

Constant Fractional Marking/Tagging Program For Central Valley Fall-run Chinook Salmon

2010 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. 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 with an adipose fin clip and coded-wire tagging a representative 25% of production releases of fall-run Chinook salmon from the Central Valley hatcheries in 2007, 2008, 2009, and 2010. The program was conducted at Coleman National Fish Hatchery, Feather River Hatchery, Feather River Hatchery Annex, Nimbus Hatchery, and Mokelumne River Hatchery in these years.

This report covers the fourth year of marking/tagging activities at the Central Valley hatcheries in the spring of 2010 (Brood Year 2009 fall-run Chinook). In the 2010 season, a greater percentage of the fall-run Chinook production was marked relative to the previous three seasons. In 2010, the Mokelumne River Hatchery produced fewer fish than the production goals; therefore, 100% of the production was coded-wire tagged and adipose fin-clipped. Feather River Hatchery and Nimbus Fish Hatchery also chose to perform 100% clip/tag on a few groups of their production fish. The program successfully processed 100% of the production releases of fall-run Chinook salmon through the automated marking trailers, a total of 28,040,548 fish. Of this total, approximately 31.86% were coded-wire tagged and adipose fin-clipped (a total of 8,933,647 fish).

Introduction

In most years, over 32 million fall-run Chinook salmon are produced at five hatcheries in California's Central Valley, including Coleman National Fish Hatchery, Feather River Hatchery, Feather River Hatchery Annex, Nimbus Hatchery, and Mokelumne River 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.

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 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 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 Game, 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 and 2010, funding

to conduct tagging operations at each hatchery was provided by the following entities: Coleman National Fish Hatchery, U.S. Bureau of Reclamation; Feather River Fish Hatchery, California Department of Water Resources; Feather River Annex, California Department of Fish and Game; Mokelumne River Fish Hatchery, East Bay Municipal Utility District; and Nimbus Fish Hatchery, U.S. Bureau of Reclamation.

The CFM program will provide CALFED ERP and the participating agencies with specific information needed to evaluate Ecosystem Restoration Program Plan (ERPP) actions and goals related to improving conditions for Central Valley Chinook salmon.

The overall objectives of the program 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.

This report covers the fourth year of marking/tagging activities at the Central Valley hatcheries in the spring of 2010 (Brood Year 2009 fall-run Chinook).

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 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 are 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, 2008, 2009, and 2010. In the 2010 tagging season, 100% of the BY2009 fall-run Chinook at Mokelumne River Fish Hatchery were coded-wire tagged and adipose fin-clipped to more closely monitor out-of-basin straying rates. Coded-wire tags for the 2010 season were ordered from Northwest Marine Technology in November 2009. Tags used in the program were all 1.1 mm. standard size tags; no half tags were used.

The program was conducted at Coleman National Fish Hatchery, Feather River Hatchery, Feather River Hatchery Annex, Nimbus Hatchery, and Mokelumne River Hatchery (Figure 1). Fall-run Chinook coded-wire tagged and released for experimental purposes were not included in the program. The Merced River Hatchery therefore was not included in the program, as all the fall-run Chinook at this hatchery are raised for experimental purposes, and were marked and coded-wire tagged using manual techniques in 2010.

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 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 marking season began the second week of February at the Feather River Annex in Thermalito and ended at Nimbus Fish Hatchery the second week of May. Marking of hatchery-produced salmon in 2010 therefore spanned a 14-week period.

Throughout the season, tag retention studies were conducted to determine actual marking/tagging rates for each coded-wire tag code. 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. For Coleman National Fish Hatchery, approximately 400 fish were held for retention purposes for each tag code. The lower number of fish held per tag code at this facility was determined with the assistance of USFWS personnel because 28 different tag codes were used. Study fish were sampled from throughout the tagging period for each tag code. Fish were electronically tested for tag retention at end of the study period. 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. 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

The program successfully processed 100% of the 2010 production releases of fall-run Chinook salmon from the Central Valley hatcheries. The technology allowed an accurate count of all production fish, and the marking/tagging of an exact percentage of those fish. The 25% target rate for marking/tagging was achieved for brood year 2009.

Tag retention studies indicated very high rates of tag/mark retention. Retention rates ranged as follows:

- Coleman National Fish Hatchery: 97.61 - 100% with an average of 99.62%*
- Feather River Hatchery Annex: 99.75 – 100% with an average of 99.81%
- Feather River Hatchery: 99.00% - 99.77% with an average of 99.68%
- Mokelumne River Hatchery: 99.44% - 99.56% with average of 99.50%
- Nimbus Hatchery: 97.63% - 100.00% with an average of 99.23%

* This Coleman retention data does not include the information for the two tag codes that had issues with the net pen blowing over.

Daily tagging rates, tag codes, and results of retention studies are shown in Appendix Tables 1 – 5 for each of the hatcheries.

The program successfully processed 100% of the production releases of fall-run Chinook salmon through the automated marking trailers, a total of 28,040,548 fish. Of this total, approximately 31.86% were coded-wire tagged and adipose fin-clipped (a total of 8,933,647 fish).

During the 2010 season, a greater percentage of the fall-run Chinook production was marked relative to the previous three seasons. In 2010, the Mokelumne River Hatchery produced fewer fish than the production goals; therefore, 100% of the production was coded-wire tagged and adipose fin-clipped. Feather River Hatchery and Nimbus Fish Hatchery also chose to perform 100% clip/tag on a few groups of their production fish.

Discussion

The CFM Program started the marking season the second week of February, 2010 and completed trailer operations the second week of May for a total of 14 weeks. The program started with five Trailer Operators, one of which left a month into the season. Another Trailer Operator only worked on trailer operations at Feather River. Two Trailer Operators from Idaho spent a few weeks assisting with trailer operations in California. Five to six Trailer Assistants were also employed throughout the 14 week season.

The four AutoFish Trailers are now four years old and the annual maintenance costs are increasing. The program had two Flygt pumps fail during the same week and replacement pumps were purchased but this created a delay in trailer operations at Feather River Fish Hatchery and Coleman National Fish Hatchery. A computer also failed and was replaced in the AutoFish Trailer at Mokelumne River Hatchery. We now have spare Flygt pumps for three of the four AutoFish Trailers so we should be better prepared in the event of pump failures in the future.

Acknowledgements

The Constant Fractional Marking Program would not have existed or successfully completed the first four 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:

The IEP Central Valley Salmonid Project Work Team provided guidance over the years in the development of the project. Members included Jim Smith (USFWS), Russell Bellmer (CDFG), Kenneth Lentz (USBR retired), John Hannon (USBR), Rich Dixon (CDFG retired), Alice Low (CDFG), Brad Cavallo (formerly DWR), Pete Adams (NOAA Fisheries), Stan Allen (PSMFC) and Joseph Miyamoto (EBMUD).

Management, administration, problem solving, and the existence of this program would not have been possible without Alice Low, Tom Schroyer, and Dave Zezulak, California Department of Fish and Game (CDFG); Stan Allen and Amy Roberts, Pacific States Marine Fisheries Commission (PSMFC); and Kevin Niemela, U.S. Fish and Wildlife Service (USFWS).

In particular, I want to thank the managers and staff working at the hatcheries we conduct the Constant Fractional Marking. 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. Bob Anderson (CDFG - Mokelumne River Fish Hatchery), William Smith (CDFG - Mokelumne River Fish Hatchery), Kurtis Brown (USFWS - Coleman National Fish Hatchery), Anna Kastner (CDFG - Feather River Fish Hatchery), Allen Dill (CDFG - Feather River Fish Hatchery), Paula Hoover (CDFG - Nimbus Fish Hatchery), Bob Burks (CDFG - Nimbus 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 Ryan Revnak and Kevin Young (PSMFC) for their work on the data entry and the rest of the professional and hard working CFM Tagging crew that made this fourth season a success. They each spent many long days away from home to accomplish the goals of this very demanding program. Trailer Operators included Chad Dale (PSMFC), Charles Hanley (PSMFC), Casey Frantz (PSMFC), Travis House (PSMFC), Michael Mercer (formerly PSMFC), Ryan Revnak (PSMFC), and Kevin Young (PSMFC). Tagging Trailer Assistants included seasonal PSMFC staff members Nichole Clemente, Elizabeth Ferris, Cheryl Fullerton, Tracy Foreman, Renee Goss, and Amber Smith.

