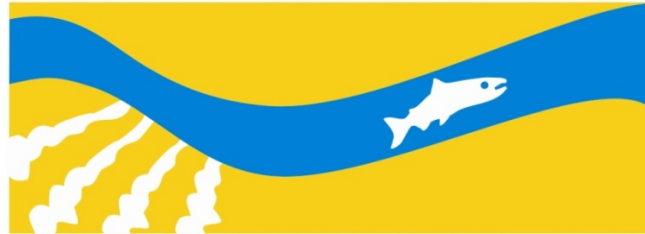


SAN JOAQUIN RIVER
RESTORATION PROGRAM



Fisheries Technical Feedback Group Meeting
March 1, 2013

Spring-run Captive Rearing Program Update

Paul Adelizi

California Department of Fish and Wildlife



Why Captive Rearing?

- CV spring-run Chinook salmon are threatened in California.
- Mining fish from a donor population can have negative impacts to that population.
- Captive Rearing will amplify small numbers of donor fish with minimal impact to the donor populations.



Harry Morse, Photographer



Program Priorities

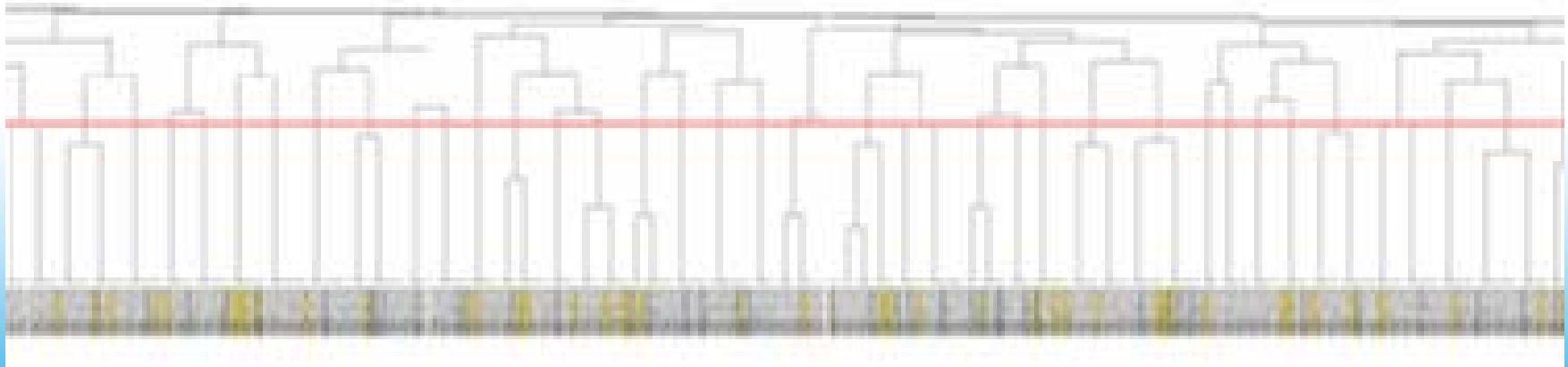
- Balancing science and nature in effort to create a naturally reproducing and self-sustaining population.





Program Priorities - Genetics

- Genetic Diversity
 - Start with diverse population
 - Mate unrelated individuals
 - Use modern genetic tools (SNPs)





