Northwest **Power** and **Conservation** Council

15 July 2020

MEMORANDUM

TO: **Council Members**

FROM: **Stacy Horton, Washington State Staff**

SUBJECT: **Hanford Reach Fall Chinook Protection Program (HRFCPP)**

BACKGROUND:

Presenters: Tom Dresser, Fish and Wildlife Manager, Grant PUD, Peter Graf, Fisheries Scientist, Grant PUD, and Paul Hoffarth, Washington Department of Fish and Wildlife, District 4 Fish Biologist.

Summary: The Hanford Reach Fall Chinook Protection Program (HRFCPP) is an agreement between Grant, Chelan, and Douglas Public Utility Districts (PUD's), Bonneville Power Administration (BPA), National Oceanic and Atmospheric Administration Fisheries (NOAAF), the Washington Department of Fish and Wildlife (WDFW) and the Confederated Tribes of the Colville Indian Reservation (CCT) to protect Hanford Reach fall Chinook salmon. This agreement is to be carried out by Grant PUD and the utility parties with respect to flows and related measures for the purpose of protecting and enhancing fall Chinook salmon in the Hanford Reach portion of the Columbia River below the Priest Rapids dam.

The 2014 Columbia River Basin Fish and Wildlife Program calls for a continuation of specific operational measures in the Hanford Reach to protect fall Chinook redds and juveniles from flow and river elevation fluctuations. The Council's fish and wildlife program asks that the parties to the agreement report periodically to ensure that operations to protect upriver brights continue to be reliably implemented.

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348
www.nwcouncil.org

Steve Crow
Executive Director

503-222-5161
800-452-5161
Fax: 503-820-2370

Staff from Grant PUD and WDFW will present the Council with information on the history and need for this agreement, will summarize elements of the program, will provide the results and compliance record to date, and will identify needs for future success.

Relevance: The Hanford Reach supports one of the most productive runs of fall Chinook, often referred to as upriver brights. While not listed under the federal ESA, this run of fish still needs protection. The Hanford Reach Fall Chinook Protection Program (HRFCPP) is an agreement that defines operational constraints and other measures, and directs how Grant PUD manages flow below the Priest Rapids Project during critical periods of the life-cycle of fall Chinook salmon. Redd count data for this species has been compiled since 1948. The prevention of redd dewatering, coupled with operational controls to limit stranding and entrapment of juveniles, has led to increased productivity for these fish.

More Info:

Hanford Reach Fall Chinook Protection Program Executed Agreement
https://www.grantpud.org/templates/galaxy/images/images/Downloads/ResourceCommittees/OtherLicenses/Hanford_Reach_Protection_Program_Executed_Agreement_4-5-04.pdf

The Hanford Reach Fall Chinook Salmon Protection Program Report for the 2018 – 2019 Protection Season
https://www.grantpud.org/templates/galaxy/images/images/Downloads/ResourceCommittees/OtherDocuments/2019_Annual_HRFCPPA_Report_final.pdf

The Hanford Reach Fall Chinook Protection Program

Northwest Power and Conservation Council
July 15, 2020

Operate Responsibly by Attaining Environmental, Cultural Resource and Regulatory Compliance

Grant PUD

Powering our way of life.

Grant PUD & The Hanford Reach

Chief Joseph Dam
(River Mile 541.1)
Capacity 2,614 MW
Corps of Engineers

Wells Dam
(River Mile 515.1)
Capacity 840 MW
Douglas PUD

Rocky Reach Dam
(River Mile 473.0)
Capacity 1,300 MW
ChelanPUD

Rock Island Dam
(River Mile 453.4)
Capacity 624 MW
Chelan PUD

Bonneville Dam
(River Mile 145.5)
Capacity 1,227 MW
Corps of Engineers

The Dalles Dam
(River Mile 191.5)
Capacity 2,160 MW
Corps of Engineers

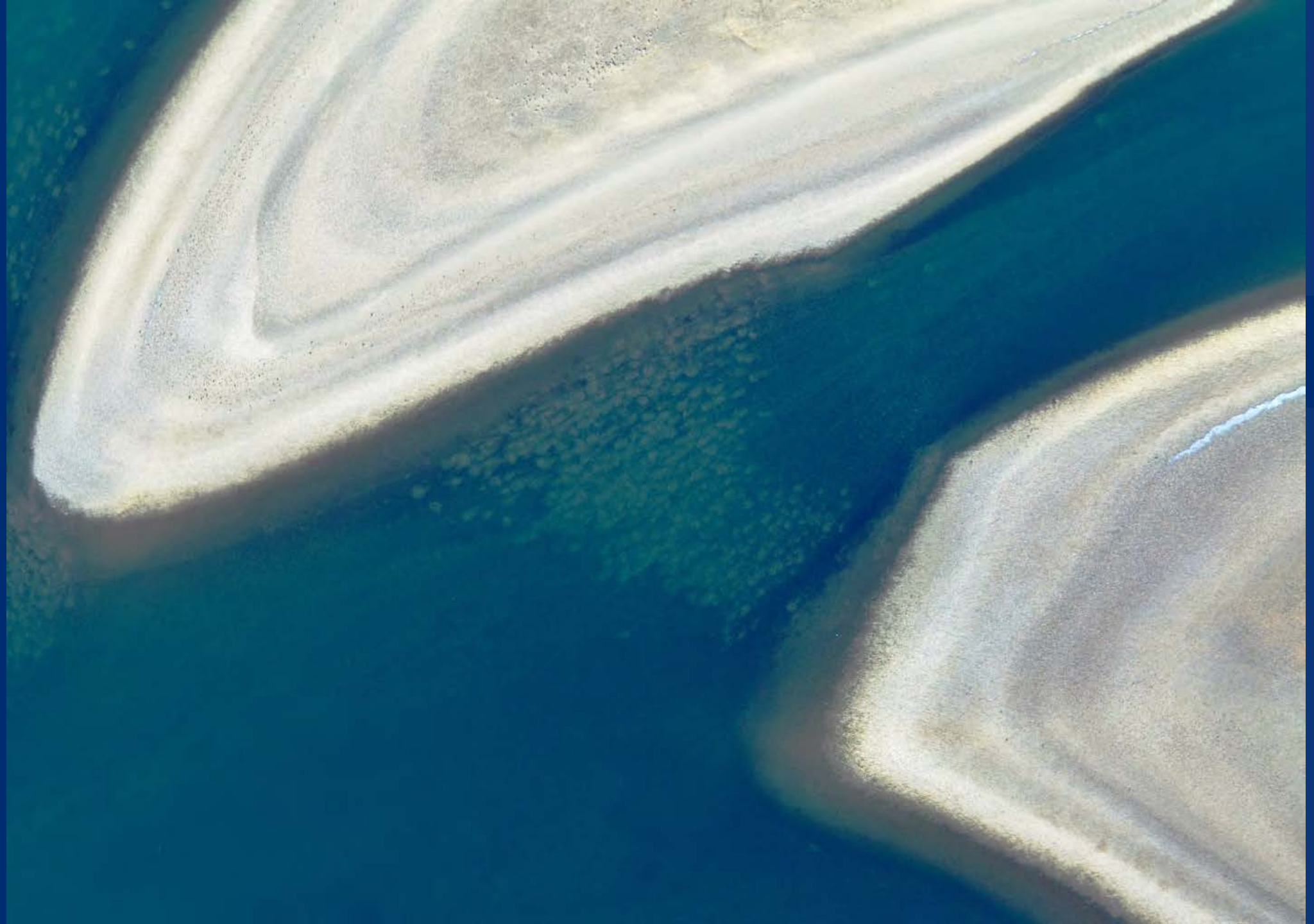
John Day Dam
(River Mile 215.8)
Capacity 2,480 MW
Corps of Engineers