Figure 1. Hatchery Locations: Central Valley Constant Fractional Marking Program (2010)

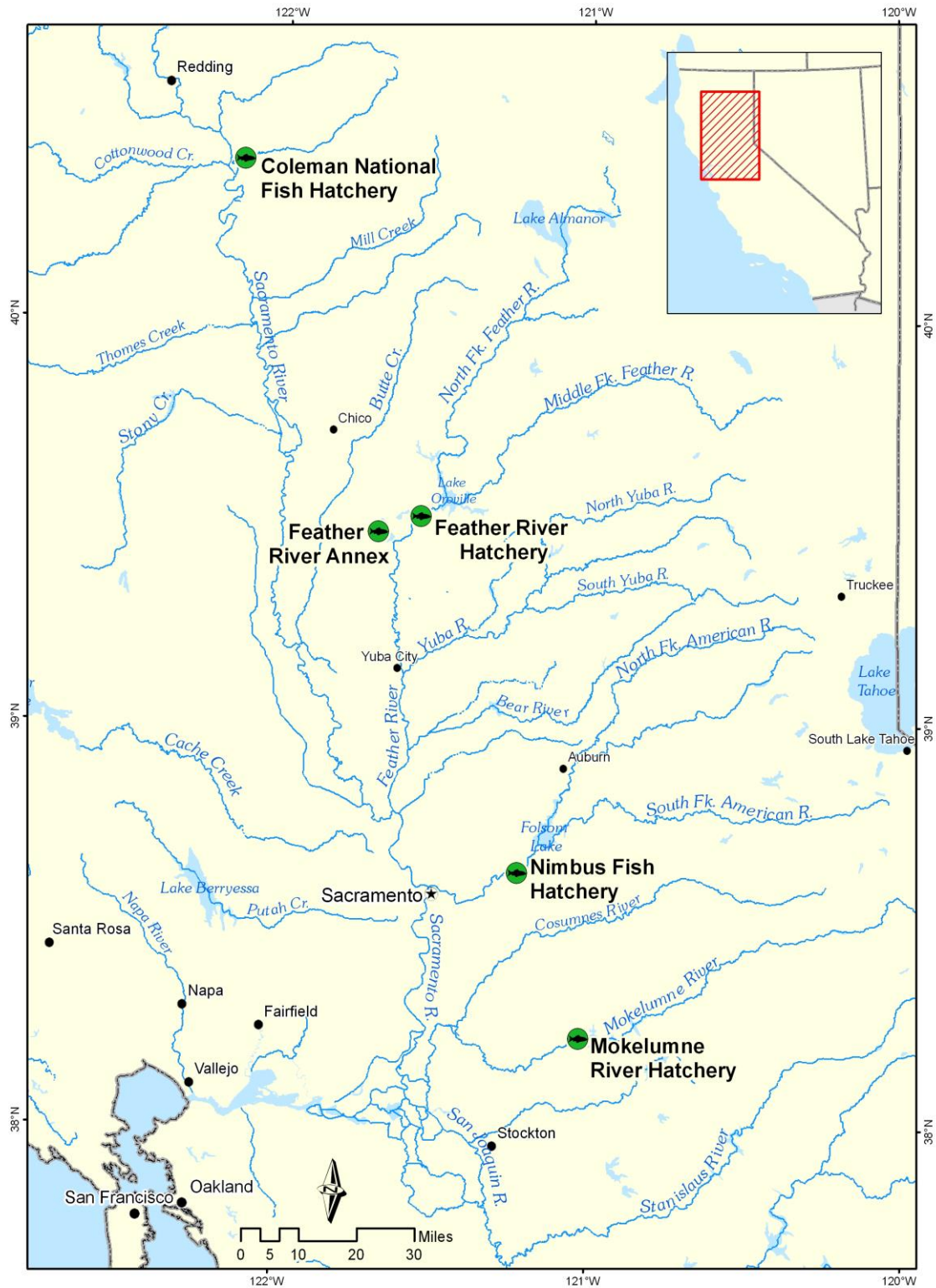
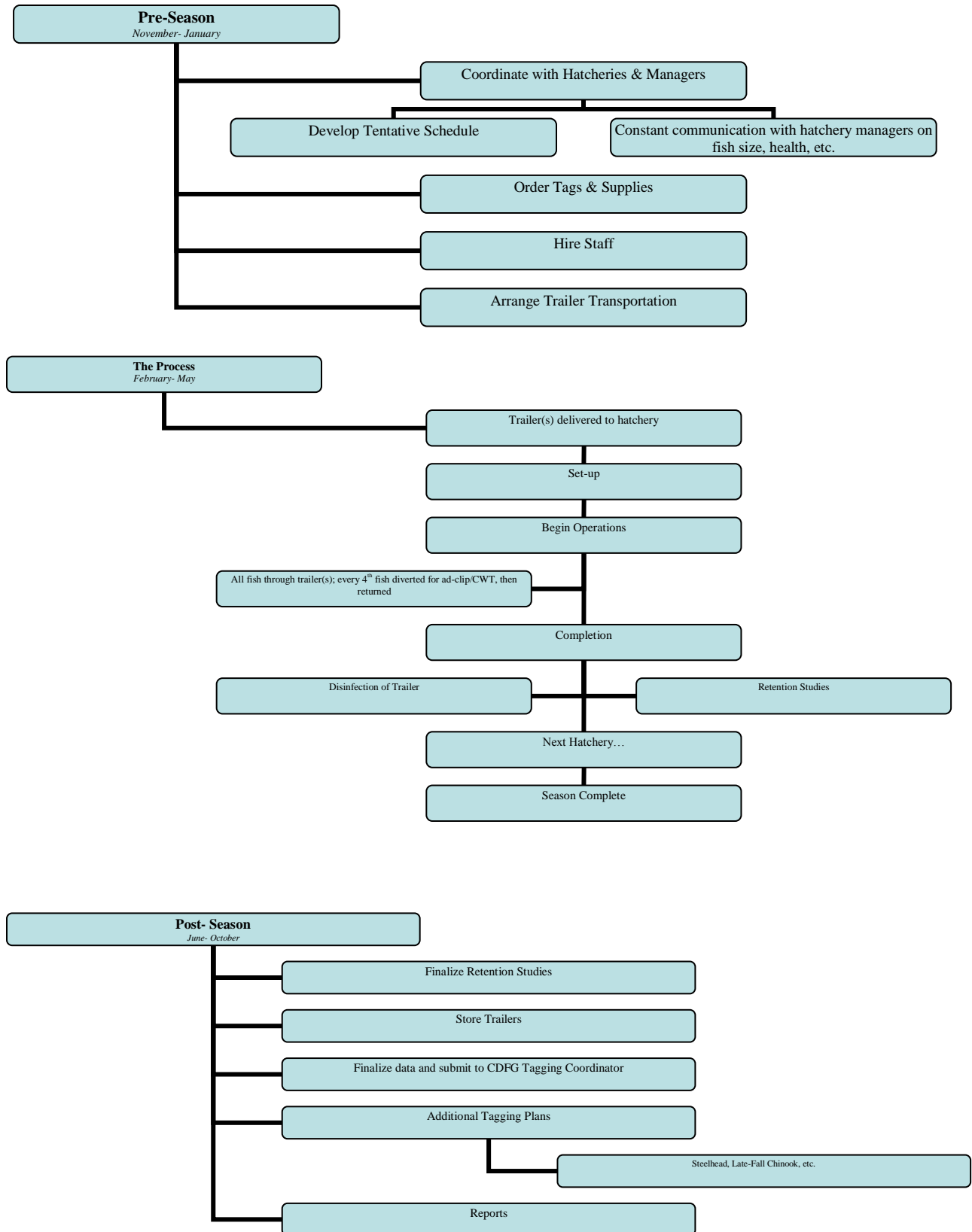