Program Priorities - Minimize Precocity





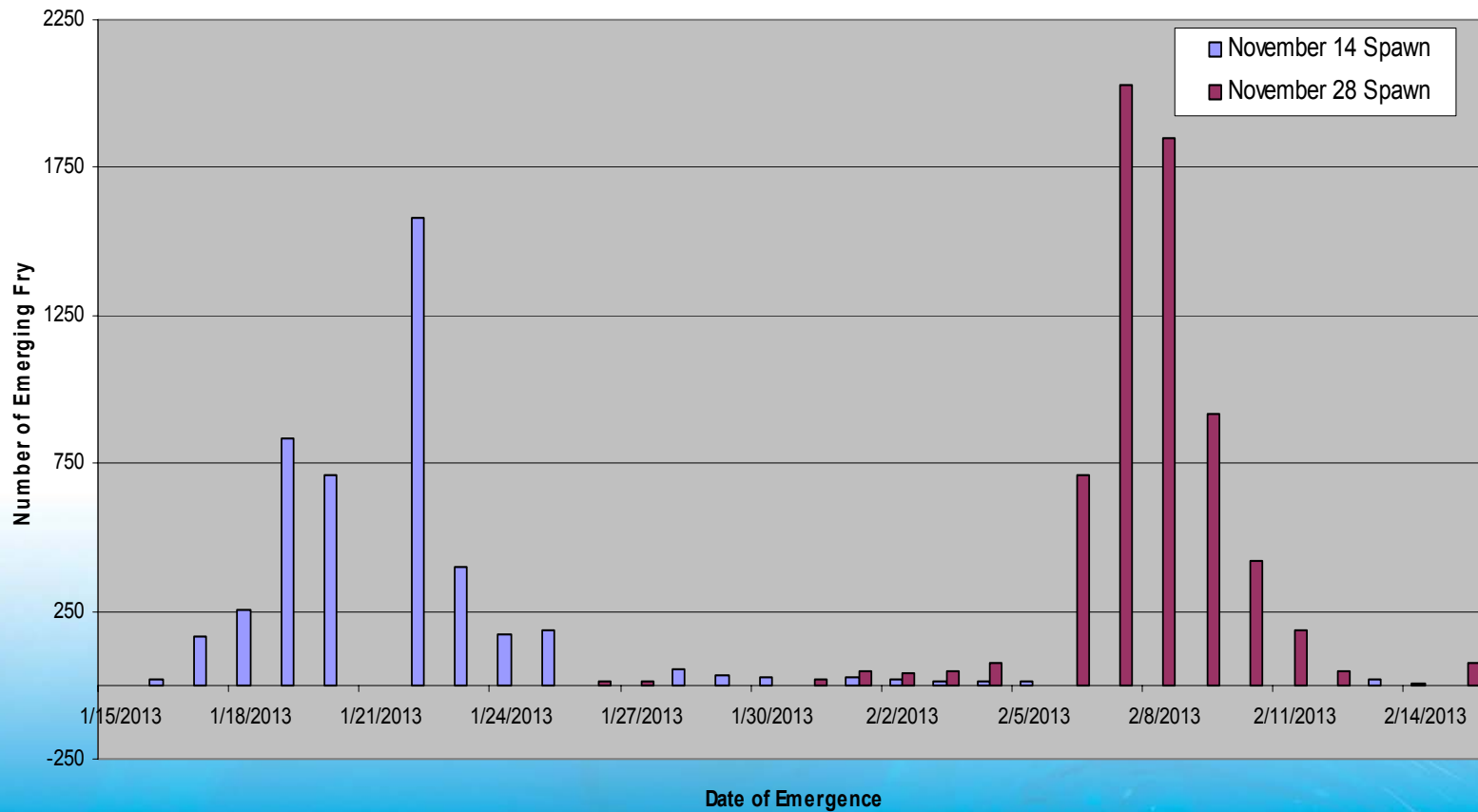
Program Priorities - Reduce Hatchery Induced Selection (Artificial Redd Experiments)





Artificial Redd Experiments

Fall-run Chinook Fry Emergence Inventory From Two Artificial Redds
(i.e. Deep Matrix Incubars); San Joaquin River Restoration Program





Planning - Analysis

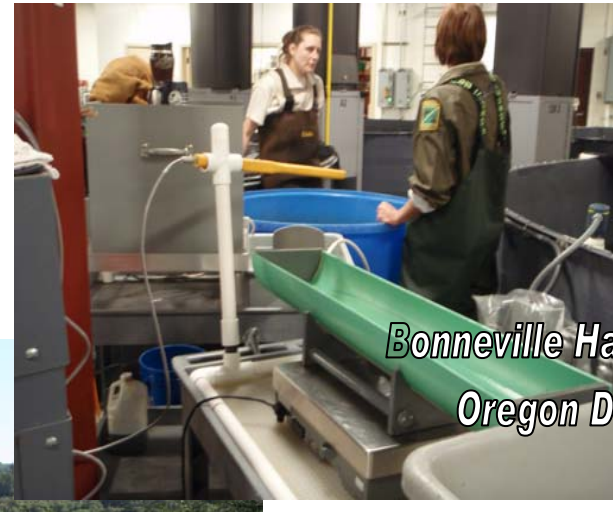
- The multi-agency Genetics Subgroup and Fisheries Management Workgroup analyzed the situation and developed the following documents:
 - Stock Selection Strategy
 - Reintroduction Strategy
 - HGMP



