National
Marine
Fisheries
Service

FCRPS 2004 Biological Opinion

Technical Presentation on 2004 FCRPS BiOp

Sept. 2004

Overview for Today

- Approach to Evaluating Jeopardy
- Updated Proposed Action
- Proposed Hydro Actions and the Reference Operation
- Proposed Non-Hydro Actions and the "gap"
- Net Effect of Actions and Jeopardy Determinations

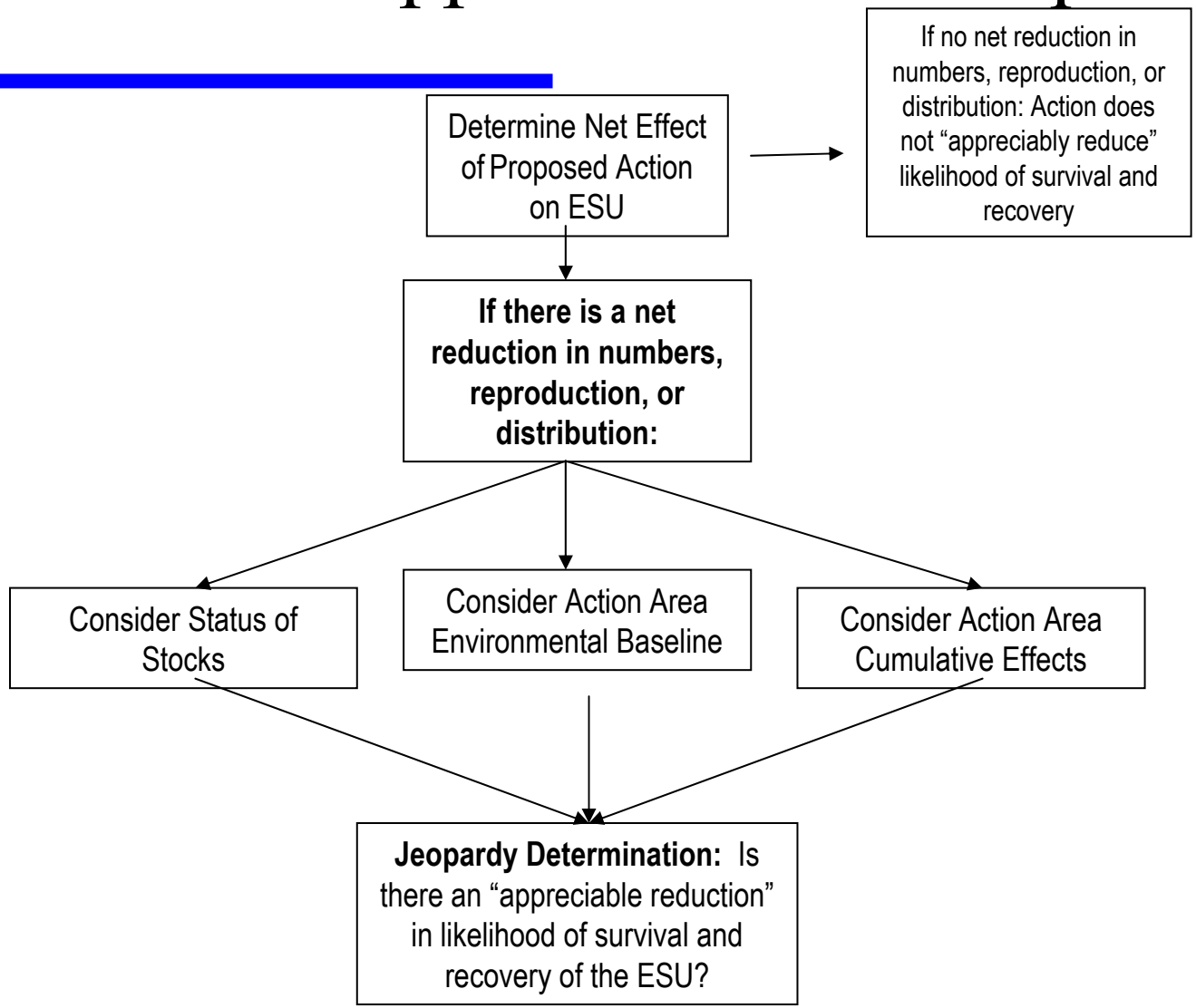
Draft Biological Opinion Schedule

- 2000 Biop remanded by Judge Redden
- Final is due by Court order on November 30th
- To meet schedule, comments requested by Oct 8th
- Technical meetings w/states and tribes in September
- Policy meetings w/states and tribes Oct 5, 8, 15

National Marine Fisheries Service

FCRPS Biological Opinion 2004

General Approach of the Biop



Orientation to the Biop - Key Sections

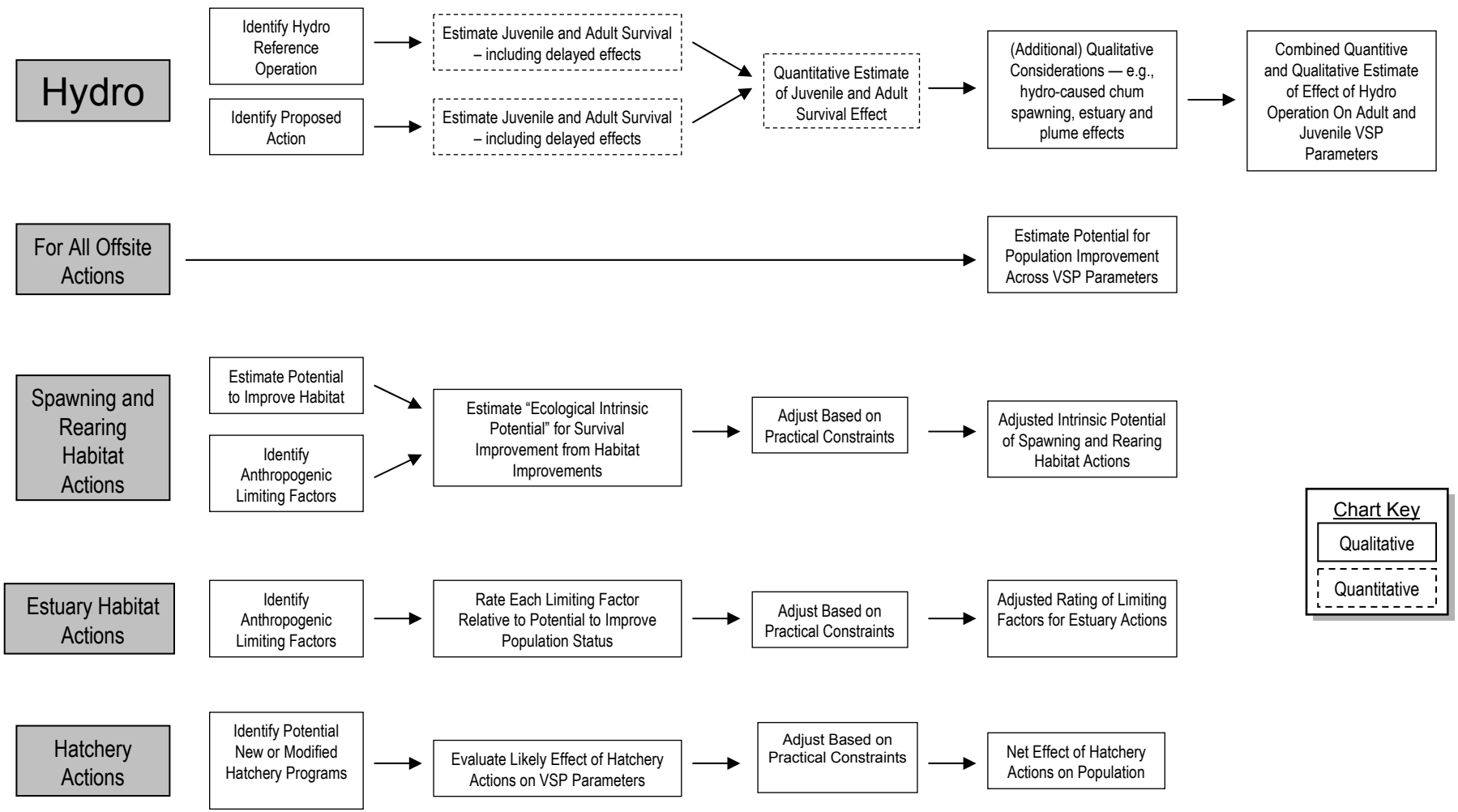
- Section 1.2 (p. 1-5): Overview of methods
- Section 5: Environmental Baseline
  - Reference Operation description (p. 5-4)
- Section 6: Effects of Proposed Action
  - Methods (p. 6-1)
  - Results organized by ESU
  - Within ESU, by hydro, non-hydro, and net effects
  - Table 6.9 = summary (p. 6-46)
- Section 7: Cumulative Effects
- Section 8: Conclusions
  - Factors considered (p. 8-2,3)
- Section 10: Incidental Take Statement

Application of Jeopardy Standard

- Draft Biop
  - Uses regulatory definition of "to jeopardize"
    - Proposed action cannot "appreciably reduce" the likelihood of survival and recovery of the ESU
  - Separates baseline effects of hydro system from proposed action hydro effects
    - Discretionary annual operations
    - "Reference operation"
  - Distinguishes between proposed action and other regional activities in environmental baseline and cumulative effects