McNary Dam
(River Mile 292.0)
Capacity 980 MW
Corps of Engineers

Grand Coulee Dam
(River Mile 596.6)
Capacity 6,809 MW
Bureau of Reclamation

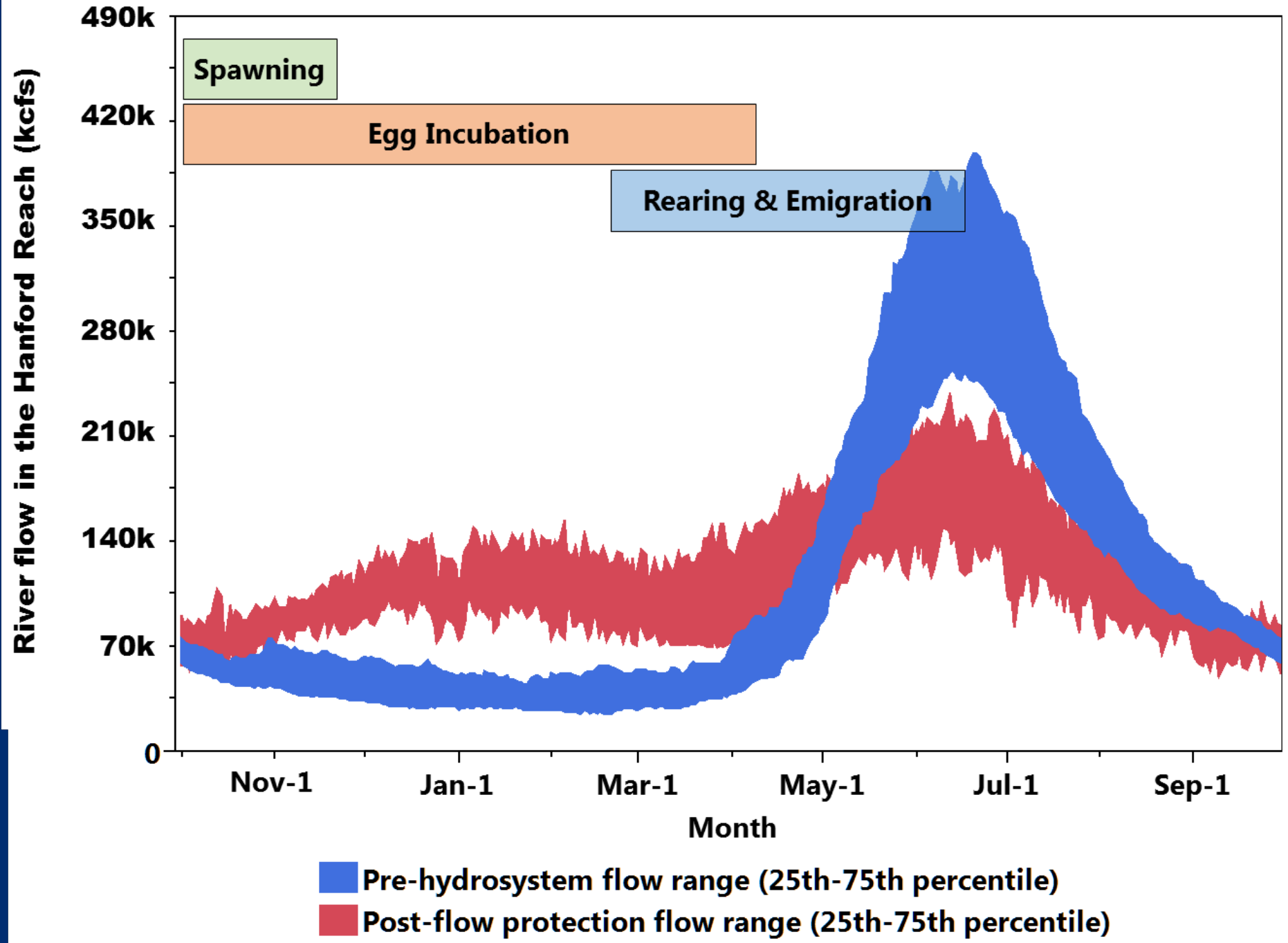
Wanapum Dam
(River Mile 415.8)
Capacity 1,185 MW
Grant PUD

Priest Rapids Dam
(River Mile 397.1)
Capacity 953 MW
Grant PUD

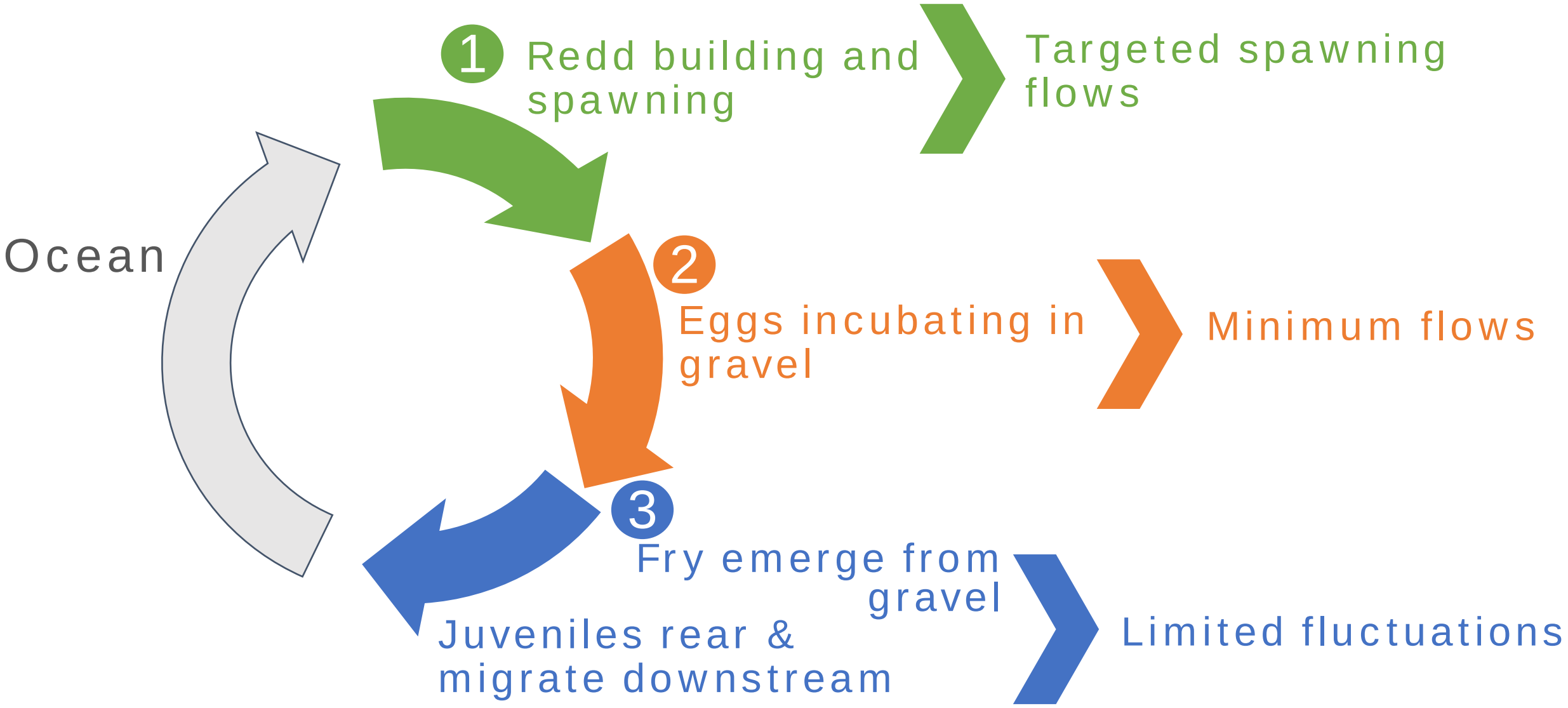


- 1961: Priest Rapids Dam Completed
- 1970s: Grant PUD funds studies on flow controls
- 1983: Experimental flow protections
- 1988: Vernita Bar Settlement Agreement (VBSA) formalizes protections for spawning Chinook
- 2004: Hanford Reach Fall Chinook Protection Program (HRFCPPA) signed expanding VBSA protections to include emergence and rearing
- 2012: Productivity assessments begin on protection flow outcomes

The Protection Program Design and Operations


490k
420k
350k
280k
210k
140k
70k
0
River flow in the Hanford Reach (kcfs)
Spawning
Egg Incubation
Rearing & Emigration
Nov-1
Jan-1
Mar-1
May-1
Jul-1
Sep-1
Month
Pre-hydrosystem flow range (25th-75th percentile)
Post-flow protection flow range (25th-75th percentile)