Planning - Facility Investigations



*Feather River
Hatchery*



*Bonneville Hatchery
Oregon DFW*



*Oregon Hatchery
Research Facility*



Warm Springs Hat



Livingston Stone



Proposed Location



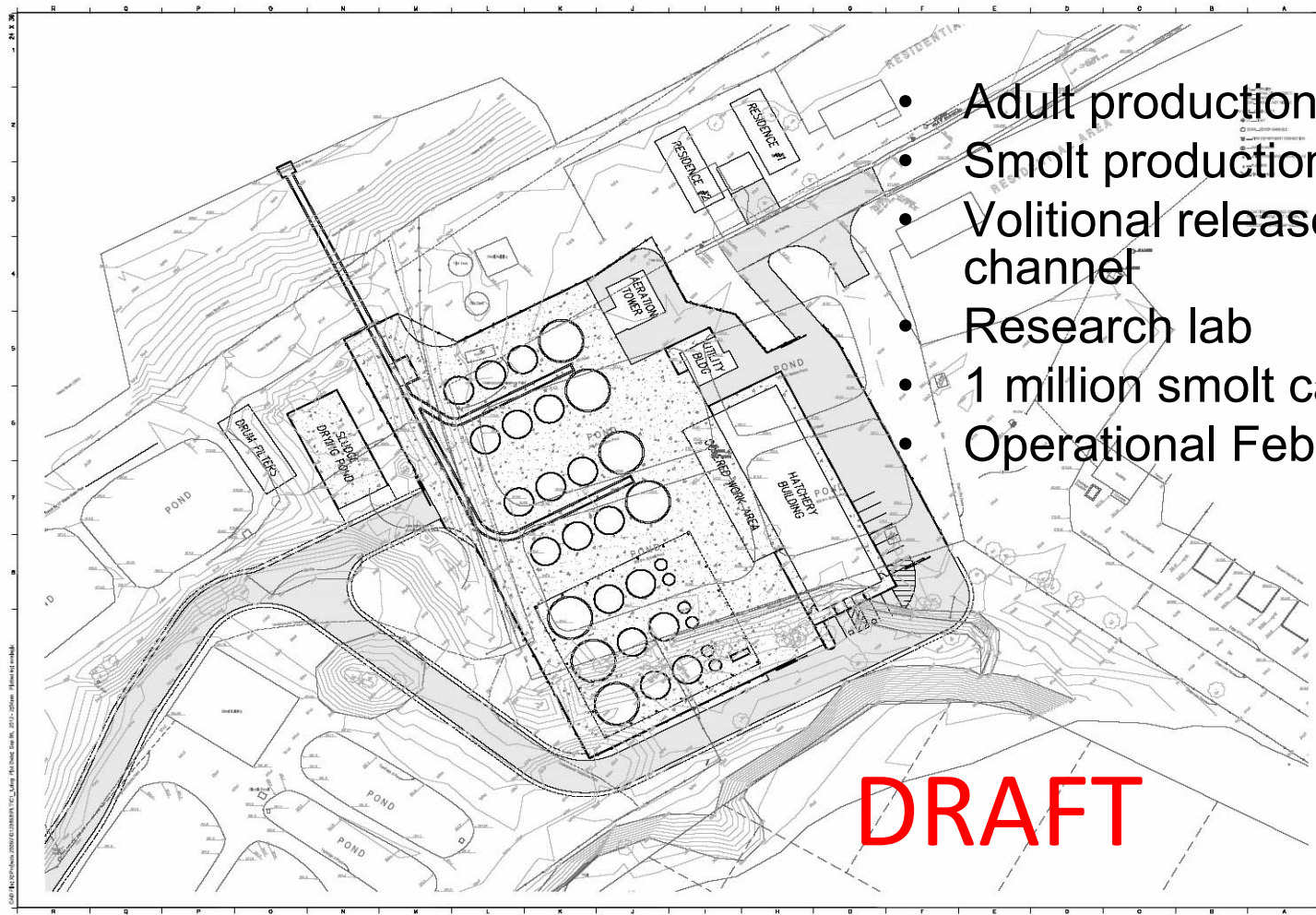


Proposed Location





Preliminary Drawings



- Adult production
- Smolt production
- Volitional release channel
- Research lab
- 1 million smolt capacity
- Operational Feb. 2016

DRAFT

DGS
GENERAL SERVICES

Department of General Services
Architecture & Engineering Section
State of California
Real Estate Services Division
Professional Services Branch
707 Third Street, Suite 4-125
West Sacramento, California 95625
Project Manager: Wade Johnson
916.339.1377
wjohnson@dgsc.ca.gov

California State Fire Marshal
APPROVED
Approval of this plan does not constitute or
imply any opinion or warranty from
architectural professionals. If it is required to
approve plans, the architect shall be notified in the
written form of the State Architect.

