, a total of 1,790,237 fish. The program also adipose fin-clipped 100% of the steelhead produced at Coleman National Fish Hatchery, Feather River Fish Hatchery, Feather River Annex Fish Hatchery, Mokelumne River Fish Hatchery, and Nimbus Fish Hatchery, a total of 1,204,646 fish. The Coleman National Fish Hatchery late-fall-run Chinook salmon and steelhead marking/tagging numbers are included in a separate report.

Introduction

In most years, approximately 30 million fall-run Chinook salmon are produced at four hatcheries in California's Central Valley, including Coleman National Fish Hatchery, Feather River Fish Hatchery, Nimbus Fish Hatchery, and Mokelumne River Fish Hatchery (Figure 1). Production from these hatcheries contributes to major sport and commercial fisheries in ocean and inland areas. Until 2007, only experimental releases of fall-run Chinook were externally marked and coded-wire tagged on a regular basis.

In 2004, the CALFED Ecosystem Restoration Program (ERP) funded a study to design a constant fractional marking/coded-wire tagging program for production releases of fall-run Chinook salmon from Central Valley hatcheries, with the goal of estimating in a statistically valid manner the relative contribution of hatchery production. The study recommended the implementation of a system-wide marking/tagging program for production releases.

In 2006, the ERP Program provided the initial funding to begin implementation of the Central Valley Constant Fractional Marking (CFM) program. The initial contract provided funding to Pacific States Marine Fisheries Commission for the purchase of four automated tagging systems (AutoFish Systems) and the first two years of operating costs for marking/tagging production releases of fall-run Chinook salmon at the five major Central Valley hatcheries (in 2007 and 2008).

This program is a cooperative effort of the California Department of Fish and Wildlife, California Department of Water Resources, U.S. Fish and Wildlife Service, Pacific States Marine Fisheries Commission, U.S. Bureau of Reclamation, and East Bay Municipal Utility District. In 2009 through 2017, funding to conduct tagging operations was provided by the following entities: California Department of Water Resources and California Department of Fish and Wildlife; East Bay Municipal Utility District; and U.S. Bureau of Reclamation.

From 2002 to 2010, 100% of the spring-run Chinook salmon production at Feather River Hatchery was marked and coded-wire tagged using manual techniques. In 2011 through 2017, an AutoFish Trailer was used for the spring-run Chinook salmon marking/tagging. Funding was provided by the California Department of Water Resources.

The overall objectives of the fall and spring-run Chinook salmon tagging programs are:

1. To evaluate the contribution rates of hatchery fish to Central Valley Chinook salmon populations,
2. To evaluate the Central Valley propagation program's genetic and ecological effects on natural Chinook populations,
3. To estimate exploitation rates of hatchery and natural Central Valley Chinook salmon in ocean and inland fisheries,
4. To evaluate the success of restoration actions designed to increase natural production of Central Valley Chinook salmon,
5. To evaluate the relative impacts of water project operations on hatchery and naturally-produced Chinook salmon,
6. To evaluate the recovery of listed stocks of Chinook salmon.

All of the steelhead reared at Central Valley hatcheries were also marked using the AutoFish Trailers in 2017. Marking allows selective harvest of hatchery-reared steelhead in sport fisheries.

This report covers the eleventh year of the CFM program's marking/tagging activities at five major Central Valley hatcheries in the spring/summer of 2017 (Brood Year 2016 fall-run Chinook salmon). Also included in this report is the manual tagging operations conducted at Friant Fish Hatchery on both spring-run and fall-run Chinook salmon, and Merced River Fish Hatchery fall-run Chinook salmon. The report also includes the marking/tagging of Brood Year 2016 spring-run Chinook salmon reared at the Feather River Fish Hatchery (which were moved to the Feather River Annex hatchery), and marking of steelhead reared at Feather River Fish Hatchery, Mokelumne River Fish Hatchery, and Nimbus Fish Hatchery. Coleman National Fish Hatchery steelhead and late-fall run Chinook salmon are included in a separate report.

Methods

The coded-wire tag/adipose fin clip is the method agreed to by the Pacific Salmon Treaty (1999) to monitor Chinook salmon in ocean fisheries along the Pacific Coast. It is a cost-effective method to apply a long-term mark that gives data on hatchery origin and release group, and provides for external identification of tagged fish. The coded-wire tag/adipose fin-clip marking method has been used throughout the West Coast of North America since the 1970's. Currently, over 50 million Chinook and coho salmon are coded-wire tagged each year. This Central Valley program is an integral part of this Coast-wide tagging program; tagged fish are recovered in ocean fisheries throughout the West Coast.

Four state-of-the-art automated tagging trailers were purchased for the Central Valley program in late 2006 and early 2007 from Northwest Marine Technology. The trailers incorporated the latest advanced technology for marking and coded-wire tagging fish. The AutoFish System™ has the capacity to mark and implant coded-wire tags very rapidly without any use of anesthetic or human contact. These systems have been in use for many years in the Pacific Northwest, but the Central Valley trailers were the first to be purchased for use in California.

Planning studies indicated that the optimal marking/tagging rate for the Central Valley CFM program was 25% of the fall-run Chinook production releases. For each production release (fish released at the same time and location), the program therefore targeted marking/tagging a representative 25% in 2007 through 2017. Coded-wire tags for the 2017 season were ordered from Northwest Marine Technology in November 2016. Tags used in the program were all 1.1 mm standard length tags with the exception of the Knagg's Ranch Chinook salmon tagging, which half-length tags were used.

The program was conducted at Coleman National Fish Hatchery, Feather River Fish Hatchery, Nimbus Fish Hatchery, and Mokelumne River Fish Hatchery (Figure 1). A manual tagging trailer was used for the Friant Fish Hatchery spring-run and fall-run Chinook salmon and fall-run Chinook salmon at Merced River Fish Hatchery.

The automated marking trailers have the ability to process fish that are a minimum length of 57 mm and a maximum length of 142 mm. With this in mind, timing of AutoFish Trailer operations at each facility was critical to maximize efficiency and productivity while meeting hatchery release deadlines. Double shifts were often used to maximize efficiency and output of the AutoFish Trailers. Trailers were moved as needed when fish at each hatchery reached the appropriate marking size. The fall-run Chinook salmon marking/tagging season began the first week of March at Coleman National Fish Hatchery and ended at Nimbus Fish Hatchery the third week of May. Marking/tagging of hatchery-produced fall-run Chinook salmon in 2017 therefore spanned an 11-week period. The spring-run Chinook salmon marking/tagging season began the third week of January at Friant Fish Hatchery and was completed at the Feather River Annex Hatchery the third week of March for a total of ten weeks. The Central Valley steelhead marking was conducted intermittently based on the number of fish that were the appropriate size to process through the AutoFish Trailers, from the second week of June through the second week of July for a total of four weeks.

Throughout the season, fin-clipping rate and tag retention studies were conducted for fall and spring-run Chinook salmon to determine actual marking/tagging rates for each coded-wire tag code. Except as otherwise noted below, approximately 800-900 marked/tagged fish per tag code

were retained and held separately for a period of approximately 21 days following the completion of each tag code. At Coleman National Fish Hatchery and Mokelumne River Fish Hatchery, approximately 400 fish were held for retention purposes for each tag code. A lower number of fish was used in studies at these facilities due to the large number of tag codes used. Study fish were sampled from throughout the tagging period for each tag code. Fish were electronically tested for tag retentions and visually inspected for fin-clip quality at the end of the study period. During these quality checks, for a fish to be counted as successfully retaining a tag, 60% or more of the adipose fin must be removed and a coded-wire tag must be present. A partial clip resulted in 10-40% of the adipose fin still present but was not counted against the successful clipping rate. If more than 40% of the adipose fin was still intact, it was classified as unclipped and therefore counts against the successful tagging rate (i.e. it likely would not be checked for a CWT since the adipose fin is intact or mostly intact). In some instances, fish were held for less than the standard 21-day time period due to specific hatchery release strategies. For some smaller tag codes, tag retention studies were not feasible; for these tag groups, retention rates were extrapolated from larger groups tagged at the same hatchery during similar time periods.

Following the tagging season, coded-wire tag data were summarized for submission to [the Regional Mark Processing Center \(RMPC\)](#), operated by the Pacific States Marine Fisheries Commission (<http://www.rmhc.org>). The RMPC provides regional coordination of salmon tagging and fin marking programs, and maintenance of coastwide databases for coded-wire tag releases, recoveries, and associated catch/sample information, in the Regional Mark Information System (RMIS).

Figure 2 summarizes the annual project work flow.

Results

Daily tagging rates, tag codes, and results of retention studies for the 2017 tagging season are shown in Appendix Tables 1 – 7 for each of the hatcheries. The technology allowed an accurate count of all production fish, and the marking/tagging of an exact percentage of those fish.