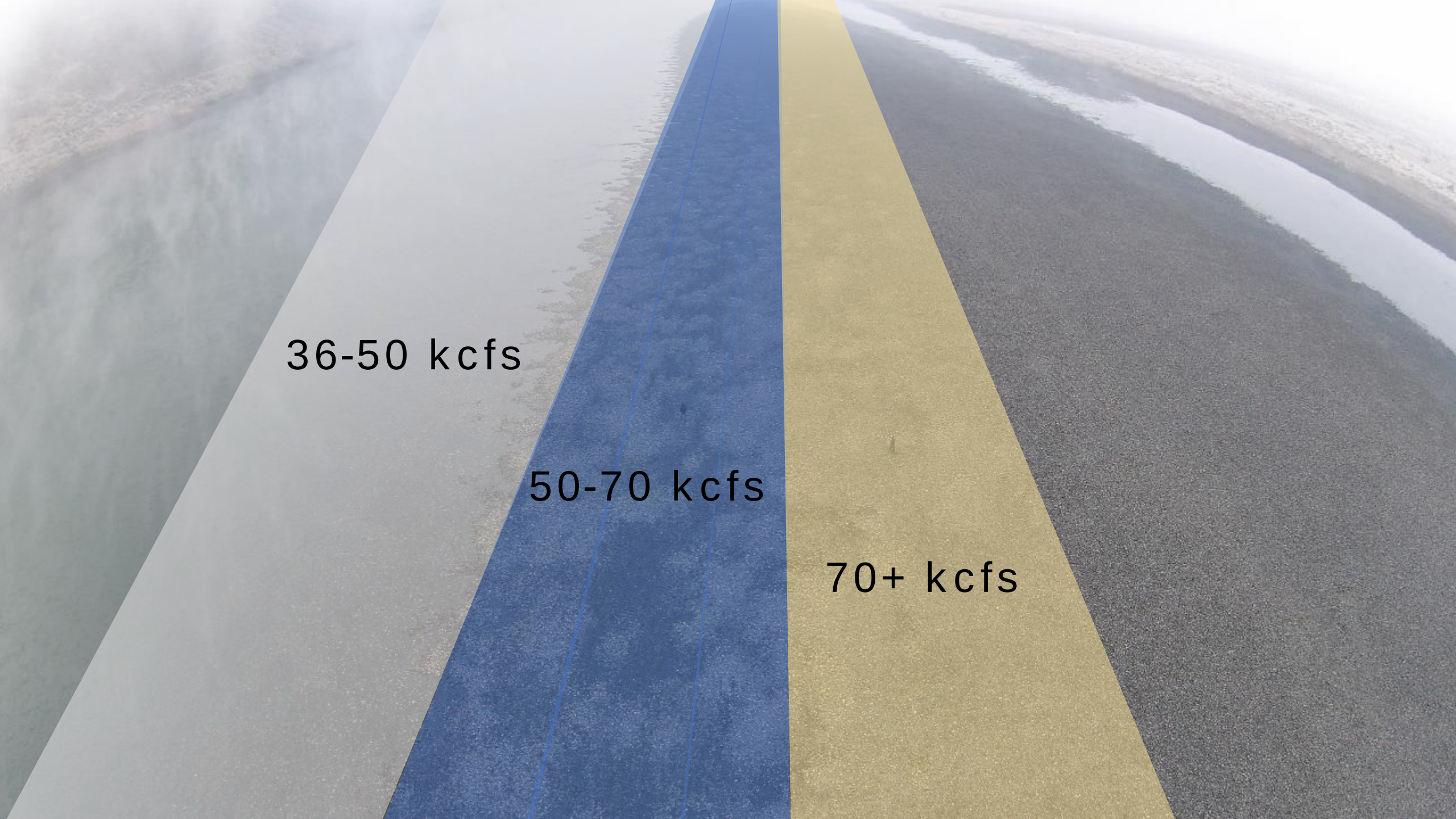
Flow protections guided by salmon life-cycle