Figure 2. Constant Fractional Marking Program Annual Work Flow Summary



Appendix

Coleman National Fish Hatchery



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

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/79 | | | size: 93k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/8/2010 | 1 | 1 | 52,396 | - | 157,620 | - | 210,016 |
| 3/9/2010 | 1 | 1 | 44,555 | 96,951 | 133,728 | 291,348 | 388,299 |
| Tag Code Totals: | | | - | 96,951 | - | 291,348 | 388,299 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/80 | | | size: 93k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/9/2010 | 2 | 2 | 36,348 | - | 109,152 | - | 145,500 |
| 3/10/2010 | 2 | 2 | 52,084 | 88,432 | 156,366 | 265,518 | 353,950 |
| Tag Code Totals: | | | - | 88,432 | - | 265,518 | 353,950 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/81 | | | size: 93k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/10/2010 | 3 | 3 | 19,794 | - | 59,406 | - | 79,200 |
| 3/11/2010 | 3 | 3 | 36,807 | 56,601 | 110,541 | 169,947 | 226,548 |
| 3/11/2010 | 3 | 3 | 38,978 | 95,579 | 116,988 | 286,935 | 382,514 |
| Tag Code Totals: | | | - | 95,579 | - | 286,935 | 382,514 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/82 | | | size: 93k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/12/2010 | 4 | 4 | 38,597 | - | 115,869 | - | 154,466 |
| 3/12/2010 | 4 | 4 | 35,750 | 74,347 | 107,310 | 223,179 | 297,526 |
| 3/15/2010 | 4 | 4 | 12,439 | 86,786 | 37,398 | 260,577 | 347,363 |
| Tag Code Totals: | | | - | 86,786 | - | 260,577 | 347,363 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/83 | | | size: 112k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/8/2010 | 8 | 8 | 15,431 | - | 46,383 | - | 61,814 |
| 3/9/2010 | 8 | 8 | 78,832 | 94,263 | 236,544 | 282,927 | 377,190 |
| 3/10/2010 | 8 | 8 | 22,402 | 116,665 | 67,254 | 350,181 | 466,846 |
| Tag Code Totals: | | | - | 116,665 | - | 350,181 | 466,846 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/84 | | | size: 112k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/10/2010 | 9 | 9 | 61,733 | - | 185,271 | - | 247,004 |
| 3/11/2010 | 9 | 9 | 53,615 | 115,348 | 160,902 | 346,173 | 461,521 |
| Tag Code Totals: | | | - | 115,348 | - | 346,173 | 461,521 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/85 | | | size: 112k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/11/2010 | 10 | 10 | 1,338 | - | 4,014 | - | 5,352 |
| 3/12/2010 | 10 | 10 | 77,589 | 78,927 | 232,803 | 236,817 | 315,744 |
| 3/15/2010 | 10 | 10 | 29,548 | 108,475 | 88,692 | 325,509 | 433,984 |
| Tag Code Totals: | | | - | 108,475 | - | 325,509 | 433,984 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/86 | | | size: 112k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/12/2010 | 11 | 11 | 28,339 | - | 85,101 | - | 113,440 |
| 3/16/2010 | 11 | 11 | 40,658 | 68,997 | 122,004 | 207,105 | 276,102 |
| 3/16/2010 | 11 | 11 | 36,904 | 105,901 | 110,748 | 317,853 | 423,754 |
| Tag Code Totals: | | | - | 105,901 | - | 317,853 | 423,754 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/87 | | | size: 112k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/15/2010 | 5 | 5 | 41,792 | - | 125,421 | - | 167,213 |
| 3/16/2010 | 5 | 5 | 43,055 | 84,847 | 129,222 | 254,643 | 339,490 |
| 3/16/2010 | 5 | 5 | 34,184 | 119,031 | 102,594 | 357,237 | 476,268 |
| Tag Code Totals: | | | - | 119,031 | - | 357,237 | 476,268 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/88 | | | size: 112k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/17/2010 | 6 | 6 | 40,127 | - | 120,471 | - | 160,598 |
| 3/17/2010 | 6 | 6 | 41,648 | 81,775 | 125,022 | 245,493 | 327,268 |
| 3/18/2010 | 6 | 6 | 36,545 | 118,320 | 109,707 | 355,200 | 473,520 |
| Tag Code Totals: | | | - | 118,320 | - | 355,200 | 473,520 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/89 | | | size: 112k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/18/2010 | 7 | 7 | 45,243 | - | 135,789 | - | 181,032 |
| 3/19/2010 | 7 | 7 | 67,241 | 112,484 | 201,885 | 337,674 | 450,158 |
| Tag Code Totals: | | | - | 112,484 | - | 337,674 | 450,158 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/90 | | | size: 110k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/17/2010 | 15 | 15 | 42,950 | - | 128,970 | - | 171,920 |
| 3/18/2010 | 15 | 15 | 41,358 | 84,308 | 124,101 | 253,071 | 337,379 |
| 3/18/2010 | 15 | 15 | 16,761 | 101,069 | 50,286 | 303,357 | 404,426 |
| Tag Code Totals: | | | - | 101,069 | - | 303,357 | 404,426 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/91 | | | size: 110k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/18/2010 | 16 | 16 | 10,275 | - | 30,858 | - | 41,133 |
| 3/19/2010 | 16 | 16 | 38,260 | 48,535 | 114,849 | 145,707 | 194,242 |
| 3/19/2010 | 16 | 16 | 17,321 | 65,856 | 52,026 | 197,733 | 263,589 |
| 3/22/2010 | 16 | 16 | 38,470 | 104,326 | 115,455 | 313,188 | 417,514 |
| Tag Code Totals: | | | - | 104,326 | - | 313,188 | 417,514 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/92 | | | size: 110k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/23/2010 | 17 | 17 | 36,018 | - | 108,114 | - | 144,132 |
| 3/23/2010 | 17 | 17 | 36,929 | 72,947 | 110,862 | 218,976 | 291,923 |
| 3/24/2010 | 17 | 17 | 43,939 | 116,886 | 131,853 | 350,829 | 467,715 |
| Tag Code Totals: | | | - | 116,886 | - | 350,829 | 467,715 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/93 | | | size: 110k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/24/2010 | 18 | 18 | 35,716 | - | 107,226 | - | 142,942 |
| 3/25/2010 | 18 | 18 | 44,153 | 79,869 | 132,498 | 239,724 | 319,593 |
| 3/25/2010 | 18 | 18 | 37,904 | 117,773 | 113,793 | 353,517 | 471,290 |
| Tag Code Totals: | | | - | 117,773 | - | 353,517 | 471,290 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/94 | | | size: 110k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/26/2010 | 19 | 19 | 56,878 | - | 170,715 | - | 227,593 |
| 3/29/2010 | 19 | 19 | 54,485 | 111,363 | 163,545 | 334,260 | 445,623 |
| 3/30/2010 | 19 | 19 | 904 | 112,267 | 2,733 | 336,993 | 449,260 |
| Tag Code Totals: | | | - | 112,267 | - | 336,993 | 449,260 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/95 | | | size: 110k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/22/2010 | 22 | 22 | 20,107 | - | 60,429 | - | 80,536 |
| 3/23/2010 | 22 | 22 | 41,651 | 61,758 | 125,046 | 185,475 | 247,233 |
| 3/24/2010 | 22 | 22 | 40,667 | 102,425 | 122,067 | 307,542 | 409,967 |
| 3/25/2010 | 22 | 22 | 13,069 | 115,494 | 39,249 | 346,791 | 462,285 |
| Tag Code Totals: | | | - | 115,494 | - | 346,791 | 462,285 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/96 | | | size: 110k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/7/2010 | 20 | 20 | 42,722 | - | 128,238 | - | 170,960 |
| 4/7/2010 | 20 | 20 | 38,634 | 81,356 | 115,959 | 244,197 | 325,553 |
| 4/8/2010 | 20 | 20 | 24,205 | 105,561 | 72,660 | 316,857 | 422,418 |
| Tag Code Totals: | | | - | 105,561 | - | 316,857 | 422,418 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/97 | | | size: 110k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/5/2010 | 21 | 21 | 31,085 | - | 93,336 | - | 124,421 |
| 4/6/2010 | 21 | 21 | 39,762 | 70,847 | 119,430 | 212,766 | 283,613 |
| 4/6/2010 | 21 | 21 | 36,802 | 107,649 | 110,469 | 323,235 | 430,884 |
| Tag Code Totals: | | | - | 107,649 | - | 323,235 | 430,884 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/98 | | | size: 105k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/25/2010 | 23 | 23 | 14,697 | - | 44,139 | - | 58,836 |
| 3/26/2010 | 23 | 23 | 37,425 | 52,122 | 112,314 | 156,453 | 208,575 |
| 3/29/2010 | 23 | 23 | 27,720 | 79,842 | 83,196 | 239,649 | 319,491 |
| 3/30/2010 | 23 | 23 | 24,240 | 104,082 | 72,780 | 312,429 | 416,511 |
| Tag Code Totals: | | | - | 104,082 | - | 312,429 | 416,511 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/51/99 | | | size: 105k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/30/2010 | 24 | 24 | 5,521 | - | 16,563 | - | 22,084 |
| 3/31/2010 | 24 | 24 | 43,313 | 48,834 | 129,963 | 146,526 | 195,360 |
| 4/1/2010 | 24 | 24 | 51,128 | 99,962 | 153,453 | 299,979 | 399,941 |
| Tag Code Totals: | | | - | 99,962 | - | 299,979 | 399,941 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/52/21 | | | size: 105k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/2/2010 | 25 | 25 | 27,672 | - | 83,064 | - | 110,736 |
| 4/5/2010 | 25 | 25 | 42,764 | 70,436 | 128,361 | 211,425 | 281,861 |
| 4/5/2010 | 25 | 25 | 39,746 | 110,182 | 119,286 | 330,711 | 440,893 |
| Tag Code Totals: | | | - | 110,182 | - | 330,711 | 440,893 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/52/22 | | | size: 105k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/6/2010 | 26 | 26 | 64,945 | - | 194,952 | - | 259,897 |
| 4/7/2010 | 26 | 26 | 45,987 | 110,932 | 138,072 | 333,024 | 443,956 |
| Tag Code Totals: | | | - | 110,932 | - | 333,024 | 443,956 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/52/23 | | | size: 105k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/7/2010 | 27 | 27 | 26,844 | - | 80,628 | - | 107,472 |
| 4/8/2010 | 27 | 27 | 39,875 | 66,719 | 119,697 | 200,325 | 267,044 |
| 4/8/2010 | 27 | 27 | 35,046 | 101,765 | 105,219 | 305,544 | 407,309 |
| Tag Code Totals: | | | - | 101,765 | - | 305,544 | 407,309 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/52/24 | | | size: 90k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/30/2010 | 13 | 13 | 47,071 | - | 141,339 | - | 188,410 |
| 3/31/2010 | 13 | 13 | 47,897 | 94,968 | 143,742 | 285,081 | 380,049 |
| Tag Code Totals: | | | - | 94,968 | - | 285,081 | 380,049 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/52/25 | | | size: 90k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/31/2010 | 14 | 14 | 15,445 | - | 46,371 | - | 61,816 |
| 4/1/2010 | 14 | 14 | 75,304 | 90,749 | 225,966 | 272,337 | 363,086 |
| Tag Code Totals: | | | - | 90,749 | - | 272,337 | 363,086 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/52/26 | | | size: 90k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/2/2010 | 12 | 12 | 61,993 | - | 186,048 | - | 248,041 |
| 4/5/2010 | 12 | 12 | 27,999 | 89,992 | 84,102 | 270,150 | 360,142 |
| Tag Code Totals: | | | - | 89,992 | - | 270,150 | 360,142 |