The program successfully processed 100% of the 2017 production releases of fall-run Chinook salmon from the Central Valley hatcheries (totaling 27,603,460 fish). The 25% target rate for marking/tagging was achieved for Brood Year 2016 (approximately 33.25% were CWT/ad-clipped, 9,177,405 fish). The AutoFish Trailers also marked and tagged Brood Year 2016 spring-run Chinook salmon reared at the Feather River Fish Hatchery 1,702,517 fish, and manually tagged 16,169 for the Knagg's Ranch Project. 71,551 Brood Year 2016 spring-run Chinook salmon were manually tagged at Friant Fish Hatchery.

The AutoFish Trailers marked 100% of the steelhead reared at Coleman National Fish Hatchery, Feather River Fish Hatchery, Mokelumne River Fish Hatchery, and Nimbus Fish Hatchery.

Tag retention studies for the fall-run Chinook salmon indicated very high rates of tag/mark retention. Retention rates ranged as follows:

- Coleman National Fish Hatchery: 95.63 - 100% with an average of 99.47%
- Feather River Annex Fish Hatchery: 92.87% - 100% with an average of 98.59%

- Feather River Fish Hatchery: 99.34% - 99.78% with an average of 99.56%
- Mokelumne River Fish Hatchery: 96.48% - 100% with average of 99.30%
- Nimbus Fish Hatchery: 99.56% - 100% with an average of 99.84%

Tag retention studies for the spring-run Chinook salmon also indicated high rates of tag/mark retention. Retention rates ranged as follows:

- Feather River Hatchery: 98.67% – 99.33% with an average of 99.02%

The steelhead from each facility are generally released during the winter months and clip quality will be checked just prior to release.

The numbers of fish included in this report were those processed and returned to the raceways during the tagging process. The actual numbers of fish released may differ. Please refer to the RMIS website, <http://www.rmhc.org>, for the number of fish that were successfully clipped, tagged, and then released.

Discussion

Similar to past tagging seasons, finding and retaining qualified technical personnel for program operations continued to be a challenge during the 2017 tagging season. At the northern five hatcheries, the program had seven Trailer Operators and seven Trailer Assistants employed at the start of the 2017 season. We hired an eighth Trailer Assistant that worked only at Mokelumne River Fish Hatchery. At the southern two hatcheries, four to five Trailer Assistants were employed during the tagging season. A couple crew members left prior to the end of the season but we were able to complete the marking/tagging with a short crew.

The issue with Oroville Dam created several challenges with both fish rearing and the tagging operations. All of the spring-run Chinook salmon and approximately four million fall-run Chinook salmon were moved from the main Feather River Fish Hatchery to the Feather River Annex Hatchery prior to any fish-marking operations. The poor water quality and stress on the fish created slow growth along with fish health issues which delayed the AutoFish Trailer operations for several weeks. We completed the tagging operations at the Feather River Annex Hatchery and moved this trailer to the main Feather River Fish Hatchery to complete the fish-marking operations on the approximate two million fall-run Chinook salmon that were kept at this facility. The high sediment load in the water at the Feather River Fish Hatchery created some challenges in the AutoFish Trailers but the program was able to complete the tagging operations.

This report includes all of the anadromous marking/tagging activities in the Central Valley with the exception of the Coleman National Fish Hatchery late-fall-run Chinook and steelhead, and Livingston Stone National Fish Hatchery winter-run Chinook. These groups of fish are included in separate annual reports.

Acknowledgements

The Constant Fractional Marking Program would not have existed or successfully completed eleven years of tagging without significant contributions from a number of people and agencies.

I would like to thank the following individuals for their support, dedication and cooperation in this program:

Management, administration, problem solving, and the existence of this program would not have been possible without Heather McIntire, California Department of Fish and Wildlife (CDFW); Stan Allen and Amy Roberts, Pacific States Marine Fisheries Commission (PSMFC); John Hannon, Bureau of Reclamation (USBR), Jose Setka East Bay Municipal Utility District (EBMUD) and Kevin Niemela, U.S. Fish and Wildlife Service (USFWS).

In particular, I want to thank the managers and staff working at the hatcheries where we conduct the marking/tagging program. Without your help, cooperation and support, this program would not be possible. Your willingness to work with us in adjusting the agendas and scheduling is critical in meeting the goals of all of the facilities. Ron Stone (USFWS - Coleman National Fish Hatchery), Penny Booth-Crawshaw (CDFW - Feather River Fish Hatchery), Anna Kastner (CDFW - Feather River Fish Hatchery), Gary Novak (CDFW - Nimbus Fish Hatchery), William Smith (CDFW - Mokelumne River Fish Hatchery), and their very professional hatchery staff did a significant amount of work to accommodate the trailers at their hatcheries, and made us feel welcome while we were on-site. I look forward to continuing to work with you all.

I also want to thank Scott Merlette and Nathan Peterson (PSMFC) for their work on the data. I want to thank Scott Merlette (PSMFC) for all of his maintenance work on the AutoFish Trailers to ensure that everything was operational. I also want to thank the rest of the professional and hardworking CFM crew that made this eleventh season a great success. They each spent many long days away from home to accomplish the goals of this very demanding program. Trailer Operators included Chris Childers (PSMFC), Brittany Furlong (PSMFC), Kristie Lofton (PSMFC), Christian Maola (PSMFC), Scott Merlette (PSMFC), Nathan Peterson (PSMFC), and TJ Wilson (PSMFC). Tagging Trailer Assistants included seasonal PSMFC staff members Mitchel Barreras, Angela Deason, Elizabeth Ferris, Ashlee Mitchell, John Perkins, Matt Salomon, Tyler Smithhart, and Catherine Brooks-Wagner.

Schedule of Mark Events

- January 3rd- January 11th Clipping/Tagging winter-run Chinook at Livingston Stone National Fish Hatchery
- January 17th- February 2nd Clipping/Tagging spring-run Chinook at Friant Hatchery
- January 30th-February 2nd Clipping/Tagging Knaggs Ranch fall-run Chinook at Feather River Fish Hatchery
- February 28th-March 21th Clipping/Tagging spring-run Chinook at Feather River Annex Hatchery
- March 6th-April 14th Clipping/Tagging fall-run Chinook at Coleman National Fish Hatchery
- March 15th-May 2nd Clipping/Tagging spring-run Chinook at Merced Fish Hatchery
- April 18th-May 8th Clipping/Tagging fall-run Chinook at Feather River Fish Hatchery
- March 7th-May 3rd Clipping/Tagging fall-run Chinook at Mokelumne River Fish Hatchery
- April 26th-May 18th Clipping/Tagging fall-run Chinook at Nimbus Fish Hatchery
- May 15th-June 6th Clipping steelhead at Coleman National Fish Hatchery

- May 25th-June 13th Clipping/tagging late-fall-run Chinook at Coleman National Fish Hatchery
- June 21st-July 10th Clipping steelhead at Feather River Fish Hatchery
- June 13th-July 6th Clipping steelhead at Nimbus Fish Hatchery

Figure 1. Hatchery Locations: Central Valley Constant Fractional Marking Program (2017)