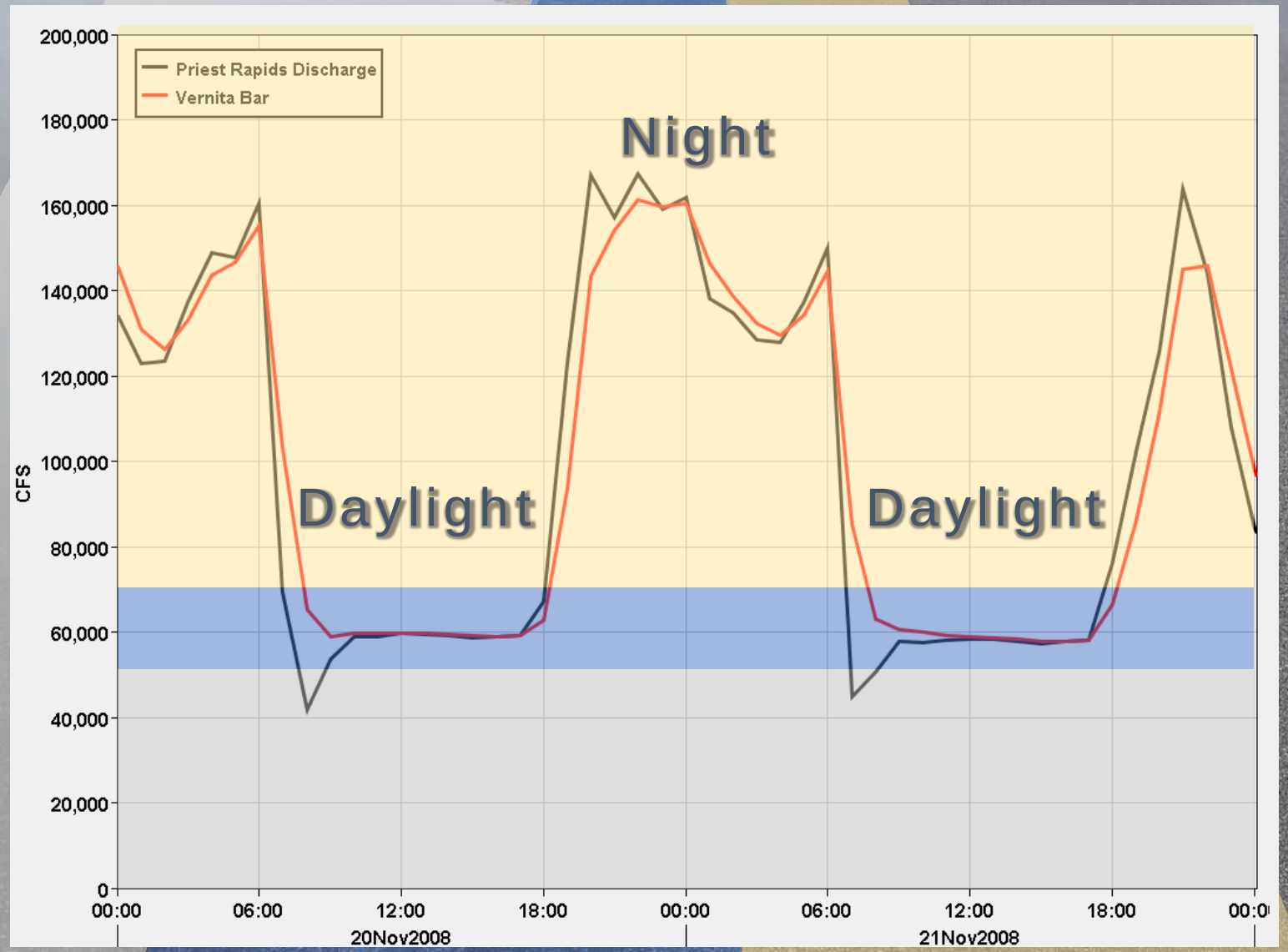
1 Spawning & Pre-Hatch

Fish Behavior:
Spawning Site Selection

Flow Protection:
Moderate Daytime Flow


36-50 kcfs
50-70 kcfs
70+ kcfs

“Reverse Load Factoring” targets 55 -70 kcfs during daylight

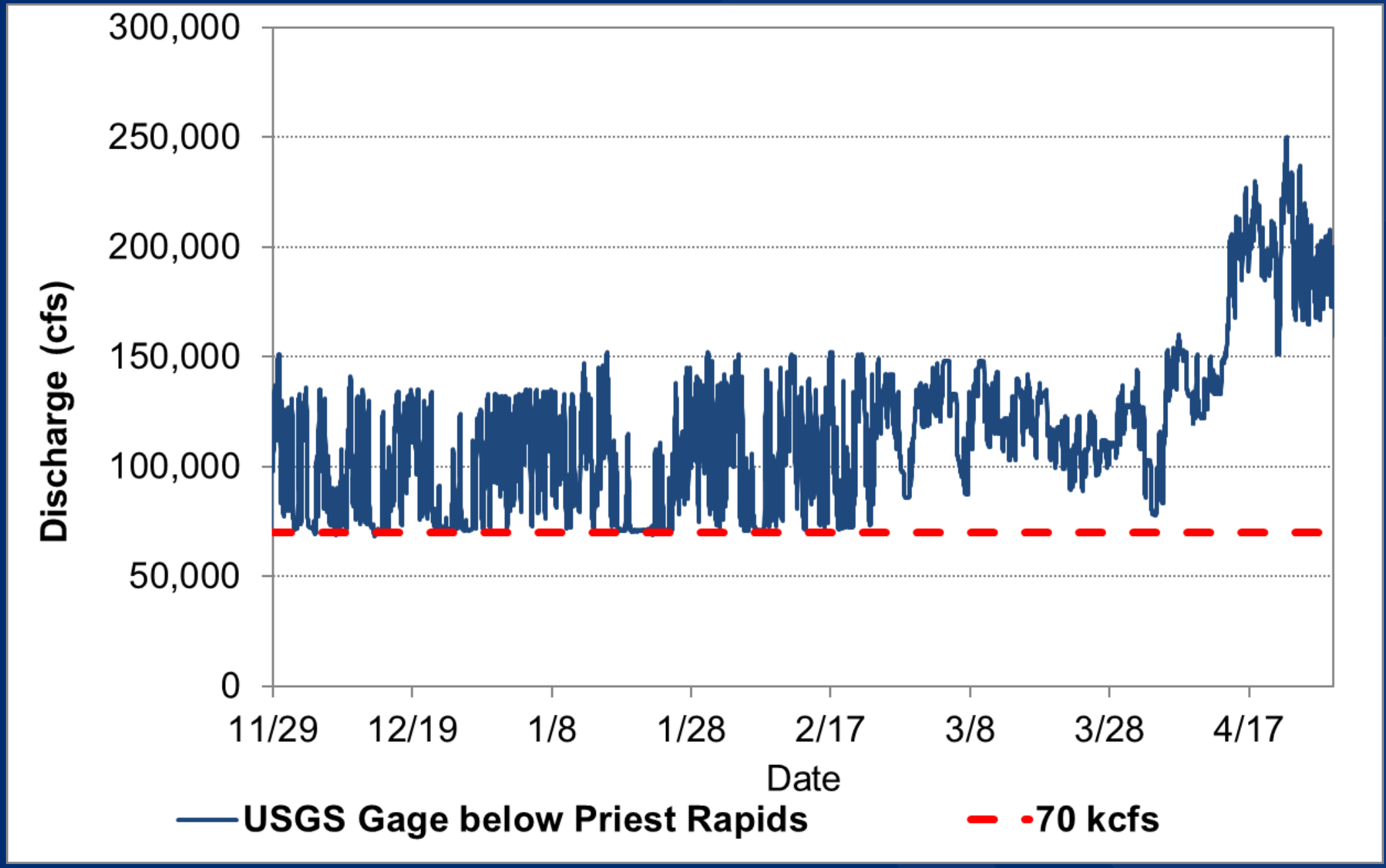


2 Egg Incubation

Fish Behavior:
Eggs in gravel

Flow Protection:
Minimum flows

Minimum flows to protect eggs



3 Emergence and Rearing

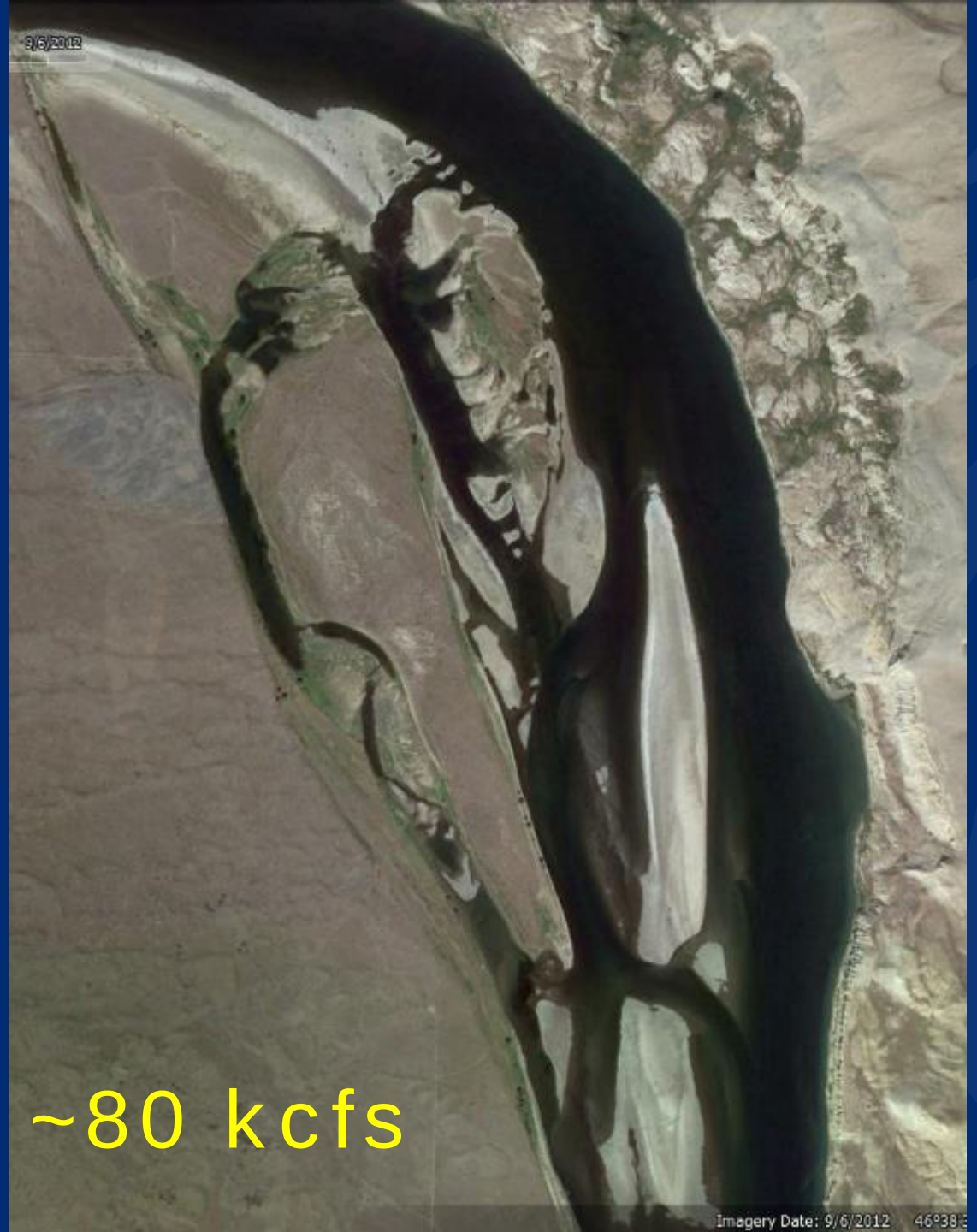
Fish Behavior:

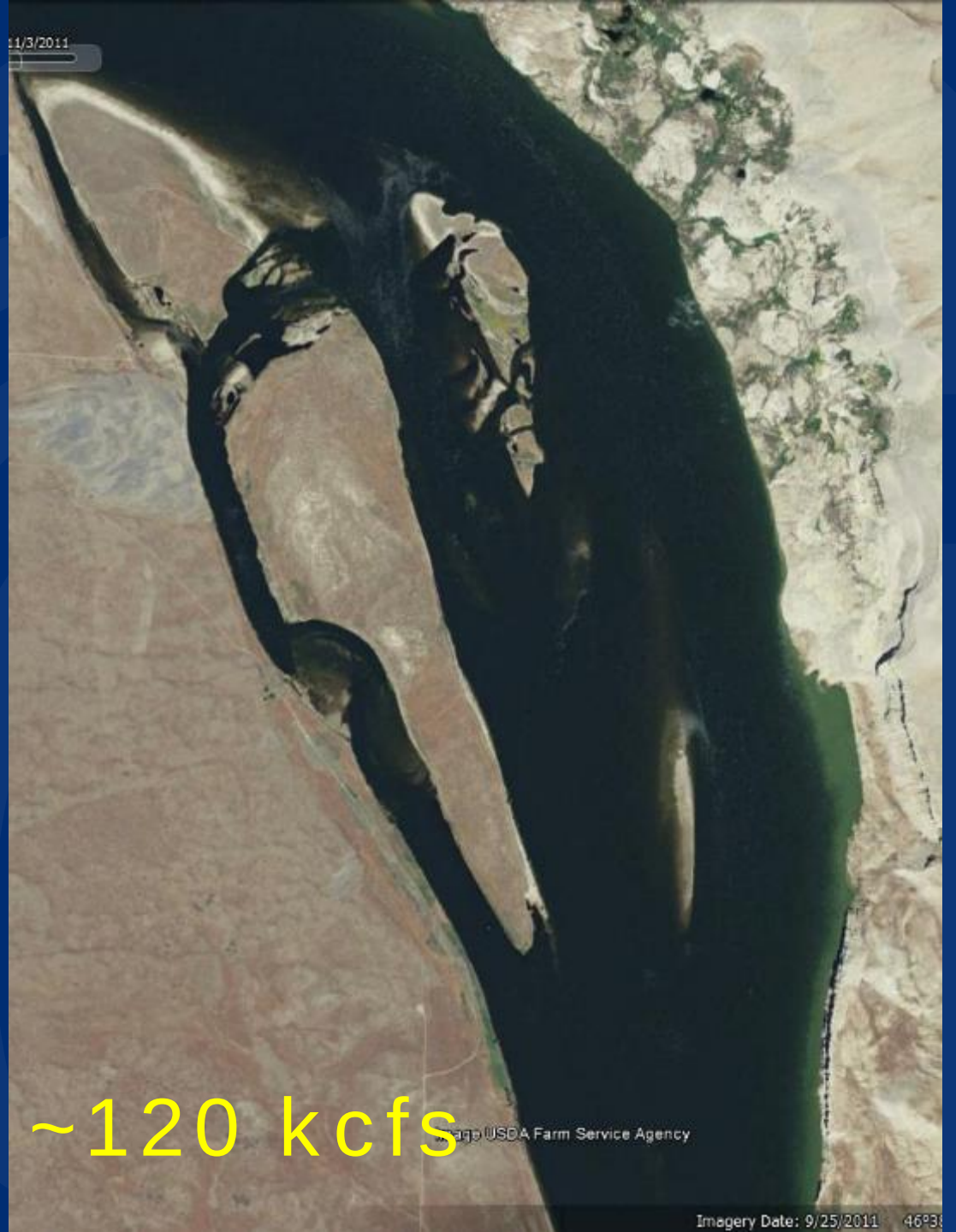
Juveniles emerging, rearing, feeding along shoreline

