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IDAHO ANADROMOUS FISH-MARKING PROGRAM

Report to:
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Introduction

In April 2009 IDFG contracted all anadromous fish-marking in the state of Idaho to PSMFC. In 2013 all fish-marking personnel were employees of PSMFC. The marking program was based out of Lewiston, Idaho and consisted of one Tagging Coordinator, six Trailer Operators, one Trailer Operator/Trailer Assistant, four Trailer Assistants, and a varying number of temporary Trailer Assistants as needed for the 2013 marking season. This report summarizes all fish marked by the Idaho Anadromous Fish-Marking Program in the year 2013. The program was responsible for the marking of anadromous fish at the following eight fish hatcheries: Clearwater, Rapid River, McCall, Sawtooth, Pahsimeroi, Niagara Springs, Magic Valley, and Hagerman National (no fish were reared at Oxbow Hatchery in 2013). While at these fish hatcheries a variety of different marks and tags were applied including adipose fin-clips, coded-wire tags (CWT), and passive integrated transponder (PIT) tags to steelhead (*Oncorhynchus mykiss*), Sockeye salmon (*Oncorhynchus nerka*), and Chinook salmon (*Oncorhynchus tshawytscha*).

The IDFG research division develops a mark plan that indicates the number of fish at each hatchery that are to receive specific marks. Coded-wire tags were implanted from the last week of April through the middle of September. The adipose fin-clipping took place from the last week of April through the middle of September. PIT-tags were implanted from January through March, and again in October and November, and provide a unique alphanumeric code to each individual fish.

The overall objectives of the Idaho Anadromous Fish-Marking Program are as follows:

Objective 1: Provide technical and administrative services associated with performing and completing the work identified in the 2013 Fish Marking Contract. Technical and administrative tasks may include: project management, budgeting, scheduling, coordination, crew supervision, report preparation, grant management, invoicing, equipment maintenance and data collection, storage and analysis, and all other tasks that may be necessary to complete the scope of work specified in the 2013 contract.

Objective 2: Purchase supplies as per the contracted budget, hire and supervise project personnel for marking and tagging operations specified in the contract. Operate IDFG owned marking and tagging trailers, vehicles and associated equipment.

Objective 3: Conduct quality control studies for each fin-clipped and coded-wire tagged release group and report to the IDFG Project Manager. Coordinate all project activities and share all project data with IDFG hatchery staff.

Objective 4: Coordinate with IDFG to ensure marking and tagging information is uploaded to IDFG's data storage location. Information will be accurate and timely and conform to the established formatting protocols established by IDFG.

Objective 5: Prepare and submit an annual report to the IDFG Project Manager in electronic form no later than December 31 of the current contract period. Each report shall detail work accomplished, numbers of fish marked and tagged, results of tag retention studies, a discussion of any problems

encountered and recommendations to correct challenges or problems encountered during the year. Additionally, PSMFC will provide monthly financial reports as well as preliminary data reports that summarize numbers of fish handled, numbers and types of marks and tags applied, and hatcheries where work was performed.

Methods

The Idaho marking program used three state-of-the-art automated tagging trailers. One of these automated trailers is 53 feet long with six automated lines, and the other two are 48 feet long with five automated lines each. These trailers incorporate the latest advanced technology for adipose fin-clipping and coded-wire tagging fish. These automated trailers have the capacity to mark and implant coded-wire tags very rapidly without the use of anesthetic or human contact. These systems have been in use for many years in the Pacific Northwest and in Idaho since 2002. Steelhead and Chinook salmon were PIT-tagged using either a four-station, or three-station, manual PIT-tagging trailer.

The automated trailers are able to process fish that are a minimum of 57mm in total length and a maximum of 142mm in total length. This size restriction means that timing at each facility is critical to maximize efficiency and productivity. At many facilities the fish were processed through the automated trailers when the hatcheries were ready to move the fish from inside rearing vats to outside rearing ponds or raceways, making timing of the mark event even more critical to ensure that the density limits of the inside rearing containers were not exceeded. Double shifts were typically used to maximize efficiency and output of the automated trailers. Trailers were moved as needed between hatcheries relative to fish reaching appropriate marking size.

Fish were delivered to the automated trailers by means of a forklift mounted live fish transfer tank, electric Matsusaka four-inch fish pumps, and an electric Aqua-Life two and a half-inch fish pump. The forklifts and the Aqua-Life fish pump were operated by hatchery personnel and the two Matsusaka fish pumps were operated by members of the fish-marking crew. Once inside the trailers fish were pumped via an internal fish lift system into the sorter. The sorter takes an image of each individual fish and records the total length of the fish (within .1mm) and then diverts the fish to the appropriate line. Each of the automated lines is set up to run a specific size range of fish. Once the fish have reached the automated line they travel down a channel and are separated by a series of gates that ensure one fish at a time arrive at the clamping mechanism. Once the clamps come together on the fish a camera takes an image of the back of the fish and locates the adipose fin. The computer relays the exact X and Y coordinates of the adipose fin in relation to the back of the fish to a clipping mechanism that excises the adipose fin. Once the clipping is complete the camera takes a second image to ensure that the fin-clip was successful. At the moment the clamps come together to hold the fish for imaging the coded-wire tag is inserted into the snout of the fish via a MK IV tag injector that is positioned at the end of each channel. After the fish has been clipped and/or tagged it is released from the clamps and travels through a Quality Control Device (QCD) that checks for the presence of a coded-wire tag. If the fish

passes the clip quality check and tag detection, it is then delivered from the trailer to the proper raceway or pond via four-inch discharge pipe. If the fish fails either the tag detection or clip quality check, it is diverted into a reject container and will be processed manually in the back of the trailer by a Trailer Assistant.

In the manual section of the trailer fish that were either too large or too small to be processed through the automated lines, or were rejected by the automated lines, were anesthetized and clipped and/or tagged manually.

At most facilities tag retention studies were conducted to determine the coded-wire tag shed rate for each specific tag code and/or raceway. A minimum of 300 fish were checked 21 days post tagging to check for the presence of a coded-wire tag and examined for adipose fin-clip quality. For the purpose of this report all fish with an intact adipose fin (no clip), and those fish with a partial adipose fin-clip were determined to be unsuccessful clips. All other clips were considered to be successful, including those with deep clips, due to the ability to visually identify the fish as having an adipose fin-clip when it returns as an adult. It is worth noting that a percentage of the fish with partial adipose fin-clips that survive and return as adults will still be identifiable as hatchery origin by evidence of a healed scar. With the large reduction in the number of groups of fish receiving adipose fin-clips and CWT there was a reduction in the rate of adipose fin-clip checks that were performed in 2013. Sawtooth and Pahsimeroi Hatcheries performed the CWT retention checks on their fish in 2013 and checked for presence/absence of CWT only and did not look at clip quality further reducing the number of adipose fin-clip quality checks that were conducted in 2013. This is discussed in greater detail in the "Discussion" section of this report.

Upon completion of marking operations at each facility all trailers and equipment were disinfected prior to being transported off the hatchery compound following the Idaho Trailer Disinfection Protocol. The first step in this process was to scrub all inside surfaces with diluted liquid Lysol. A large water trough was then used to create a closed water circulating system and a bleach solution (350ppm) was run through the trailer for a minimum of 45 minutes. Upon completion of the disinfection process Sodium Thiosulfate was used to neutralize the bleach and the water was then emptied out of the trailer according to hatchery protocol. Upon arrival at the next facility the entire trailer was extensively flushed with fresh hatchery water before exposing fish to the trailer.

The numbers in this report reflect the fish handled and type of mark that the Idaho Anadromous Fish-Marking Crew applied at each of the respective hatcheries at the time of marking. This information is not intended to be used for release numbers or information regarding release.

Results

The Marking Program performed the adipose fin-clipping and coded-wire tagging according to the 2013 Mark Plan. A total of 17,027,432 marks were applied to 16,005,017 fish in 2013 (Table 1).

Tag retention studies indicated very high rates of tag/mark retention; our program wide goal is to achieve 99% or better tag retention on all groups of tagged fish. Adipose fin-clip rates were only checked on those groups of fish that also received a coded-wire tag. Tag retention rates ranged as follows:

- Clearwater Fish Hatchery: 98.67 – 100.00% with an average of 99.64%
- Pahsimeroi Fish Hatchery: 99.67 – 100.00% with an average of 99.81%
- Rapid River Fish Hatchery: 100.00 – 100.00% with an average of 100.00%
- McCall Fish Hatchery: 97.00 – 100.00% with an average of 98.60%
- Magic Valley Fish Hatchery: 97.67 – 99.33% with an average of 98.33%
- Hagerman National Fish Hatchery: 98.00 – 99.00% with an average of 98.44%
- Niagara Springs Fish Hatchery: No CWT at Niagara Springs Hatchery in 2013
- Sawtooth Fish Hatchery: 98.67 – 100.00% with an average of 99.27%

Note: Tag code and raceway specific tag retention rates can be seen in Tables 2 – 12 for each facility.