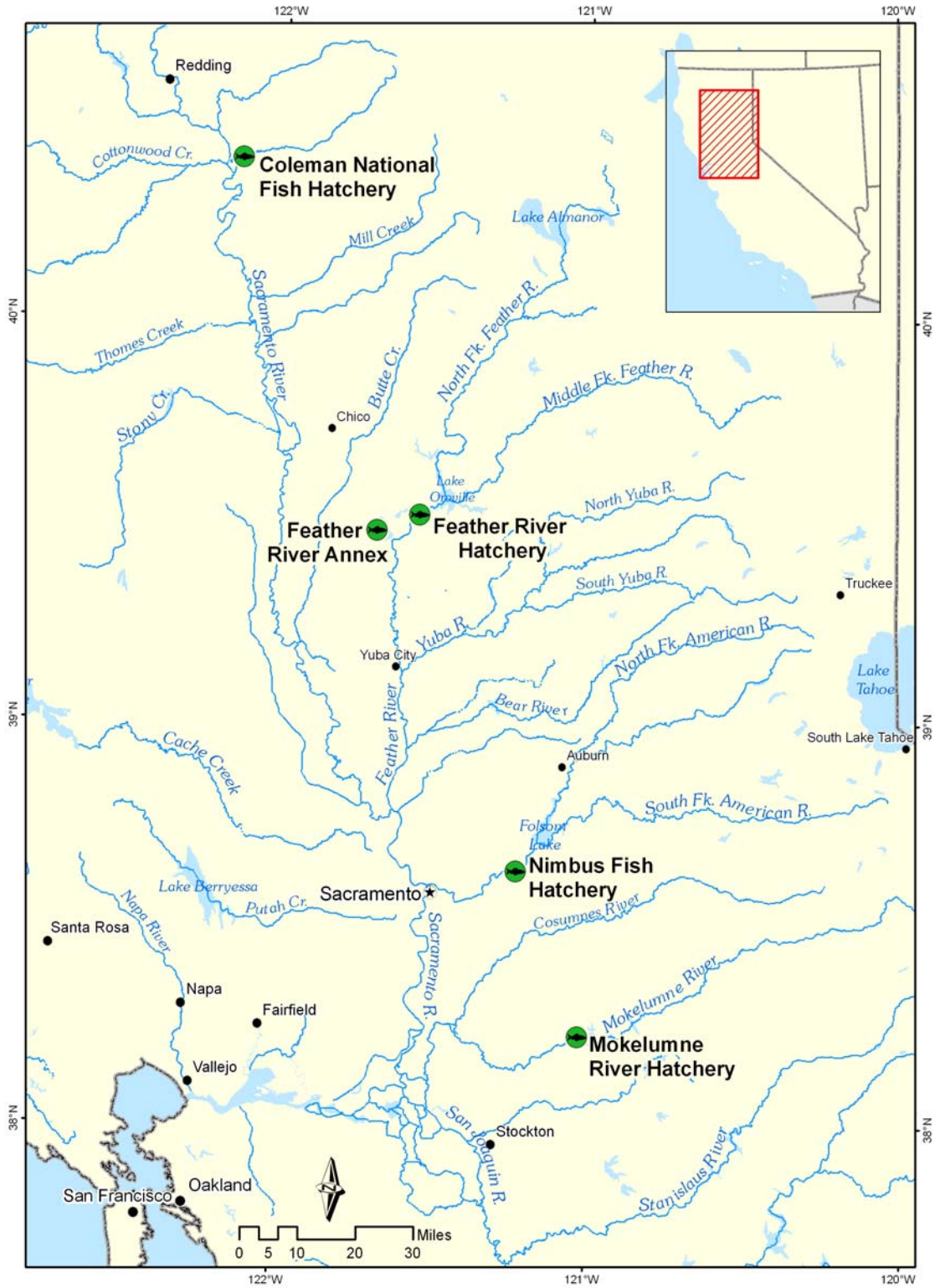
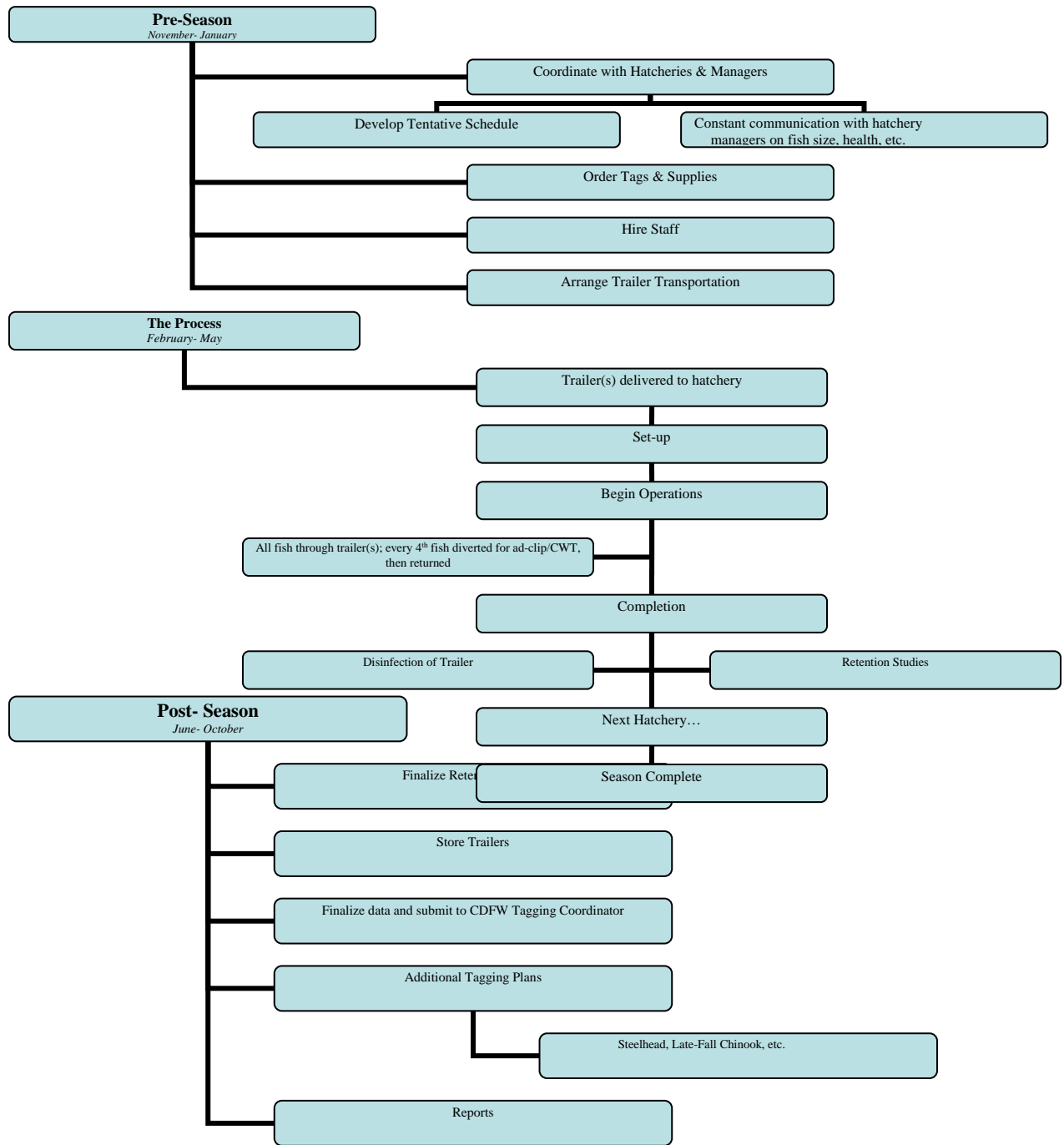


Figure 2. Constant Fractional Marking Program Annual Work Flow Summary



Appendix

Coleman National Fish Hatchery



Table 1a. Daily Tagging Rates at Coleman National Fish Hatchery

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/58			Size: 105K			Trailer # CA 2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/6/2017	3	3	12,073	-	36,285	-	48,358
3/6/2017	3	3	23,077	35,150	69,360	105,645	140,795
3/7/2017	3	3	39,855	75,005	119,682	225,327	300,332
3/7/2017	3	3	22,358	97,363	67,170	292,497	389,860
Tag Code Totals:			-	97,363	-	292,497	389,860

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/59			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/8/2017	2	2	45,540	-	136,881	-	182,421
3/9/2017	2	2	14,710	60,250	44,214	181,095	241,345
3/9/2017	2	2	24,058	84,308	72,591	253,686	337,994
3/10/2017	2	2	33,267	117,575	99,882	353,568	471,143
Tag Code Totals:			-	117,575	-	353,568	471,143

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/60			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/9/2017	5	5	30,833	-	92,643	-	123,476
3/10/2017	5	5	35,518	66,351	106,653	199,296	265,647
3/10/2017	5	5	36,070	102,421	108,306	307,602	410,023
Tag Code Totals:			-	102,421	-	307,602	410,023

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/61			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/13/2017	1	1	23,991	-	72,075	-	96,066
3/13/2017	1	1	38,399	62,390	115,356	187,431	249,821
3/14/2017	1	1	48,275	110,665	145,062	332,493	443,158
Tag Code Totals:			-	110,665	-	332,493	443,158

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/62			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/13/2017	4	4	28,619	-	85,971	-	114,590
3/13/2017	4	4	36,187	64,806	108,597	194,568	259,374
3/14/2017	4	4	47,788	112,594	143,448	338,016	450,610
Tag Code Totals:			-	112,594	-	338,016	450,610

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/63			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/14/2017	7	7	12,053	-	36,201	-	48,254
3/15/2017	7	7	38,122	50,175	114,501	150,702	200,877
3/15/2017	7	7	41,118	91,293	123,513	274,215	365,508
3/16/2017	7	7	12,606	103,899	37,854	312,069	415,968
Tag Code Totals:			-	103,899	-	312,069	415,968

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/64			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/14/2017	9	9	7,004	-	21,039	-	28,043
3/15/2017	9	9	39,300	46,304	118,014	139,053	185,357
3/15/2017	9	9	40,280	86,584	120,924	259,977	346,561
3/16/2017	9	9	32,504	119,088	97,617	357,594	476,682
Tag Code Totals:			-	119,088	-	357,594	476,682