Flow Protections:

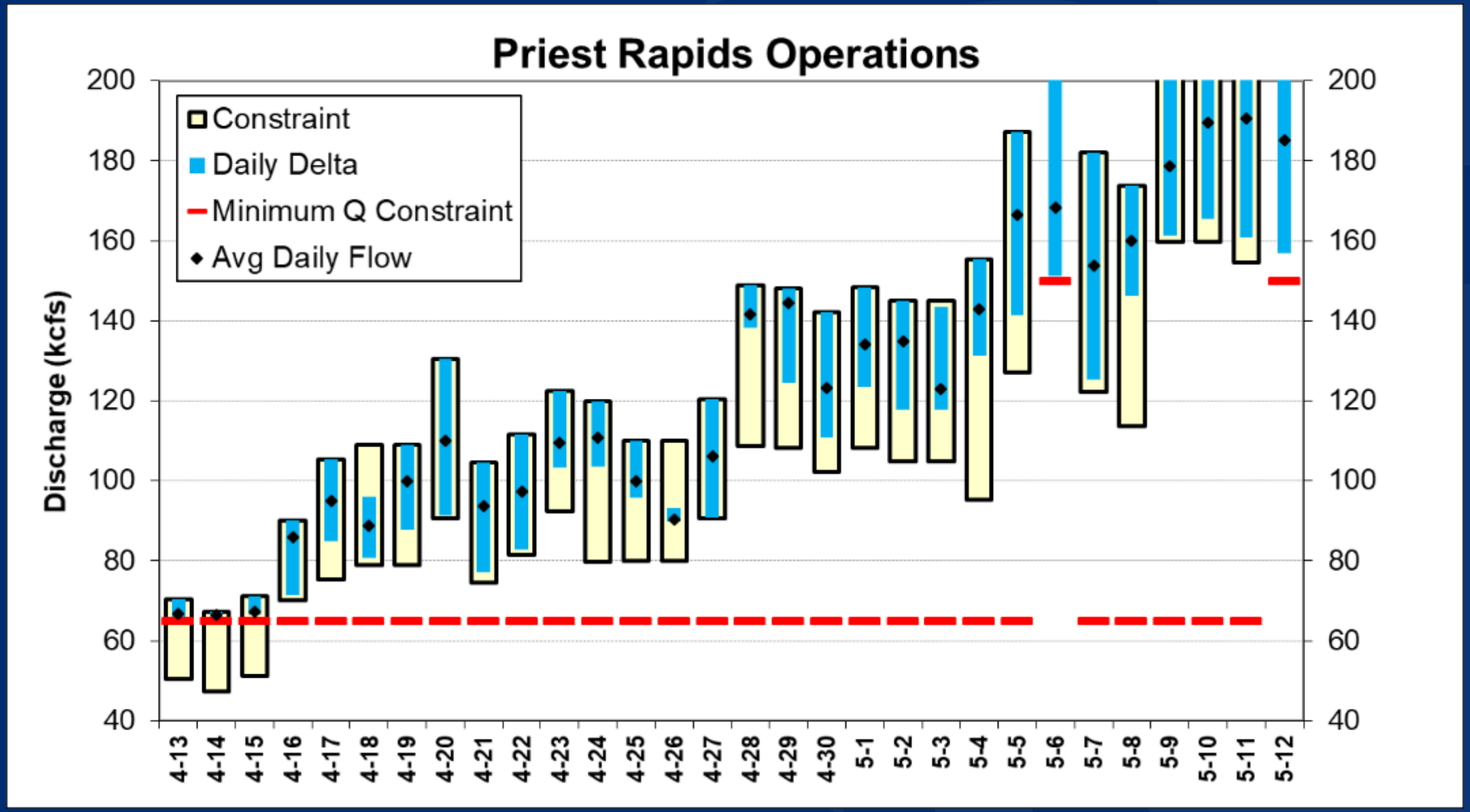
Minimum flows

Flow fluctuation constraints

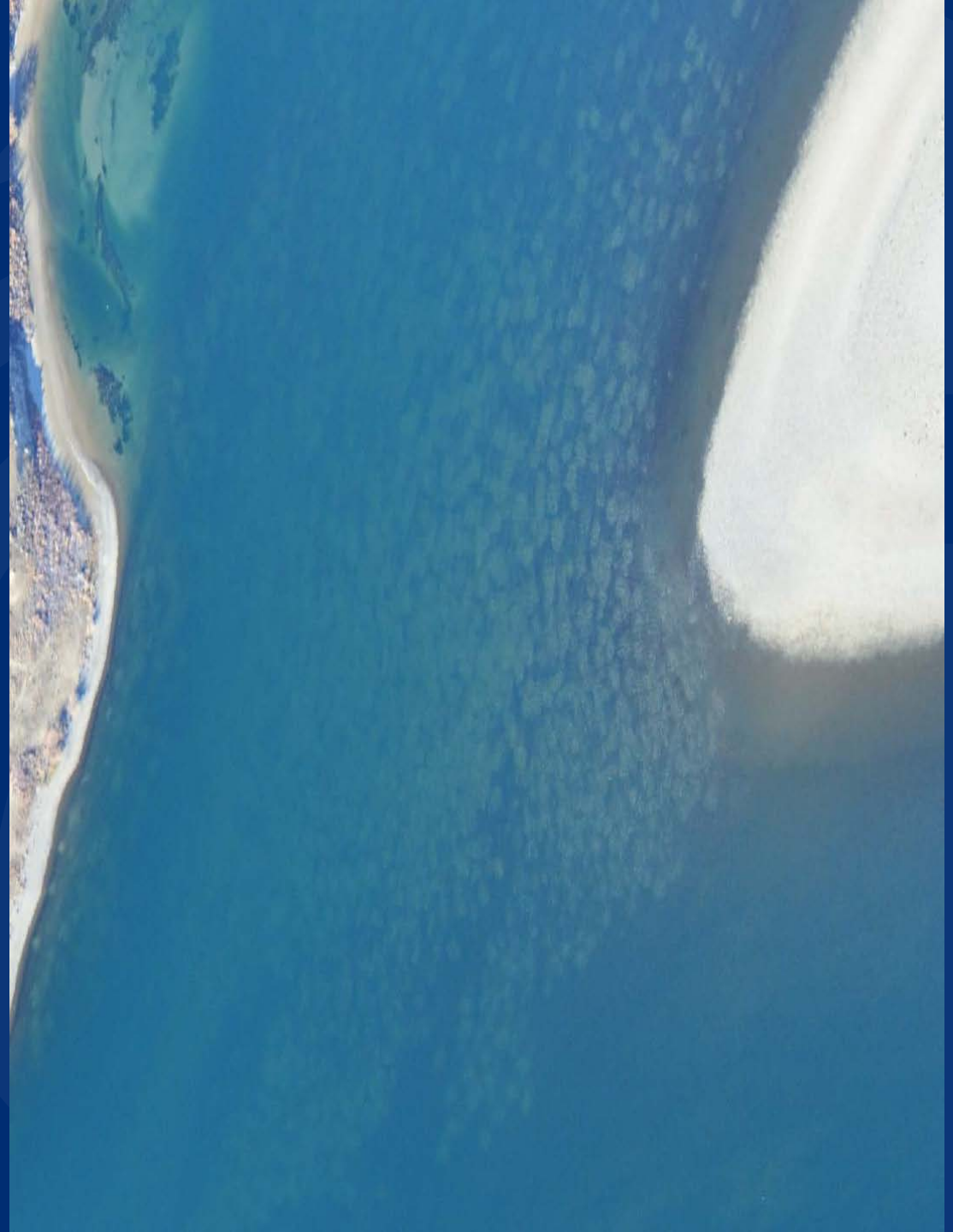

9/6/2012
~80 kcfs
Imagery Date: 9/6/2012


11/3/2011
~120 kcfs
USDA Farm Service Agency
Imagery Date: 9/25/2011

Flow Fluctuation Constraints



Outcomes and Compliance



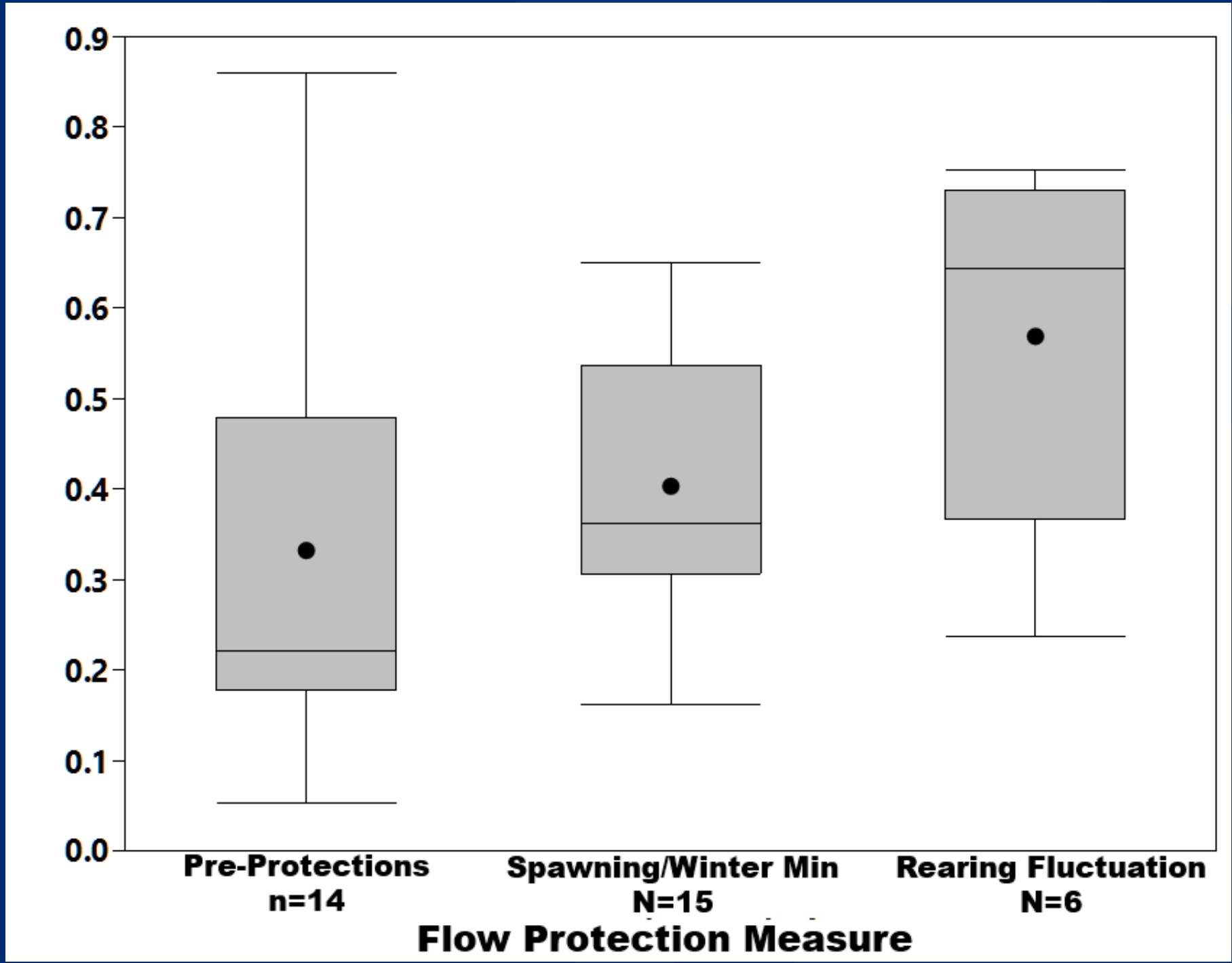
Compliance Learning Curve

Summary of constraints and performance during the Emergence and Rearing Periods under the HRFCPPA, 2004-present.

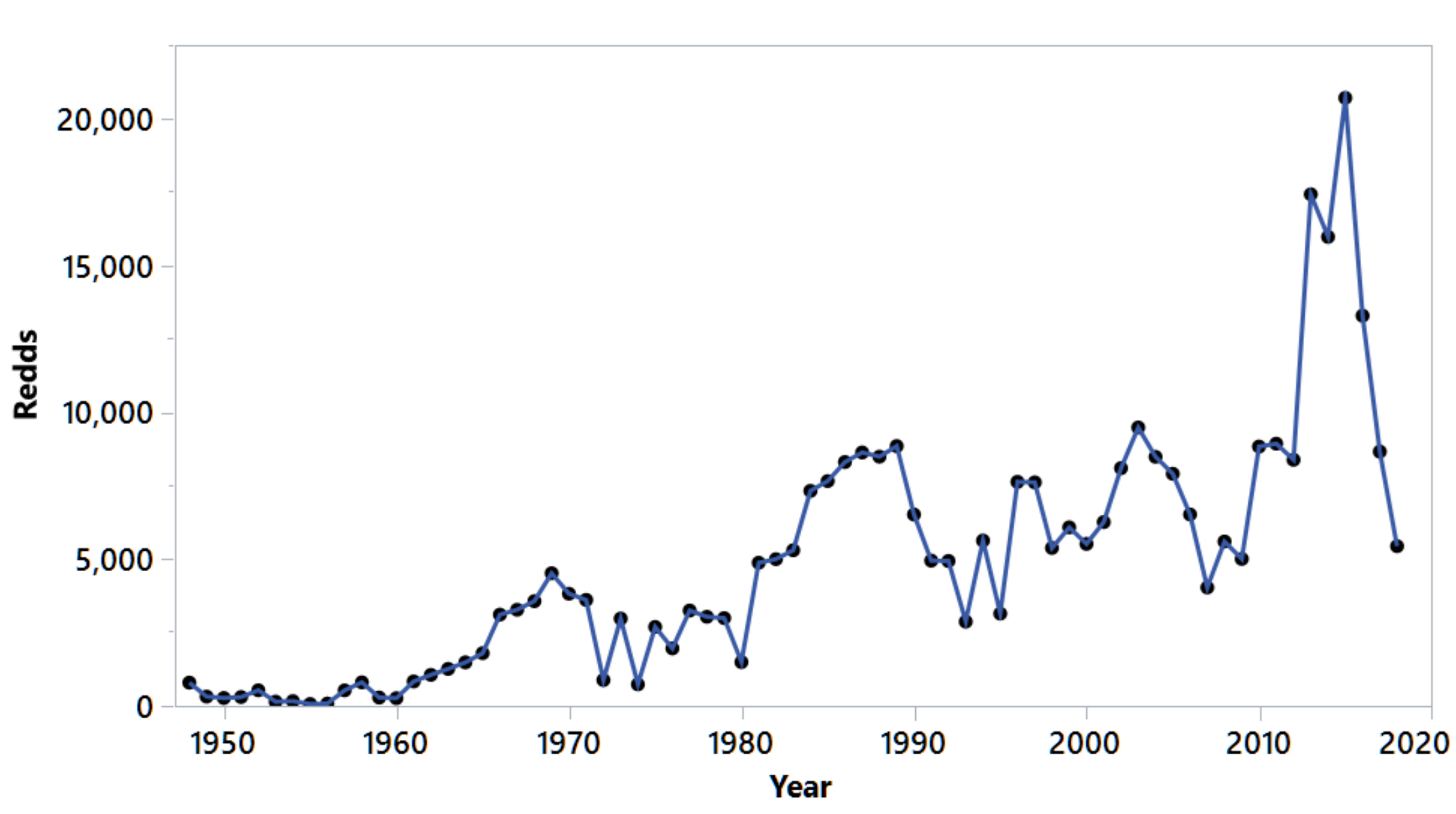
Migration year	Weekday Constraint		Weekend Constraint		Combined			CJAD II weekends – difference between minimum discharge and constraints (kcfs)			
	Targets	Met	Targets	Met	Targets	Met	%	1	2	3	4
2019	69	69	27	27	95	95	100.0	19.4	1.4	32.6	17.2
2018	61	61	24	24	85	85	100.0	5.4	27.1	128.6	3.6
2017	72	72	30	29	102	101	99.0	28.2	25.3	1.1	6.5
2016	68	68	28	27	96	97	99.0	1.1	49.8	-4.0	3.0
2015	70	69	28	28	98	97	99.0	1.1	3.2	7.6	10.3
2014	64	64	25	25	89	89	100.0	4.6	6.0	20.1	21.9
2013	65	64	14	13	79	77	97.5	10.9	36.4	4.5	-27.0
2012	72	72	15	15	87	87	100.0				
2011	81	80	17	15	98	95	96.9				
2010	72	68	14	14	86	82	95.3				
2009	63	57	13	11	76	68	89.5				
2008	57	57	12	9	69	66	95.7				
2007	56	55	11	8	67	63	94.0				
2006	84	66	16	11	100	77	77.0				
2005	76	60	15	7	91	67	73.6				
2004	60	39	13	8	73	47	64.4				
Mean	68.3	62.6	16.0	13.6	84.4	76.2	90.2				