| Coleman National Fish Hatchery | | | | | | | |
|--------------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 05/52/27 | | | size: 50k | | | Trailer # CA1 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/12/2010 | 28 | 28 | 34,481 | - | 103,551 | - | 138,032 |
| 4/13/2010 | 28 | 28 | 11,381 | 45,862 | 34,170 | 137,721 | 183,583 |
| Tag Code Totals: | | | - | 45,862 | - | 137,721 | 183,583 |

Table 1b. Summary of hatchery tag codes and tag retention study

| Coleman National Hatchery Summary | | | | | | | | |
|--|----------------------|----------------|------------------------|------------------------|------------------------|--------------------------|------------------|--------------------|
| Tag Code Size and Location | | | Tag Code Totals | | | Retention | | |
| Tag Code | Tag Code Size | Raceway | Number Tagged | Number Untagged | Total Processed | # of Fish | Days Held | % Retention |
| 05/51/79 | 93k | 1 | 96,951 | 291,348 | 388,299 | 415 | 21*** | 99.05% |
| 05/51/80 | 93k | 2 | 88,432 | 265,518 | 353,950 | 388 | 21*** | 99.74% |
| 05/51/81 | 93k | 3 | 95,579 | 286,935 | 382,514 | 390 | 21*** | 99.49% |
| 05/51/82 | 93k | 4 | 86,786 | 260,577 | 347,363 | 401 | 21*** | 99.50% |
| 05/51/83 | 112k | 8 | 116,665 | 350,181 | 466,846 | 413 | 21*** | 99.76% |
| 05/51/84 | 112k | 9 | 115,348 | 346,173 | 461,521 | 198* | 21*** | 98.88% |
| 05/51/85 | 112k | 10 | 108,475 | 325,509 | 433,984 | 386 | 21*** | 100% |
| 05/51/86 | 112k | 11 | 105,901 | 317,853 | 423,754 | 362 | 21*** | 100% |
| 05/51/87 | 112k | 5 | 119,031 | 357,237 | 476,268 | 384 | 21*** | 99.74% |
| 05/51/88 | 112k | 6 | 118,320 | 355,200 | 473,520 | ** | - | 99.62%**** |
| 05/51/89 | 112k | 7 | 112,484 | 337,674 | 450,158 | 399 | 21*** | 100% |
| 05/51/90 | 110k | 15 | 101,069 | 303,357 | 404,426 | 301 | 21*** | 98.69% |
| 05/51/91 | 110k | 16 | 104,326 | 313,188 | 417,514 | 400 | 21*** | 100% |
| 05/51/92 | 110k | 17 | 116,886 | 350,829 | 467,715 | 392 | 21*** | 100% |
| 05/51/93 | 110k | 18 | 117,773 | 353,517 | 471,290 | 388 | 21*** | 100% |
| 05/51/94 | 110k | 19 | 112,267 | 336,993 | 449,260 | 395 | 21*** | 99.75% |
| 05/51/95 | 110k | 22 | 115,494 | 346,791 | 462,285 | 286 | 21*** | 97.61% |
| 05/51/96 | 110k | 20 | 105,561 | 316,857 | 422,418 | 401 | 21*** | 99.75% |
| 05/51/97 | 110k | 21 | 107,649 | 323,235 | 430,884 | 398 | 21*** | 100% |
| 05/51/98 | 105k | 23 | 104,082 | 312,429 | 416,511 | 393 | 21*** | 100% |
| 05/51/99 | 105k | 24 | 99,962 | 299,979 | 399,941 | 396 | 21*** | 99.75% |
| 05/52/21 | 105k | 25 | 110,182 | 330,711 | 440,893 | 398 | 21*** | 99.50% |
| 05/52/22 | 105k | 26 | 110,932 | 333,024 | 443,956 | 419 | 21*** | 99.29% |
| 05/52/23 | 105k | 27 | 101,765 | 305,544 | 407,309 | 149 | 21*** | 100% |
| 05/52/24 | 90k | 13 | 94,968 | 285,081 | 380,049 | 388 | 21*** | 99.49% |
| 05/52/25 | 90k | 14 | 90,749 | 272,337 | 363,086 | 406 | 21*** | 100% |
| 05/52/26 | 90k | 12 | 89,992 | 270,150 | 360,142 | 400 | 21*** | 99.75% |
| 05/52/27 | 50k | 28 | 45,862 | 137,721 | 183,583 | 391 | 21*** | 98.74% |
| Grand Total = | | | 2,893,491 | 8,685,948 | 11,579,439 | Avg % Retention = | | 99.62% |

* This group had a problem with marked and unmarked fish getting in and out of the net pen so 800 fish were sampled and 198 of those were clipped and tagged.