Identification Stamp:
Division of the State Architect

No.	Date	Description
1	08/05/12	CON. PPA

Project:
SAN JOAQUIN FISH
HATCHERY EXPANSION
12319 BROOKMOUNT DRIVE
PRYOR CREEK

DEPARTMENT OF
FISH AND GAME

Supervisor	Designer	Drawn	Checked
EV	EV	EV	EV

File Date: _____ Vault File Number: _____

Sheet Title:
SITE
PLAN

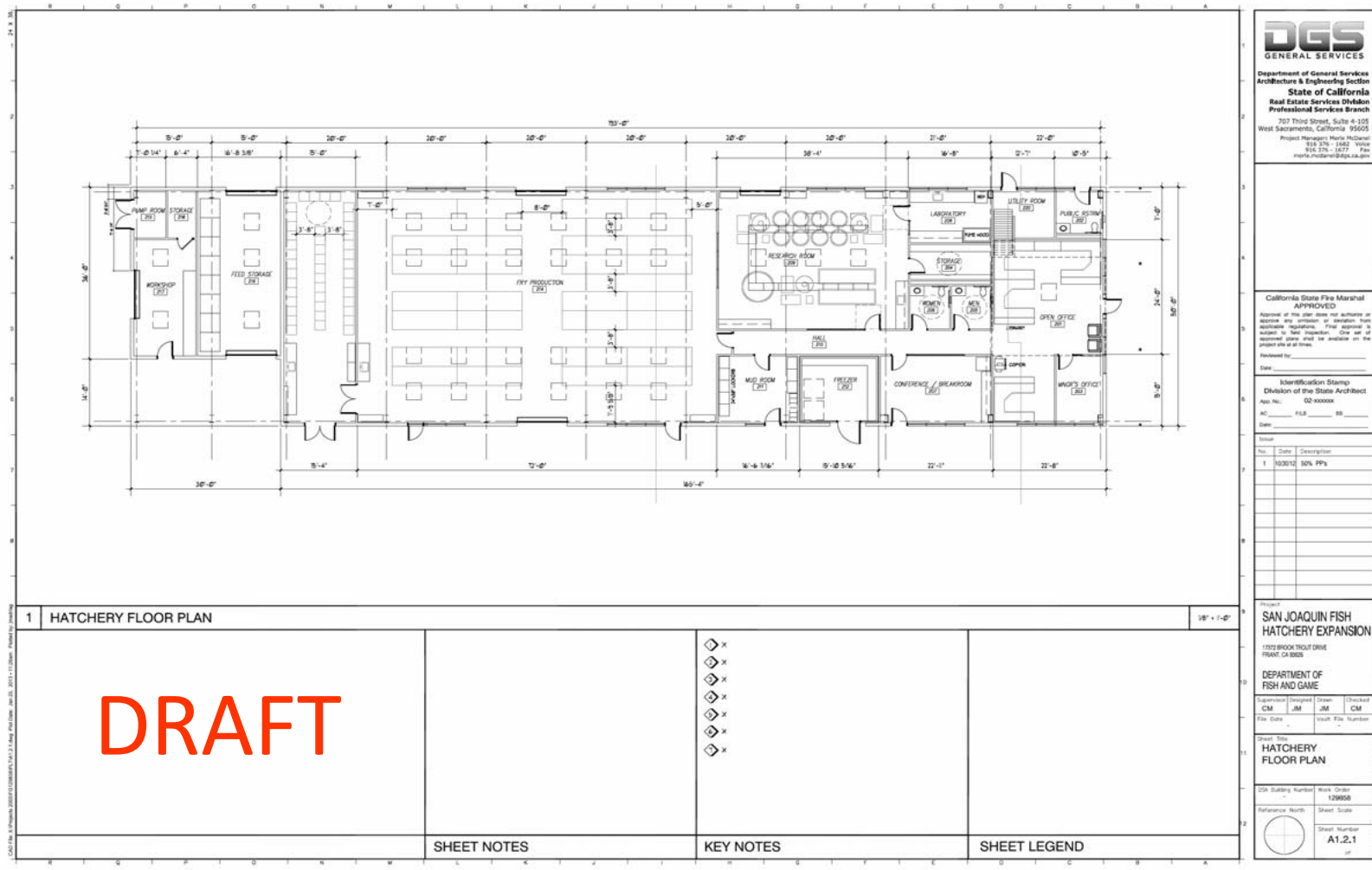
DGS Building Number: _____ Work Order:
128658

Reference North: _____ Sheet Scale:
1" = 200'±

Sheet Number:
C1.1
of 1



Hatchery Building



DGS
GENERAL SERVICES

Department of General Services
Architecture & Engineering Section
State of California
Real Estate Services Division
Professional Services Branch

207 Third Street, Suite 4100
West Sacramento, California 95605
Project Manager: Maria McDaniel
916.270.1482 Voice
916.276.1277 Fax
maria.mcdaniel@dgs.ca.gov

California State Fire Marshal
APPROVED

Approval of this plan does not constitute an approval of any condition or condition from applicable regulations. Final approval is subject to final inspection. One set of approved plans shall be available on the project site at all times.