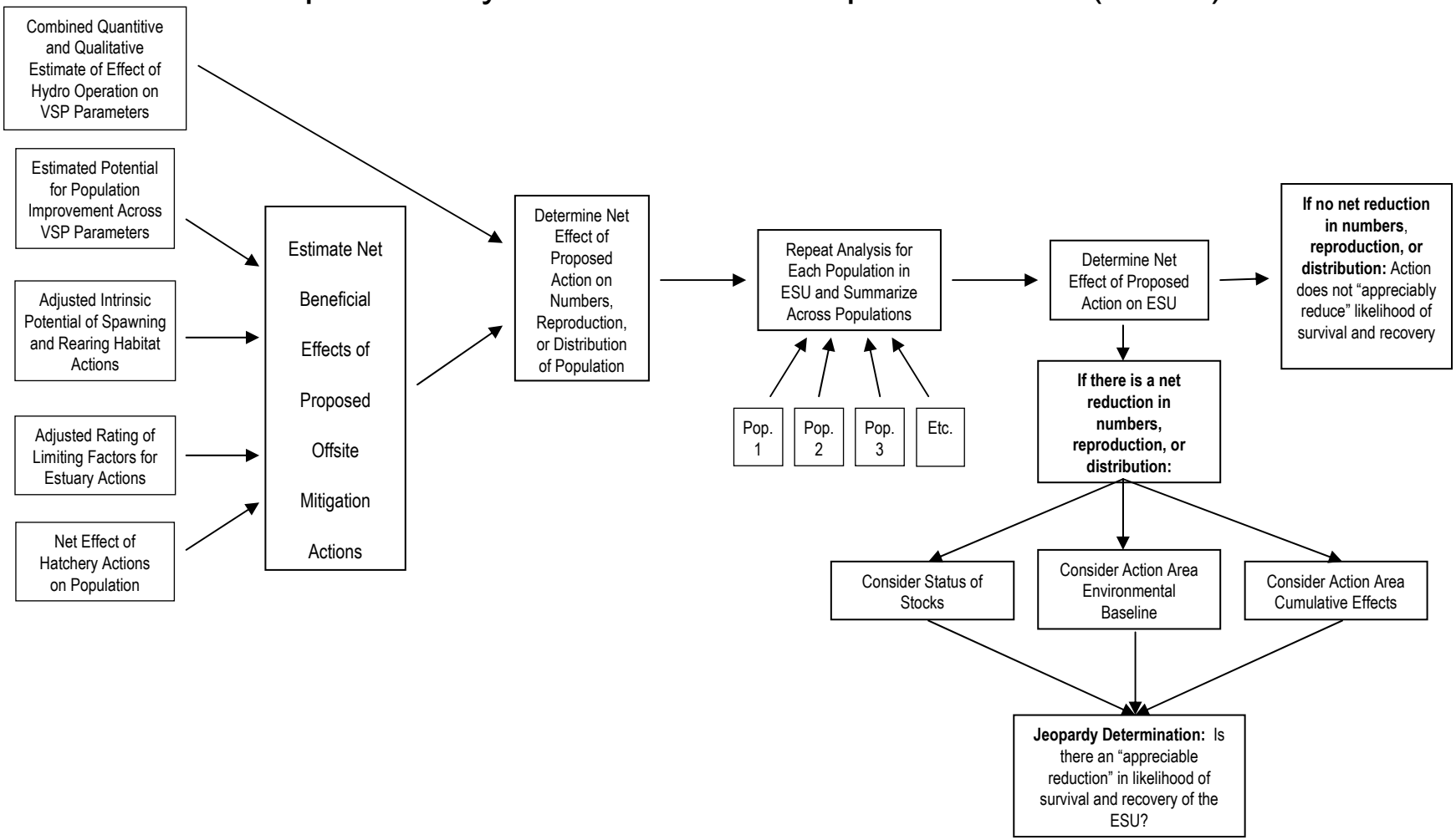
NOAA Fisheries DRAFT

Steps in Analysis of Effects of Proposed Action (Part 1)



NOAA Fisheries DRAFT

Steps in Analysis of Effects of Proposed Action (Part 2)



Adverse Modification of Critical Habitat

- In addition to jeopardy determination, must also make adverse modification determination
- Three ESUs still have critical habitat
- Others will soon have proposed critical habitat
- Recent court decisions question NOAA's regulations for this determination
- Because we are still reviewing those decisions, no determination in this draft

Updated Proposed Action

- Why is there a UPA, instead of the RPA in the BiOp?
- Components of the UPA

ACTION AGENCIES PROPOSED ACTION

2010 Theoretical Survival

Reference Operation Survival

Survival Gap

Action Agencies Proposed Actions

1. Hydro-system Actions to benefit all listed fish through hydro-system

- Dam Improvements:
  - Ice Harbor RSW (2005)
  - Lower Monumental RSW (2006) *
  - Little Goose RSW (2007) *
  - The Dalles Physical Guidance Device (2007)
  - McNary RSW (2008) *
- Reduce juvenile transport in April
- Continue fish spill operations
- Manage water for fish purposes

2. Predator Control Actions to benefit all listed fish through hydrosystem

- Redistribute Caspian terns
- Increase Northern Pikeminnow rewards
- Investigate other actions

3. Other Actions

- Tributary actions targeted to Upper Columbia River listed fish informed by sub-basin plans where feasible
- Estuary improvements that target Snake River fall Chinook, but also benefit all listed fish in lower river
- Safety net hatchery program targeted to Snake River Sockeye

2004 Current Survival

Hydro Proposed Actions

Ongoing actions since 2000, including dam operations and structural improvements for juvenile and adult fish passage.

* Planning dates, actual dates to be determined through collaboration with states and tribes in Regional Forum process

Assessment to Guide Yearly Operations

Reference Op

Proposed Op

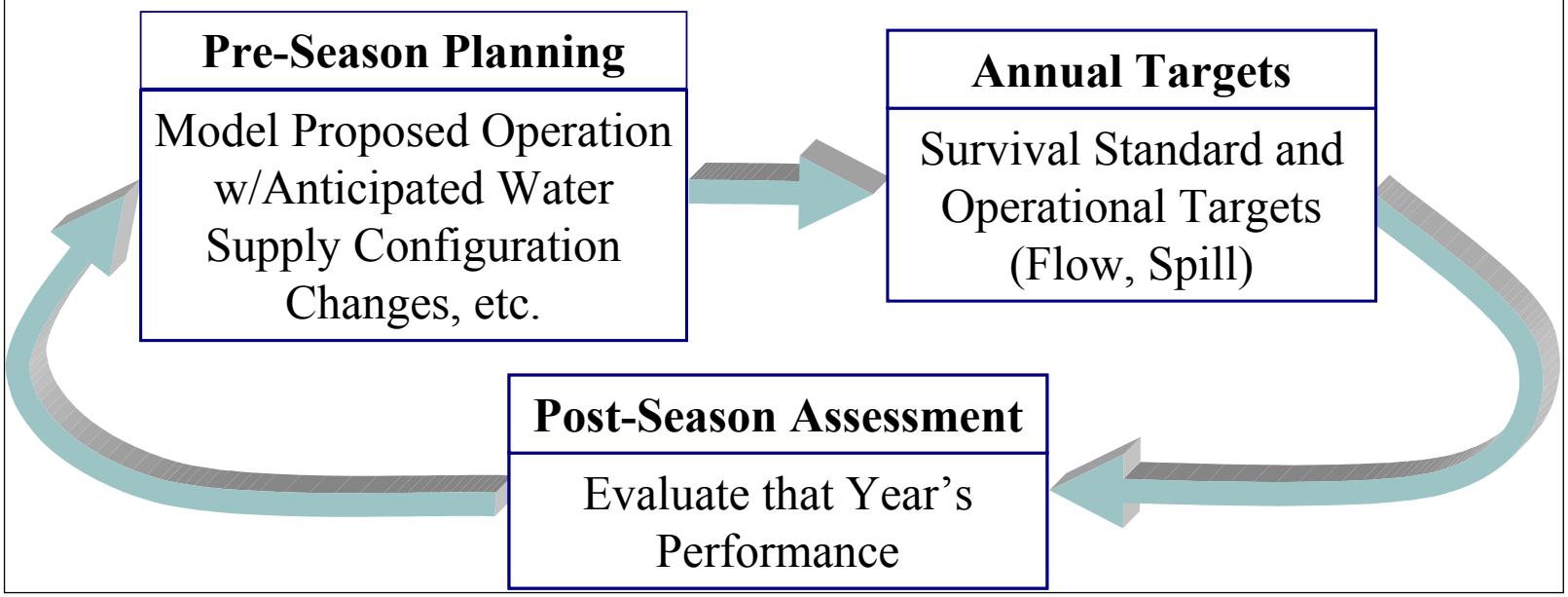
Current Op

Non-Hydro Actions

Mean Gap from NOAA

(encompasses 1994 – 2003)

Annual Planning and Assessment Cycle



Habitat Metrics in Updated Proposed Action

Tributary Habitat Performance Measures

- Streamflow: cubic feet per second of rate of water leased or purchased and/or conserved
- Entrainment: number of screen problems resolved
- Channel morphology: miles of access or complexity restored
- Riparian condition: miles of riparian habitat protected or enhanced

Estuary Habitat Performance Measures

- Species composition
- Stock population age/size structure
- Stock identity
- Temporal presence (the time when juveniles are present)