Freshwater productivity

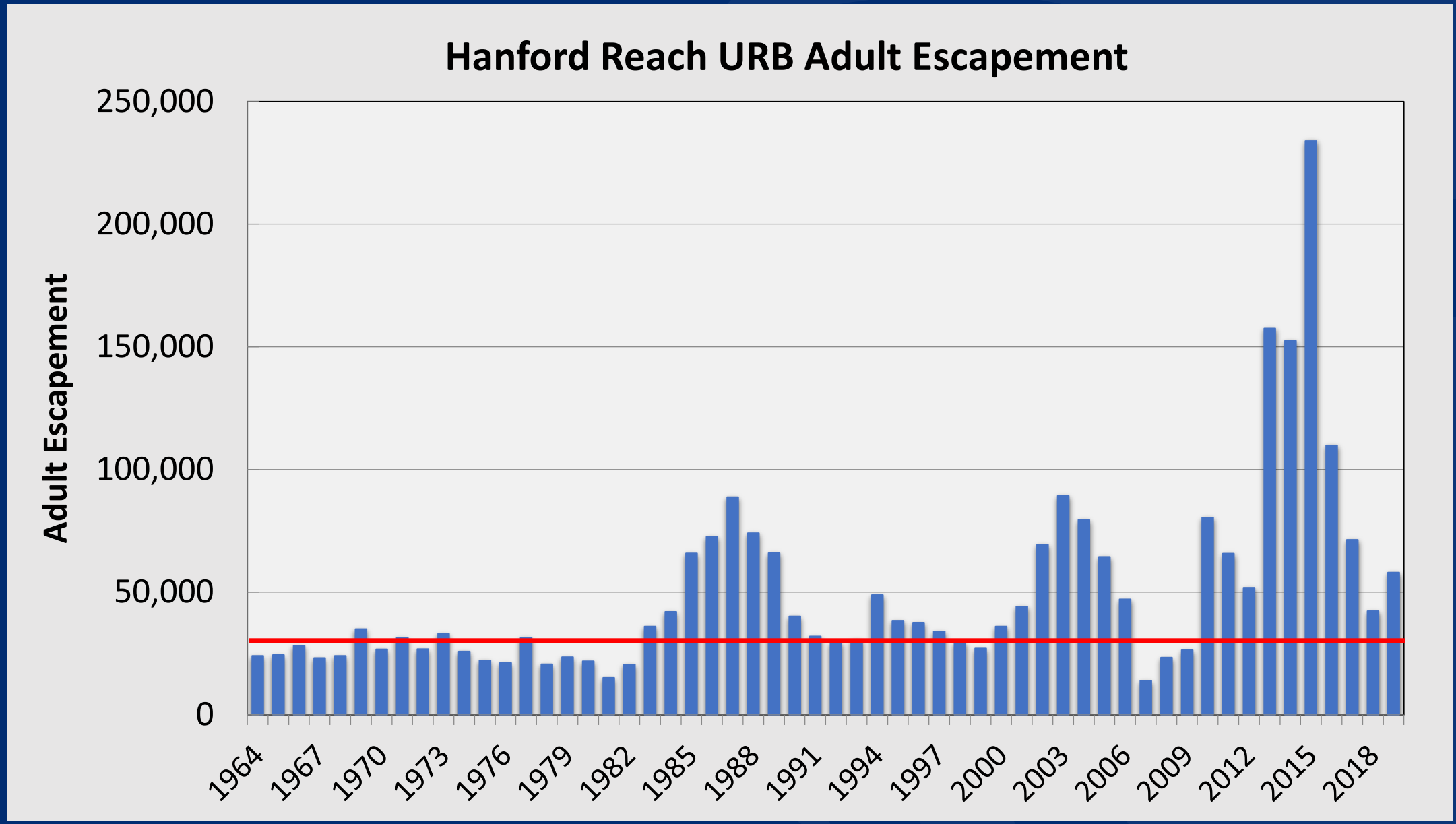
(pre-smolts per egg)