Approved by: _____
Date: _____

Identification Stamp
Division of the State Architect
App. No.: 02-xxxxxx
AC: _____ PLS: _____ SS: _____
Date: _____

No.	Date	Description
1	10/30/12	50% PPs

Project: **SAN JOAQUIN FISH HATCHERY EXPANSION**
1702 BUCK HOLT DRIVE
FRONT, CALIFORNIA

DEPARTMENT OF FISH AND GAME

Submitted	Approved	Drawn	Checked
CM	JM	JM	CM

File Date: _____
Task File Number: _____

Sheet Title:
HATCHERY FLOOR PLAN

DGS Building Number: _____
Reference Number: 128608

Reference North: _____
Sheet Scale: _____

Sheet Number:
A1.2.1
of _____

1 HATCHERY FLOOR PLAN			1/8" = 1'-0"	
DRAFT	<ul style="list-style-type: none"> ◇ X ◇ X ◇ X ◇ X ◇ X ◇ X ◇ X 	SHEET NOTES	KEY NOTES	SHEET LEGEND



Interim Facility



FRH Ladder Opened September 17





Recording Hallprint Tags and Ovarian Fluid





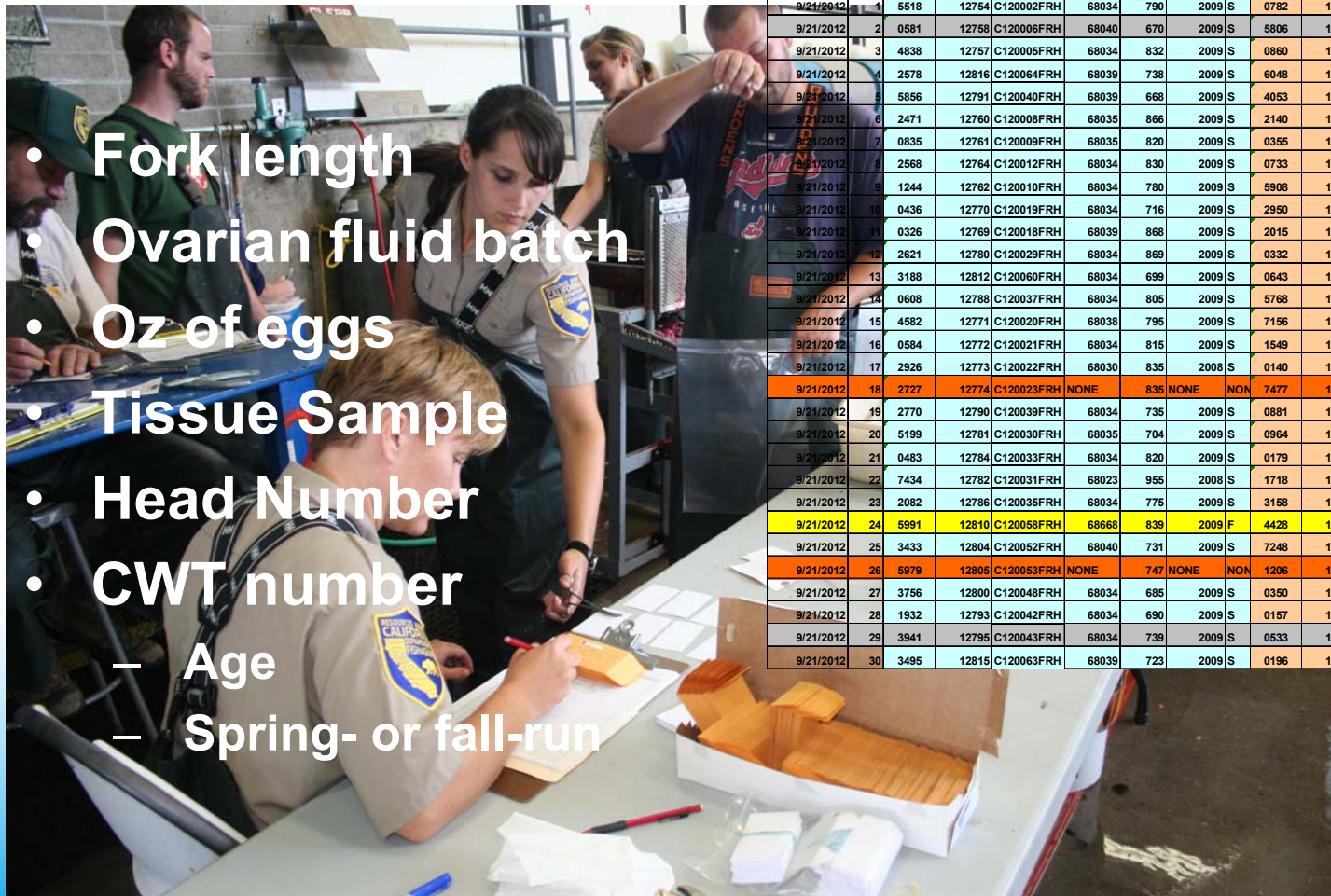
Spawning



- **Spawning occurred on September 21, 25, and 28**
- **First 30 pairs were mated**
- **Only used fish with CWTs**