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/65			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/16/2017	6	6	15,837	-	47,514	-	63,351
3/16/2017	6	6	46,770	62,607	140,397	187,911	250,518
3/17/2017	6	6	50,543	113,150	151,797	339,708	452,858
Tag Code Totals:			-	113,150	-	339,708	452,858

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/66			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/16/2017	8	8	45,091	-	135,351	-	180,442
3/17/2017	8	8	55,332	100,423	166,074	301,425	401,848
Tag Code Totals:			-	100,423	-	301,425	401,848

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/67			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/20/2017	10	10	26,980	-	81,018	-	107,998
3/20/2017	10	10	42,432	69,412	127,467	208,485	277,897
3/21/2017	10	10	38,093	107,505	114,318	322,803	430,308
Tag Code Totals:			-	107,505	-	322,803	430,308

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/68			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/20/2017	11	11	27,423	-	82,356	-	109,779
3/20/2017	11	11	37,343	64,766	112,080	194,436	259,202
3/21/2017	11	11	46,459	111,225	139,437	333,873	445,098
Tag Code Totals:			-	111,225	-	333,873	445,098

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/69			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/21/2017	12	12	15,896	-	47,757	-	63,653
3/22/2017	12	12	39,094	54,990	117,360	165,117	220,107
3/22/2017	12	12	32,811	87,801	98,487	263,604	351,405
3/23/2017	12	12	26,471	114,272	79,494	343,098	457,370
Tag Code Totals:			-	114,272	-	343,098	457,370

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/73			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/22/2017	16	16	34,071	-	102,276	-	136,347
3/22/2017	16	16	38,991	73,062	117,021	219,297	292,359
3/23/2017	16	16	35,632	108,694	106,953	326,250	434,944
Tag Code Totals:			-	108,694	-	326,250	434,944

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/74			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/23/2017	17	17	46,401	-	139,296	-	185,697
3/24/2017	17	17	36,371	82,772	109,188	248,484	331,256
3/24/2017	17	17	29,734	112,506	89,268	337,752	450,258
Tag Code Totals:			-	112,506	-	337,752	450,258

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/70			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/23/2017	13	7	44,929	-	134,835	-	179,764
3/24/2017	13	7	48,266	93,195	144,930	279,765	372,960
Tag Code Totals:			-	93,195	-	279,765	372,960

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/71			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/27/2017	14	9	32,179	-	96,612	-	128,791
3/27/2017	14	9	40,634	72,813	121,947	218,559	291,372
3/28/2017	14	9	38,596	111,409	115,845	334,404	445,813
Tag Code Totals:			-	111,409	-	334,404	445,813

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/75			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/27/2017	18	18	28,355	-	85,122	-	113,477
3/27/2017	18	18	43,338	71,693	130,044	215,166	286,859
3/28/2017	18	18	41,375	113,068	124,176	339,342	452,410
Tag Code Totals:			-	113,068	-	339,342	452,410

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/72			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/28/2017	15	13	32,399	-	97,269	-	129,668
3/29/2017	15	13	38,582	70,981	115,803	213,072	284,053
3/29/2017	15	13	37,411	108,392	112,272	325,344	433,736
Tag Code Totals:			-	108,392	-	325,344	433,736

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/76			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/28/2017	19	14	37,917	-	113,796	-	151,713
3/29/2017	19	14	39,035	76,952	117,159	230,955	307,907
3/29/2017	19	14	26,621	103,573	79,905	310,860	414,433
Tag Code Totals:			-	103,573	-	310,860	414,433

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/77			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/29/2017	20	19	8,307	-	24,930	-	33,237
3/30/2017	20	19	64,294	72,601	192,990	217,920	290,521
3/31/2017	20	19	43,896	116,497	131,772	349,692	466,189
Tag Code Totals:			-	116,497	-	349,692	466,189

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/78			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/30/2017	21	15	32,392	-	97,218	-	129,610
3/30/2017	21	15	42,971	75,363	128,955	226,173	301,536
3/31/2017	21	15	23,633	98,996	70,971	297,144	396,140
Tag Code Totals:			-	98,996	-	297,144	396,140

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/80			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/3/2017	23	21	33,007	-	99,120	-	132,127
4/4/2017	23	21	34,696	67,703	104,220	203,340	271,043
4/4/2017	23	21	33,264	100,967	99,840	303,180	404,147
Tag Code Totals:			-	100,967	-	303,180	404,147

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/79			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/3/2017	22	20	38,609	-	115,887	-	154,496
4/4/2017	22	20	26,682	65,291	80,100	195,987	261,278
4/5/2017	22	20	34,241	99,532	102,768	298,755	398,287
4/6/2017	22	20	13,288	112,820	39,906	338,661	451,481
Tag Code Totals:			-	112,820	-	338,661	451,481

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/82			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/5/2017	25	23	33,606	-	100,911	-	134,517
4/5/2017	25	23	29,006	62,612	87,081	187,992	250,604
4/6/2017	25	23	26,660	89,272	80,037	268,029	357,301
4/7/2017	25	23	9,080	98,352	27,279	295,308	393,660
Tag Code Totals:			-	98,352	-	295,308	393,660

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/84			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/10/2017	27	25	31,201	-	93,708	-	124,909
4/10/2017	27	25	39,635	70,836	119,037	212,745	283,581
4/11/2017	27	25	50,036	120,872	150,162	362,907	483,779
Tag Code Totals:			-	120,872	-	362,907	483,779

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/81			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/10/2017	24	22	37,447	-	112,404	-	149,851
4/11/2017	24	22	41,892	79,339	125,727	238,131	317,470
4/11/2017	24	22	36,681	116,020	110,064	348,195	464,215
Tag Code Totals:			-	116,020	-	348,195	464,215

Coleman National Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 05/60/85			Size: 105K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/12/2017	28	27	35,373	-	106,161	-	141,534
4/12/2017	28	27	41,439	76,812	124,422	230,583	307,395
4/13/2017	28	27	35,141	111,953	105,465	336,048	448,001
Tag Code Totals:			-	111,953	-	336,048	448,001

Coleman National Fish Hatchery - Fall Run Chinook Salmon

Tag Code: 05/60/83			Size: 105K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/12/2017	26	24	39,034	-	117,186	-	156,220
4/13/2017	26	24	45,772	84,806	137,358	254,544	339,350
4/13/2017	26	24	26,451	111,257	79,374	333,918	445,175
Tag Code Totals:			-	111,257	-	333,918	445,175

Hatchery
Totals:

3,048,751

9,153,516

12,202,267

Retention Range: 95.63-100%

Retention Average: 99.47%

Table 1b. Summary of Hatchery Tag Codes and Tag Retention Study

Coleman National Fish Hatchery- Fall Run Chinook										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
05/60/58	105K	3	97,363	292,497	389,860	497	29	99.20%	96,584	293,276
05/60/59	105K	2	117,575	353,568	471,143	458	26	95.63%	112,437	358,706
05/60/60	105K	5	102,421	307,602	410,023	370	26	99.19%	101,591	308,432
05/60/61	105K	1	110,665	332,493	443,158	399	22	99.75%	110,388	332,770
05/60/62	105K	4	112,594	338,016	450,610	421	22	99.29%	111,795	338,815
05/60/63	105K	7	103,899	312,069	415,968	395	35	99.75%	103,639	312,329
05/60/64	105K	9	119,088	357,594	476,682	480	26	100.00%	119,088	357,594
05/60/65	105K	6	113,150	339,708	452,858	401	19	99.75%	112,867	339,991
05/60/66	105K	8	100,423	301,425	401,848	399	19	100.00%	100,423	301,425
05/60/67	105K	10	107,505	322,803	430,308	395	21	97.97%	105,323	324,985
05/60/68	105K	11	111,225	333,873	445,098	400	21	99.50%	110,669	334,429
05/60/69	105K	12	114,272	343,098	457,370	395	29	99.75%	113,986	343,384
05/60/73	105K	16	108,694	326,250	434,944	397	29	99.75%	108,422	326,522
05/60/74	105K	17	112,506	337,752	450,258	407	27	99.51%	111,955	338,303
05/60/70	105K	7	93,195	279,765	372,960	387	27	100.00%	93,195	279,765
05/60/71	105K	9	111,409	334,404	445,813	387	23	100.00%	111,409	334,404
05/60/75	105K	18	113,068	339,342	452,410	388	23	99.48%	112,480	339,930
05/60/72	105K	13	108,392	325,344	433,736	383	22	100.00%	108,392	325,344
05/60/76	105K	14	103,573	310,860	414,433	401	22	99.25%	102,796	311,637
05/60/77	105K	19	116,497	349,692	466,189	392	20	100.00%	116,497	349,692
05/60/78	105K	15	98,996	297,144	396,140	377	20	99.73%	98,729	297,411
05/60/80	105K	21	100,967	303,180	404,147	387	30	100.00%	100,967	303,180
05/60/79	105K	20	112,820	338,661	451,481	393	14	100.00%	112,820	338,661
05/60/82	105K	23	98,352	295,308	393,660	310	27	99.03%	97,398	296,262
05/60/84	105K	25	120,872	362,907	483,779	394	23	100.00%	120,872	362,907
05/60/81	105K	22	116,020	348,195	464,215	383	23	99.74%	115,718	348,497
05/60/85	105K	27	111,953	336,048	448,001	390	21	100.00%	111,953	336,048
05/60/83	105K	24	111,257	333,918	445,175	399	21	98.75%	109,866	335,309
Hatchery Totals			3,048,751	9,153,516	12,202,267	Retention Average		99.47%	3,032,260	9,170,007

NOTE: Some raceways of fish were released earlier than normal, which allowed the CFM Program to discharge some groups into the empty raceways and thus, some raceway numbers are listed twice.