Table 1: Mark Year 2013 Summary of Total Marks

HATCHERY	# OF FISH MARKED	AD/CWT	CWT ONLY	AD ONLY	TOTAL MARKS
CLEARWATER SPRING-RUN CHINOOK	2,679,957	547,928	341,701	1,790,328	3,227,885
CLEARWATER SUMMER-RUN CHINOOK	495,167	0	495,167	0	495,167
CLEARWATER STEELHEAD	647,302	0	152,000	495,302	647,302
HAGERMAN NATIONAL	1,475,381	0	62,562	1,412,819	1,475,381
MAGIC VALLEY	1,357,150	0	143,791	1,213,359	1,357,150
MC CALL	1,145,144	113,463	329,776	701,905	1,258,607
NIAGARA SPRINGS	1,852,825	0	0	1,852,825	1,852,825
PAHSIMEROI	1,065,965	120,081	152,541	793,343	1,186,046
RAPID RIVER	3,140,160	120,924	0	3,019,236	3,261,084
SAWTOOTH CHINOOK	1,971,506	120,019	385,838	1,465,649	2,091,525
SAWTOOTH SOCKEYE	174,460	0	0	174,460	174,460
MARK YEAR 2013 TOTALS	**16,005,017**	**1,022,415**	**2,063,376**	**12,919,226**	**17,027,432**

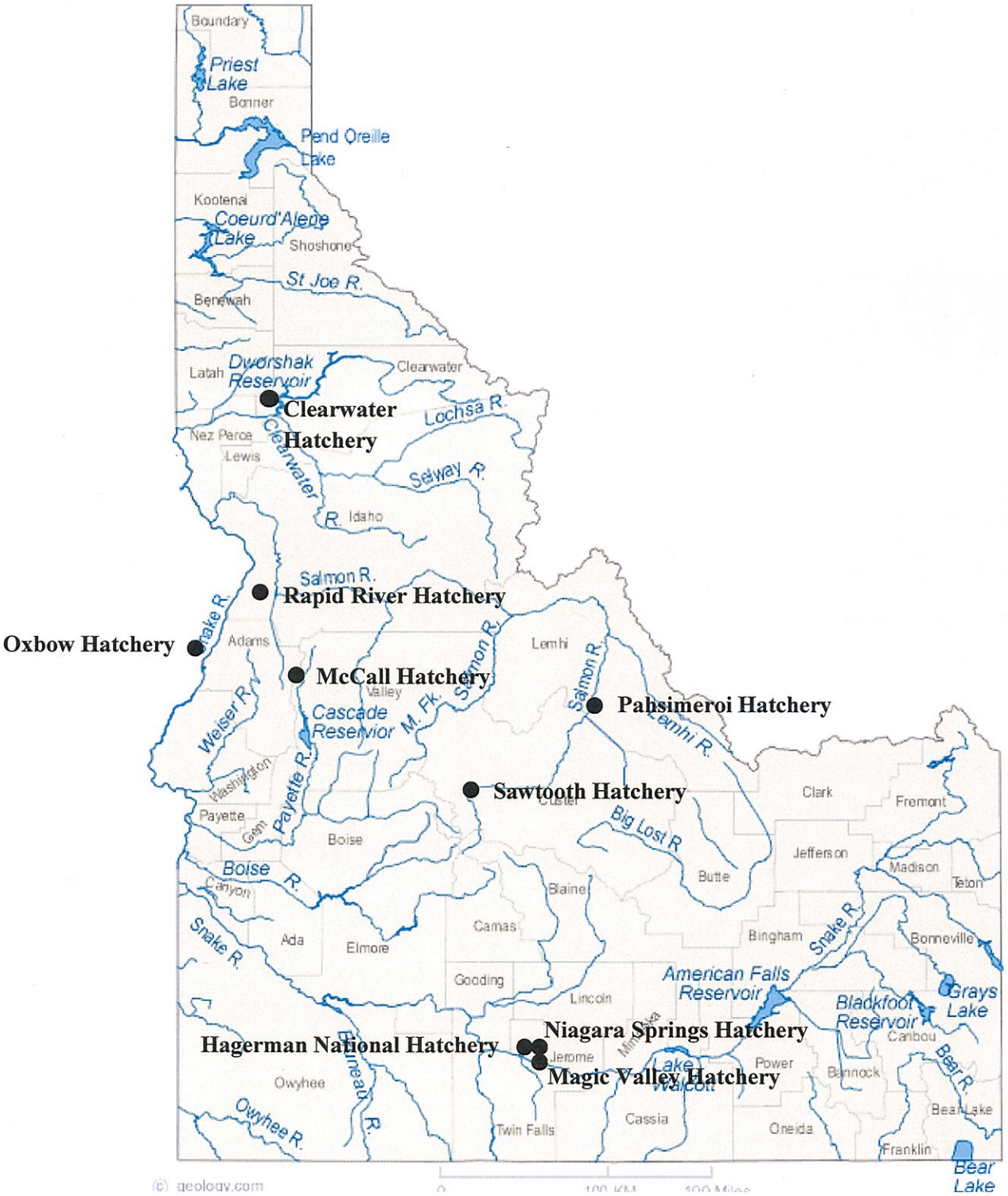
In addition to the coded-wire tags and adipose fin-clips, 404,124 fish were PIT-tagged by the Marking Program in 2013 (Table 1A).

Table 1A: Mark Year 2013 Summary of PIT-Tags

Table 1A: PIT-Tag Summary	
HATCHERY	**# TAGGED**
CLEARWATER SPRING-RUN CHINOOK	68,174
CLEARWATER SUMMER-RUN CHINOOK	25,482
CLEARWATER STEELHEAD	26,583
HAGERMAN NATIONAL STEELHEAD	17,191
MAGIC VALLEY STEELHEAD	37,570
MC CALL SUMMER-RUN CHINOOK	53,986
NIAGARA SPRINGS STEELHEAD	28,281
PAHSIMEROI SUMMER-RUN CHINOOK	22,406
RAPID RIVER SPRING-RUN CHINOOK	51,969
SAWTOOTH SPRING-RUN CHINOOK	22,389
SAWTOOTH SOCKEYE	50,093
TOTAL PIT TAGS	**404,124**

Note: Brood Year (BY) and species/run specific PIT-tag numbers can be seen in Tables 2A – 12A and Table 9B for each facility.

Figure 1: Hatchery Locations for the 2013 Idaho Anadromous Fish-Marking Program



Oxbow Fish Hatchery

BY 2012 fall-run Chinook salmon were not reared at Oxbow Fish Hatchery in 2013, therefore the Idaho Anadromous Fish Marking Program did not go to Oxbow Hatchery in 2013.

Clearwater Fish Hatchery

Clearwater Fish Hatchery Chinook

The Idaho Anadromous Fish-Marking Crew processed BY 2012 spring-run Chinook salmon at Clearwater Fish Hatchery on two separate occasions. The first trip occurred April 30th through May 7th; the second mark event was May 24th through June 6th (Table2). A total of 2,679,957 spring-run Chinook salmon were coded-wire tagged and/or adipose fin-clipped. One six-line and one five-line automated marking trailers were used to process fish that received a coded-wire tag and/or adipose fin-clip. Fish were loaded into the main trough of the trailers by hatchery personnel utilizing a forklift mounted live fish transfer tank and one electric Matsusaka fish transfer pump. After marking, fish were distributed to raceways via four-inch aluminum discharge pipe.

A total of 68,174 BY 2011 spring-run Chinook salmon (Table 2A), and 25,482 BY 2011 summer-run Chinook salmon (Table 3A) were PIT-tagged at Clearwater Fish Hatchery February 4th through February 8th using the four-station manual PIT-tagging trailer. Fish were loaded into the main trough of the trailer by hatchery personnel utilizing a forklift mounted live fish transfer tank. After marking, fish were distributed to raceways via four-inch aluminum discharge pipe.

Table 2: Raceway and Mark Totals Clearwater Fish Hatchery BY 2012 Spring-Run Chinook									
RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
1E	4/30/2013	M1	AD ONLY	N/A	103,271	23,183	126,454	126,454	S F CLWR
2E	4/30/2013	M1	AD/CWT	10-02-49	29,157	1,141	30,298		S F CLWR
2E	5/2/2013	M1	AD ONLY	N/A	85,231	21,869	107,100	137,398	S F CLWR
3E	5/2/2013	M1	CWT ONLY	10-02-58	122,942	8,364	131,306		POWELL
3E	5/2/2013	M1	CWT ONLY	10-24-73	6,077	0	6,077	137,383	POWELL
4E	5/6/2013	M1	AD ONLY	N/A	61,812	13,190	75,002		POWELL
4E	5/3/2013	M1	AD/CWT	10-02-50	55,826	4,204	60,030	135,032	POWELL
5E	5/7/2013	M1	AD ONLY	N/A	101,527	22,694	124,221	124,221	POWELL
1W	4/30/2013	M3	AD ONLY	N/A	84,241	18,247	102,488		S F CLWR
1W	4/29/2013	M3	AD/CWT	10-02-49	27,521	2,487	30,008	132,496	S F CLWR
2W	5/1/2013	M3	AD ONLY	N/A	111,988	28,012	140,000	140,000	S F CLWR
3W	5/2/2013	M3	AD/CWT	10-02-56	53,355	6,894	60,249		POWELL
3W	5/2/2013	M3	AD ONLY	N/A	58,938	17,732	76,670	136,919	POWELL
4W	5/6/2013	M3	AD ONLY	N/A	101,614	33,386	135,000	135,000	POWELL
5W	5/7/2013	M3	AD ONLY	N/A	66,876	11,623	78,499		POWELL
5W	5/6/2013	M3	AD/CWT	10-02-50	37,282	4,213	41,495		POWELL
5W	5/6/2013	M3	AD/CWT	10-42-73	16,606	1,899	18,505	138,499	POWELL
1A	6/6/2013	M3	AD ONLY	N/A	49,009	9,583	58,592	58,592	DWORSHAK
1B	6/5/2013	M1	AD ONLY	N/A	14,600	5,400	20,000		DWORSHAK
1B	6/5/2013	M3	AD/CWT	10-02-46	46,262	3,738	50,000	70,000	DWORSHAK
2A	6/5/2013	M3	AD/CWT	10-02-46	63,976	5,868	69,844	69,844	DWORSHAK
2B	6/5/2013	M1	AD ONLY	N/A	61,057	10,945	72,002	72,002	DWORSHAK
3A	6/4/2013	M3	AD/CWT	10-02-56	54,892	5,107	59,999		POWELL
3A	6/4/2013	M3	AD ONLY	N/A	1,226	3,637	4,863	64,862	POWELL
3B	6/4/2013	M1	AD ONLY	N/A	61,664	10,763	72,427	72,427	POWELL
6E	5/24/2013	M1	AD/CWT	22-01-30	26,789	2,945	29,734		DWORSHAK
6E	6/6/2013	M1	AD/CWT	22-01-30	2,619	1,448	4,067		S F CLWR
6E	5/24/2013	M3	AD/CWT	22-01-34	14,199	2,788	16,987		DWORSHAK
6E	6/6/2013	M3	AD/CWT	22-01-34	15,822	869	16,691		S F CLWR
6E	5/24/2013	M3	CWT ONLY	22-01-34	63,115	7,148	70,263	137,742	DWORSHAK
6W	5/24/2013	M3	CWT ONLY	22-01-34	113,873	9,175	123,048		DWORSHAK
6W	5/24/2013	M1	CWT ONLY	22-01-30	8,984	2,023	11,007	134,055	DWORSHAK
7B	5/30/2013	M1	AD ONLY	N/A	56,900	16,100	73,000	73,000	S F CLWR
8A	5/30/2013	M3	AD ONLY	N/A	57,787	15,215	73,002	73,002	S F CLWR
8B	5/30/2013	M1	AD ONLY	N/A	56,025	16,985	73,010	73,010	S F CLWR
9A	5/29/2013	M1	AD/CWT	10-02-49	10,548	0	10,548		S F CLWR
9A	5/29/2013	M3	AD/CWT	10-23-73	16,454	3,000	19,454		S F CLWR
9A	5/30/2013	M3	AD ONLY	N/A	33,635	9,363	42,998	73,000	SF CLWR
9B	5/29/2013	M1	AD ONLY	N/A	56,500	16,500	73,000	73,000	S F CLWR