Data Collection



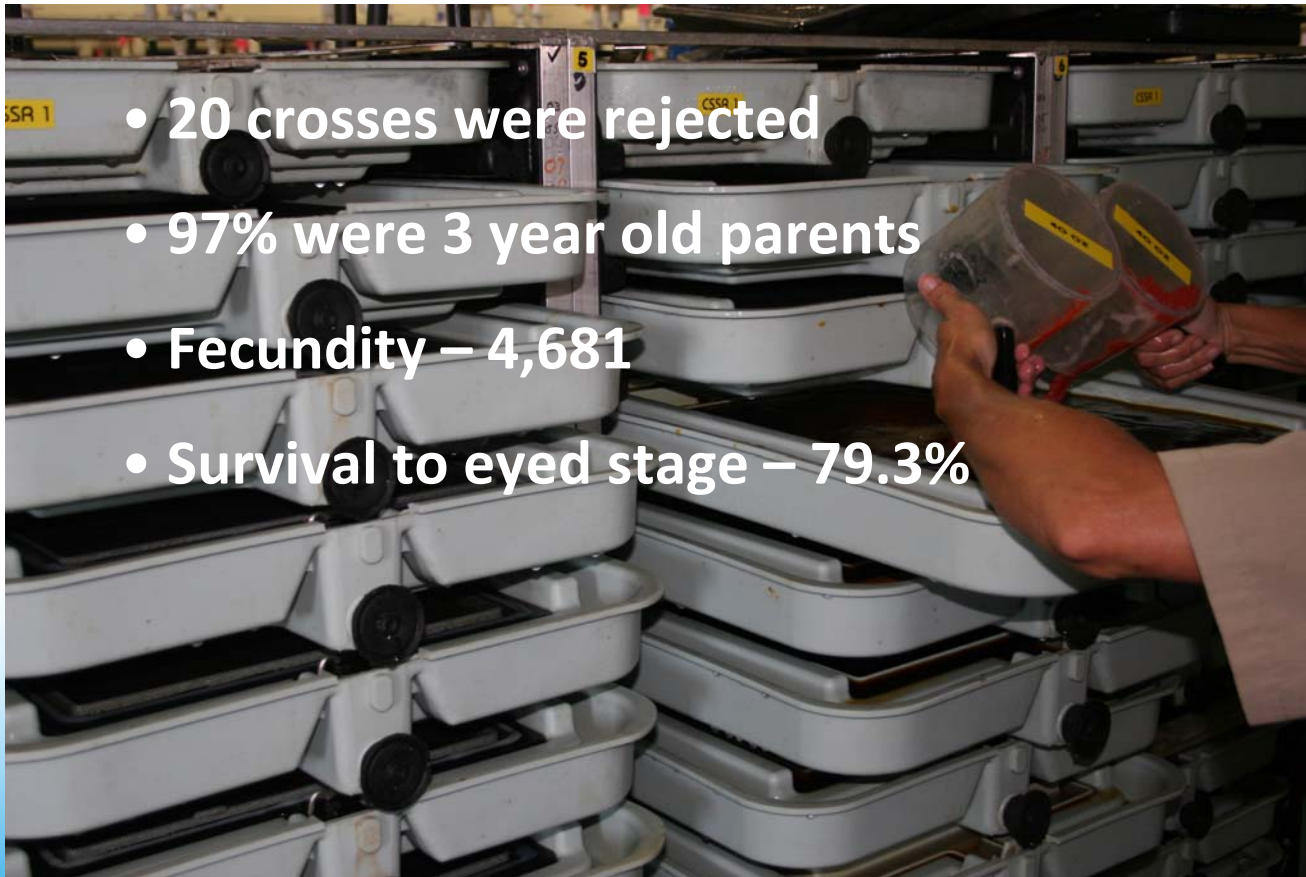
- Fork length
- Ovarian fluid batch
- Oz of eggs
- Tissue Sample
- Head Number
- CWT number
 - Age
 - Spring- or fall-run