Reporting in the Draft BiOp

Annual plans and reports

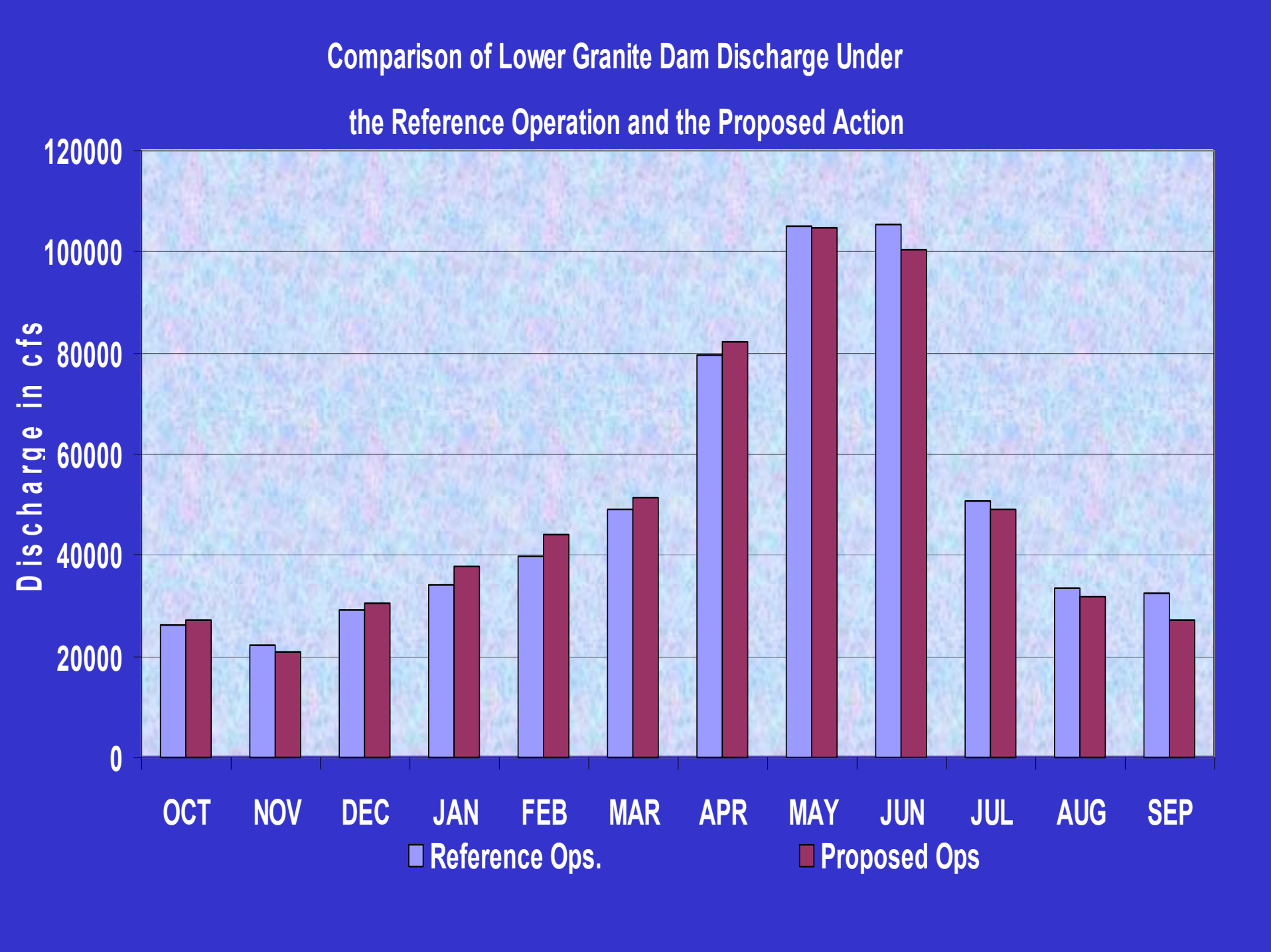
- implementation plan
- water management plan
- progress report

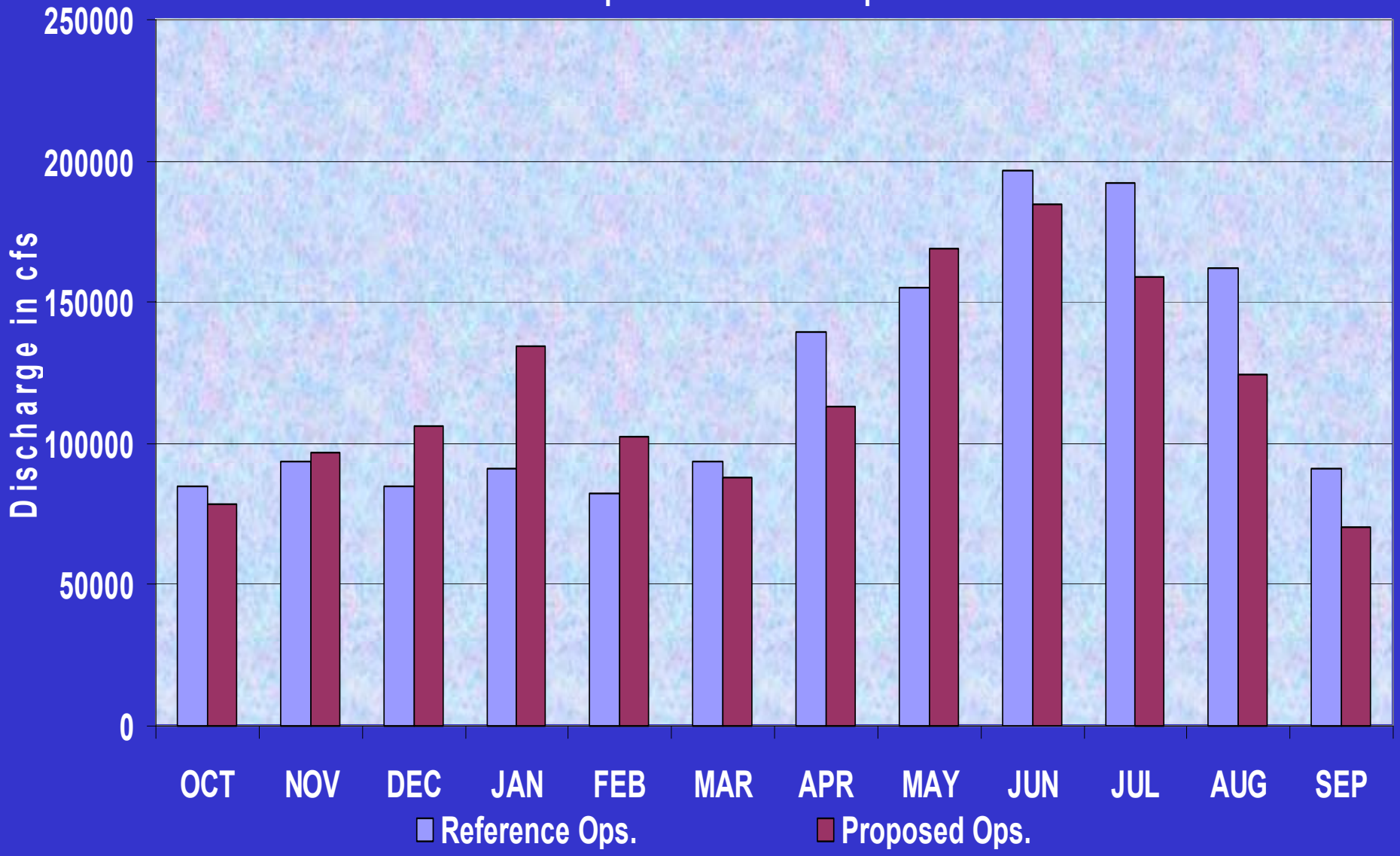
Comprehensive evaluations:

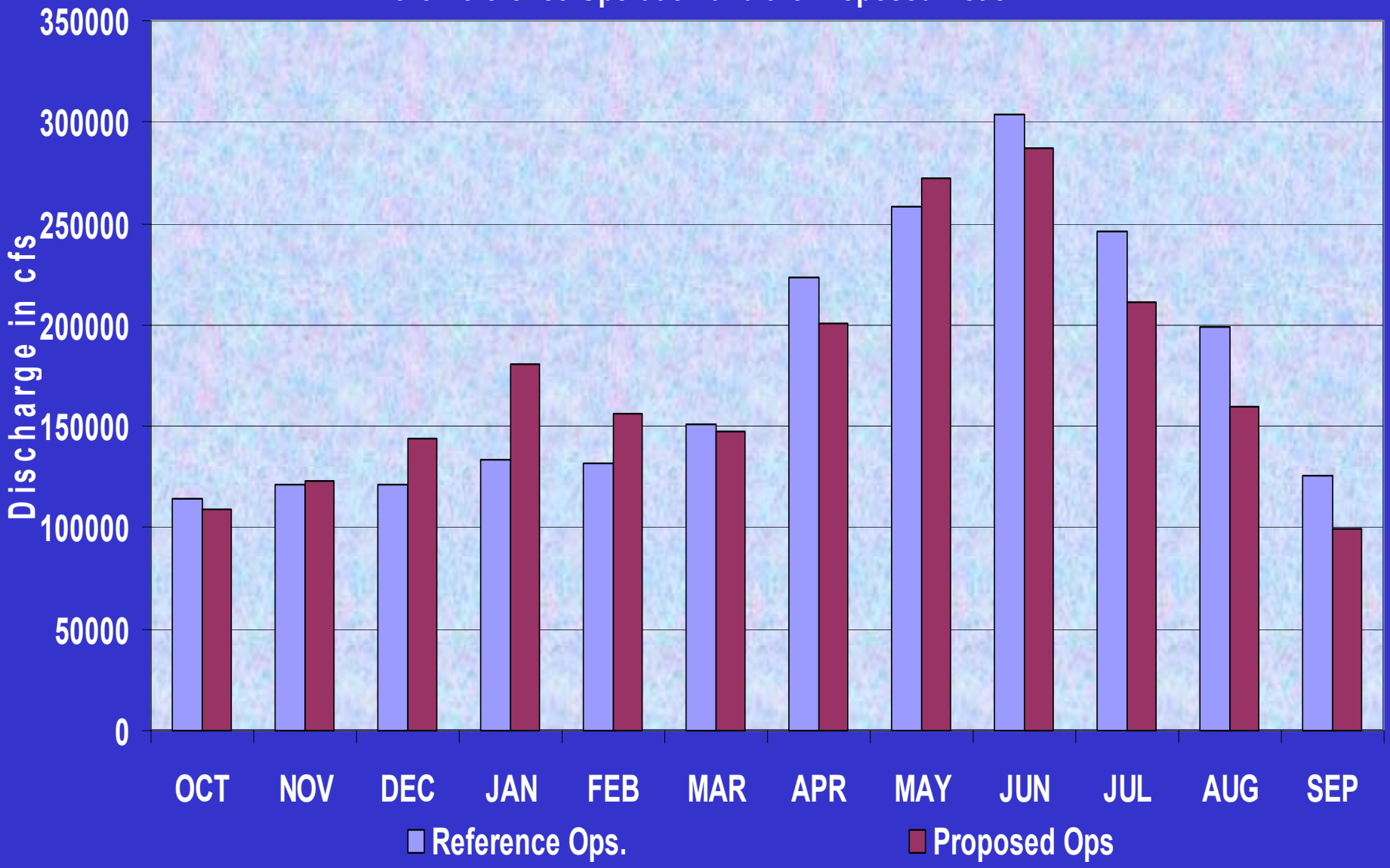
2007, 2010

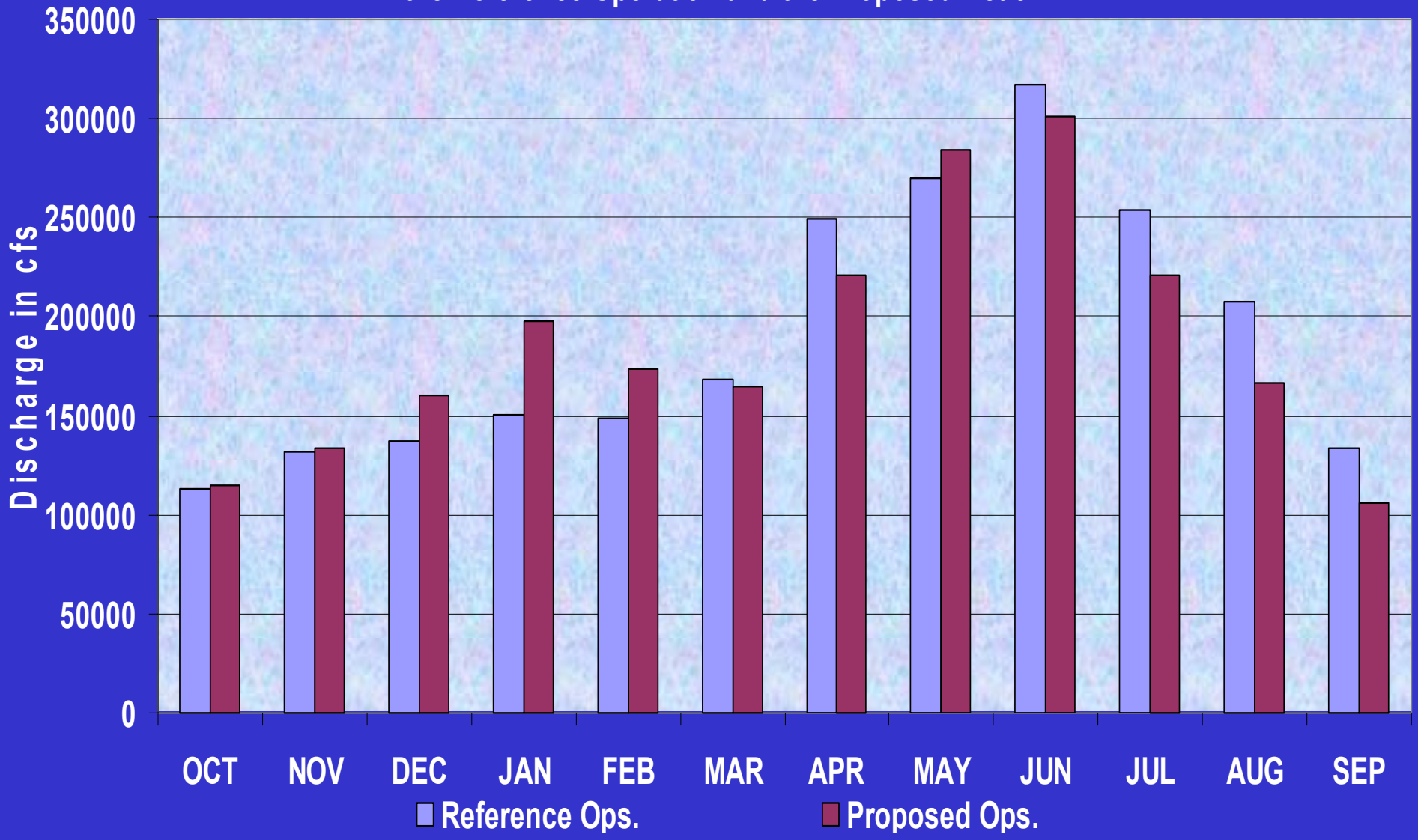
Proposed Hydro Actions and the Reference Operation

- Flow objectives and reservoir operations:
  - 1) P.A. -- Same spring/summer flow objectives and fed'l. reservoir draft limits as in 2000 BiOp, operate John Day reservoir at MIP from mid-April thru Sept.; operate reservoirs to URCs and refill by June 30; include all federal irrigation withdrawals
  - 2) Ref. -- Higher spring/summer flow objectives with no fed'l. reservoir draft limits, refill by June 30, operate John Day reservoir at MOP from April-Sept., and no federal irrigation withdrawals
  - 3) Results (P.A.-Ref.): little/no change in spring flows; -3.3 kcfs lower flows in Snake and -38 kcfs lower flows in Columbia river in summer; almost 12 kcfs higher flows during fall and winter


Comparison of Lower Granite Dam Discharge Under
the Reference Operation and the Proposed Action
Discharge in cfs
120000
100000
80000
60000
40000
20000
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
Reference Ops.
Proposed Ops


Comparison of Priest Rapids Dam Discharge Under
the Reference Operation and the Proposed Action
Discharge in cfs
250000
200000
150000
100000
50000
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
Reference Ops.
Proposed Ops.


Comparison of McNary Dam Discharge Under
the Reference Operation and the Proposed Action
Discharge in cfs
350000
300000
250000
200000
150000
100000
50000
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
Reference Ops.
Proposed Ops


Comparison of Bonneville Dam Discharge Under
the Reference Operation and the Proposed Action
Discharge in cfs
350000
300000
250000
200000
150000
100000
50000
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
Reference Ops.
Proposed Ops.

Proposed Hydro Actions and the Reference Operation

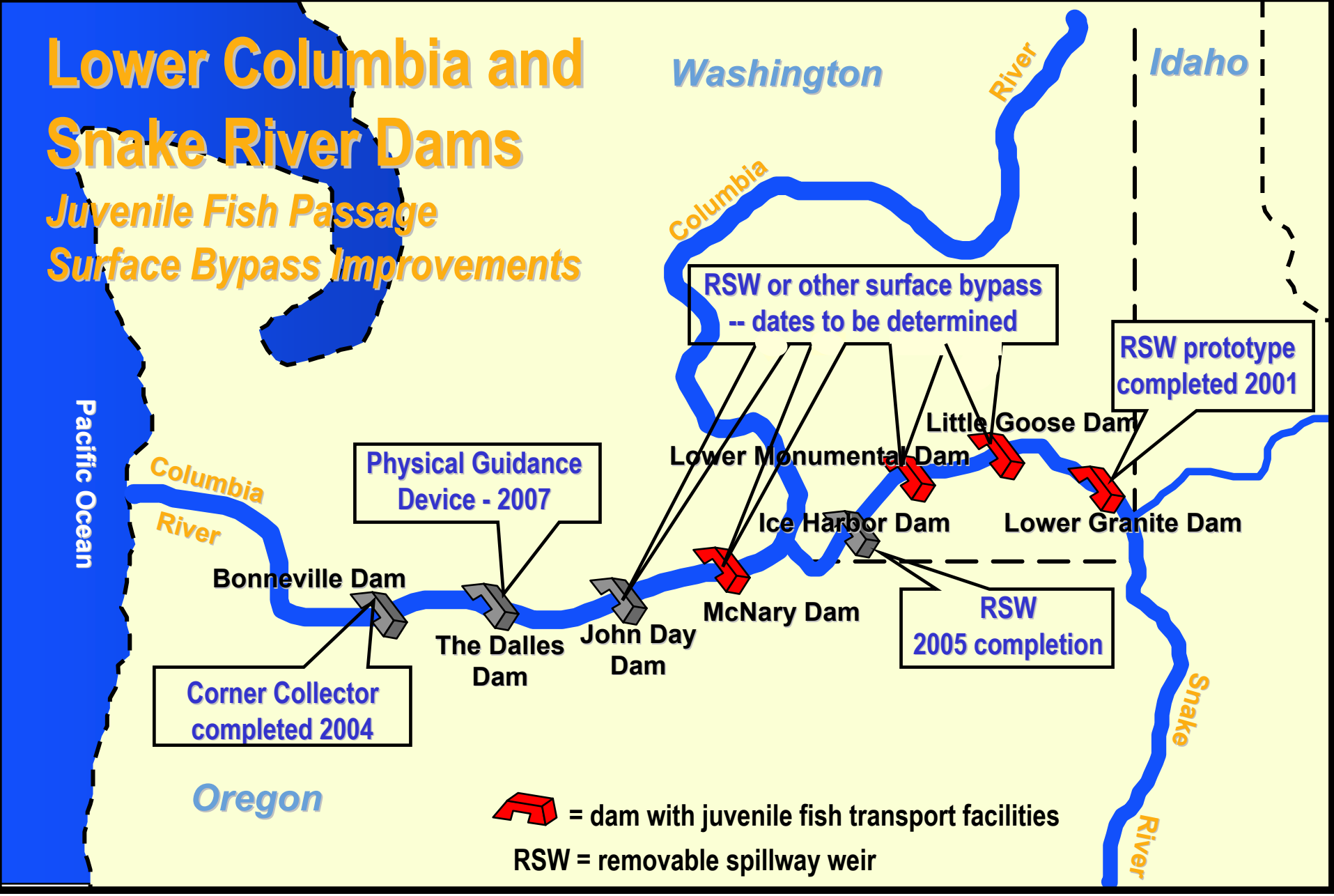
- Spill for fish passage
  - 1) P.A. – Same spring and summer spill operation as in 2000 BiOp
  - 2) Ref. – provides 24-hour spill at generally higher levels in spring; no difference from P.A. in spill operations at Snake R. or MCN and TDA dams, but 24-hour spill at generally higher levels at JDA and BON dams in summer.