Table 2: Raceway and Mark Totals Clearwater Fish Hatchery BY 2012 Spring-Run Chinook									
RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
10A	5/29/2013	M3	AD ONLY	N/A	58,335	14,666	73,001	73,001	S F CLWR
10B	5/29/2013	M1	AD ONLY	N/A	31,191	11,790	42,981		S F CLWR
10B	5/28/2013	M1	AD/CWT	10-02-49	26,640	3,379	30,019	73,000	S F CLWR
11A	5/28/2013	M3	AD ONLY	N/A	56,017	17,000	73,017	73,017	S F CLWR
11B	5/28/2013	M1	AD ONLY	N/A	56,001	17,000	73,001	73,001	S F CLWR

TAG CODE TOTALS		
TAG CODE	TAG CODE SIZE	# TAGGED
10-02-56	110K	120,248
10-02-49	90K	100,873
10-02-50	90K	101,525
10-42-73	20K	18,505
10-02-58	115K	131,306
10-24-73	20K	6,077
22-01-34	200K	226,989
22-01-30	75K	44,808
10-23-73	20K	19,454
10-02-46	110K	119,844

TOTAL AD/CWT	547,928
TOTAL CWT ONLY	341,701
TOTAL AD ONLY	1,790,328
TOTAL MARKED	2,679,957

CWT RETENTION			
RACEWAY	# CHECKED	# TAGGED	% SUCCESSFUL
W1	320	318	99.38%
W3	349	349	100.00%
E2	292	291	99.66%
E3	300	297	99.00%
W5	309	309	100.00%
9A	295	292	98.98%
6W	300	300	100.00%
10B	298	297	99.66%
1B	293	293	100.00%
2A	300	297	99.00%
6E	300	300	100.00%

AVERAGE RETENTION	99.61%
MINIMUM RETENTION	98.98%
MAXIMUM RETENTION	100.00%

ADIPOSE FIN-CLIP RATE						
RWY	# SAMPLED	NO CLIP	PARTIAL	DEEP	# GOOD	%
W1	320	1	3	0	316	98.75%
W3	349	2	0	0	347	99.43%
E2	292	0	0	0	292	100.00%
W5	309	0	0	4	305	98.71%
9A	295	0	1	0	294	99.66%
10B	298	0	0	0	298	100.00%
1B	293	0	0	0	293	100.00%
					AVG.	**99.51%**

Table 2A: Clearwater Fish Hatchery PIT-Tag BY 2011 Spring-Run Chinook		
DATE	**RWY**	**# OF FISH TAGGED**
2/4/2013	83	8,495
2/4/2013	79	8,591
2/5/2013	75	8,501
2/5/2013	73	8,596
2/5/2013	57	4,296
2/7/2013	63	8,499
2/7/2013	61	8,602
2/7/2013	51	4,200
2/8/2013	62	4,298
2/8/2013	56	4,096
	TOTAL FISH TAGGED:	**68,174**

While at Clearwater Hatchery for the second round of Chinook marking a total of 495,167 BY 2012 summer-run Chinook salmon were coded-wire tagged in addition to the spring-run Chinook salmon (Table 3).

Table 3: Raceway and Mark Totals Clearwater Fish Hatchery BY 2012 Summer-Run Chinook

RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
4A	6/6/2013	M3	CWT ONLY	10-02-53	59,502	10,665	70,167	70,167	S F SALMON
4B	6/3/2013	M1	CWT ONLY	10-02-44	60,800	9,200	70,000	70,000	S F SALMON
5A	6/3/2013	M3	CWT ONLY	10-02-53	4,881	300	5,181		S F SALMON
5A	6/3/2013	M3	CWT ONLY	10-02-62	59,760	6,059	65,819	71,000	S F SALMON
5B	6/3/2013	M1	CWT ONLY	10-02-44	12,524	8,386	20,910		S F SALMON
5B	6/3/2013	M1	CWT ONLY	10-01-98	48,140	1,950	50,090	71,000	S F SALMON
6A	6/3/2013	M3	CWT ONLY	10-02-62	60,892	10,108	71,000	71,000	S F SALMON
6B	5/31/2013	M1	CWT ONLY	10-01-98	62,523	8,477	71,000	71,000	S F SALMON
7A	5/31/2013	M3	CWT ONLY	10-02-62	63,293	7,707	71,000	71,000	S F SALMON

TAG CODE TOTALS		
TAG CODE	TAG CODE SIZE	# TAGGED
10-02-62	180K	207,819
10-01-98	105K	121,090
10-02-44	90K	90,910
10-02-53	90K	75,348

TOTAL CWT ONLY	495,167
TOTAL MARKED	495,167

CWT RETENTION			
RACEWAY	# CHECKED	# TAGGED	% SUCCESSFUL
4A	300	300	100.00%
4B	300	300	100.00%
5A	300	300	100.00%
5B	300	298	99.33%
6A	300	300	100.00%
6B	300	300	100.00%

AVERAGE RETENTION	99.89%
MINIMUM RETENTION	99.33%
MAXIMUM RETENTION	100.00%

Table 3A: Clearwater Fish Hatchery PIT-Tag BY 2011 Summer-Run Chinook

DATE	RWY	# OF FISH TAGGED
2/6/2013	69	12,690
2/6/2013	67	12,792
	TOTAL FISH TAGGED:	**25,482**

Clearwater Fish Hatchery Steelhead

The Idaho Anadromous Fish-Marking Crew processed BY 2013 summer-run steelhead at Clearwater Fish Hatchery July 24th through July 29th (Table 4). A total of 647,302 fish were coded-wire tagged or adipose fin-clipped. One five-line and one six-line automated marking trailers were used to process fish that received a coded-wire tag or adipose fin-clip. Fish were loaded into the main trough of the trailers by two electric Matsusaka fish transfer pumps. After marking, fish were distributed to raceways via four-inch aluminum discharge pipe.

A total of 26,583 BY 2012 summer-run steelhead were PIT-tagged at Clearwater Fish Hatchery January 31st and February 1st using the four-station manual PIT-tagging trailer (Table 4A). Fish were loaded into the main trough of the trailer by hatchery personnel utilizing a forklift mounted live fish transfer tank. After marking, fish were distributed to raceways via four-inch aluminum discharge pipe.