DATE	Cross #	♂ Male Data						♀ Female Data							
		Halprint#	Head Tag#	CVTA ID#	CWT#	FK (mm)	Brood Year	Run	Halprint#	Head Tag#	CVTA#	CWT#	FK (mm)	Brood Year	Run
9/21/2012	1	5518	12754	C120002FRH	68034	790	2009	S	0782	12753	C120001FRH	68034	750	2009	S
9/21/2012	2	0581	12758	C120006FRH	68040	670	2009	S	5806	12755	C120003FRH	68035	700	2009	S
9/21/2012	3	4838	12757	C120005FRH	68034	832	2009	S	0860	12756	C120004FRH	68035	685	2009	S
9/21/2012	4	2578	12816	C120064FRH	68039	738	2009	S	6048	12759	C120007FRH	68035	770	2009	S
9/21/2012	5	5856	12791	C120040FRH	68039	668	2009	S	4053	12766	C120014FRH	68034	761	2009	S
9/21/2012	6	2471	12760	C120008FRH	68035	866	2009	S	2140	12767	C120016FRH	68034	725	2009	S
9/21/2012	7	0835	12761	C120009FRH	68035	820	2009	S	0355	12808	C120056FRH	68034	766	2009	S
9/21/2012	8	2568	12764	C120012FRH	68034	830	2009	S	0733	12814	C120062FRH	68034	747	2009	S
9/21/2012	9	1244	12762	C120010FRH	68034	780	2009	S	5908	12763	C120011FRH	68035	680	2009	S
9/21/2012	10	0436	12770	C120019FRH	68034	716	2009	S	2950	12777	C120026FRH	68034	750	2009	S
9/21/2012	11	0326	12769	C120018FRH	68039	868	2009	S	2015	12789	C120038FRH	68034	730	2009	S
9/21/2012	12	2621	12780	C120029FRH	68034	869	2009	S	0332	12809	C120057FRH	68034	795	2009	S
9/21/2012	13	3188	12812	C120060FRH	68034	699	2009	S	0643	12792	C120041FRH	68034	795	2009	S
9/21/2012	14	0608	12788	C120037FRH	68034	805	2009	S	5768	12775	C120024FRH	68035	679	2009	S
9/21/2012	15	4582	12771	C120020FRH	68038	795	2009	S	7156	12779	C120028FRH	68034	748	2009	S
9/21/2012	16	0584	12772	C120021FRH	68034	815	2009	S	1549	12778	C120027FRH	68034	710	2009	S
9/21/2012	17	2926	12773	C120022FRH	68030	835	2008	S	0140	12776	C120025FRH	68034	690	2009	S
9/21/2012	18	2727	12774	C120023FRH	NONE	835	NONE	NON	7477	12787	C120036FRH	68040	700	2009	S
9/21/2012	19	2770	12790	C120039FRH	68034	735	2009	S	0881	12807	C120055FRH	68034	789	2009	S
9/21/2012	20	5199	12781	C120030FRH	68035	704	2009	S	0964	12811	C120059FRH	68034	728	2009	S
9/21/2012	21	0483	12784	C120033FRH	68034	820	2009	S	0179	12783	C120032FRH	68034	718	2009	S
9/21/2012	22	7434	12782	C120031FRH	68023	955	2008	S	1718	12813	C120061FRH	68034	707	2009	S
9/21/2012	23	2082	12786	C120035FRH	68034	775	2009	S	3158	12785	C120034FRH	68035	695	2009	S
9/21/2012	24	5991	12810	C120058FRH	68668	839	2009	F	4428	12797	C120045FRH	68034	730	2009	S
9/21/2012	25	3433	12804	C120052FRH	68040	731	2009	S	7248	12796	C120044FRH	68037	739	2009	S
9/21/2012	26	5979	12805	C120053FRH	NONE	747	NONE	NON	1206	12799	C120045FRH	68034	686	2009	S
9/21/2012	27	3756	12800	C120048FRH	68034	685	2009	S	0350	12801	C120049FRH	68034	668	2009	S
9/21/2012	28	1932	12793	C120042FRH	68034	690	2009	S	0157	12803	C120051FRH	68034	656	2009	S
9/21/2012	29	3941	12795	C120043FRH	68034	739	2009	S	0533	12798	C120046FRH	68034	721	2009	S
9/21/2012	30	3495	12815	C120063FRH	68039	723	2009	S	0196	12802	C120050FRH	68023	876	2008	S