Feather River Fish Hatchery



Table 2a. Daily Tagging Rates at Feather River Hatchery

Feather River Fish Hatchery - Knaggs Ranch - 100% Mark/Tag - Half Tags					
Tag Code: 06/1/2/9/1		Size: 10K		Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
2/1/2017	F2	Deep Tank	5,936	-	5,936
2/2/2017	F2	Deep Tank	2,100	-	8,036
Tag Code Total			-	-	8,036

Feather River Fish Hatchery - Knaggs Ranch - 100% Mark/Tag - Half Tags					
Tag Code: 06/1/2/8/9		Size: 10K		Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
1/30/2017	F2	Deep Tank	2,903	-	2,903
1/31/2017	F2	Deep Tank	5,230	-	8,133
Tag Code Total			-	-	8,133

Hatchery Total

16,169

Feather River Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/67		Size: 460K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
4/18/2017	C2	B2	44,711	-	44,711
4/18/2017	C2	B2	37,759	-	82,470
4/19/2017	C2	B2	50,992	-	133,462
4/19/2017	C2	B2	54,227	-	187,689
4/20/2017	C2	B2	49,207	-	236,896
4/20/2017	C2	B2	53,972	-	290,868
4/21/2017	C2	B2	21,466	-	312,334
4/21/2017	C2	B2	62,067	-	374,401
4/24/2017	C2/D3	B2	29,020	-	403,421
4/25/2017	D3	B2	54,584	-	458,005
4/26/2017	D3	B2	52,758	-	510,763
Tag Code Total			-	-	510,763

Feather River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/76			Size: 115K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/27/2017	D4	C2	33,486	-	100,491	-	133,977
4/28/2017	D4/D2	C2	19,927	53,413	59,814	160,305	213,718
5/1/2017	D2	C2	13,501	66,914	40,563	200,868	267,782
5/1/2017	D2	C2	24,033	90,947	72,171	273,039	363,986
5/2/2017	D2	C2	40,152	131,099	120,522	393,561	524,660
Tag Code Totals			-	131,099	-	393,561	524,660

Feather River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/77			Size: 115K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/2/2017	D2	D1	16,322	-	49,005	-	65,327
5/3/2017	D3	D1	22,650	38,972	68,028	117,033	156,005
5/3/2017	D3	D1	28,278	67,250	84,879	201,912	269,162
5/4/2017	D3	D1	25,951	93,201	77,913	279,825	373,026
5/4/2017	C4	D1	27,351	120,552	82,125	361,950	482,502
5/5/2017	C4	D1	12,059	132,611	36,219	398,169	530,780
Tag Code Totals			-	132,611	-	398,169	530,780

Feather River Fish Hatchery - Fall Run Chinook Salmon

Tag Code: 06/09/38			Size: 60K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/5/2017	C3	C4	27,449	-	82,389	-	109,838
5/8/2017	C3	C4	23,804	51,253	71,442	153,831	205,084
Tag Code Totals			-	51,253	-	153,831	205,084

Hatchery Totals

825,726

945,561

1,771,287

Retention Range: 99.34 - 99.78%

Retention Average: 99.56%

Table 2b. Summary of Hatchery Fall-Run Tag Codes and Retention Study

Feather River Fish Hatchery - Fall Run Chinook Salmon										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06/09/67	460K	B2	510,763	-	510,763	900	13	99.78%	509,639	1,124
06/09/76	115K**	C2	131,099	393,561	524,660	-	-	99.56%	130,522	394,138
06/09/77	115K	D2	132,611	398,169	530,780	911	17	99.34%	131,736	399,044
06/09/38	60K**	C4	51,253	153,831	205,084	-	-	99.56%	51,027	154,057
Hatchery Totals			825,726	945,561	1,771,287	Retention Average		99.56%	822,925	948,362

** = Retention fish not checked. Used CFM average to obtain retention rate.

Feather River Fish Hatchery - Steelhead - 100% Mark Only					
Trailer # CA3					
Marking Date	Raceway Prior to Marking	Raceway Following Marking	Daily Marked Total	Cumulative Marked Total	Raceway Total
6/21/2017	E2	E4	44,337	-	44,337
6/22/2017	E2	E4	47,609	-	91,946
6/23/2017	E2	E4	33,849	-	125,795
6/26/2017	E2	E4	47,373	-	173,168
6/26/2017	E2	E4	54,339	-	227,507
6/27/2017	E2	E4	52,954	-	280,461
6/27/2017	E2	E4	10,392	-	290,853
6/27/2017	F2	F4	35,881	-	35,881
6/28/2017	F2	F4	45,720	-	81,601
6/28/2017	F2	F4	50,821	-	132,422
6/29/2017	F2	F4	50,649	-	183,071
6/29/2017	F2	F4	56,376	-	239,447
6/30/2017	F2	F4	46,015	-	285,462
6/30/2017	F2	F4	2,364	-	287,826
6/30/2017	F2	F1	31,665	-	31,665
7/6/2017	F2	F1	38,553	-	70,218
7/7/2017	F2	F1	32,402	-	102,620
7/10/2017	F2	F1	23,604	-	137,365
Hatchery Total			-	-	716,044

Feather River Fish Hatchery Annex



Table 3a. Daily Tagging Rates at Feather River Annex Hatchery

Feather River - Annex - Spring Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/64		Size: 460K		Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
2/28/2017	A3	A6	59,843	-	59,843
2/28/2017	A3	A6	54,829	-	114,672
3/1/2017	A3	A6	68,499	-	183,171
3/1/2017	A3	A6	35,702	-	218,873
3/2/2017	A3	A6	81,948	-	300,821
3/3/2017	A3	A3B	68,255	-	369,076
3/3/2017	A3	A3B	45,023	-	414,099
3/4/2017	A3	A3B	62,503	-	476,602
3/4/2017	A3/A2	A3B	52,477	-	529,079
Tag Code Total			-	-	529,079

Feather River - Annex - Spring Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/65		Size: 460K		Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/5/2017	A2	A3	62,999	-	62,999
3/5/2017	A2	A3	29,336	-	92,335
3/7/2017	A2	A3	12,770	-	105,105
3/7/2017	A2	A3/A1	38,155	-	143,260
3/8/2017	A2	A1	45,133	-	188,393
3/8/2017	A2	A1	50,115	-	238,508
3/9/2017	A2	A1	43,215	-	281,723
3/9/2017	A2	A1	61,809	-	343,532
3/10/2017	A2/B3	A1	57,698	-	401,230
3/10/2017	B3	A1	43,489	-	444,719
3/11/2017	B3	A1	38,139	-	482,858
3/13/2017	B3	A1	45,324	-	528,182
Tag Code Total			-	-	528,182

Feather River - Annex - Spring Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/66		Size: 460K		Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/13/2017	B3	B6	23,520	-	23,520
3/14/2017	B3	B6	64,360	-	87,880
3/14/2017	B3	B6	59,319	-	147,199
3/15/2017	B3	B6	63,353	-	210,552
3/15/2017	B3	B6	58,066	-	268,618
3/16/2017	B3/B2	B6/B4	50,319	-	318,937
3/16/2017	B2	B4	57,018	-	375,955
3/17/2017	B2	B4	60,562	-	436,517
3/17/2017	B2	B4	45,420	-	481,937
3/20/2017	B2	B4	51,182	-	533,119
Tag Code Total			-	-	533,119

Feather River - Annex - Spring Run Chinook - 100% Mark/Tag					
Tag Code: 06/87/29		Size: 80K		Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/20/2017	B2	B3	50,520	-	50,520
3/21/2017	B2	B3	41,071	-	91,591
Tag Code Total			-	-	91,591

Feather River - Annex - Spring Run Chinook - 100% Mark/Tag					
Tag Code: 06/80/02		Size: 20K		Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/21/2017	B2	B3	20,546	-	20,546
Tag Code Total			-	-	20,546

Hatchery Totals

1,702,517

Retention Range: 98.67 - 99.33%

Retention Average: 99.02%

Table 3b. Summary of Hatchery Spring-Run Tag Codes and Retention Study

Feather River - Annex - Spring Run Chinook - 100% Mark/Tag										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06/09/64	460K	A4-6	529,079	-	529,079	900	13	98.67%	522,042	7,037
06/09/65	460K	A1-3	528,182	-	528,182	900	4	98.89%	522,319	5,863
06/09/66	460K	B4-6	533,119	-	533,119	900	14	99.33%	529,547	3,572
06/87/29	80K*	B3	91,591	-	91,591	900	13	99.11%	90,776	815
06/80/02	20K*	B3	20,546	-	20,546	900	13	99.11%	20,363	183
Hatchery Totals			1,702,517	-	1,702,517	Retention Average		99.02%	1,685,048	17,469

* = Fish held with other tag code fish from same raceway. Retention percentage applied to all tag codes in one raceway.