Table 4: Raceway and Mark Totals Clearwater Fish Hatchery BY 2013 Steelhead

RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
8E	7/24/2013	M1	AD ONLY	N/A	60,200	15,800	76,000	76,000	DWOR B
8W	7/24/2013	M2	CWT ONLY	10-02-59	66,010	9,990	76,000	76,000	S F CLWR
9E	7/25/2013	M1	AD ONLY	N/A	62,214	13,787	76,001	76,001	DWOR B
9W	7/25/2013	M2	CWT ONLY	10-02-59	65,967	10,033	76,000	76,000	S F CLWR
10E	7/26/2013	M1	AD ONLY	N/A	58,508	16,209	74,717	74,717	DWOR B
10W	7/26/2013	M2	AD ONLY	N/A	57,628	19,318	76,946	76,946	S F CLWR
11E	7/26/2013	M1	AD ONLY	N/A	46,450	10,550	57,000	57,000	DWOR B
11W	7/29/2013	M2	AD ONLY	N/A	54,258	11,942	66,200	66,200	DWOR B
12W	7/29/2013	M2	AD ONLY	N/A	52,030	16,408	68,438	68,438	DWOR B

TAG CODE TOTALS		
TAG CODE	TAG CODE SIZE	# TAGGED
10-02-59	140K	152,000

TOTAL CWT ONLY	152,000
TOTAL AD ONLY	495,302
TOTAL MARKED	647,302

CWT RETENTION			
RACEWAY	# CHECKED	# TAGGED	% SUCCESSFUL
8W	300	298	99.33%
9W	300	296	98.67%

AVERAGE RETENTION	99.00%
MINIMUM RETENTION	98.67%
MAXIMUM RETENTION	99.33%

Table 4A: Clearwater Fish Hatchery PIT-Tag BY 2012 Steelhead		
DATE	**RWY**	**# OF FISH TAGGED**
1/31/2013	W6	2,382
1/31/2013	W8	4,199
1/31/2013	W10	2001
1/31/2013	W11	1,901
1/31/2013	W12	2,501
2/1/2013	E12	1,997
2/1/2013	E11	2,199
2/1/2013	E9	1,900
2/1/2013	E8	4,100
2/1/2013	E7	3,403
	TOTAL FISH TAGGED:	**26,583**

Pahsimeroi Fish Hatchery

The Idaho Anadromous Fish-Marking Crew processed BY 2012 summer-run Chinook salmon at Pahsimeroi Fish Hatchery May 10th through May 13th (Table 5). A total of 1,065,965 fish were coded-wire tagged and/or adipose-fin-clipped. Two five-line automated marking trailers were used to process fish that received a coded-wire tag and/or adipose fin-clip. Fish were loaded into the main trough of the two trailers by two electric Matsusaka fish-transfer pumps. After marking, fish were distributed to ponds via four-inch aluminum discharge pipe.

A total of 22,406 BY 2011 summer-run Chinook salmon were PIT-tagged at Pahsimeroi Fish Hatchery March 14th using the four-station manual PIT-tagging trailer (Table 5A). Fish were loaded into the main trough of the trailer by manually netting the fish out of the pond and transporting them in five-gallon buckets. After marking, fish were distributed back to the ponds via four-inch discharge hose.

Table 5: Raceway and Mark Totals Pahsimeroi Hatchery BY 2012 Summer-Run Chinook									
POND	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
1	5/12/2013	M3	AD/CWT	10-02-45	36,167	3,833	40,000		PAHSIMEROI
1	5/10/2013	M2	CWT ONLY	10-02-47	130,180	22,361	152,541		PAHSIMEROI
1	5/12/2013	M3	AD ONLY	N/A	163,377	45,088	208,465		PAHSIMEROI
1	5/12/2013	M2	AD ONLY	N/A	92,338	31,843	124,181	525,187	PAHSIMEROI
2	5/11/2013	M2/3	AD/CWT	10-02-45	53,572	6,496	60,068		PAHSIMEROI
2	5/12/2013	M2	AD/CWT	10-41-73	17,767	2,246	20,013		PAHSIMEROI
2	5/13/2013	M2	AD ONLY	N/A	189,399	56,576	245,975		PAHSIMEROI
2	5/13/2013	M3	AD ONLY	N/A	165,275	49,447	214,722	540,778	PAHSIMEROI

TAG CODE TOTALS		
TAG CODE	TAG CODE SIZE	# TAGGED
10-02-45	90K	100,068
10-02-47	180K	152,541
10-41-73	20K	20,013

TOTAL AD/CWT	120,081
TOTAL CWT ONLY	152,541
TOTAL AD ONLY	793,343
TOTAL MARKED	1,065,965

CWT RETENTION			
RACEWAY	# CHECKED	# TAGGED	% SUCCESSFUL
VAT 18A	300	299	99.67%
VAT 18B,D	450	449	99.78%
VAT 18C	300	300	100.00%

AVERAGE RETENTION	99.81%
MINIMUM RETENTION	99.67%
MAXIMUM RETENTION	100.00%

Table 5A: Pahsimeroi Fish Hatchery PIT-Tag BY 2011 Summer-Run Chinook		
DATE	POND	# OF FISH TAGGED
3/14/2013	1	22,406
	TOTAL FISH TAGGED:	**22,406**

Sawtooth Fish Hatchery

Sawtooth Fish Hatchery Chinook

The Idaho Anadromous Fish-Marking Crew processed BY 2012 spring-run Chinook salmon at Sawtooth Fish Hatchery May 15th through May 19th. A total of 1,971,506 spring-run Chinook salmon were coded-wire tagged and/or adipose fin-clipped (Table 6). One six-line and two five-line automated marking trailers were used to process fish that received a coded-wire tag and/or adipose fin-clip. Fish were loaded into the main trough of the trailers by two electric Matsusaka fish-transfer pumps. After marking, fish were distributed to the raceways via four-inch aluminum discharge pipe.

A total of 22,389 BY 2011 spring-run Chinook salmon were PIT-tagged at Sawtooth Fish Hatchery March 18th through March 19th using the four-station manual PIT-tagging trailer (Table 6A). Fish were loaded into the main trough of the trailer by one electric Matsusaka fish-transfer pump. After marking, fish were distributed back to the raceways via four-inch discharge hose.

Table 6: Raceway and Mark Totals Sawtooth Fish Hatchery BY 2012 Spring-Run Chinook									
RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
3	5/15/2013	M3	CWT ONLY	10-02-61	161,588	22,203	183,791	183,791	SALMON R
4	5/19/2013	M1	CWT ONLY	10-38-73	22,458	0	22,458		SALMON R
4	5/19/2013	M1	CWT ONLY	10-02-60	162,732	16,857	179,589	202,047	SALMON R
5	5/16/2013	M3	AD/CWT	10-02-51	18,205	1,797	20,002		SALMON R
5	5/17/2013	M3	AD ONLY	N/A	109,587	27,586	137,173	157,175	SALMON R
6	5/18/2013	M3	AD ONLY	N/A	128,907	28,993	157,900	157,900	SALMON R
7	5/19/2013	M3	AD ONLY	N/A	116,913	21,968	138,881		SALMON R
7	5/18/2013	M3	AD/CWT	10-02-51	18,502	1,498	20,000	158,881	SALMON R
8	5/19/2013	M1	AD ONLY	N/A	129,915	30,885	160,800	160,800	SALMON R
9	5/17/2013	M1	AD ONLY	N/A	102,853	25,069	127,922		SALMON R
9	5/15/2013	M1	AD/CWT	10-02-51	28,521	1,489	30,010	157,932	SALMON R
10	5/18/2013	M1	AD ONLY	N/A	125,473	32,471	157,944	157,944	SALMON R
11	5/19/2013	M2	AD ONLY	N/A	111,958	29,370	141,328		SALMON R
11	5/19/2013	M2	AD/CWT	10-29-73	17,970	2,037	20,007	161,335	SALMON R
12	5/18/2013	M2	AD ONLY	N/A	128,831	29,069	157,900	157,900	SALMON R
13	5/17/2013	M2	AD ONLY	N/A	102,563	25,337	127,900		SALMON R
13	5/16/2013	M2	AD/CWT	10-02-51	27,534	2,466	30,000	157,900	SALMON R
14	5/15/2013	M2	AD ONLY	N/A	127,447	30,454	157,901	157,901	SALMON R

TAG CODE TOTALS		
TAG CODE	TAG CODE SIZE	# TAGGED
10-02-51	90K	100,012
10-29-73	20K	20,007
10-02-61	160K	183,791
10-38-73	20K	22,458
10-02-60	160K	179,589

TOTAL AD/CWT	120,019
TOTAL CWT ONLY	385,838
TOTAL AD ONLY	1,465,649
TOTAL MARKED	1,971,506

CWT RETENTION			
RACEWAY	# CHECKED	# TAGGED	% SUCCESSFUL
L3	300	297	99.00%
L4	300	296	98.67%
L5	300	298	99.33%
L7	300	298	99.33%
L9	298	295	98.99%
L11	301	301	100.00%
L13	301	301	100.00%

AVERAGE RETENTION	99.27%
MINIMUM RETENTION	98.67%
MAXIMUM RETENTION	100.00%

Table 6A: Sawtooth Fish Hatchery PIT-Tag BY 2011 Spring-Run Chinook		
DATE	**RWY**	**# OF FISH TAGGED**
3/18/2013	7	7,192
3/18/2013	9	7,096
3/19/2013	11	7,099
3/19/2013	13	1,002
	TOTAL FISH TAGGED:	**22,389**

Sawtooth Fish Hatchery Sockeye

The Marking Crew processed BY 2012 Sockeye salmon at Sawtooth Fish Hatchery September 17th through September 18th (Table 7). A total of 174,460 fish were adipose fin-clipped. One six-line automated marking trailer was used to process fish that received an adipose fin-clip. Fish were loaded into the main trough of the trailer via the Matsusaka fish-transfer pump. After marking, fish were distributed to either vats or raceways via four-inch aluminum discharge pipe.

A total of 50,093 BY 2011 Sockeye salmon were PIT-tagged at Sawtooth Fish Hatchery March 15th through March 18th using the four-station manual PIT-tagging trailer (Table 7A). Fish were loaded into the main trough of the trailer via the Matsusaka fish-transfer pump. After marking, fish were distributed back to the raceways via four-inch discharge hose.