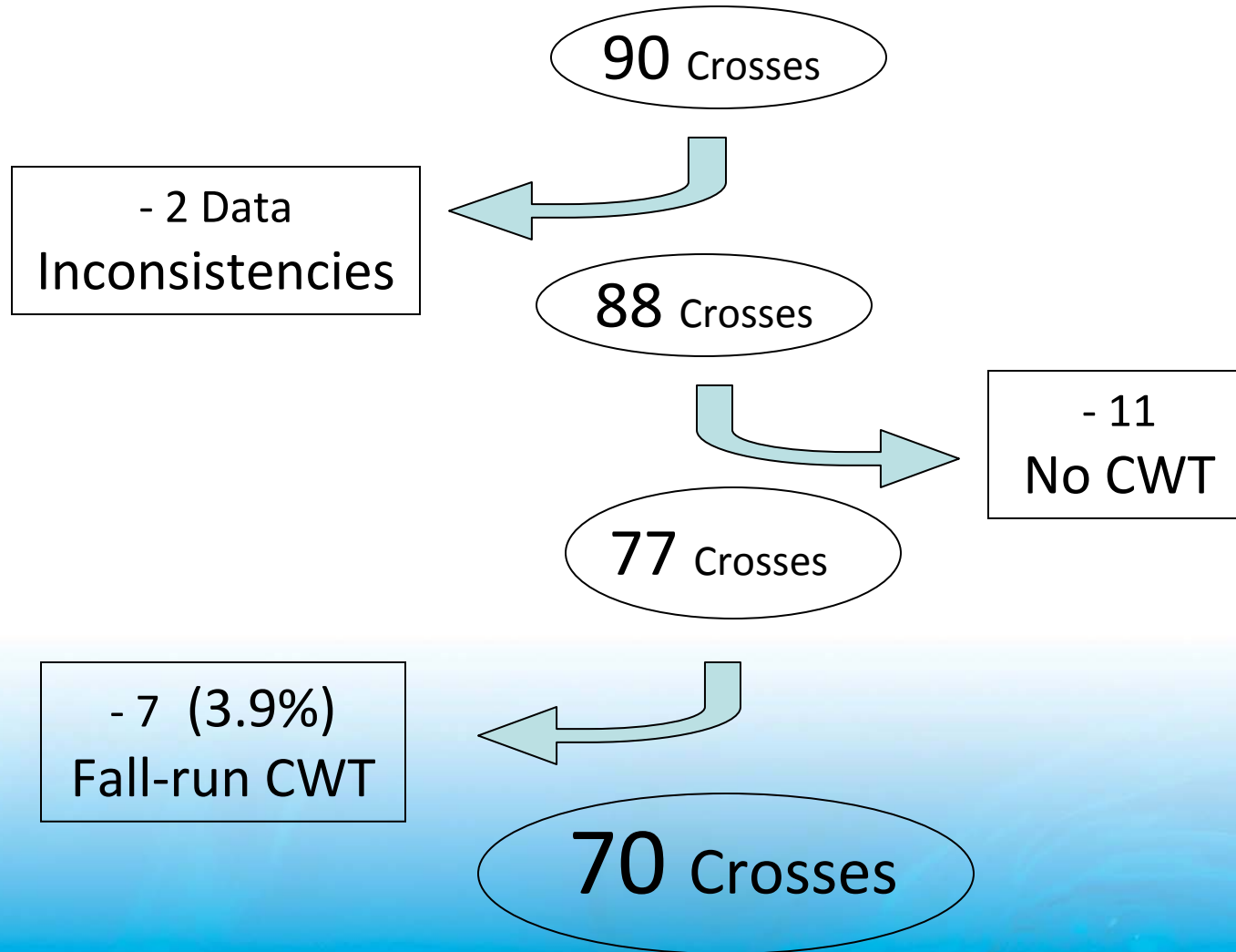
Results

- 20 crosses were rejected
- 97% were 3 year old parents
- Fecundity – 4,681
- Survival to eyed stage – 79.3%





Selection Process





Silverado Fisheries Base



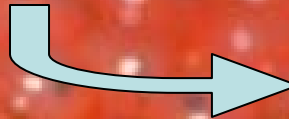


Broodstock Inventory

560 eyed eggs



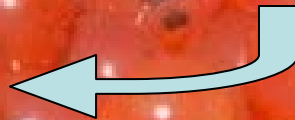
Silverado Fisheries Base



- 60 Fish Health
Assessment

500 juveniles

-61
Mortality
(88 % Survival)



439 juveniles



Near-term Activities

- Tagging at SFB (CWT)
- Transport to Interim Facility
- PIT tagging, Tissue Sampling
- Sex identification
- Separate males and females
- Growth rate modulation September - January



Long-term Activities

- Quarterly growth monitoring
- September 2013 – Maturity Check
- September 2013 – Egg collection at Feather River Hatchery
- September 2014 – (1) Spawn Jacks and Jills using mating matrix and (2) Egg collection at Feather River Hatchery
- September 2015 – (1) Spawn 3 year old brood stock using mating matrix and (2) Egg collection at Feather River Hatchery
- Continue to explore conservation hatchery techniques.



Acknowledgements

- US Fish and Wildlife Service
- National Marine Fisheries Service
- NOAA's Southwest Fisheries Science Center
- US Bureau of Reclamation
- UC Davis Genomic Variation Lab
- CDFW Feather River Hatchery
- CDFW Silverado Fisheries Base
- CDFW Tissue Archive Lab
- CDFW Fish Health Lab



Questions?