** The net pen blew over so no retention fish were held for this tag code.

*** Number of days held for retention fish was approximately 21 days. The USFWS crew checked fish one or two times per week so some groups would have been checked a day or two more or less than the 21 time period.

**** The tag retention percentage for this tag code is the average of all the other tag codes.

Feather River Fish Hatchery



Table 2a. Daily Tagging Rates at Feather River Hatchery

| Feather River | | | | | | | |
|--------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/70/30 | | | size: 5k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/23/2010 | A4 | A4 | 5,836 | - | 17,560 | - | 23,396 |
| Tag Code Totals: | | | - | 5,836 | - | 17,560 | 23,396 |

| Feather River | | | | | | | |
|--------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/70/31 | | | size: 5k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/23/2010 | A4 | A4 | 5,835 | - | 17,559 | - | 23,394 |
| Tag Code Totals: | | | - | 5,835 | - | 17,559 | 23,394 |

| Feather River | | | | | | | |
|--------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/86/60 | | | size: 50k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/22/2010 | A4 | A4 | 42,138 | - | 126,474 | - | 168,612 |
| 4/23/2010 | A4 | A4 | 11,755 | 53,893 | 35,205 | 161,679 | 215,572 |
| Tag Code Totals: | | | - | 53,893 | - | 161,679 | 215,572 |

| Feather River | | | | | | | |
|-----------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT TYEE Club | | | | | | | |
| Tag Code: 06/86/24 | | | size: 40k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/29/2010 | C3/2 | C1 | 42,357 | - | - | - | 42,357 |
| Tag Code Totals: | | | - | 42,357 | - | - | 42,357 |

| Feather River | | | | | | | |
|-------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|----------------|
| Tag Code: 06/86/54 | | | size: 100k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/19/2010 | B6 | B2 | 43,431 | - | 130,356 | - | 173,787 |
| 4/20/2010 | B6/A2 | B2 | 14,462 | 57,893 | 43,401 | 173,757 | 231,650 |
| | | | | | | | |
| 4/20/2010 | A2 | B4 | 55,868 | - | 167,649 | - | 223,517 |
| | | | | | | | |
| Tag Code Totals: | | | - | 113,761 | - | 341,406 | 455,167 |

| Feather River | | | | | | | |
|-------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|------------------|
| Tag Code: 06/86/69 | | | size: 350k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/1/2010 | F2 | Chan 2 | 41,379 | - | 124,335 | - | 165,714 |
| 3/2/2010 | F2 | Chan 2 | 42,072 | 83,451 | 126,306 | 250,641 | 334,092 |
| 3/2/2010 | F2 | Chan 2 | 38,744 | 122,195 | 116,289 | 366,930 | 489,125 |
| 3/3/2010 | F2/E2 | Chan 2 | 39,247 | 161,442 | 117,816 | 484,746 | 646,188 |
| 3/3/2010 | E2 | Chan 2 | 33,101 | 194,543 | 99,348 | 584,094 | 778,637 |
| 3/4/2010 | E2 | Chan 2 | 33,243 | 227,786 | 103,113 | 687,207 | 914,993 |
| 3/4/2010 | E2 | Chan 2 | 25,438 | 253,224 | 76,383 | 763,590 | 1,016,814 |
| 3/5/2010 | F4 | Chan 2 | 31,266 | 284,490 | 93,858 | 857,448 | 1,141,938 |
| 3/5/2010 | F4 | Chan 2 | 26,120 | 310,610 | 78,426 | 935,874 | 1,246,484 |
| 3/10/2010 | E4 | Chan 2 | 35,524 | 346,134 | 106,644 | 1,042,518 | 1,388,652 |
| 3/10/2010 | E4 | Chan 2 | 21,734 | 367,868 | 65,253 | 1,107,771 | 1,475,639 |
| 3/11/2010 | E2 | Chan 2 | 5,068 | 372,936 | 15,207 | 1,122,978 | 1,495,914 |
| 3/11/2010 | E2 | Chan 2 | 23,091 | 396,027 | 69,333 | 1,192,311 | 1,588,338 |
| Tag Code Totals: | | | - | 396,027 | - | 1,192,311 | 1,588,338 |

| Feather River | | | | | | | |
|--------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/86/70 | | | size: 350k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/15/2010 | E2 | Chan1 | 28,199 | - | 84,678 | - | 112,877 |
| 3/16/2010 | E2 | Chan1 | 69,424 | 97,623 | 208,509 | 293,187 | 390,810 |
| 3/17/2010 | F2 | Chan1 | 72,230 | 169,853 | 216,912 | 510,099 | 679,952 |
| 3/18/2010 | F2 | Chan1 | 46,364 | 216,217 | 139,491 | 649,590 | 865,807 |
| 3/19/2010 | F2 | Chan1 | 10,163 | 226,380 | 30,579 | 680,169 | 906,549 |
| 3/19/2010 | D2 | Chan1 | 5,201 | 231,581 | 15,603 | 695,772 | 927,353 |
| 3/19/2010 | C2 | Chan1 | 22,830 | 254,411 | 68,544 | 764,316 | 1,018,727 |
| 3/22/2010 | C2 | Chan1 | 27,179 | 281,590 | 81,636 | 845,952 | 1,127,542 |
| 3/23/2010 | C2 | Chan1 | 31,136 | 312,726 | 93,492 | 939,444 | 1,252,170 |
| 3/25/2010 | C2/4 | Chan1 | 47,890 | 360,616 | 143,727 | 1,083,171 | 1,443,787 |
| 3/26/2010 | C3/4 | Chan1 | 39,972 | 400,588 | 119,976 | 1,203,147 | 1,603,735 |
| Tag Code Totals: | | | - | 400,588 | - | 1,203,147 | 1,603,735 |

| Feather River | | | | | | | |
|--------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/86/71 | | | size: 350k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/31/2010 | C6/4 | F2 | 59,453 | - | 178,437 | - | 237,890 |
| 4/1/2010 | C6/4 | F2 | 34,774 | 94,227 | 104,364 | 282,801 | 377,028 |
| | | | | | | | |
| 4/1/2010 | C6/4 | F4 | 17,412 | - | 52,257 | - | 69,669 |
| 4/2/2010 | C6 | F4 | 19,818 | 37,230 | 59,511 | 111,768 | 148,998 |
| 4/2/2010 | D2 | F4 | 29,440 | 66,670 | 88,356 | 200,124 | 266,794 |
| 4/5/2010 | D2 | F4 | 14,696 | 81,366 | 44,148 | 244,272 | 325,638 |
| | | | | | | | |
| 4/5/2010 | D2 | F6 | 45,607 | - | 136,851 | - | 182,458 |
| 4/6/2010 | D2 | F6 | 24,661 | 70,268 | 73,989 | 210,840 | 281,108 |
| 4/6/2010 | D2 | F6 | 5,060 | 75,328 | 15,183 | 226,023 | 301,351 |
| | | | | | | | |
| 4/6/2010 | D4 | E6 | 32,212 | - | 96,666 | - | 128,878 |
| 4/7/2010 | D4 | E6 | 43,324 | 75,536 | 130,038 | 226,704 | 302,240 |
| | | | | | | | |
| 4/7/2010 | D4 | E4 | 15,874 | - | 47,667 | - | 63,541 |
| 4/8/2010 | D4/6 | E4 | 51,660 | 67,534 | 155,055 | 202,722 | 270,256 |
| Tag Code Totals: | | | - | 393,991 | - | 1,182,522 | 1,576,513 |