Feather River - Annex - Fall Run Chinook Salmon							
Tag Code: 06/09/70			Size: 225K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/21/2017	C2	A6	4,106	-	12,351	-	16,457
3/22/2017	C2	A6	22,154	26,260	66,537	78,888	105,148
3/22/2017	C2	A6	26,830	53,090	80,808	159,696	212,786
3/23/2017	C2	A6	23,745	76,835	71,298	230,994	307,829
3/23/2017	C2	A6	31,334	108,169	94,065	325,059	433,228
4/3/2017	A3	A6	1,178	109,347	3,579	328,638	437,985
4/4/2017	A3/A2	A3	18,696	128,043	56,133	384,771	512,814
4/4/2017	A2	A3	32,121	160,164	96,513	481,284	641,448
4/5/2017	A2	A3	14,707	174,871	44,166	525,450	700,321
4/5/2017	A2	A3	11,817	186,688	35,457	560,907	747,595
4/5/2017	A2	A3	20,117	206,805	60,444	621,351	828,156
4/6/2017	D2	A1	23,017	229,822	69,102	690,453	920,275
4/6/2017	D2	A1	25,499	255,321	76,713	767,166	1,022,487
Tag Code Totals			-	255,321	-	767,166	1,022,487

Feather River - Annex - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/69		Size: 225K		Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
4/7/2017	D2	B4	44,312	-	44,312
4/7/2017	D2	B4	31,479	-	75,791
4/10/2017	D2	B4	51,345	-	127,136
4/10/2017	D2	B4	55,237	-	182,373
4/11/2017	D2	B4	56,618	-	238,991
4/11/2017	D2	B4	25,005	-	263,996
Tag Code Total			-	-	263,996

Feather River - Annex - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/68		Size: 225K		Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
4/11/2017	D2	B4	19,265	-	19,265
4/12/2017	D2	B4	57,586	-	76,851
4/12/2017	D2	B4	45,212	-	122,063
4/13/2017	D2	B4	52,749	-	174,812
4/13/2017	D2	B4	21,781	-	196,593
4/14/2017	D2	B4	60,822	-	257,415
Tag Code Total			-	-	257,415

Feather River - Annex - Fall Run Chinook Salmon							
Tag Code: 06/09/75			Size: 115K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/14/2017	D2	B3	7,474	-	22,434	-	29,908
4/17/2017	B2	B3	26,921	34,395	80,811	103,245	137,640
4/17/2017	B2	B3	16,473	50,868	49,488	152,733	203,601
4/17/2017	B2	B1	4,574	55,442	13,731	166,464	221,906
4/18/2017	B2	B1	22,437	77,879	67,368	233,832	311,711
4/18/2017	B2	B1	29,326	107,205	88,038	321,870	429,075
4/19/2017	B2	B1	26,042	133,247	78,168	400,038	533,285
Tag Code Totals			-	133,247	-	400,038	533,285

Table 3c. Summary of Hatchery Fall-Run Tag Codes and Retention Study

Feather River - Annex - Fall Run Chinook Salmon										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06/09/70	225K	A	255,321	767,166	1,022,487	940	15	92.87%	237,117	785,370
06/09/69	225K	B4-6	263,996	-	263,996	900	10	98.67%	260,485	3,511
06/09/68	225K	B4-6	257,415	-	257,415	900	7	98.67%	253,991	3,424
06/09/75	115K	B1-3	133,247	400,038	533,285	900	26	99.89%	133,100	400,185
06/09/72	225K	C	256,054	768,765	1,024,819	903	19	100.00%	256,054	768,765
06/07/92	40K*	D4-6	43,366	130,218	173,584	900	18	100.00%	43,366	130,218
06/09/35	30K*	D4-6	30,491	91,494	121,985	900	18	100.00%	30,491	91,494
Hatchery Totals			1,239,890	2,157,681	3,397,571	Retention Average		98.59%	1,214,604	2,182,967

* = Fish held with other tag code fish from same raceway. Retention percentage applied to all tag codes in one raceway.

Merced Hatchery



Table 4a. Daily Tagging Rates at Merced Hatchery

Merced Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/07/90		Size: 70K		Trailer # Manual Trailer	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/15/2017	1,2,3	A1	2,166	-	2,166
3/16/2017	1,2,3	A1	3,921	-	6,087
3/17/2017	1,2,3	A1	5,619	-	11,706
3/20/2017	1,,2,3	A1	7,450	-	19,156
3/21/2017	1,2,3,4,5	A1	5,214	-	24,370
3/22/2017	5	A1	6,236	-	30,606
3/23/2017	5	A1	4,921	-	35,527
3/24/2017	5	A1	4,292	-	39,819
3/27/2017	4,5	A1	3,731	-	43,550
3/28/2017	4	A1	4,435	-	47,985
3/29/2017	4	A1	4,898	-	52,883
3/30/2017	4	A1	6,330	-	59,213
3/31/2017	4	A1	5,356	-	64,569
4/3/2017	4,6	A1	6,042	-	70,611
Tag Code Total			-	-	70,611

Merced Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/04/33		Size: 100K		Trailer # Manual Trailer	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
4/3/2017	4,6	A2	1,704	-	1,704
4/4/2017	6	A2	9,305	-	11,009
4/5/2017	6	A2	7,074	-	18,083
4/6/2017	6	A2	10,626	-	28,709
4/7/2017	6	A2	3,855	-	32,564
4/10/2017	6	A2	8,040	-	40,604
4/11/2017	7	A2	9,099	-	49,703
4/12/2017	7	A2	8,466	-	58,169
4/13/2017	7	A2	12,250	-	70,419
4/14/2017	7,8	A2	5,835	-	76,254
4/17/2017	8	A2	6,810	-	83,064
4/18/2017	8	A2	6,728	-	89,792
4/19/2017	8	A2	5,822	-	95,614
4/20/2017	8	A2	5,093	-	100,707
Tag Code Total			-	-	100,707

Merced Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/87/28		Size: 80K		Trailer # Manual Trailer	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
4/20/2017	8	A3	4,227	-	4,227
4/21/2017	8,9,10	A3	7,753	-	11,980
4/24/2017	9,10	A3	10,092	-	22,072
4/25/2017	9,10	A3	10,859	-	32,931
4/26/2017	9,10	A3	10,314	-	43,245
4/27/2017	9,10	A3	10,397	-	53,642
4/28/2017	9,10,11,12	A3	9,252	-	62,894
5/1/2017	11,12,13	A3	7,418	-	70,312
5/2/2017	11,12,13	A3	9,731	-	80,043
Tag Code Total			-	-	80,043

* No tag retention results available

Hatchery Totals

251,361

Mokelumne River Hatchery



Table 5a. Daily Tagging Rates at Mokelumne River Hatchery

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/79			Size: 100K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/7/2017	B	A	31,156	-	93,576	-	124,732
3/7/2017	B	A	37,249	68,405	111,972	205,548	273,953
3/8/2017	B	A	44,688	113,093	134,568	340,116	453,209
Tag Code Totals:			-	113,093	-	340,116	453,209

Mokelumne River Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/87		Size: 90K		Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/8/2017	C	B1	5,028	-	5,028
3/20/2017	C	B1	33,095	-	38,123
3/20/2017	C	B1	50,274	-	88,397
3/21/2017	C	B1	12,525	-	100,922
Tag Code Total			-	-	100,922

Mokelumne River Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/88		Size: 90K		Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/21/2017	C	B2	24,590	-	24,590
3/21/2017	C	B2	54,920	-	79,510
3/22/2017	C	B2	21,510	-	101,020
Tag Code Total			-	-	101,020

Mokelumne River Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/89		Size: 90K		Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/22/2017	C	B3	25,803	-	25,803
3/22/2017	C	B3	50,815	-	76,618
3/23/2017	C	B3	24,012	-	100,630
Tag Code Total			-	-	100,630