Table 7: Raceway and Mark Totals Sawtooth Fish Hatchery BY 2012 Sockeye									
VAT	**DATE**	**TRAILER**	**MARK TYPE**	**TAG CODE**	**MATS**	**MANUAL**	**MARK TOTAL**	**RWY TOTAL**	**STOCK**
4	9/17/2013	M1	AD ONLY	N/A	12,800	5,700	18,500	18,500	REDFISH LK
5	9/17/2013	M1	AD ONLY	N/A	12,500	6,000	18,500	18,500	REDFISH LK
6	9/17/2013	M1	AD ONLY	N/A	13,498	5,002	18,500	18,500	REDFISH LK
7	9/17/2013	M1	AD ONLY	N/A	15,200	3,300	18,500	18,500	REDFISH LK
8	9/18/2013	M1	AD ONLY	N/A	15,589	4,592	20,181	20,181	REDFISH LK
9	9/18/2013	M1	AD ONLY	N/A	11,429	8,071	19,500	19,500	REDFISH LK
10	9/18/2013	M1	AD ONLY	N/A	13,500	6,000	19,500	19,500	REDFISH LK
11	9/18/2013	M1	AD ONLY	N/A	14,901	5,850	20,751	20,751	REDFISH LK
12	9/18/2013	M1	AD ONLY	N/A	15,889	4,639	20,528	20,528	REDFISH LK

TOTAL AD ONLY	174,460
TOTAL MARKED	174,460

Note: Clip quality checks will be completed by IDFG personnel just prior to release of Sockeye salmon.

Table 7A: Sawtooth Fish Hatchery PIT-Tag BY 2011 Sockeye		
DATE	**RWY**	**# OF FISH TAGGED**
3/15-16/2013	1	24,991
3/16-18/2013	2	25,102
	TOTAL FISH TAGGED:	**50,093**

Rapid River Fish Hatchery

The Idaho Anadromous Fish-Marking Crew processed BY 2012 spring-run Chinook salmon at Rapid River Fish Hatchery June 10th through June 24th (Table 8). A total of 3,140,160 fish were coded-wire tagged and/or adipose fin-clipped. One six-line and two five-line automated marking trailers were used to process fish that received a coded-wire tag and/or adipose fin-clip. Fish were loaded into the main trough of the trailers by two electric Matsusaka fish-transfer pumps. After marking, fish were distributed to the rearing ponds via four-inch aluminum discharge pipe. Due to the long distances between marking trailers and rearing ponds much of the discharge pipe is provided by Rapid River Hatchery and is stored on site at the hatchery.

A total of 51,969 BY 2011 spring-run Chinook salmon were PIT-tagged at Rapid River Fish Hatchery February 12th through February 14th using the four-station manual PIT-tagging trailer (Table 8A). Fish were loaded into the main trough of the trailer by manually netting the fish out of the pond and transporting them in five-gallon buckets. After marking, fish were distributed back to the pond via four-inch aluminum discharge pipe.

Table 8: Raceway and Mark Totals Rapid River Fish Hatchery BY 2012 Spring-Run Chinook

POND	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
1A	6/10/2013	M1	AD/CWT	10-02-52	17,081	2,920	20,001		RAPID R
1A	6/21/2013	M1	AD/CWT	10-33-73	18,321	1,773	20,094		RAPID R
1A	6/10-24/2013	M3	AD ONLY	NA	434,249	109,706	543,955	584,050	RAPID R
1B	6/14,19/2013	M1	AD/CWT	10-02-52	37,490	3,327	40,817		RAPID R
1B	6/11-24/2013	M1	AD ONLY	N/A	437,375	105,708	543,083	583,900	RAPID R/DWOR
2A	6/11,13/2013	M3	AD/CWT	10-02-52	36,605	3,407	40,012		RAPID R
2A	6/10-18/2013	M3	AD ONLY	N/A	376,527	90,366	466,893	506,905	RAPID R
2B	6/10-24/2013	M2	AD ONLY	N/A	393,368	86,944	480,312	480,312	RAPID R/DWOR
2C	6/11-24/2013	M2	AD ONLY	N/A	388,537	88,799	477,336	477,336	RAPID R/DWOR
2D	6/10-20/2013	M3	AD ONLY	N/A	412,046	95,611	507,657	507,657	RAPID R/DWOR

TAG CODE TOTALS		
TAG CODE	**TAG CODE SIZE**	**# TAGGED**
10-33-73	20K	20,094
10-02-52	90K	100,830

TOTAL AD/CWT	120,924
TOTAL AD ONLY	3,019,236
TOTAL MARKED	3,140,160

CWT RETENTION			
POND	**# CHECKED**	**# TAGGED**	**% SUCCESSFUL**
1A	589	589	100.00%

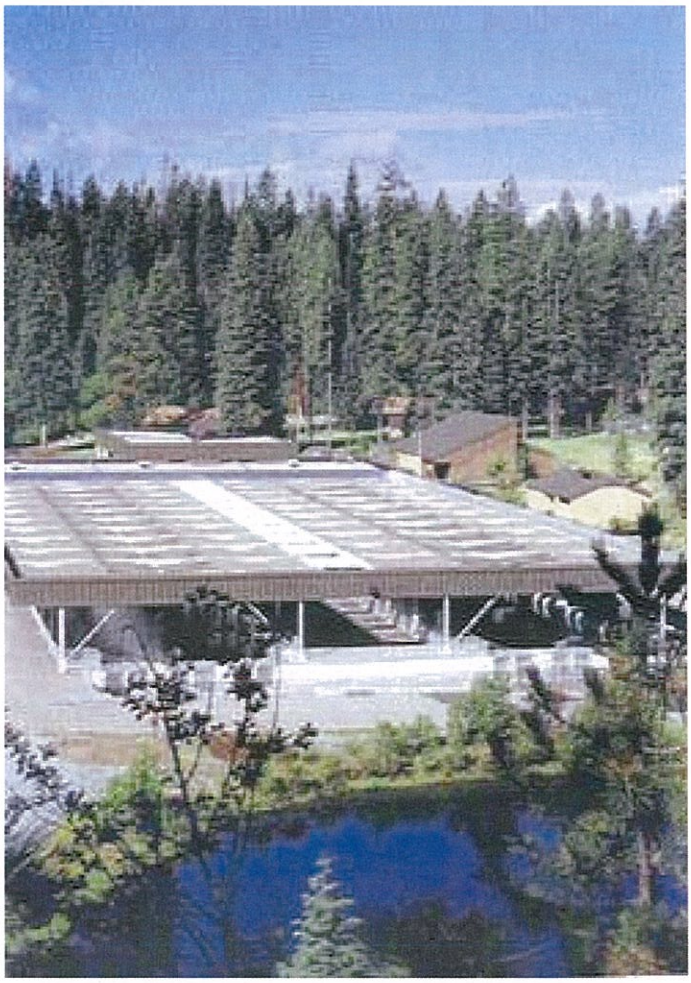
AVERAGE RETENTION	100.00%
MINIMUM RETENTION	100.00%
MAXIMUM RETENTION	100.00%

ADIPOSE FIN-CLIP RATE						
POND	**# SAMPLED**	**NO CLIP**	**PARTIAL**	**DEEP**	**# GOOD**	**% SUCCESSFUL**
1A	589	0	2	0	587	99.66%
					AVG	**99.66%**

Table 8A: Rapid River Fish Hatchery PIT-Tag BY 2011 Spring-Run Chinook

DATE	POND	# OF FISH TAGGED
2/12-14/2013	2B	51,969
	TOTAL FISH TAGGED:	**51,969**

McCall Fish Hatchery



The Idaho Anadromous Fish-Marking Crew processed BY 2012 summer-run Chinook salmon at McCall Fish Hatchery on two separate occasions (Table 9). A total of 1,145,144 fish were coded-wire tagged and/or adipose fin-clipped. The first mark event occurred June 3rd through June 6th; one five-line automated marking trailer was used to adipose fin-clip and move fish to outside rearing ponds in order to reduce fish densities in the indoor vats. The second mark event occurred July 8th through July 11th; two five-line automated marking trailers were used to process fish that received an adipose fin-clip and/or coded-wire tag. Fish were loaded into the main trough of the two trailers by two electric Matsusaka fish-transfer pumps. After marking, fish were distributed to ponds via four-inch aluminum discharge pipe.

A total of 51,987 BY 2011 summer-run Chinook salmon were PIT-tagged at McCall Fish Hatchery February 6th through February 8th using the four-station manual PIT-tagging trailer (Table 9A). Fish were loaded into the main trough of the trailer by manually netting the fish out of the pond and transporting them in five-gallon buckets. After marking, fish were sent back to the pond via four-inch aluminum discharge pipe. An additional 1,999 BY 2012 summer-run Chinook salmon were PIT-tagged at McCall

Fish Hatchery October 22nd (Table 9B). Fish were manually netted out of the pond and allowed to recover in five-gallon buckets before being manually poured back into the pond.