| Feather River | | | | | | | |
|-------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|------------------|
| Tag Code: 06/86/72 | | | size: 350k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/9/2010 | D4/6 | C4 | 52,036 | - | 156,153 | - | 208,189 |
| 4/12/2010 | D4/6 | C4 | 28,854 | 80,890 | 86,649 | 242,802 | 323,692 |
| | | | | | | | |
| 4/12/2010 | B2 | C6 | 16,761 | - | 50,337 | - | 67,098 |
| 4/13/2010 | B2 | C6 | 58,528 | 75,289 | 175,722 | 226,059 | 301,348 |
| | | | | | | | |
| 4/13/2010 | B2 | D6 | 12,090 | - | 36,270 | - | 48,360 |
| 4/14/2010 | B2/4 | D6 | 63,131 | 75,221 | 189,432 | 225,702 | 300,923 |
| | | | | | | | |
| 4/14/2010 | B4 | D4 | 6,576 | - | 19,728 | - | 26,304 |
| 4/15/2010 | B4 | D4 | 68,844 | 75,420 | 206,610 | 226,338 | 301,758 |
| | | | | | | | |
| 4/15/2010 | B4 | D2 | 3,315 | - | 9,945 | - | 13,260 |
| 4/16/2010 | B4/6 | D2 | 66,393 | 69,708 | 199,296 | 209,241 | 278,949 |
| 4/19/2010 | B6 | D2 | 25,682 | 95,390 | 77,124 | 286,365 | 381,755 |
| Tag Code Totals: | | | - | 402,210 | - | 1,207,266 | 1,609,476 |

| Feather River | | | | | | | |
|-------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|----------------|
| 100% AD/CWT Monterey | | | | | | | |
| Tag Code: 06/86/75 | | | Size: 110k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/29/2010 | C3/4 | C2 | 38,899 | - | - | - | 38,899 |
| 3/30/2010 | C3/4 | C2 | 84,489 | 123,388 | - | - | 123,388 |
| Tag Code Totals: | | | - | 123,388 | - | - | 123,388 |

| Feather River | | | | | | | |
|--------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/86/95 | | | size: 80k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/21/2010 | A4 | A2 | 58,965 | - | 176,973 | - | 235,938 |
| 4/21/2010 | A4 | A2 | 1,000 | 59,965 | 3,000 | 179,973 | 239,938 |
| 4/22/2010 | A4 | A2 | 30,180 | 90,145 | 90,645 | 270,618 | 360,763 |
| Tag Code Totals: | | | - | 90,145 | - | 270,618 | 360,763 |

Table 2b. Summary of hatchery tag codes and tag retention study

| Feather River Hatchery Summary | | | | | | | | |
|---------------------------------------|----------------------|--------------------|------------------------|------------------------|------------------------|-------------------------|------------------|--------------------|
| Tag Code Size and Location | | | Tag Code Totals | | | Retention | | |
| Tag Code | Tag Code Size | Raceway | Number Tagged | Number Untagged | Total Processed | # of Fish | Days Held | % Retention |
| 06/86/69 | 350K | Channel 2 | 396,027 | 1,192,311 | 1,588,338 | 800 | 24 | 99.75% |
| 06/86/54 | 100K | Channel 1 | 113,761 | 341,406 | 455,167 | 445 | 20 | 99.77% |
| 06/86/71 | 350K | E4,E6,F2,F4,F6 | 393,991 | 1,182,522 | 1,576,513 | 798 | 21 | 99.76% |
| 06/86/72 | 350K | D2,D4,D6, C4,C6 | 402,210 | 1,207,266 | 1,609,476 | 820 | 21 | 99.76% |
| 06/86/70 | 350K | E2,F2,D2,C2,C4 | 400,588 | 1,203,147 | 1,603,735 | 802 | 21 | 99.75% |
| 06/86/75 | 110K | C2 | 123,388 | - | 123,388 | 250 | 25 | 99.20% |
| 06/86/24 | 40K | C1 | 42,357 | - | 42,357 | 200 | 26 | 99.00% |
| 06/86/30 | 5K | A4 | 5,836 | 17,560 | 23,396 | - | - | 99.68%* |
| 06/86/95 | 80K | A2 | 90,145 | 270,618 | 360,763 | - | - | 99.68%* |
| 06/86/31 | 5K | A4 | 5,835 | 17,559 | 23,394 | - | - | 99.68%* |
| 06/86/60 | 50K | A4 | 53,893 | 161,679 | 215,572 | - | - | 99.68%* |
| Tag Code Totals | | | 2,028,031 | 5,594,068 | 7,622,099 | Avg% Retention = | | 99.68% |

* No retention fish held. Retention percentage based on the average of all other retention groups.

Feather River Hatchery Annex



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

| Feather River Annex | | | | | | | |
|-------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|------------------|
| Tag Code: 06/86/67 | | | size: 230k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 2/11/2010 | C2 | C6 | 206 | - | 729 | - | 935 |
| 2/12/2010 | C2 | C6 | 26,426 | 26,632 | 79,371 | 80,100 | 106,732 |
| | | | | | | | |
| 2/16/2010 | C2 | C2 | 57,014 | - | 171,216 | - | 228,230 |
| 2/17/2010 | C2/4 | C2 | 6,306 | 63,320 | 19,008 | 190,224 | 253,544 |
| | | | | | | | |
| 2/17/2010 | C4 | C4 | 33,665 | - | 101,052 | - | 134,717 |
| | | | | | | | |
| 2/17/2010 | D2 | D6 | 26,267 | - | 78,870 | - | 105,137 |
| | | | | | | | |
| 2/18/2010 | D2/4 | D2 | 37,795 | - | 113,505 | - | 151,300 |
| 2/18/2010 | D4 | D2 | 27,266 | 65,061 | 81,840 | 195,345 | 260,406 |
| | | | | | | | |
| 2/18/2010 | D4 | D4 | 3,514 | - | 10,545 | - | 14,059 |
| 2/19/2010 | D4 | D4 | 44,101 | 47,615 | 132,402 | 142,947 | 190,562 |
| Tag Code Totals: | | | - | 262,560 | - | 788,538 | 1,051,098 |

| Feather River Annex | | | | | | | |
|---------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/86/68 | | | size: 230k | | | Trailer # CA4 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 2/19/2010 | A2 | A6 | 6,915 | - | 20,796 | - | 27,711 |
| 2/22/2010 | A2 | A6 | 19,536 | 26,451 | 58,722 | 79,518 | 105,969 |
| | | | | | | | |
| 2/22/2010 | A2/4 | A2 | 44,265 | - | 132,939 | - | 177,204 |
| 2/23/2010 | A2/A4 | A2 | 20,809 | 65,074 | 62,517 | 195,456 | 260,530 |
| | | | | | | | |
| 2/23/2010 | A4 | A4 | 38,831 | - | 116,568 | - | 155,399 |
| | | | | | | | |
| 2/24/2010 | B2 | B6 | 26,522 | - | 79,644 | - | 106,166 |
| | | | | | | | |
| 2/24/2010 | B2/4 | B2 | 40,688 | - | 122,244 | - | 162,932 |
| 2/25/2010 | B4 | B2 | 24,651 | 65,339 | 74,037 | 196,281 | 261,620 |
| | | | | | | | |
| 2/25/2010 | B4 | B4 | 38,704 | - | 116,199 | - | 154,903 |
| Tag Code Totals: | | | - | 260,921 | - | 783,666 | 1,044,587 |

Table 3b. Summary of hatchery tag codes and tag retention studies

| Feather River Annex Summary | | | | | | | | |
|-----------------------------|---------------|--------------------|-----------------|-----------------|-----------------|-------------------|-----------|-------------|
| Tag Code Size and Location | | | Tag Code Totals | | | Retention | | |
| Tag Code | Tag Code Size | Raceway | Number Tagged | Number Untagged | Total Processed | # of Fish | Days Held | % Retention |
| 06/86/67 | 230K | C2,C4,C6,D2,D4,D6 | 262,560 | 788,538 | 1,051,098 | 796 | 21 | 100% |
| 06/86/68 | 230K | A2,A4,A6,B2, B4,B6 | 260,921 | 783,666 | 1,044,587 | 798 | 21 | 99.60% |
| Grand Total = | | | 523,481 | 1,572,204 | 2,095,658 | Avg % Retention = | | 99.81% |