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/80			Size: 100K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/27/2017	D	C	22,167	-	66,606	-	88,773
3/27/2017	D	C	37,840	60,007	113,604	180,210	240,217
3/28/2017	D/E	C	39,397	99,404	118,275	298,485	397,889
3/28/2017	E	C	13,688	113,092	41,133	339,618	452,710
Tag Code Totals:			-	113,092	-	339,618	452,710

Mokelumne River Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/53		Size: 110K		Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/28/2017	E	D1	27,331	-	27,331
3/29/2017	E	D1	57,181	-	84,512
3/29/2017	E	D1	38,269	-	122,781
Tag Code Total			-	-	122,781

Mokelumne River Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/52		Size: 650K		Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/29/2017	E	D2	15,956	-	15,956
3/30/2017	E	D2	57,060	-	73,016
3/30/2017	E	D2	40,021	-	113,037
3/31/2017	E	D2	67,423	-	180,460
4/1/2017	E	D2	15,984	-	196,444
4/1/2017	E	D2	44,262	-	240,706
4/6/2017	E	D2	4,490	-	245,196
4/1/2017	F	E	24,866	-	24,866
4/2/2017	F	E	64,929	-	89,795
4/3/2017	F	E	42,382	-	132,177
4/3/2017	F	E	59,828	-	192,005
4/4/2017	F	E	65,632	-	257,637
4/4/2017	F	E	64,019	-	321,656
4/5/2017	F/G	E	66,592	-	388,248
4/5/2017	G	E	57,015	-	445,263
4/6/2017	G	E	39,941	-	485,204
Tag Code Total			-	-	730,400

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/81			Size: 100K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/6/2017	G	F	40,764	-	122,343	-	163,107
4/7/2017	G/H	F	36,442	77,206	109,380	231,723	308,929
4/7/2017	H	F	26,042	103,248	78,168	309,891	413,139
4/10/2017	H	F	10,904	114,152	32,793	342,684	456,836
Tag Code Totals:			-	114,152	-	342,684	456,836

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/09/82			Size: 100K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/10/2017	H	G	50,563	-	151,752	-	202,315
4/11/2017	H/I	G	36,796	87,359	110,466	262,218	349,577
4/11/2017	I	G	24,851	112,210	74,610	336,828	449,038
Tag Code Totals:			-	112,210	-	336,828	449,038

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/83			Size: 100K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/11/2017	I	H	2,257	-	6,801	-	9,058
4/12/2017	I	H	40,090	42,347	120,336	127,137	169,484
4/12/2017	I	H	16,458	58,805	49,404	176,541	235,346
4/13/2017	I/J	H	14,585	73,390	43,803	220,344	293,734
4/13/2017	J	H	36,505	109,895	109,557	329,901	439,796
4/14/2017	J	H	2,647	112,542	7,980	337,881	450,423
Tag Code Totals:			-	112,542	-	337,881	450,423

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/84			Size: 100K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/14/2017	J	I	35,596	-	106,821	-	142,417
4/14/2017	J	I	17,560	53,156	52,713	159,534	212,690
4/17/2017	K	I	23,956	77,112	71,964	231,498	308,610
4/17/2017	K	I	35,783	112,895	107,394	338,892	451,787
Tag Code Totals:			-	112,895	-	338,892	451,787

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/50			Size: 100K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/18/2017	K	J	44,312	-	132,999	-	177,311
4/18/2017	L	J	45,404	89,716	136,248	269,247	358,963
4/19/2017	L	J	22,939	112,655	68,877	338,124	450,779
Tag Code Totals:			-	112,655	-	338,124	450,779

Mokelumne River Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/05/98		Size: 230K		Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
4/19/2017	L	K	26,320	-	26,320
4/19/2017	L	K	69,949	-	96,269
4/20/2017	L/M	K	73,194	-	169,463
4/20/2017	M	K	74,623	-	244,086
4/21/2017	M	K	6,830	-	250,916
Tag Code Total			-	-	250,916

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/51			Size: 100K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/21/2017	M	L	28,107	-	84,330	-	112,437
4/21/2017	M	L	25,333	53,440	76,029	160,359	213,799
4/24/2017	M	L	26,100	79,540	78,417	238,776	318,316
4/24/2017	M/N	L	33,000	112,540	99,048	337,824	450,364
Tag Code Totals:			-	112,540	-	337,824	450,364

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/85			Size: 100K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/24/2017	N	M	2,297	-	6,915	-	9,212
4/25/2017	N	M	40,351	42,648	121,134	128,049	170,697
4/25/2017	N	M	43,280	85,928	129,882	257,931	343,859
4/26/2017	N	M	26,879	112,807	80,712	338,643	451,450
Tag Code Totals:			-	112,807	-	338,643	451,450

Mokelumne River Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/90		Size: 180K		Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
4/26/2017	O	N1	16,990	-	16,990
4/26/2017	O	N1	65,298	-	82,288
4/27/2017	O	N1	64,079	-	146,367
4/27/2017	O	N1	53,585	-	199,952
Tag Code Total			-	-	199,952

Mokelumne River Fish Hatchery - Fall Run Chinook - 100% Mark/Tag					
Tag Code: 06/09/91		Size: 180K		Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
4/27/2017	O	N2	5,703	-	5,703
4/28/2017	O	N2	48,967	-	54,670
4/28/2017	O	N2	48,357	-	103,027
5/1/2017	O	N2	38,965	-	141,992
5/1/2017	O	N2	59,043	-	201,035
Tag Code Total			-	-	201,035

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/86			Size: 100K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/2/2017	O	O2	36,974	-	110,988	-	147,962
5/2/2017	P	O2	43,972	80,946	131,955	242,943	323,889
5/3/2017	P	O2	32,439	113,385	97,395	340,338	453,723
Tag Code Totals:			-	113,385	-	340,338	453,723

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/07/11			Size: 25K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/3/2017	P	P2	27,260	-	81,813	-	109,073
Tag Code Totals:			-	27,260	-	81,813	109,073

Mokelumne River Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/87/90			Size: 10K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/3/2017	P	P2	4,167	-	12,528	-	16,695
Tag Code Totals:			-	4,167	-	12,528	16,695

Hatchery Totals: 2,968,454 3,485,289 6,453,743

Retention Range: 96.48 - 100%

Retention Average: 99.30%

Table 5b. Summary of Hatchery Tag Codes and Tag Retention Studies

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06/09/79	100K	A	113,093	340,116	453,209	420	20	100.00%	113,093	340,116
06/09/87	90K	B1	100,922	-	100,922	398	21	96.48%	97,370	3,552
06/09/88	90K	B2	101,020	-	101,020	400	20	99.25%	100,262	758
06/09/89	90K	B3	100,630	-	100,630	400	19	97.75%	98,366	2,264
06/09/80	100K	C	113,092	339,618	452,710	403	21	99.26%	112,255	340,455
06/09/53	110K	D1	122,781	-	122,781	413	21	98.79%	121,295	1,486
06/09/52	650K	D2/E	730,400	-	730,400	400	18	98.75%	721,270	9,130
06/09/81	100K	F	114,152	342,684	456,836	678	18	99.41%	113,479	343,357
06/09/82	100K	G	112,210	336,828	449,038	403	21	100.00%	112,210	336,828
06/09/83	100K	H	112,542	337,881	450,423	411	20	100.00%	112,542	337,881
06/09/84	100K	I	112,895	338,892	451,787	409	17	100.00%	112,895	338,892
06/09/50	100K	J	112,655	338,124	450,779	416	19	99.76%	112,385	338,394
06/05/98	230K	K	250,916	-	250,916	400	17	99.75%	250,289	627
06/09/51	100K	L	112,540	337,824	450,364	398	14	99.75%	112,259	338,105
06/09/85	100K	M	112,807	338,643	451,450	407	12	100.00%	112,807	338,643
06/09/90	180K	N1	199,952	-	199,952	400	25	99.75%	199,452	500
06/09/91	180K	N2	201,035	-	201,035	400	21	100.00%	201,035	0
06/09/86	100K	O2	113,385	340,338	453,723	408	18	99.26%	112,546	341,177
06/07/11	25K*	P	27,260	81,813	109,073	405	18	99.01%	26,990	82,083
06/87/90	10K*	P	4,167	12,528	16,695	405	18	99.01%	4,126	12,569
Hatchery Totals			2,968,454	3,485,289	6,453,743	Retention Average		99.30%	2,946,925	3,506,818

* = Fish held with other tag code fish from same raceway. Retention percentage applied to all tag codes in one raceway.