Proposed Hydro Actions and the Reference Operation

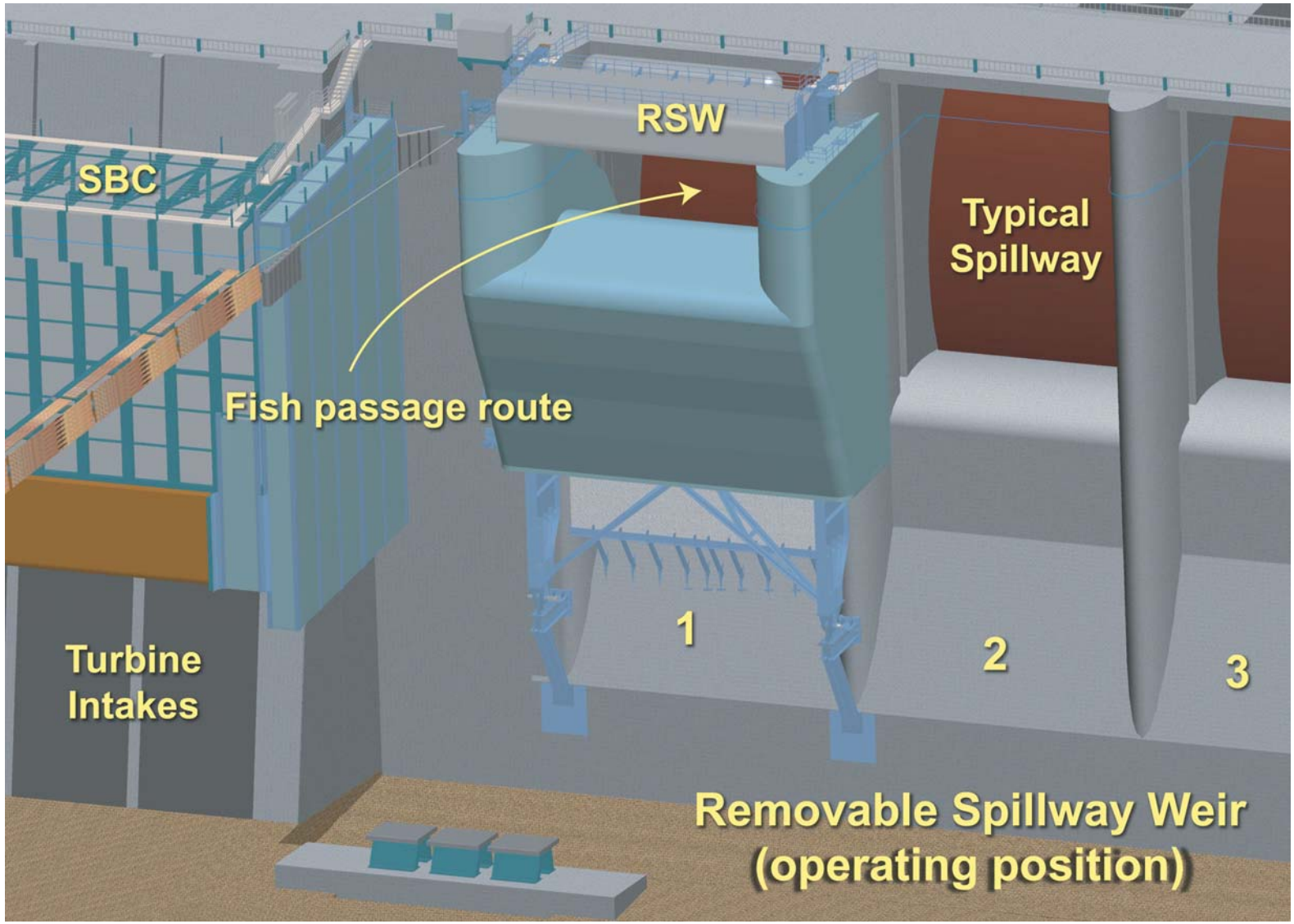
- Fish transport operations:
  - 1) P.A. – In spring and summer, same transport operations as in 2000 BiOp, except reduce collection/transport in early April.
  - 2) Ref. – In spring, lower flow threshold and reduce collection and transport during April; in summer, same transport operation as in P.A.

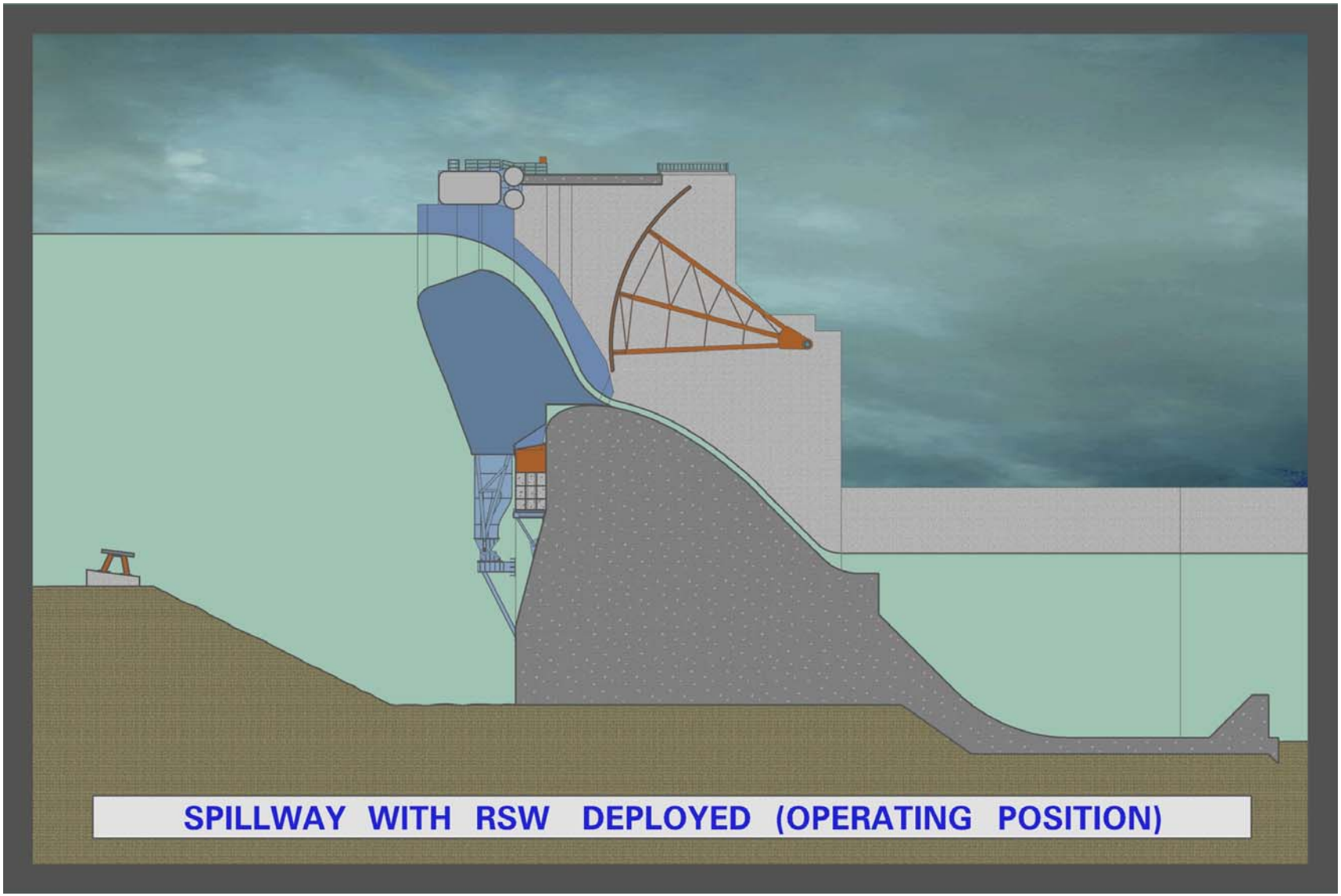
Proposed Hydro Actions and the Reference Operation

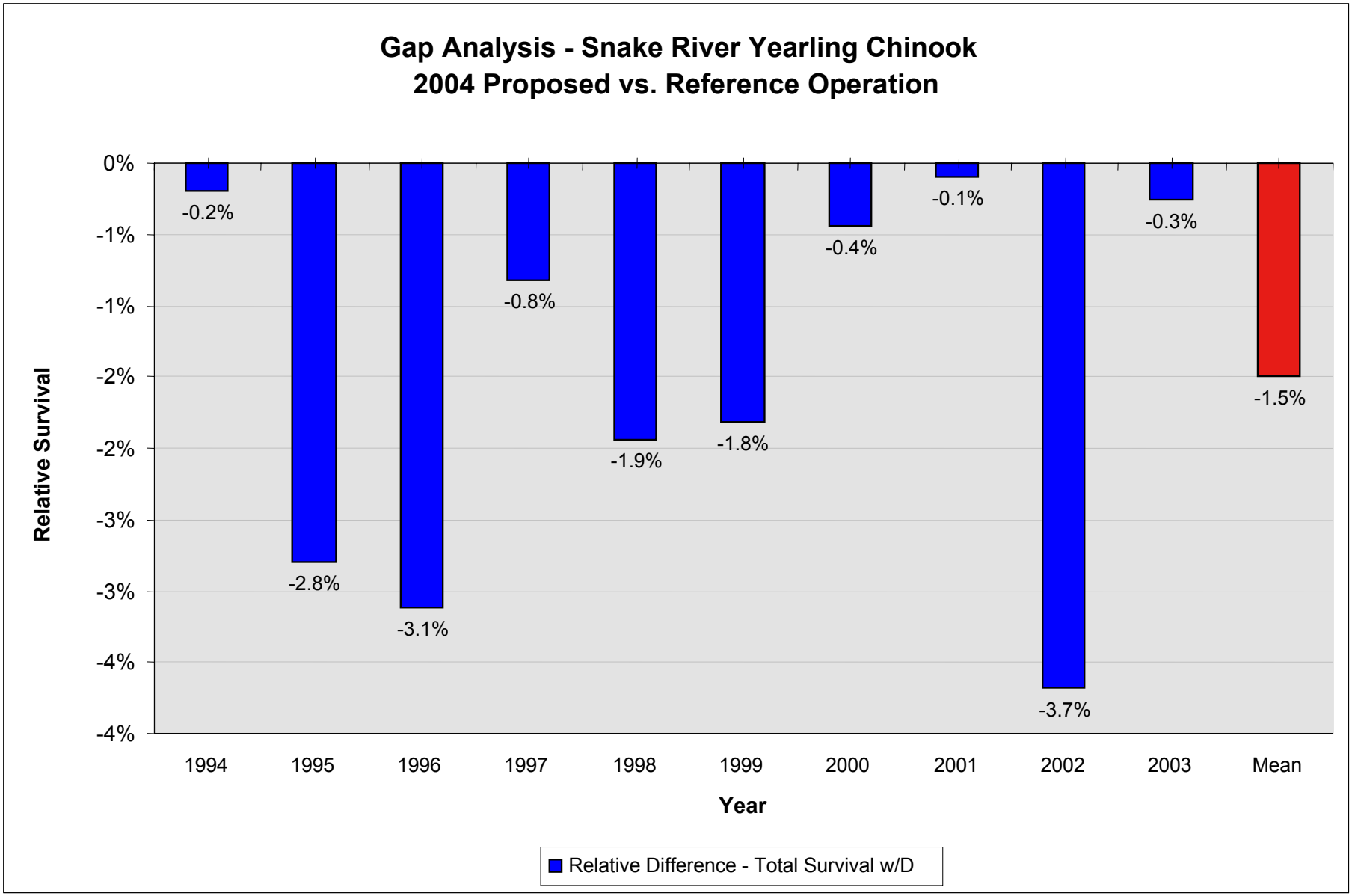
- System configuration improvements:
  1) P.A. – 2004 improvements include RSWs at LWG and IHR, with a corner collector at BON-II. Long-term improvements include RSWs at all Snake R dams, and MCN, possibly JDA and forebay guidance device at TDA; add'l. fish bypass system, debris handling and screen improvements and/or outfall relocations; improvements in turbine operations; and new juvenile and adult PIT-tag detection facilities.
  2) Ref. – Same improvements as specified in the 2004 P.A.