Table 9: Raceway and Mark Totals McCall Fish Hatchery BY 2012 Summer-Run Chinook

RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
VAT 1	7/11/2013	M3	CWT ONLY	22-01-36	26,469	6,497	32,966	32,966	JOHNSON CK
VAT 2	7/11/2013	M3	CWT ONLY	22-01-36	13,269	1,833	15,102		JOHNSON CK
VAT 2	7/10/2013	M3	CWT ONLY	22-01-35	13,736	2,637	16,373	31,475	JOHNSON CK
VAT 3	7/10/2013	M3	CWT ONLY	22-01-35	28,006	2,696	30,702	30,702	JOHNSON CK
POND 1	7/10/2013	M2	AD/CWT	10-02-57	63,432	10,031	73,463		S F SALMON
POND 1	6/3/2013	M2	AD ONLY	N/A	46,207	20,844	67,051		S F SALMON
POND 1	6/4/2013	M2	AD ONLY	N/A	102,394	26,288	128,682		S F SALMON
POND 1	6/5/2013	M2	AD ONLY	N/A	104,346	34,391	138,737		S F SALMON
POND 1	6/6/2013	M2	AD ONLY	N/A	87,008	23,025	110,033	517,966	S F SALMON
POND 2	7/8/2013	M3	AD ONLY	N/A	39,593	19,771	59,364		S F SALMON
POND 2	7/8/2013	M2	AD ONLY	N/A	46,877	18,978	65,855		S F SALMON
POND 2	7/10/2013	M2	AD ONLY	N/A	91,269	40,914	132,183		S F SALMON
POND 2	7/11/2013	M3	CWT ONLY	10-30-73	14,565	1,507	16,072		S F SALMON
POND 2	7/11/2013	M3	CWT ONLY	10-02-63	186,750	31,811	218,561		S F SALMON
POND 2	7/9/2013	M2	AD/CWT	10-02-57	34,736	5,264	40,000	532,035	S F SALMON

TAG CODE TOTALS		
TAG CODE	**TAG CODE SIZE**	**# TAGGED**
22-01-35	60K	47,075
22-01-36	60K	48,068
10-02-57	110K	113,463
10-02-63	205K	218,561
10-30-73	20K	16,072

TOTAL AD/CWT	113,463
TOTAL CWT ONLY	329,776
TOTAL AD ONLY	701,905
TOTAL MARKED	1,145,144

CWT RETENTION			
RACEWAY	**# CHECKED**	**# TAGGED**	**% SUCCESSFUL**
VAT 1	300	296	98.67%
VAT 2	300	291	97.00%
VAT 3	300	297	99.00%
UPPER 14	300	295	98.33%
LOWER 14	497	497	100.00%

AVERAGE RETENTION	98.60%
MINIMUM RETENTION	97.00%
MAXIMUM RETENTION	100.00%

ADIPOSE FIN-CLIP RATE						
RWY	# SAMPLED	NO CLIP	PARTIAL	DEEP	# GOOD	% SUCCESSFUL
UPPER 14	300	2	1	0	297	99.00%
					AVG	**99.00%**

Table 9A: McCall Fish Hatchery PIT-Tag BY 2011 Summer-Run Chinook		
DATE	**POND**	**# OF FISH TAGGED**
2/19-20/2013	1	25,990
2/20-22/2013	2	25,997
	TOTAL FISH TAGGED:	**51,987**

Table 9B: McCall Fish Hatchery PIT-Tag BY 2012 Summer-Run Chinook		
DATE	**POND**	**# OF FISH TAGGED**
10/22/2013	2	1,999
	TOTAL FISH TAGGED:	**1,999**

Magic Valley Fish Hatchery

The Idaho Anadromous Fish-Marking Crew processed BY 2013 summer-run steelhead at Magic Valley Fish Hatchery on two separate occasions (Table 10). The first trip occurred July 25th through July 31st; the second mark event was August 8th through August 14th. A total of 1,357,150 fish were coded-wire tagged or adipose fin-clipped using two five-line automated marking trailers. Fish were loaded into the main trough of the two trailers by hatchery personnel utilizing a forklift mounted live fish transfer tank. After marking, fish were distributed to raceways via four-inch aluminum discharge pipe.

A total of 37,570 BY 2012 summer-run steelhead were PIT-tagged at Magic Valley Fish Hatchery January 24th through January 26th using the four-station manual PIT-tagging trailer (Table 10A). Fish were loaded into the main trough of the trailer by hatchery personnel utilizing a forklift mounted live fish transfer tank. After marking, fish were distributed to raceways via four-inch aluminum discharge pipe.

Table 10: Raceway and Mark Totals Magic Valley Fish Hatchery BY 2013 Steelhead									
RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
E1A	7/25/2013	M3	AD ONLY	N/A	25,401	6,600	32,001	32,001	UPPER SALMON B
E1B	7/25/2013	M3	AD ONLY	N/A	25,800	6,200	32,000	32,000	UPPER SALMON B
E2A	7/26/2013	M3	AD ONLY	N/A	24,441	7,600	32,041	32,041	UPPER SALMON B
E2B	7/26/2013	M3	AD ONLY	N/A	22,996	9,004	32,000	32,000	UPPER SALMON B
E3A	7/27/2013	M3	AD ONLY	N/A	18,623	13,377	32,000	32,000	UPPER SALMON B
E3B	7/28/2013	M3	AD ONLY	N/A	7,205	24,800	32,005	32,005	UPPER SALMON B
E4A	7/29/2013	M3	AD ONLY	N/A	26,374	5,626	32,000	32,000	UPPER SALMON B
E4B	7/28/2013	M3	AD ONLY	N/A	23,010	8,990	32,000	32,000	UPPER SALMON B
E5A	7/29/2013	M3	AD ONLY	N/A	23,654	8,350	32,004	32,004	UPPER SALMON B
E5B	8/10/2013	M3	AD ONLY	N/A	22,502	9,498	32,000	32,000	PAH A
E8A	8/11/2013	M3	AD ONLY	N/A	24,638	7,371	32,009	32,009	UPPER SALMON B
E8B	8/11/2013	M3	AD ONLY	N/A	23,602	8,400	32,002	32,002	UPPER SALMON B
E9A	8/10/2013	M3	AD ONLY	N/A	24,407	7,600	32,007	32,007	PAH A
E9B	8/10/2013	M3	AD ONLY	N/A	24,151	7,851	32,002	32,002	PAH A
E10A	8/9/2013	M3	AD ONLY	N/A	24,310	7,700	32,010	32,010	PAH A
E10B	8/9/2013	M3	AD ONLY	N/A	23,910	8,100	32,010	32,010	PAH A
E11A	8/10/2013	M3	AD ONLY	N/A	24,215	7,785	32,000	32,000	PAH A
E11B	8/8/2013	M3	AD ONLY	N/A	24,360	7,641	32,001	32,001	PAH A
E12A	7/31/2013	M3	AD ONLY	N/A	24,911	7,090	32,001	32,001	PAH A
E12B	7/31/2013	M3	AD ONLY	N/A	26,650	5,350	32,000	32,000	PAH A
E13A	8/9/2013	M3	AD ONLY	N/A	21,958	10,043	32,001	32,001	PAH A
E13B	8/8/2013	M3	AD ONLY	N/A	25,808	6,200	32,008	32,008	PAH A
E14A	7/31/2013	M3	AD ONLY	N/A	25,553	6,459	32,012	32,012	PAH A
E14B	7/30/2013	M3	AD ONLY	N/A	24,677	7,324	32,001	32,001	PAH A
E15A	7/30/2013	M3	AD ONLY	N/A	23,683	8,828	32,511	32,511	PAH A
E15B	7/30/2013	M3	AD ONLY	N/A	25,400	6,600	32,000	32,000	PAH A
W1A	8/8/2013	M2	AD ONLY	N/A	23,853	8,147	32,000	32,000	UPPER SALMON B
W1B	8/8/2013	M2	AD ONLY	N/A	26,050	5,950	32,000	32,000	UPPER SALMON B
W2A	8/10/2013	M2	CWT ONLY	10-02-54	27,680	4,320	32,000	32,000	DWOR B
W2B	8/9/2013	M2	CWT ONLY	10-02-55	27,787	4,213	32,000	32,000	DWOR B
W3A	8/10/2013	M2	CWT ONLY	10-02-55	27,238	4,763	32,001	32,001	DWOR B
W3B	8/9/2013	M2	CWT ONLY	10-02-55	27,006	4,994	32,000	32,000	DWOR B
W4A	8/14/2013	M2	AD ONLY	N/A	22,800	9,200	32,000	32,000	PAH A/U SAL B
W4B	8/10/2013	M2	CWT ONLY	10-02-54	12,464	3,326	15,790	15,790	DWOR B
W5A	8/11/2013	M2	AD ONLY	N/A	26,184	8,893	35,077	35,077	UPPER SALMON B
W5B	8/10/2013	M2	AD ONLY	N/A	23,500	8,604	32,104	32,104	UPPER SALMON B
W8A	8/11/2013	M2	AD ONLY	N/A	22,978	9,022	32,000	32,000	UPPER SALMON B
W8B	8/11/2013	M2	AD ONLY	N/A	20,300	8,700	29,000	29,000	UPPER SALMON B
W9A	8/12/2013	M2	AD ONLY	N/A	22,901	9,099	32,000	32,000	UPPER SALMON B

Table 10: Raceway and Mark Totals Magic Valley Fish Hatchery BY 2013 Steelhead									
RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
W9B	8/12/2013	M2	AD ONLY	N/A	23,137	8,863	32,000	32,000	UPPER SALMON B
W10A	8/13/2013	M2	AD ONLY	N/A	22,803	9,197	32,000	32,000	UPPER SALMON B
W10B	8/13/2013	M2	AD ONLY	N/A	24,300	7,700	32,000	32,000	UPPER SALMON B
W11B	8/13/2013	M2	AD ONLY	N/A	21,729	6,823	28,552	28,552	UPPER SALMON B

TAG CODE TOTALS		
TAG CODE	TAG CODE SIZE	# TAGGED
10-02-54	95K	47,790
10-02-55	95K	96,001

TOTAL CWT ONLY	143,791
TOTAL AD ONLY	1,213,359
TOTAL MARKED	1,357,150

CWT RETENTION			
RACEWAY	# CHECKED	# TAGGED	% SUCCESSFUL
W2A	300	298	99.33%
W2B	300	294	98.00%
W3A	300	296	98.67%
W3B	300	294	98.00%
W4B	300	293	97.67%