Nimbus Hatchery



Table 6a. Daily Tagging Rates at Nimbus Hatchery

Nimbus Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/97			Size: 155K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/26/2017	A	A	34,357	-	103,140	-	137,497
4/27/2017	A	A	39,428	73,785	118,344	221,484	295,269
4/28/2017	A	A	24,570	98,355	73,752	295,236	393,591
5/1/2017	A	A	56,389	154,744	169,257	464,493	619,237
Tag Code Totals			-	154,744	-	464,493	619,237

Nimbus Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/98			Size: 155K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/2/2017	B	B	38,041	-	114,165	-	152,206
5/2/2017	B	B	42,661	80,702	128,031	242,196	322,898
5/3/2017	B	B	38,316	119,018	115,002	357,198	476,216
5/3/2017	B	B	32,483	151,501	97,482	454,680	606,181
Tag Code Totals			-	151,501	-	454,680	606,181

Nimbus Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/09/99			Size: 155K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/4/2017	C	C	38,063	-	114,234	-	152,297
5/4/2017	C	C	44,876	82,939	134,673	248,907	331,846
5/5/2017	C	C	29,601	112,540	88,845	337,752	450,292
5/5/2017	C	C	35,741	148,281	107,253	445,005	593,286
Tag Code Totals			-	148,281	-	445,005	593,286

Nimbus Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/12/01			Size: 155K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/8/2017	D	D	15,704	-	47,160	-	62,864
5/8/2017	D	D	42,640	58,344	127,977	175,137	233,481
5/9/2017	D	D	36,708	95,052	110,151	285,288	380,340
5/9/2017	D	D	36,308	131,360	108,975	394,263	525,623
5/10/2017	D	D	7,057	138,417	21,207	415,470	553,887
Tag Code Totals			-	138,417	-	415,470	553,887

Nimbus Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/12/02			Size: 155K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/10/2017	E	E	25,736	-	77,211	-	102,947
5/10/2017	E	E	38,818	64,554	116,499	193,710	258,264
5/11/2017	E	E	38,130	102,684	114,423	308,133	410,817
5/11/2017	E	E	32,400	135,084	97,242	405,375	540,459
5/12/2017	E	E	10,813	145,977	32,709	438,084	584,061
Tag Code Totals			-	145,977	-	438,084	584,061

Nimbus Fish Hatchery - Fall Run Chinook Salmon							
Tag Code: 06/12/03			Size: 155K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/15/2017	F	F	28,625	-	86,055	-	114,680
5/16/2017	F	F	46,702	75,327	140,229	226,284	301,611
5/17/2017	F	F	37,256	112,583	111,942	338,226	450,809
5/18/2017	F	F	20,173	132,756	60,624	398,850	531,606
Tag Code Totals			-	132,756	-	398,850	531,606

Hatchery Totals

871,676

2,616,582

3,488,258

Retention Range: 99.56 - 100%

Retention Average: 99.84%

Table 6b. Summary of Fall-Run Tag Codes and Tag Retention Studies

Nimbus Fish Hatchery - Fall Run Chinook Salmon										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06/09/97	155K	A	154,744	464,493	619,237	867	22	99.88%	154,558	464,679
06/09/98	155K	B	151,501	454,680	606,181	828	20	100.00%	151,501	454,680
06/09/99	155K	C	148,281	445,005	593,286	942	18	99.89%	148,118	445,168
06/12/01	155K	D	138,417	415,470	553,887	916	13	99.89%	138,265	415,622
06/12/02	155K**	E	145,977	438,084	584,061	-	-	99.84%	145,743	438,318
06/12/03	155K	F	132,756	398,850	531,606	907	25	99.56%	132,172	399,434
Hatchery Totals			871,676	2,616,582	3,488,258	Retention Average		99.84%	870,357	2,617,901

** = Retention fish not checked. Used CFM average to obtain retention rate.

Nimbus Fish Hatchery - Steelhead - 100% Mark Only					
Trailer # CA1					
Marking Date	Raceway Prior to Marking	Raceway Following Marking	Daily Marked Total	Cumulative Marked Total	Raceway Total
6/13/2017	Lots 2,3,5	A1	36,583	-	36,583
6/22/2017	Lots 1,4	A1	19,997	-	56,580
6/21/2017	Lots 6,7	B1	36,182	-	36,182
6/22/2017	Lot 7	B1	4,977	-	41,159
6/22/2017	Lot 4	B1	9,980	-	51,139
6/23/2017	Lot 4	B1	6,092	-	57,231
6/23/2017	Lots 4,9	E1	13,104	-	13,104
7/5/2017	Lot 8	E1	44,073	-	57,177
7/5/2017	Lot 8	F1	2,638	-	2,638
7/6/2017	Lots 10-14	F1	42,494	-	45,132
Hatchery Total			-	-	216,120

San Joaquin Hatchery (Friant)



Table 7a. Daily Tagging Rates at San Joaquin Hatchery (Friant)

Friant Fish Hatchery - Spring Run Chinook - 100% Mark/Tag at SCARF					
Tag Code: 06/14/23		Size: 30K		Trailer # Manual Trailer	
Tagging Date	Raceway Prior to Marking	Raceway Following Marking	Daily Marked Total	Cumulative Marked Total	Raceway Total
1/17/2017	20-2	Round tank	3,227	-	3,227
1/18/2017	20-2	Round tank	5,404	-	8,631
1/18/2017	16-1	Round tank	1,384	-	10,015
1/19/2017	16-1	Round tank	9,487	-	19,502
1/20/2017	16-1	Round tank	5,978	-	25,480
1/23/2017	16-1	Round tank	4,167	-	29,647
Tag Code Total			-	-	29,647

Friant Fish Hatchery - Spring Run Chinook - 100% Mark/Tag at SCARF					
Tag Code: 06/14/19		Size: 2K		Trailer # Manual Trailer	
Tagging Date	Raceway Prior to Marking	Raceway Following Marking	Daily Marked Total	Cumulative Marked Total	Raceway Total
1/23/2017	16-1	Small Tank	1,401	-	1,401
Tag Code Total			-	-	1,401

Friant Fish Hatchery - Spring Run Chinook - 100% Mark/Tag at SIRF					
Tag Code: 06/14/06		Size: 50K		Trailer # Manual Trailer	
Tagging Date	Raceway Prior to Marking	Raceway Following Marking	Daily Marked Total	Cumulative Marked Total	Raceway Total
1/24/2017	U1-6-1/2	U1-6-1/2	7,723	-	7,723
1/25/2017	U1-6-2/3/4	U1-6-2/3/4	11,611	-	19,334
1/26/2017	U2-6-1/2/3	U2-6-1/2/3	14,961	-	34,295
1/27/2017	U4-6-1/2	U4-6-1/2	4,721	-	39,016
Tag Code Total			-	-	39,016

Friant Fish Hatchery - Spring Run Chinook - 100% Mark/Tag at SIRF					
Tag Code: 06/14/20		Size: 2K		Trailer # Manual Trailer	
Tagging Date	Raceway Prior to Marking	Raceway Following Marking	Daily Marked Total	Cumulative Marked Total	Raceway Total
1/27/2017	U4-6-2	U4-6-2	1,487	-	1,487
Tag Code Total			-	-	1,487

* No tag retention results available.

Hatchery totals

71,551

Friant Fish Hatchery - Fall Run Chinook - 100% Mark/Tag at SIRF					
Tag Code: 06/14/07		Size: 50K		Trailer # Manual Trailer	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Raceway Total	Cumulative Tagged Total
4/12/2017	U3-6-1	U3-6-1	3,853	3,853	3,853
4/13/2017	U3-6-2	U3-6-2	4,072	4,072	7,925
4/13/2017	U3-6-3	U3-6-3	3,284	3,284	11,209
4/17/2017	U3-6-4	U3-6-4	4,794	4,794	16,003
4/17/2017	U3-6-5	Trailer 6ft	1,100	1,100	17,103
4/18/2017	U3-6-5	U3-6-5	3,186	3,186	20,289
4/18/2017	U4-6-1	Trailer 6ft	1,732	2,832	22,021
4/19/2017	U4-6-1	U4-6-1	1,664	1,664	23,685
4/19/2017	U4-6-2	U4-6-2	3,941	3,941	27,626
4/19/2017	U4-6-3	Trailer 6ft	3,136	5,968	30,761
4/20/2017	U4-6-3	U4-6-3	401	401	31,162
4/20/2017	U4-6-4	U4-6-4	3,830	3,830	34,992
4/20/2017	U4-6-5	U4-6-5	3,980	3,980	38,973
Tag Code Total			-	-	38,973

Table 7b. Summary of Fall-Run Tag Codes and Tag Retention Studies

Friant Fish Hatchery - Fall Run Chinook										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06/14/07	50K	Tank	38973	-	38973	200	14	96.00%	37,414	1,559
Hatchery Totals			38,973	-	38,973	Retention Average		96.00%	37,414	1,559