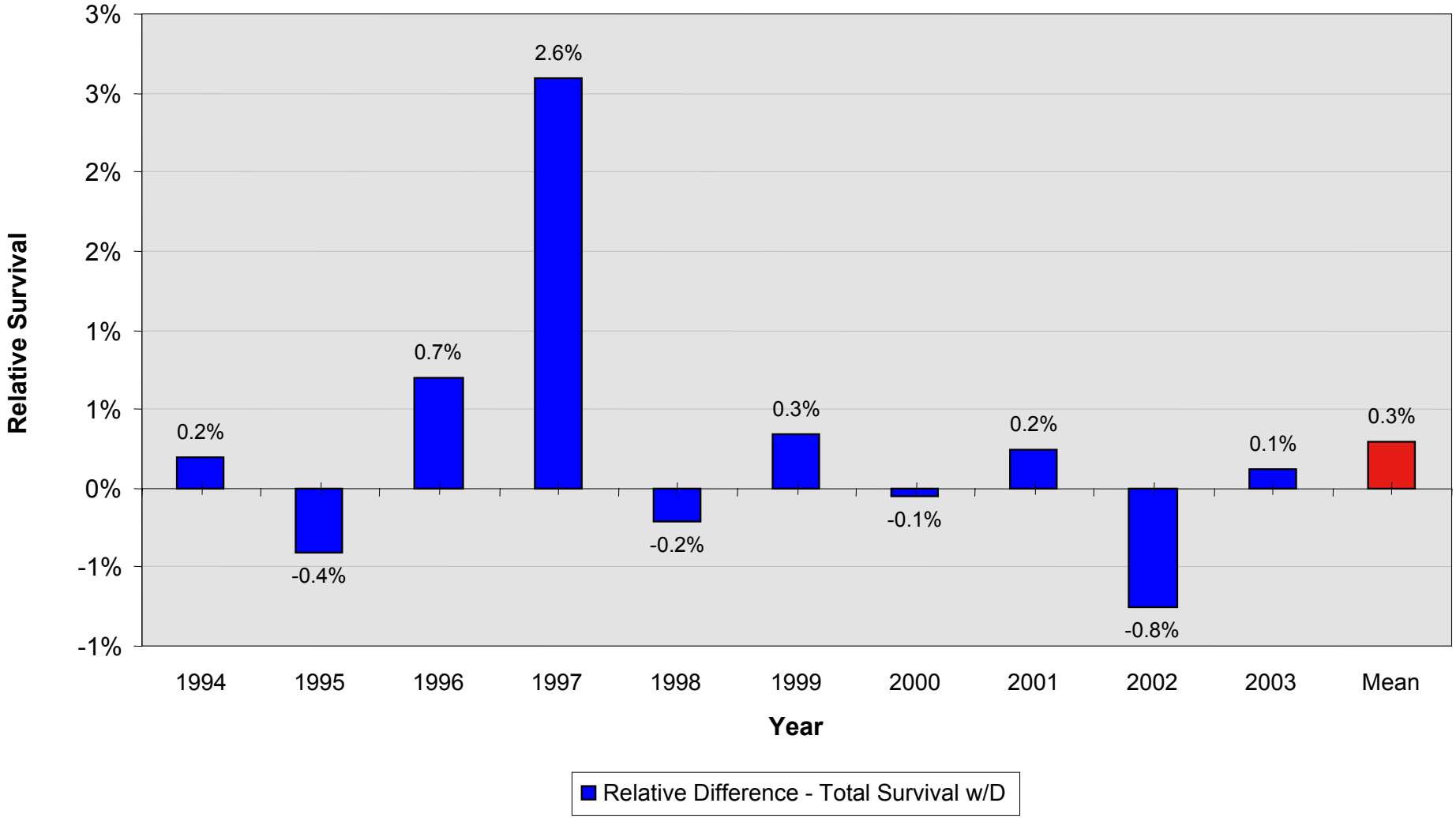
NOTE: Other than projects with completion dates shown, actual construction and schedules for these features will depend on results of on-going research, regional collaboration and prioritization, and funding.

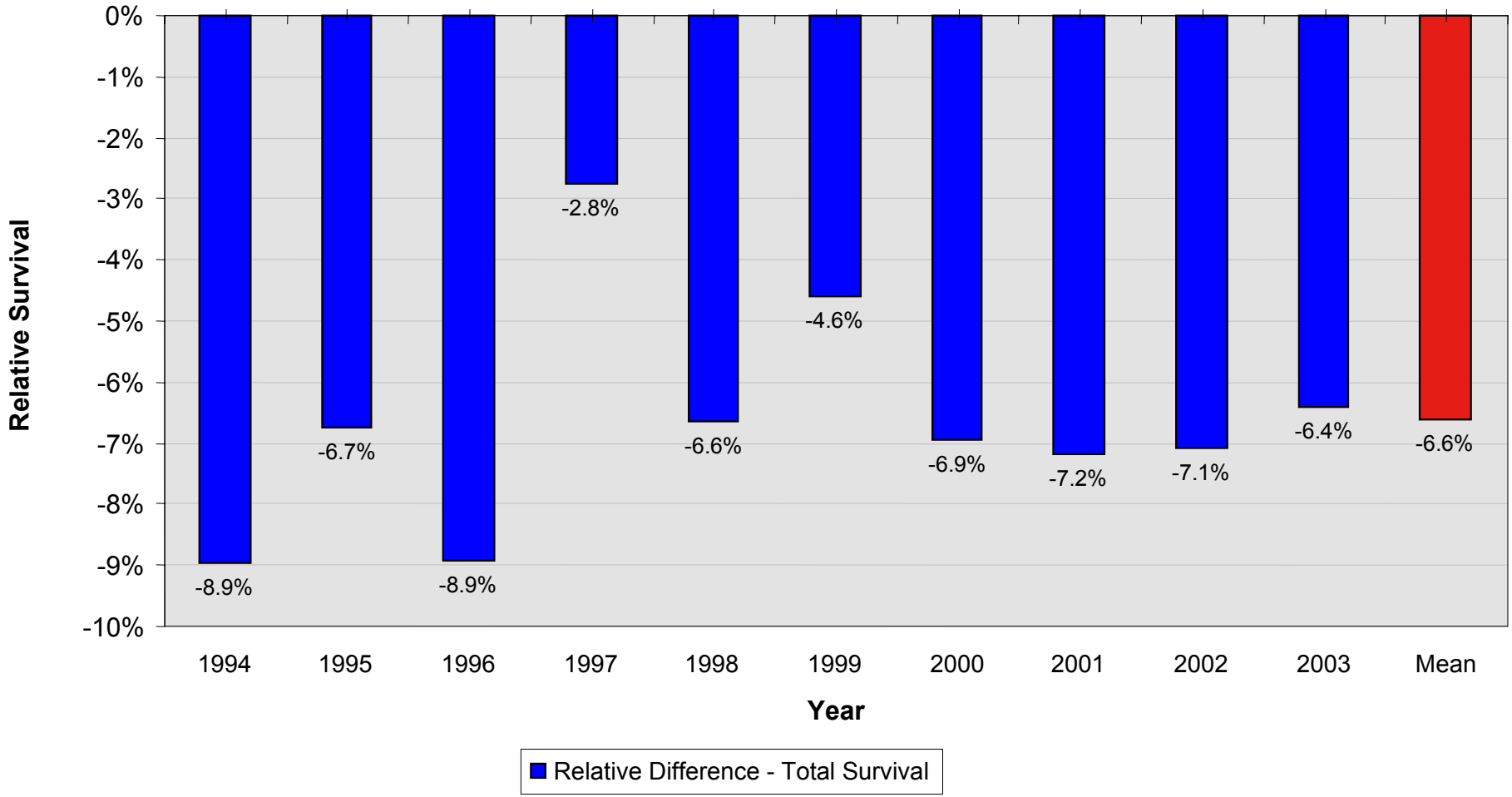

RSW
SBC
Typical
Spillway
Fish passage route
1
2
3
Turbine
Intakes
Removable Spillway Weir
(operating position)