Mokelumne River Hatchery



Table 4a. Daily Tagging Rates at Mokelumne River Hatchery

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/13 | | | size: 230k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/22/2010 | B up | B low | 22,954 | - | - | - | 22,954 |
| 3/23/2010 | B up | B low | 71,025 | 93,979 | - | - | 93,979 |
| 3/24/2010 | B up | B low | 58,287 | 152,266 | - | - | 152,266 |
| 3/25/2010 | B up | B low | 56,803 | 209,069 | - | - | 209,069 |
| 3/26/2010 | B up | B low | 12,997 | 222,066 | - | - | 222,066 |
| Tag Code Totals: | | | - | 222,066 | - | - | 222,066 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/39 | | | size: 350k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 3/29/2010 | C up | C low | 23,335 | - | - | - | 23,335 |
| 3/30/2010 | C up | C low | 62,368 | 85,703 | - | - | 85,703 |
| 3/31/2010 | C up | C low | 55,767 | 141,470 | - | - | 141,470 |
| 4/1/2010 | C up | C low | 54,590 | 196,060 | - | - | 196,060 |
| 4/2/2010 | C up | C low | 31,981 | 228,041 | - | - | 228,041 |
| 4/5/2010 | C up | C low | 48,154 | 276,195 | - | - | 276,195 |
| 4/6/2010 | C up | C low | 76,321 | 352,516 | - | - | 352,516 |
| 4/7/2010 | C up | C low | 35,647 | 388,163 | - | - | 388,163 |
| Tag Code Totals: | | | - | 388,163 | - | - | 388,163 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/41 | | | size: 250k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 5/4/2010 | F | C | 9,493 | - | - | - | 9,493 |
| 5/5/2010 | F | C | 89,697 | 99,190 | - | - | 99,190 |
| 5/6/2010 | F | C | 103,418 | 202,608 | - | - | 202,608 |
| 5/7/2010 | F | C | 75,167 | 277,775 | - | - | 277,775 |
| 5/10/2010 | F | C | 5,284 | 283,059 | - | - | 283,059 |
| 5/11/2010 | F | C | 2,717 | 285,776 | - | - | 285,776 |
| 5/12/2010 | F | C | 1,085 | 286,861 | - | - | 286,861 |
| Tag Code Totals: | | | - | 286,861 | - | - | 286,861 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/64 | | | size: 30k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 5/11/2010 | F | C | 1,974 | - | - | - | 1,974 |
| 5/12/2010 | F | C | 8,401 | 10,375 | - | - | 10,375 |
| Tag Code Totals: | | | - | 10,375 | - | - | 10,375 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 08/86/73 | | | size: 100k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 5/7/2010 | F | C | 9,274 | - | - | - | 9,274 |
| 5/10/2010 | F | C | 38,071 | 47,345 | - | - | 47,345 |
| 5/11/2010 | F | C | 64,837 | 112,182 | - | - | 112,182 |
| 5/12/2010 | F | C | 2,836 | 115,018 | - | - | 115,018 |
| Tag Code Totals: | | | - | 115,018 | - | - | 115,018 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/82 | | | size: 90k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/7/2010 | D up | D low | 31,122 | - | - | - | 31,122 |
| 4/8/2010 | D up | D low | 68,759 | 99,881 | - | - | 99,881 |
| Tag Code Totals: | | | - | 99,881 | - | - | 99,881 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/83 | | | size: 90k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/15/2010 | D up | D low | 15,542 | - | - | - | 15,542 |
| 4/16/2010 | D up | D low | 37,151 | 52,693 | - | - | 52,693 |
| 4/19/2010 | D up | D low | 33,827 | 86,520 | - | - | 86,520 |
| 4/20/2010 | D up | D low | 11,792 | 98,312 | - | - | 98,312 |
| Tag Code Totals: | | | - | 98,312 | - | - | 98,312 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/84 | | | size: 90k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/14/2010 | D up | D low | 50,660 | - | - | - | 50,660 |
| 4/15/2010 | D up | D low | 48,696 | 99,356 | - | - | 99,356 |
| Tag Code Totals: | | | - | 99,356 | - | - | 99,356 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/86 | | | size: 90k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/28/2010 | G | E | 3,209 | - | - | - | 3,209 |
| 4/29/2010 | G | E | 86,544 | 89,753 | - | - | 89,753 |
| 4/30/2010 | G | E | 13,053 | 102,806 | - | - | 102,806 |
| Tag Code Totals: | | | - | 102,806 | - | - | 102,806 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/87 | | | size: 90k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/28/2010 | G | E | 26,720 | - | - | - | 26,720 |
| 4/28/2010 | G | E | 51,154 | 77,874 | - | - | 77,874 |
| 4/29/2010 | G | E | 23,407 | 101,281 | - | - | 101,281 |
| 5/3/2010 | G | E | 1,335 | 102,616 | - | - | 102,616 |
| Tag Code Totals: | | | - | 102,616 | - | - | 102,616 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/88 | | | size: 90k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/30/2010 | G | E | 60,578 | - | - | - | 60,578 |
| 5/3/2010 | G | E | 43,547 | 104,125 | - | - | 104,125 |
| Tag Code Totals: | | | - | 104,125 | - | - | 104,125 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/66 | | | size: 20k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 5/3/2010 | G | E | 3,739 | - | - | - | 3,739 |
| Tag Code Totals: | | | - | 3,739 | - | - | 3,739 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/89 | | | size: 90k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 5/3/2010 | H | G | 23,528 | - | - | - | 23,528 |
| 5/4/2010 | H/F | G | 75,795 | 99,323 | - | - | 99,323 |
| Tag Code Totals: | | | - | 99,323 | - | - | 99,323 |

| Mokelumne River Hatchery | | | | | | | |
|--------------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/87/08 | | | size: 350k | | | Trailer # CA2 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/20/2010 | D up | D low | 29,287 | - | - | - | 29,287 |
| 4/21/2010 | E/D up | D low | 56,718 | 86,005 | - | - | 86,005 |
| 4/22/2010 | E up | D low | 58,372 | 144,377 | - | - | 144,377 |
| 4/23/2010 | E up | D low | 32,165 | 176,542 | - | - | 176,542 |
| 4/26/2010 | E up | D low | 26,814 | 203,356 | - | - | 203,356 |
| 4/26/2010 | E up | D low | 15,379 | 218,735 | - | - | 218,735 |
| 4/26/2010 | E up | D low | 38,120 | 256,855 | - | - | 256,855 |
| 4/27/2010 | E up | D low | 61,533 | 318,388 | - | - | 318,388 |
| 4/27/2010 | E/F | D low | 55,784 | 374,172 | - | - | 374,172 |
| 4/28/2010 | F | D low | 22,872 | 397,044 | - | - | 397,044 |
| Tag Code Totals: | | | - | 397,044 | - | - | 397,044 |

Table 4b. Summary of hatchery tag codes and tag retention studies

| Tag Code Size and Location | | | Retention | | | | |
|----------------------------|------|---------|------------------|------------------|--------------------------|-----------|---------------|
| Tag Code | Size | Raceway | Tagged | Total | # of Fish | Days Held | % Retention |
| 06/86/13 | 230K | B low | 222,066 | 222,066 | 900 | 24 | 99.56% |
| 06/86/39 | 350K | C low | 388,163 | 388,163 | 900 | 13 | 99.44% |
| 06/86/41 | 250K | C | 286,861 | 286,861 | 900 | 21 | 100% |
| 06/86/64 | 30K | C | 10,375 | 10,375 | 900 | 21 | 100% |
| 06/86/73 | 100K | C | 115,018 | 115,018 | 900 | 21 | 100% |
| 06/86/82 | 90K | D low | 99,881 | 99,881 | * | - | 99.89% |
| 06/86/83 | 90K | D low | 98,312 | 98,312 | * | - | 99.89% |
| 06/86/84 | 90K | D low | 99,356 | 99,356 | * | - | 99.89% |
| 06/86/86 | 90K | E | 102,806 | 102,806 | 900 | 21 | 100% |
| 06/86/87 | 90K | E | 102,616 | 102,616 | 900 | 21 | 100% |
| 06/86/88 | 90K | E | 104,125 | 104,125 | 900 | 21 | 100% |
| 06/86/66 | 20K | E | 3,739 | 3,739 | 900 | 21 | 100% |
| 06/86/89 | 90K | G | 99,323 | 99,323 | * | - | 99.89% |
| 06/86/08 | 350K | D low | 397,044 | 397,044 | 900 | 21 | 100% |
| Grand Total = | | | 2,129,685 | 2,129,685 | Avg % Retention = | | 99.89% |

* No retention fish held. Retention percentage based on the average of all other retention groups.