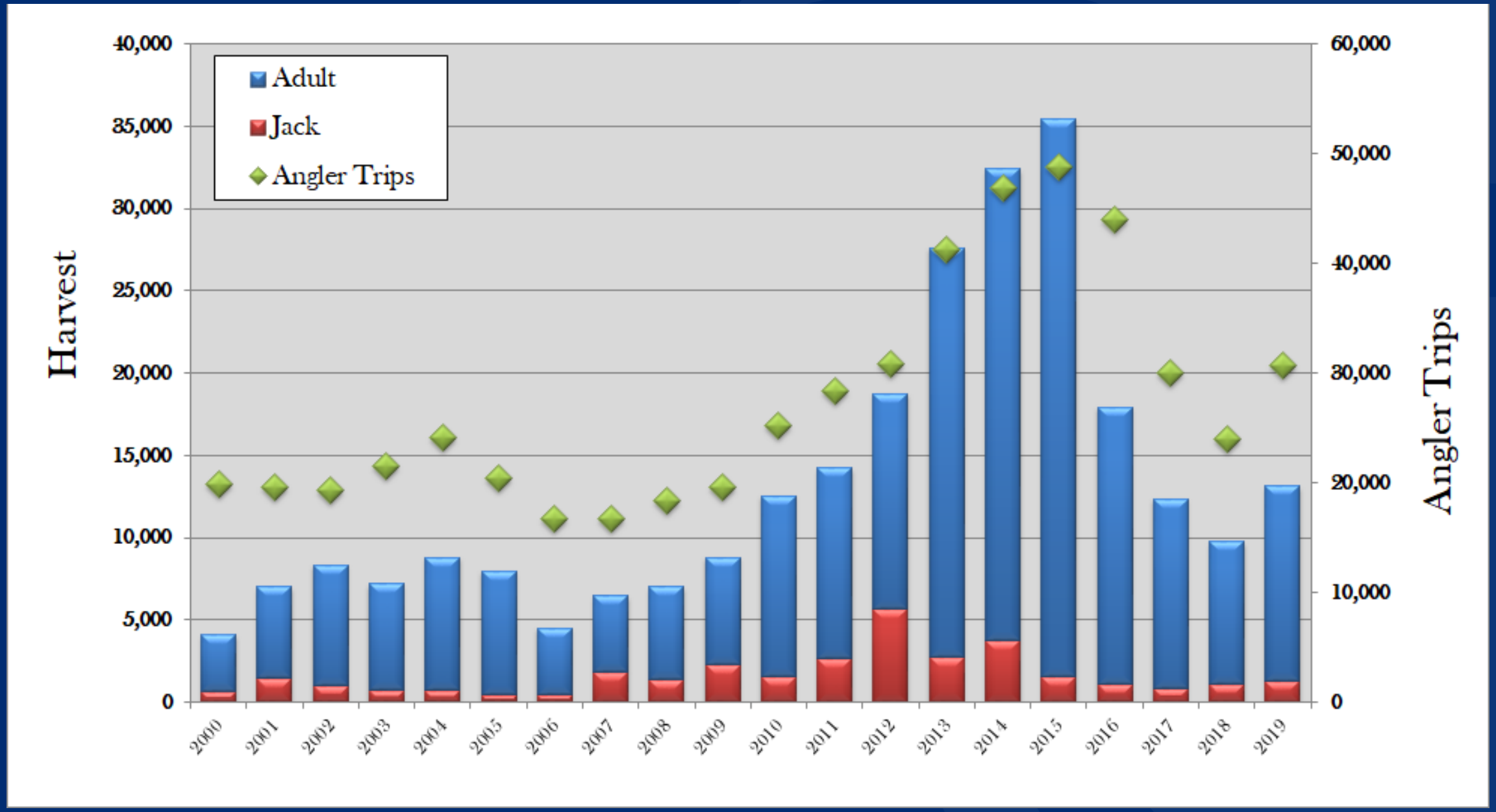
Redd Counts 1948 - 2018



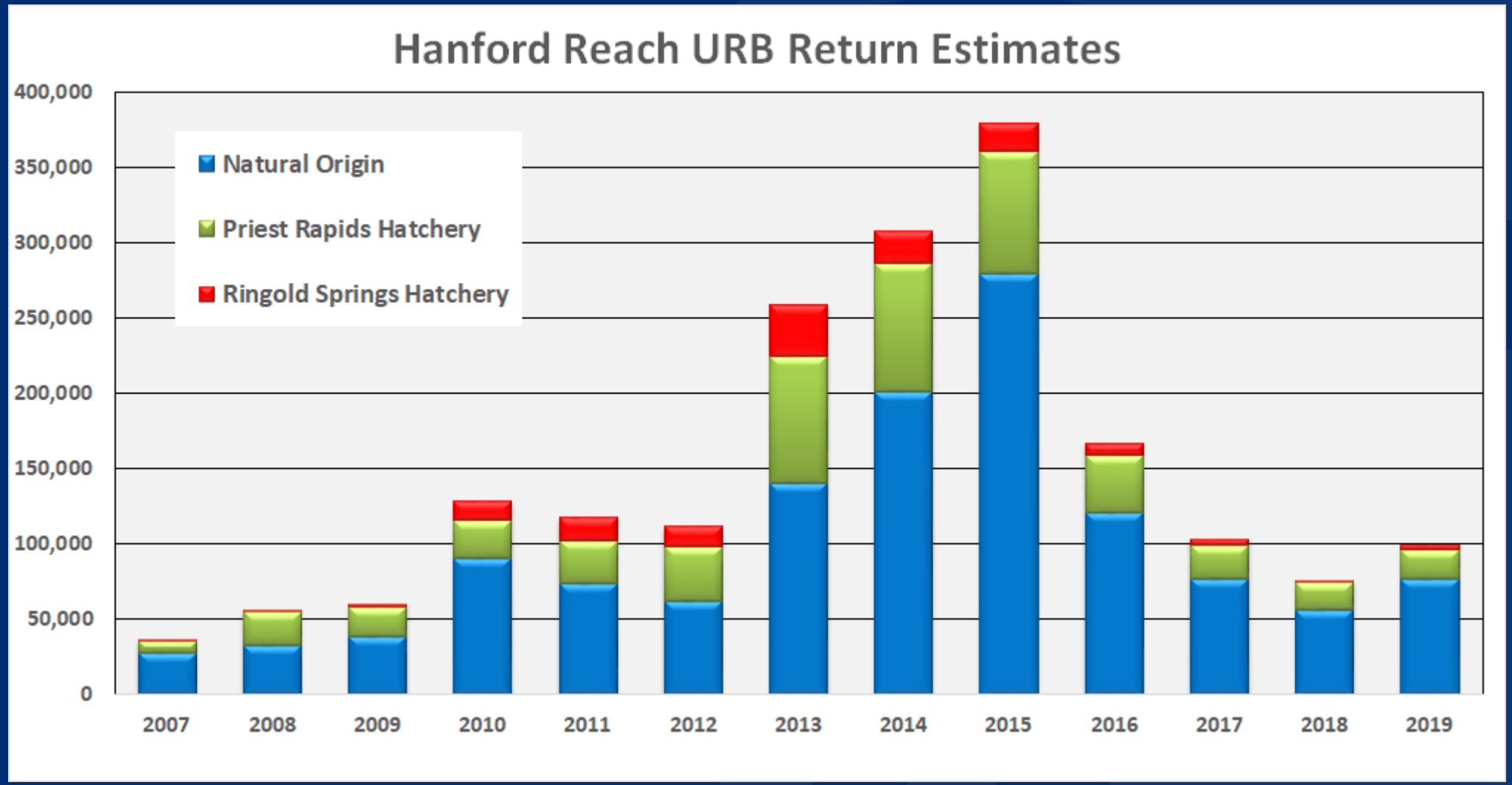
Hanford Reach URB Fall Chinook Escapement Goal = 31,100 Adults



Hanford Reach Sport Fishery and Harvest



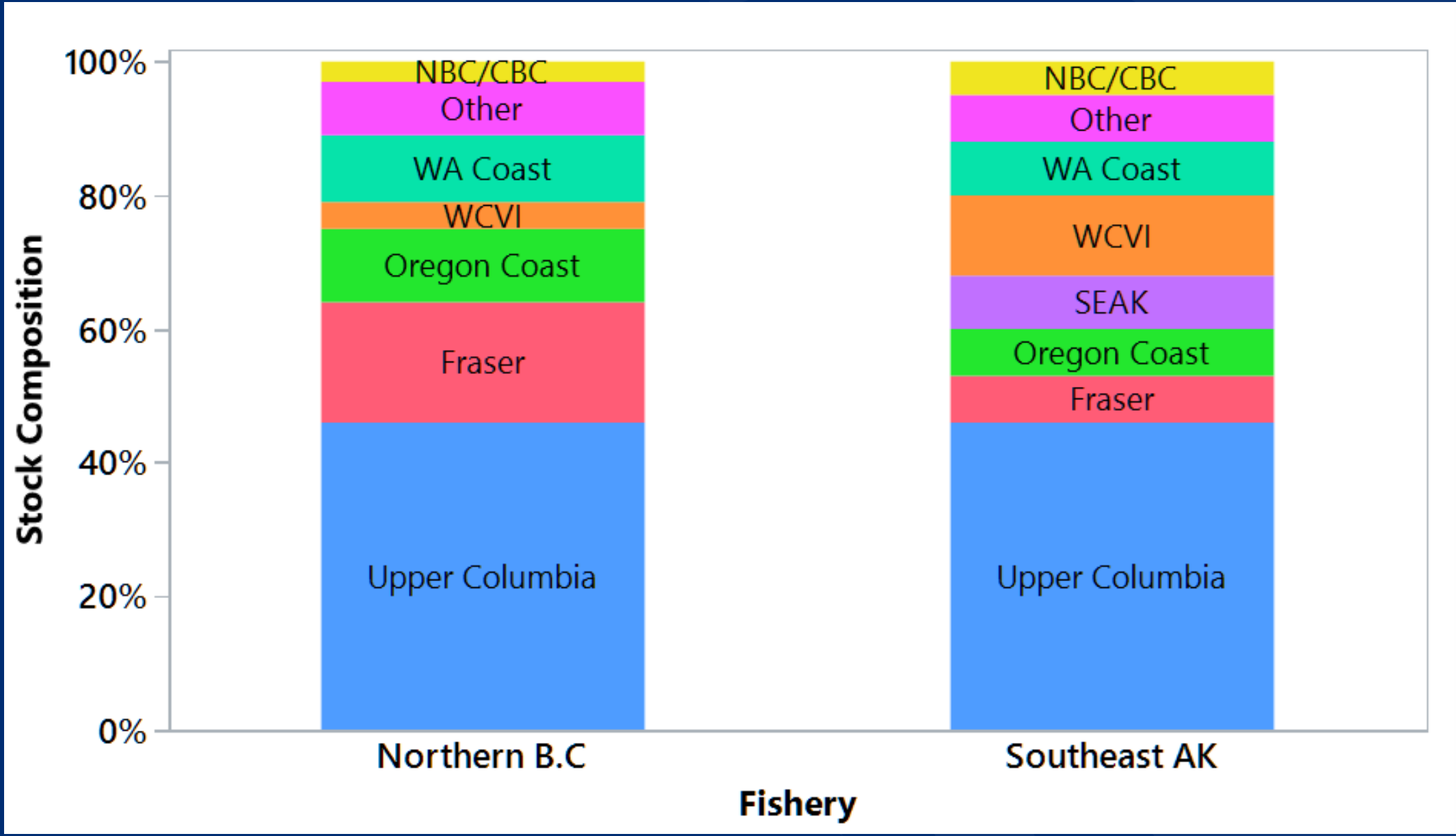
2020 Hanford Reach URB Return Estimates



2019 Return = 87,651 adults

2020 Forecast = 92,700 adults

Contribution to Ocean Fisheries



Thank you for the invitation.

Contacts:

Tom Dresser

TDresse@gcpud.org

Paul Hoffarth

Paul.Hoffarth@dfw.wa.gov

Grant PUD

Powering our way of life.