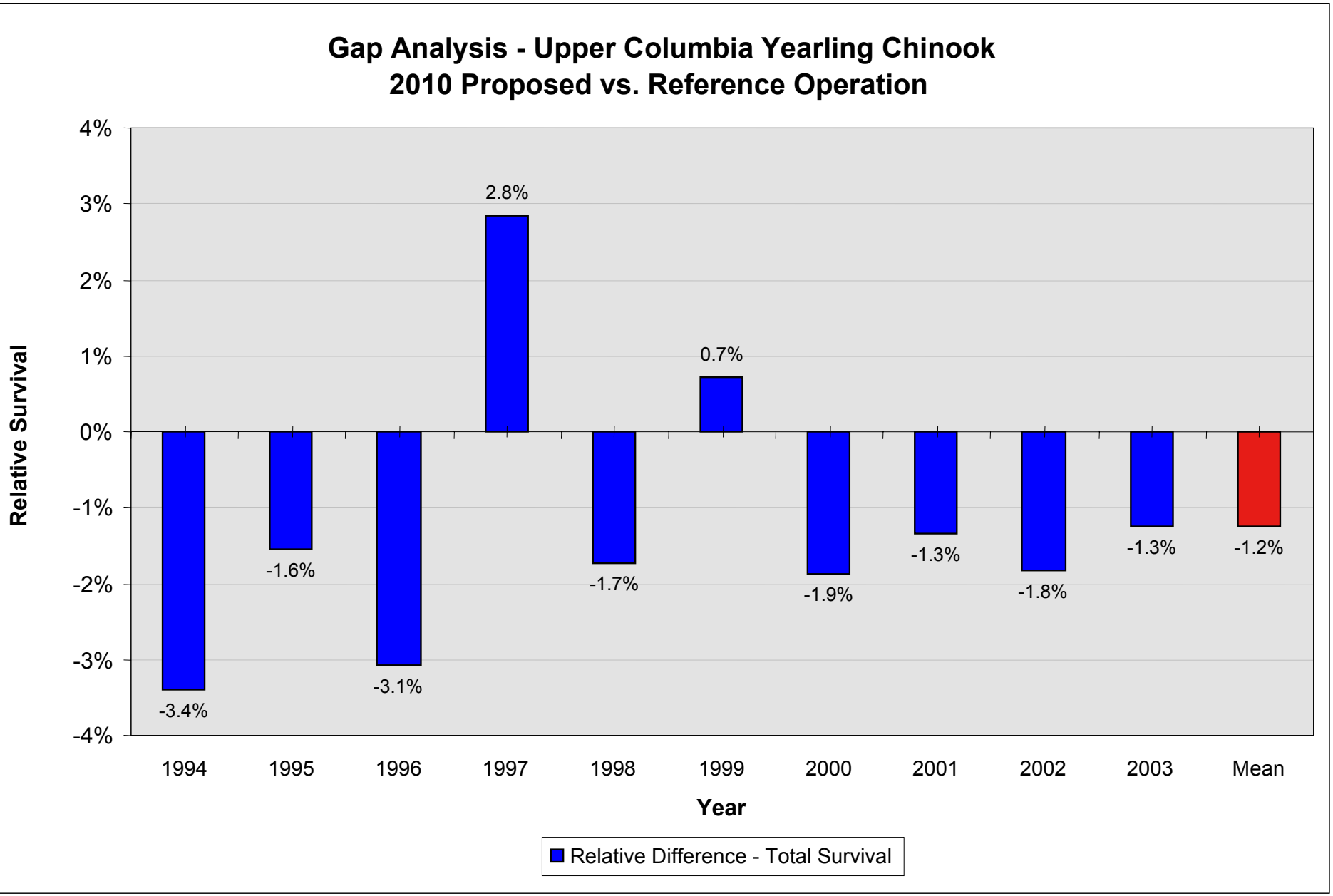

SPILLWAY WITH RSW DEPLOYED (OPERATING POSITION)


Gap Analysis - Snake River Yearling Chinook
2004 Proposed vs. Reference Operation
Relative Survival
0%
-1%
-1%
-2%
-2%
-3%
-3%
-4%
-4%
-0.2%
-2.8%
-3.1%
-0.8%
-1.9%
-1.8%
-0.4%
-0.1%
-3.7%
-0.3%
-1.5%
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
Mean
Year
Relative Difference - Total Survival w/D

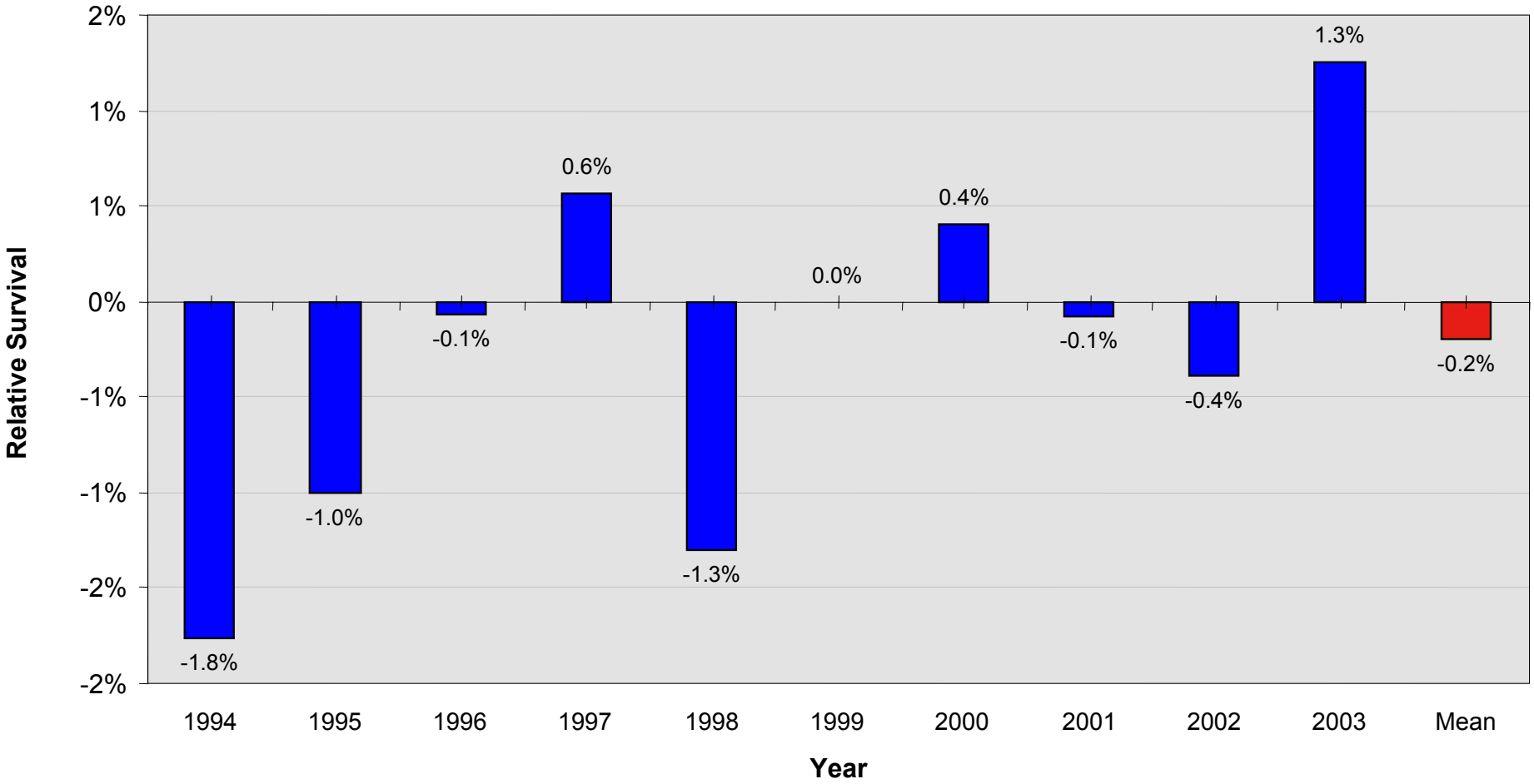
Gap Analysis - Snake River Yearling Chinook
2010 Proposed vs. Reference Operation