AVERAGE RETENTION	98.33%
MINIMUM RETENTION	97.67%
MAXIMUM RETENTION	99.33%

Table 10A: Magic Valley Fish Hatchery PIT-Tag BY 2012 Steelhead		
DATE	**RWY**	**# OF FISH TAGGED**
1/24/2013	W15A	1,796
1/24/2013	W14A	1,702
1/24/2013	W14B	1,696
1/24/2013	W13A	1,001
1/24/2013	W11A	1,602
1/24/2013	W11B	1,697
1/24/2013	W10B	1,802
1/24/2013	W4A	1,797
1/24/2013	W5B	1,097
1/24/2013	W2A	1,996
1/25/2013	W3B	1,902
1/25/2013	W2B	2,598
1/25/2013	W1A	2,590
1/25/2013	W1B	2,596
1/25/2013	E1B	1,000
1/25/2013	E3A	1,300
1/25/2013	E4B	1,201
1/25/2013	E5B	1,298
1/25/2013	E7A	1,198
1/25/2013	E7B	1,200
1/26/2013	E11A	1,498
1/26/2013	E12B	1,500
1/26/2013	E13B	800
1/26/2013	E14A	703
	TOTAL FISH TAGGED:	**37,570**

Hagerman National Fish Hatchery

Photo Credit: Hagerman National Fish Hatchery, USFWS

The Idaho Anadromous Fish-Marking Crew processed BY 2013 summer-run steelhead at Hagerman National Fish Hatchery on two separate occasions (Table 11). The first trip occurred August 1st through August 8th; the second mark event was September 5th through September 8th. A total of 1,475,381 fish were coded-wire tagged or adipose fin-clipped using two five-line and one six-line automated marking trailer. Fish were loaded into the main trough of the two trailers by hatchery personnel utilizing a forklift mounted live fish transfer tank. After marking, fish were distributed to raceways via four-inch aluminum discharge pipe.

A total of 17,191 BY 2012 summer-run steelhead were PIT-tagged at Hagerman National Fish Hatchery November 5th through November 6th using the four-station manual PIT-tagging trailer (Table 11A). Fish were loaded into the main trough of the trailer by hatchery personnel utilizing a forklift mounted live fish transfer tank. After marking, fish were distributed to raceways via four-inch aluminum discharge pipe.

Table 11: Raceway and Mark Totals Hagerman National Fish Hatchery BY 2013 Steelhead									
RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
37	8/1/2013	M1	AD ONLY	N/A	15,500	9,000	24,500	24,500	SAW A
38	8/1/2013	M1	AD ONLY	N/A	15,500	9,000	24,500	24,500	SAW A
39	8/2/2013	M1	AD ONLY	N/A	15,609	9,891	25,500	25,500	SAW A
40	8/2/2013	M1	AD ONLY	N/A	16,502	7,998	24,500	24,500	SAW A
41	8/2/2013	M1	AD ONLY	N/A	13,200	11,300	24,500	24,500	SAW A
42	8/3/2013	M1	AD ONLY	N/A	14,614	9,886	24,500	24,500	SAW A
43	8/3/2013	M1	AD ONLY	N/A	17,500	7,000	24,500	24,500	SAW A
44	8/3/2013	M1	AD ONLY	N/A	17,300	7,200	24,500	24,500	SAW A
45	8/4/2013	M1	AD ONLY	N/A	15,050	9,450	24,500	24,500	SAW A
46	8/4/2013	M1	AD ONLY	N/A	16,501	8,000	24,501	24,501	SAW A
47	9/5/2013	M3	AD ONLY	N/A	15,000	7,001	22,001	22,001	SAW A
48	9/7/2013	M3	AD ONLY	N/A	13,042	5,888	18,930	18,930	SAW A
49	9/5/2013	M3	AD ONLY	N/A	13,638	8,369	22,007	22,007	SAW A
50	9/6/2013	M3	AD ONLY	N/A	17,602	3,900	21,502	21,502	SAW A
51	9/7/2013	M3	AD ONLY	N/A	15,002	4,748	19,750	19,750	SAW A
52	9/5/2013	M3	AD ONLY	N/A	16,800	5,200	22,000	22,000	SAW A
53	9/7/2013	M3	AD ONLY	N/A	14,700	5,050	19,750	19,750	SAW A
54	9/7/2013	M3	AD ONLY	N/A	14,150	5,600	19,750	19,750	SAW A
55	9/6/2013	M3	AD ONLY	N/A	15,799	5,701	21,500	21,500	SAW A
56	9/7/2013	M3	AD ONLY	N/A	9,345	7,341	16,686	16,686	SAW A
57	9/6/2013	M3	AD ONLY	N/A	12,242	7,738	19,980	19,980	SAW A
58	9/6/2013	M3	AD ONLY	N/A	16,898	4,602	21,500	21,500	SAW A
59	9/5/2013	M2	AD ONLY	N/A	18,800	3,700	22,500	22,500	SAW A
60	9/5/2013	M2	AD ONLY	N/A	16,300	6,200	22,500	22,500	SAW A
61	9/6/2013	M2	AD ONLY	N/A	14,348	8,152	22,500	22,500	SAW A
62	8/4/2013	M1	AD ONLY	N/A	17,600	6,900	24,500	24,500	SAW A
63	8/4/2013	M1	AD ONLY	N/A	16,600	7,900	24,500	24,500	SAW A
64	8/5/2013	M1	AD ONLY	N/A	15,611	8,889	24,500	24,500	SAW A
65	8/5/2013	M1	AD ONLY	N/A	18,500	6,000	24,500	24,500	SAW A
66	8/5/2013	M1	AD ONLY	N/A	17,600	6,900	24,500	24,500	SAW A
67	8/5/2013	M1	AD ONLY	N/A	18,500	6,000	24,500	24,500	SAW A
68	8/6/2013	M1	AD ONLY	N/A	17,005	7,495	24,500	24,500	SAW A
69	8/6/2013	M1	AD ONLY	N/A	17,302	7,198	24,500	24,500	SAW A
70	8/6/2013	M1	AD ONLY	N/A	17,250	7,250	24,500	24,500	SAW A
71	8/6/2013	M1	AD ONLY	N/A	17,000	7,500	24,500	24,500	SAW A
72	8/7/2013	M1	AD ONLY	N/A	16,502	7,998	24,500	24,500	SAW A
73	8/7/2013	M1	AD ONLY	N/A	16,500	8,000	24,500	24,500	SAW A
74	8/7/2013	M1	AD ONLY	N/A	18,500	6,000	24,500	24,500	SAW A
75	8/7/2013	M1	AD ONLY	N/A	18,000	6,500	24,500	24,500	SAW A

Table 11: Raceway and Mark Totals Hagerman National Fish Hatchery BY 2013 Steelhead									
RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
76	8/7/2013	M1	AD ONLY	N/A	17,602	6,900	24,502	24,502	SAW A
77	8/8/2013	M1	AD ONLY	N/A	15,286	7,393	22,679	22,679	SAW A
78	9/8/2013	M3	AD ONLY	N/A	11,901	2,961	14,862	14,862	SAW A
79	9/8/2013	M3	AD ONLY	N/A	14,915	4,304	19,219	19,219	SAW A
80	9/8/2013	M3	CWT ONLY	10-02-48	20,435	4,263	24,698	24,698	E F SALMON
81	9/6/2013	M2	AD ONLY	N/A	16,901	5,600	22,501	22,501	SAW A
82	9/6/2013	M2	AD ONLY	N/A	16,000	6,500	22,500	22,500	SAW A
83	9/6/2013	M2	AD ONLY	N/A	9,061	5,262	14,323	14,323	SAW A
84	9/5/2013	M1	AD ONLY	N/A	17,500	5,000	22,500	22,500	SAW A
85	9/5/2013	M1	AD ONLY	N/A	15,409	7,105	22,514	22,514	SAW A
86	9/6/2013	M1	AD ONLY	N/A	16,037	6,463	22,500	22,500	SAW A
87	9/6/2013	M1	AD ONLY	N/A	18,500	4,000	22,500	22,500	SAW A
88	9/6/2013	M1	AD ONLY	N/A	15,656	6,903	22,559	22,559	SAW A
89	9/6/2013	M1	AD ONLY	N/A	17,518	5,000	22,518	22,518	SAW A
90	9/7/2013	M1	AD ONLY	N/A	16,509	5,991	22,500	22,500	SAW A
91	9/7/2013	M1	AD ONLY	N/A	19,200	3,300	22,500	22,500	SAW A
92	9/7/2013	M1	AD ONLY	N/A	17,829	4,701	22,530	22,530	SAW A
93	9/7/2013	M1	AD ONLY	N/A	17,210	5,300	22,510	22,510	SAW A
94	9/7/2013	M1	AD ONLY	N/A	15,827	5,819	21,646	21,646	SAW A
95	9/8/2013	M2	AD ONLY	N/A	7,776	4,788	12,564	12,564	SAW A
96	9/8/2013	M2	AD ONLY	N/A	15,959	3,800	19,759	19,759	SAW A
97	9/8/2013	M2	AD ONLY	N/A	16,164	6,342	22,506	22,506	SAW A
98	9/7/2013	M2	AD ONLY	N/A	15,501	7,000	22,501	22,501	SAW A
99	9/7/2013	M2	AD ONLY	N/A	17,800	4,700	22,500	22,500	SAW A
100	9/7/2013	M2	AD ONLY	N/A	19,137	4,632	23,769	23,769	SAW A
101	9/8/2013	M1	CWT ONLY	10-02-48	14,526	2,813	17,339	17,339	E F SALMON
102	9/8/2013	M1	CWT ONLY	10-02-48	17,417	3,108	20,525	20,525	E F SALMON