Nimbus Hatchery



Table 5a. Daily Tagging Rates at Nimbus Hatchery

| Nimbus Fish Hatchery | | | | | | | |
|----------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/86/58 | | | size: 70k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 5/7/2010 | F2 | F1 | 2,846 | - | 8,538 | - | 11,384 |
| 5/10/2010 | F2 | F1 | 61,906 | 64,752 | 185,763 | 194,301 | 259,053 |
| 5/11/2010 | F2 | F1 | 3,690 | 68,442 | 11,082 | 205,383 | 273,825 |
| Tag Code Totals: | | | - | 68,442 | - | 205,383 | 273,825 |

| Nimbus Fish Hatchery | | | | | | | |
|----------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/86/77 | | | size: 350k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/12/2010 | A2 | A1 | 61,094 | - | 183,369 | - | 244,463 |
| 4/13/2010 | A2/4 | A1/2 | 43,314 | 104,408 | 130,002 | 313,371 | 417,779 |
| 4/13/2010 | A4 | A2 | 40,808 | 145,216 | 122,475 | 435,846 | 581,062 |
| 4/14/2010 | A4 | A2 | 49,761 | 194,977 | 149,310 | 585,156 | 780,133 |
| | | | | | | | |
| 4/14/2010 | B2 | B1 | 30,295 | - | 90,948 | - | 121,243 |
| 4/15/2010 | B2 | B1 | 45,149 | 75,444 | 135,495 | 226,443 | 301,887 |
| 4/15/2010 | B2/4 | B1 | 46,583 | 122,027 | 139,809 | 366,252 | 488,279 |
| 4/16/2010 | B4 | B2 | 41,273 | 163,300 | 123,855 | 490,107 | 653,407 |
| 4/16/2010 | B4 | B2 | 34,610 | 197,910 | 103,890 | 593,997 | 791,907 |
| Tag Code Totals: | | | - | 392,887 | - | 1,179,153 | 1,572,040 |

| Nimbus Fish Hatchery | | | | | | | |
|----------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/86/78 | | | size: 350k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/19/2010 | C2 | C1 | 36,363 | - | 109,173 | - | 145,536 |
| 4/19/2010 | C2 | C1 | 44,742 | 81,105 | 134,259 | 243,432 | 324,537 |
| 4/20/2010 | C4 | C1/2 | 40,968 | 122,073 | 122,970 | 366,402 | 488,475 |
| 4/20/2010 | C4 | C1/2 | 41,739 | 163,812 | 125,289 | 491,691 | 655,503 |
| 4/21/2010 | C4 | C2 | 34,523 | 198,335 | 103,617 | 595,308 | 793,643 |
| | | | | | | | |
| 4/21/2010 | D2 | D1 | 43,134 | - | 129,447 | - | 172,581 |
| 4/22/2010 | D4 | D1/2 | 45,352 | 88,486 | 136,116 | 265,563 | 354,049 |
| 4/22/2010 | D4 | D1/2 | 44,843 | 133,329 | 134,577 | 400,140 | 533,469 |
| 4/23/2010 | D4 | D1/2 | 11,895 | 145,224 | 35,721 | 435,861 | 581,085 |
| Tag Code Totals: | | | - | 343,559 | - | 1,031,169 | 1,374,728 |

| Nimbus Fish Hatchery | | | | | | | |
|----------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| 100% AD/CWT | | | | | | | |
| Tag Code: 06/86/79 | | | size: 245k | | | Trailer # CA#3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 5/11/2010 | F3 low | F3 up | 76,429 | - | - | - | 76,429 |
| 5/12/2010 | F3 low | F3 up | 112,223 | 188,652 | - | - | 188,652 |
| 5/13/2010 | F3 low | F3 up | 68,045 | 256,697 | - | - | 256,697 |
| 5/13/2010 | F3 low | F3 up | 17,862 | 274,559 | - | - | 274,559 |
| Tag Code Totals: | | | - | 274,559 | - | - | 274,559 |

| Nimbus Fish Hatchery | | | | | | | |
|----------------------|--------------------------|---------------------------|-----------------|----------------------|----------------------|---------------------------|---------------|
| Tag Code: 06/86/80 | | | size: 245k | | | Trailer # CA3 | |
| Tagging Date | Raceway prior to tagging | Raceway following tagging | Daily Tag Total | Cumulative Tag Total | Daily Untagged Total | Cumulative Untagged Total | Raceway Total |
| 4/27/2010 | E2 | E1 | 15,860 | - | 47,628 | - | 63,488 |
| 4/28/2010 | E2 | E1 | 40,433 | 56,293 | 121,344 | 168,972 | 225,265 |
| 4/29/2010 | E2/3 | E1 | 44,560 | 100,853 | 133,737 | 302,709 | 403,562 |
| 4/30/2010 | E3 | E1 | 31,969 | 132,822 | 95,970 | 398,679 | 531,501 |
| 5/3/2010 | E3 | E1 | 21,179 | 154,001 | 63,585 | 462,264 | 616,265 |
| 5/4/2010 | E3 | E1 | 32,570 | 186,571 | 97,782 | 560,046 | 746,617 |
| 5/5/2010 | E3 | E1 | 20,401 | 206,972 | 61,281 | 621,327 | 828,299 |
| | | | | | | | |
| 5/5/2010 | F2 | F1 | 7,523 | - | 22,569 | - | 30,092 |
| 5/6/2010 | F2 | F1 | 38,740 | 46,263 | 116,298 | 138,867 | 185,130 |
| 5/7/2010 | F2 | F1 | 26,248 | 72,511 | 78,780 | 217,647 | 290,158 |
| Tag Code Totals: | | | - | 279,483 | - | 838,974 | 1,118,457 |

Table 5b. Summary of hatchery tag codes and tag retention studies

| Nimbus Fish Hatchery Summary | | | | | | | | |
|------------------------------|-------|-------------|-----------------|-----------|-----------|------------------------|-----------|-------------|
| Tag Code Size and Location | | | Tag Code Totals | | | Retention calculations | | |
| Tag Code | Size | Raceway | Tagged | Passed | Total | # of Fish | Days Held | % Retention |
| 06/86/78 | 350K | C1,C2,D1,D2 | 343,559 | 1,031,169 | 1,374,728 | 802 | 21 | 99.88% |
| 06/86/77 | 350K | A1,A2,B1,B2 | 392,887 | 1,179,153 | 1,572,040 | 796 | 21 | 99.12% |
| 06/86/80 | 245K | E1,F1 | 279,483 | 838,974 | 1,118,457 | 808 | 19 | 100.00% |
| 06/86/58 | 70K | F1 | 68,442 | 205,383 | 273,825 | 800 | 22 | 99.63% |
| 06/86/79 | 245K* | F3 up | 274,559 | - | 274,559 | 845 | 21 | 97.63%** |
| Grand Total = | | | 1,358,930 | 3,254,679 | 4,613,609 | Avg % Retention = | | 99.23% |

* 100% Mark and Tag

** 100% mark/tag group. Hatchery screen in raceway set improperly and unprocessed fish passed into pond with processed fish.