TAG CODE TOTALS		
TAG CODE	TAG CODE SIZE	# TAGGED
10-02-48	60K	62,562

TOTAL AD/CWT	0
TOTAL CWT ONLY	62,562
TOTAL AD ONLY	1,412,819
TOTAL MARKED	1,475,381

CWT RETENTION			
RACEWAY	# CHECKED	# TAGGED	% SUCCESSFUL
80	300	294	98.00%
101	300	297	99.00%
102	300	295	98.33%

AVERAGE RETENTION	98.44%
MINIMUM RETENTION	98.00%
MAXIMUM RETENTION	99.00%

Table 11A: Hagerman National Fish Hatchery PIT-Tag BY 2013 Steelhead		
DATE	**RWY**	**# OF FISH TAGGED**
11/5/2013	39	800
11/5/2013	43	800
11/5/2013	50	499
11/5/2013	54	500
11/5/2013	57	600
11/5/2013	63	700
11/5/2013	67	699
11/5/2013	73	697
11/5/2013	77	697
11/5/2013	80	3,399
11/5/2013	86	601
11/5/2013	90	599
11/5/2013	96	700
11/6/2013	100	2401
11/6/2013	101	2799
11/6/2013	102	700
	TOTAL FISH TAGGED:	**17,191**

Niagara Springs Fish Hatchery

The Idaho Anadromous Fish-Marking Crew processed BY 2013 summer-run steelhead at Niagara Springs Fish Hatchery August 16th through August 22nd (Table 12). A total of 1,852,825 fish were adipose fin-clipped. Two five-line and one six-line automated marking trailers were used to process fish that received an adipose fin-clip. Fish were loaded into the main trough of the trailers by two electric Matsusaka fish-transfer pumps and an Aqua-Life fish-transfer pump that was previously used at Oxbow Hatchery. After marking, fish were distributed to raceways via four-inch aluminum discharge pipe.

A total of 28,281 BY 2012 summer-run steelhead were PIT-tagged at Niagara Springs Fish Hatchery January 26th through January 28th using the four-station manual PIT-tagging trailer (Table 12A). Fish were loaded into the main trough of the trailer by an electric Matsusaka fish-transfer pump. After marking, fish were distributed to raceways via four-inch aluminum discharge pipe.

Table 12: Raceway and Mark Totals Niagara Springs Fish Hatchery BY 2013 Steelhead									
RWY	DATE	TRAILER	MARK TYPE	TAG CODE	MATS	MANUAL	MARK TOTAL	RWY TOTAL	STOCK
1	8/16/2013	M1	AD ONLY	N/A	75,018	22,000	97,018	97,018	OXBOW A
2	8/17/2013	M1	AD ONLY	N/A	78,386	18,636	97,022	97,022	OXBOW A
3	8/18/2013	M1	AD ONLY	N/A	77,855	19,179	97,034	97,034	OXBOW A
4	8/19/2013	M1	AD ONLY	N/A	73,010	23,990	97,000	97,000	OXBOW A
5	8/20/2013	M1	AD ONLY	N/A	75,054	21,946	97,000	97,000	OXBOW A
6	8/20/2013	M1	AD ONLY	N/A	77,025	20,000	97,025	97,025	OXBOW A/PAH A
7	8/21/2013	M1	AD ONLY	N/A	78,258	21,750	100,008	100,008	PAH A
8	8/22/2013	M1	AD ONLY	N/A	36,354	13,638	49,992		PAH A
8	8/21/2013	M3	AD ONLY	N/A	32,631	12,220	44,851	94,843	PAH A
9	8/22/2013	M2	AD ONLY	N/A	74,177	25,198	99,375	99,375	PAH A
10	8/21/2013	M3	AD ONLY	N/A	70,037	29,963	100,000	100,000	PAH A
11 L	8/20/2013	M3	AD ONLY	N/A	36,020	10,980	47,000	47,000	PAH A
11 U	8/20/2013	M3	AD ONLY	N/A	38,955	11,045	50,000	50,000	PAH A
12	8/19/2013	M3	AD ONLY	N/A	74,187	22,813	97,000	97,000	PAH A
13	8/18/2013	M3	AD ONLY	N/A	72,500	24,500	97,000	97,000	PAH A
14	8/21/2013	M2	AD ONLY	N/A	72,418	27,320	99,738	99,738	PAH A
15	8/20/2013	M2	AD ONLY	N/A	72,315	24,771	97,086	97,086	PAH A
16	8/19/2013	M2	AD ONLY	N/A	74,789	22,312	97,101	97,101	PAH A
17	8/18/2013	M2	AD ONLY	N/A	72,425	24,673	97,098	97,098	PAH A
18	8/17/2013	M2	AD ONLY	N/A	72,659	24,579	97,238	97,238	PAH A
19	8/17/2013	M2	AD ONLY	N/A	75,097	22,142	97,239	97,239	PAH A

TOTAL AD ONLY	1,852,825
TOTAL MARKED	1,852,825

Table 12A: Niagara Springs Fish Hatchery PIT-Tag BY 2012 Steelhead		
DATE	**RWY**	**# OF FISH TAGGED**
1/26/2013	19	2,997
1/27/2013	17	2,999
1/27/2013	14	3097
1/27/2013	13	2,998
1/27/2013	10	3,499
1/27/2013	8	3,599
1/27/2013	5	2,498
1/27/2013	4	2,499
1/28/2013	2	1,997
1/28/2013	1	2,098
	TOTAL FISH TAGGED:	**28,281**

Discussion

Overall, the 2013 marking season was a great success. One main topic of conversation over the past two years has been to move towards a common 240v receptacle at every hatchery that the marking trailers can plug into. For the 2013 season all hatcheries had converted over to the new style receptacle. Not only did this allow the marking crew to eliminate the need to change plugs on our end to match what the hatchery had available, it is also a much safer system. The new style receptacle has a disconnect switch built into it that makes it impossible to plug in or unplug when there is power to the receptacle. The plug that fits the new receptacle also locks into place eliminating the possibility of the connection coming apart inadvertently. All power at the hatcheries is now 240v, which enabled us to remove the converter inside the trailer that allows us to run on 480v power and thus removing 3 connections in the main power supply to the trailer, all of which improved safety and reduced the number of places for possible failure in the power supply. I would like to thank Steve Money for all the time and effort he has put into all of the facilities in regards to the power upgrade and modifications. Paul Abbott was very helpful in ensuring the needed electrical changes have taken place at the IPC facilities.

Again in 2013, all trailer transportation requiring a CDL was contracted out to Peters and Keatts Trucking LLC. The only exception to this was that Hagerman National Fish Hatchery employee Steve Money transported the trailers between the three Southern Idaho steelhead facilities. Peters and Keatts Trucking was once again able to move the trailers in the time frame necessary in order for the program to meet the very strict deadlines that it operates under.

We put in place a marking schedule for 2013 that ensured we were able to run a minimum of two trailers double shift when feasible even with variable fish size at a hatchery. This was done to address the concern of only running a single trailer double shift at Magic Valley, Hagerman National, and Niagara Springs hatcheries. All feedback on this approach has been positive from the respective hatcheries and we plan to continue this approach to scheduling in the upcoming marking seasons.

The issue of elevated water temperatures during marking occurred once again in 2013 at Hagerman National Fish Hatchery. Hagerman National had experienced some issues with one of their springs drying up and therefore had reduced water flows and elevated water temperatures. The Marking Program has been in contact with staff from Hagerman National and we are working to come up with viable options that will ensure our continued ability to process the necessary fish at the facility. We have a high water temperature threshold in place and will monitor water temperatures more closely in the future to make certain that fish are out of the marking trailers by the time the water temperature reaches 62 degrees Fahrenheit. We are also going to get more reliable and accurate water temperature gauges to have inside the trailers before the start of the 2014 marking season.

One major change for the 2014 marking season will be the addition of a fourth automated marking trailer. The trailer has already been built by NMT and will be delivered in the spring of 2014 prior to the beginning of the marking season. It will be a six-line automated trailer and will greatly improve our ability to keep up with the growing number of fish to be marked during the course of the season. This new trailer will enable us to mark the increased number of Chinook being reared at Clearwater

Hatchery, as well as the Sockeye being reared at the newly built Springfield Hatchery (250,000 fish in 2014 with an increase in future years).

We also performed major modifications and upgrades to the larger four-station PIT-tagging trailer. The electrical inside the trailer was upgraded and redesigned and the plumbing was modified to increase water flow inside and exiting the trailer. We also modified how fish enter the trailer to make it similar to the fish entry on the automated trailers that enables us to use the same dewatering device used on the automated trailers. This dewatering tower is a vast improvement over the dewatering device used in previous years on the PIT-tagging trailer. Not only is the new dewatering device a much more efficient design it will greatly reduce potential stress and fish health concerns associated with the old dewatering device and fish entry location used in previous years.

The reduction in the amount of adipose fin-clip quality checks that were performed in 2013 was discussed earlier in this report in the "Methods" section. Typically only groups of fish that received adipose fin-clips and CWT were checked for adipose fin-clip quality while checking for presence/absence of CWT. There has been a reduction in the number of groups of fish receiving both of these marks in 2013, especially in steelhead. Pahsimeroi and Sawtooth Hatcheries performed the CWT retention checks at their respective facilities in 2013 and only checked for presence/absence of CWT and did not look at adipose fin-clip quality on these groups. When you take these two factors into consideration the only facilities that generated adipose fin-clip quality information for 2013 were Clearwater, McCall, and Rapid River Hatcheries. In the future it would benefit all involved parties to develop a new method/protocol for generating adipose fin-clip quality information.