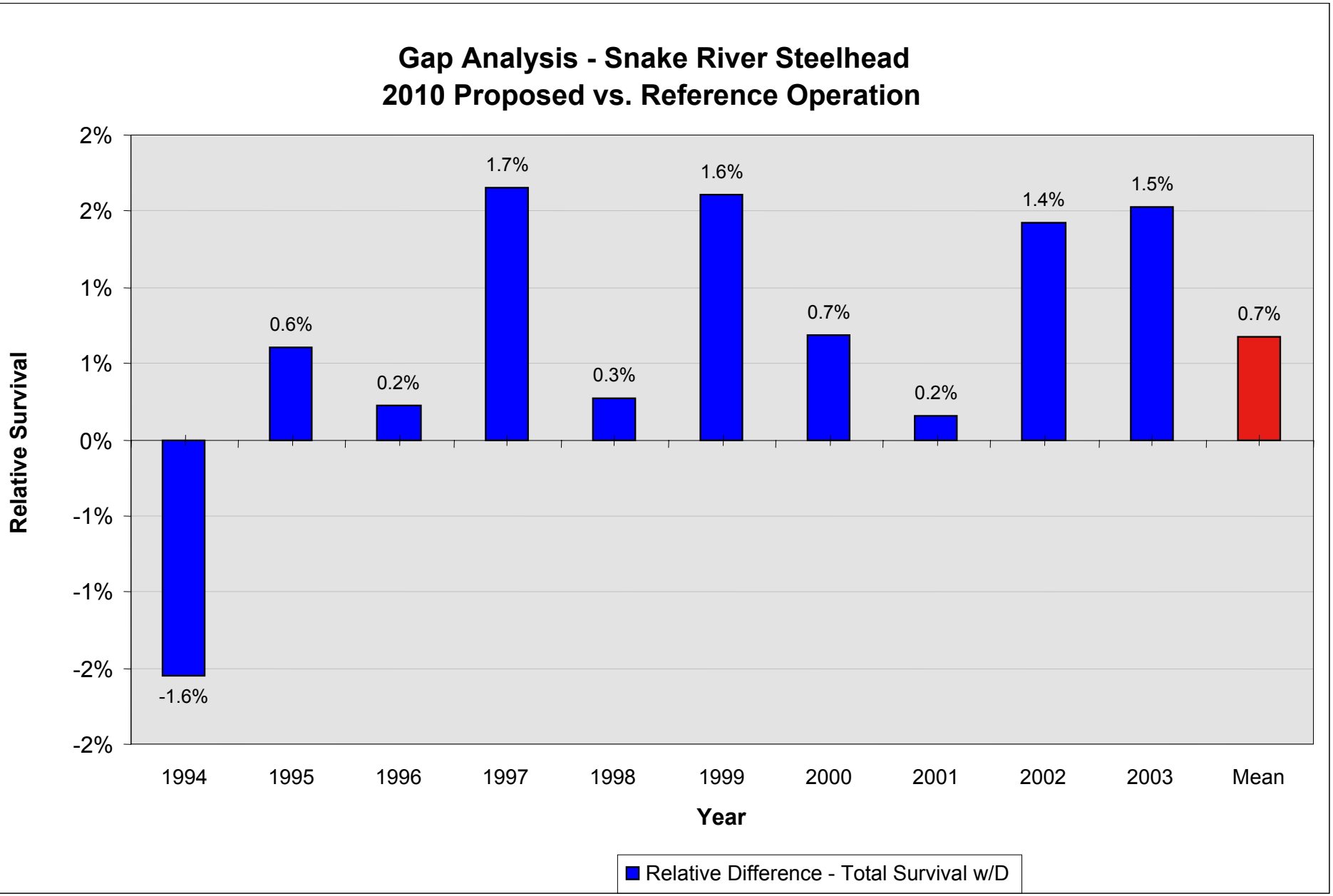


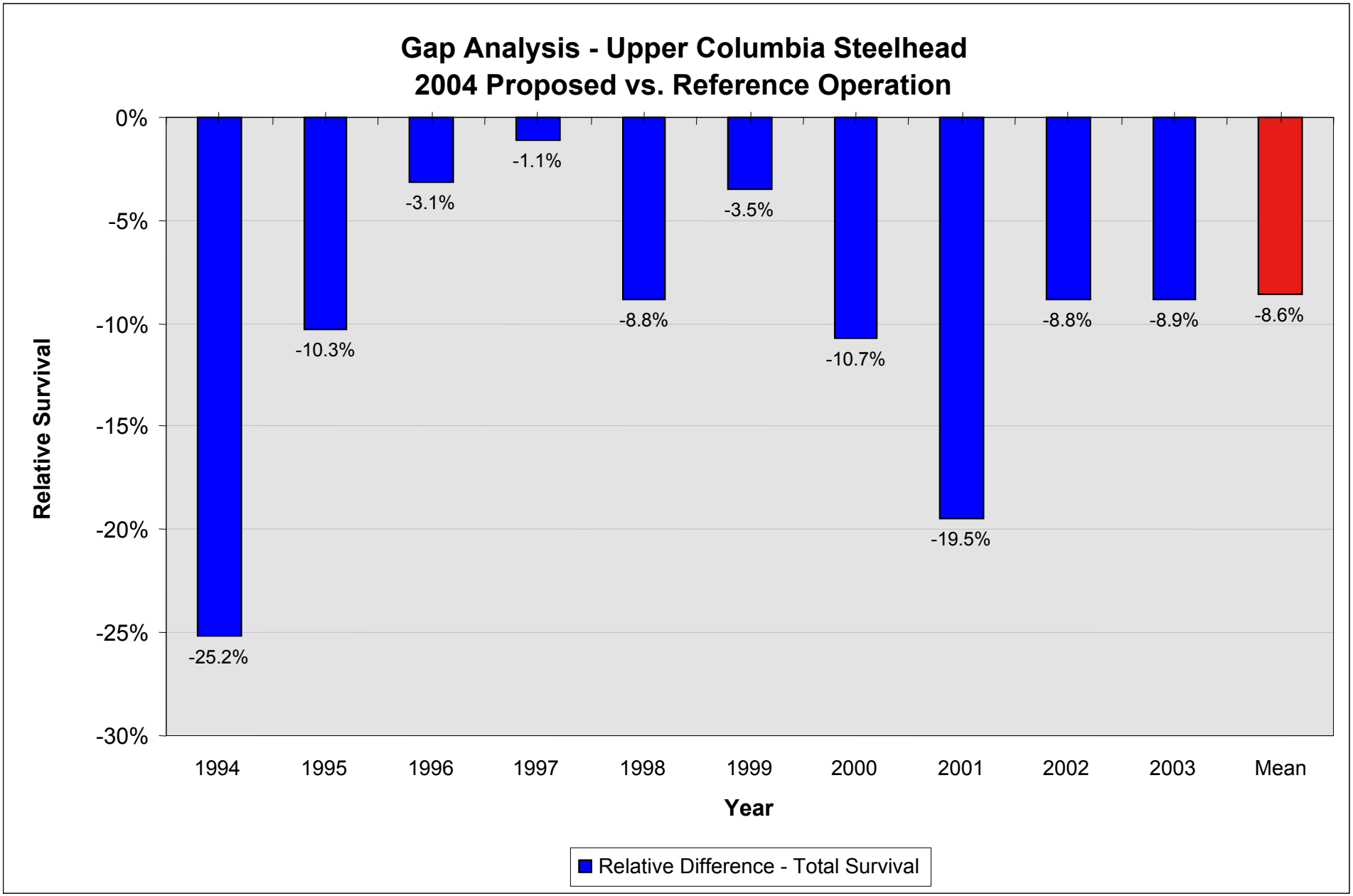

Gap Analysis - Upper Columbia Yearling Chinook
2004 Proposed vs. Reference Operation
Relative Survival
0%
-1%
-2%
-3%
-4%
-5%
-6%
-7%
-8%
-9%
-10%
-8.9%
-6.7%
-8.9%
-2.8%
-6.6%
-4.6%
-6.9%
-7.2%
-7.1%
-6.4%
-6.6%
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
Mean
Year
Relative Difference - Total Survival

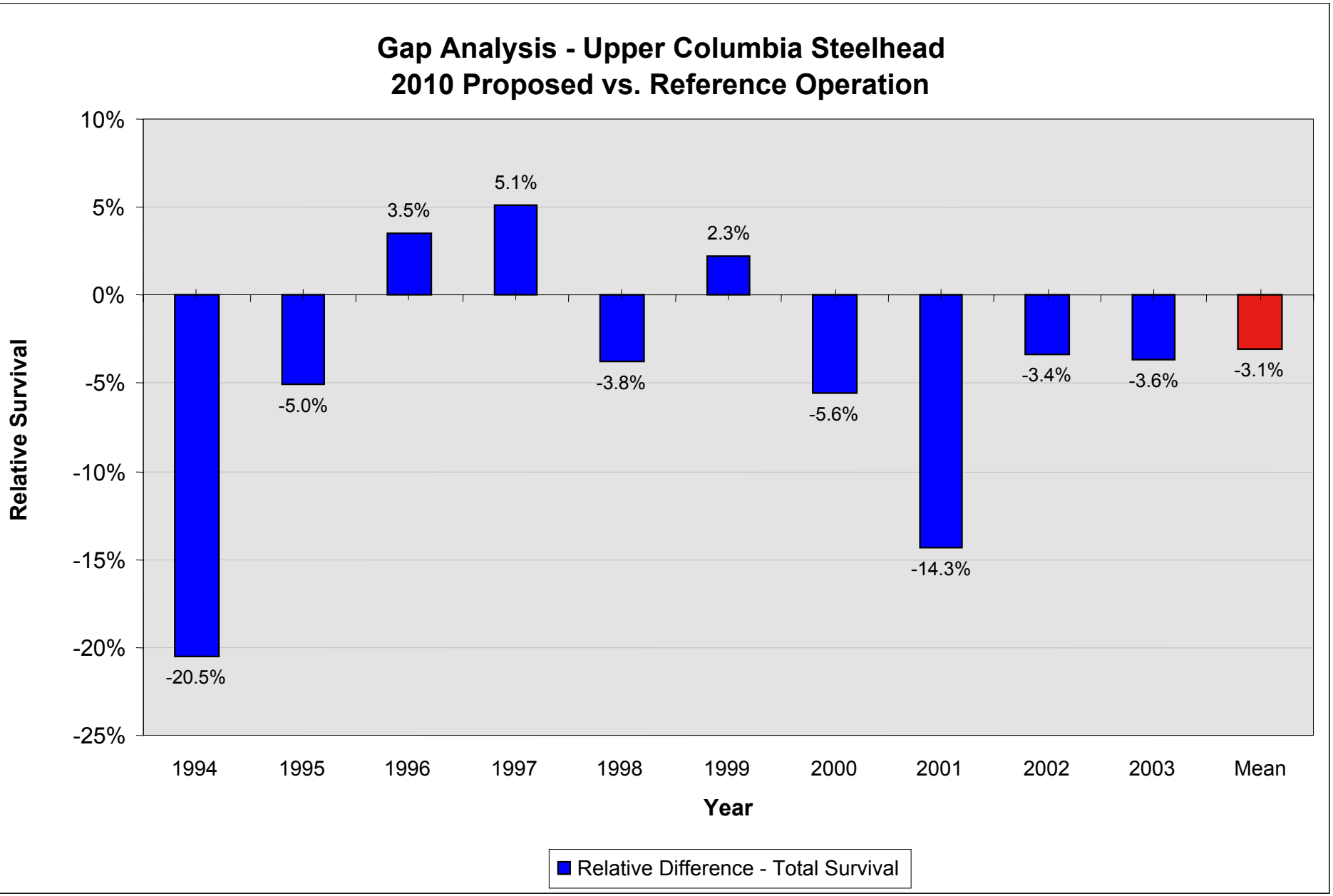

Gap Analysis - Upper Columbia Yearling Chinook
2010 Proposed vs. Reference Operation
Relative Survival
4%
3%
2%
1%
0%
-1%
-2%
-3%
-4%
2.8%
0.7%
-3.4%
-1.6%
-3.1%
-1.7%
-1.9%
-1.3%
-1.8%
-1.3%
-1.2%
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
Mean
Year
Relative Difference - Total Survival

Gap Analysis - Snake River Steelhead
2004 Proposed vs. Reference Operation




Gap Analysis - Snake River Steelhead
2010 Proposed vs. Reference Operation
Relative Survival
2%
2%
1%
1%
0%
-1%
-1%
-2%
-2%
-1.6%
0.6%
0.2%
1.7%
0.3%
1.6%
0.7%
0.2%
1.4%
1.5%
0.7%
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
Mean
Year
Relative Difference - Total Survival w/D


Gap Analysis - Upper Columbia Steelhead
2004 Proposed vs. Reference Operation
Relative Survival
0%
-5%
-10%
-15%
-20%
-25%
-30%
-25.2%
-10.3%
-3.1%
-1.1%
-8.8%
-3.5%
-10.7%
-19.5%
-8.8%
-8.9%
-8.6%
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
Mean
Year
Relative Difference - Total Survival


Gap Analysis - Upper Columbia Steelhead
2010 Proposed vs. Reference Operation
Relative Survival
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
-20.5%
-5.0%
3.5%
5.1%
-3.8%
2.3%
-5.6%
-14.3%
-3.4%
-3.6%
-3.1%
1994
1995
1996
1997
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2000
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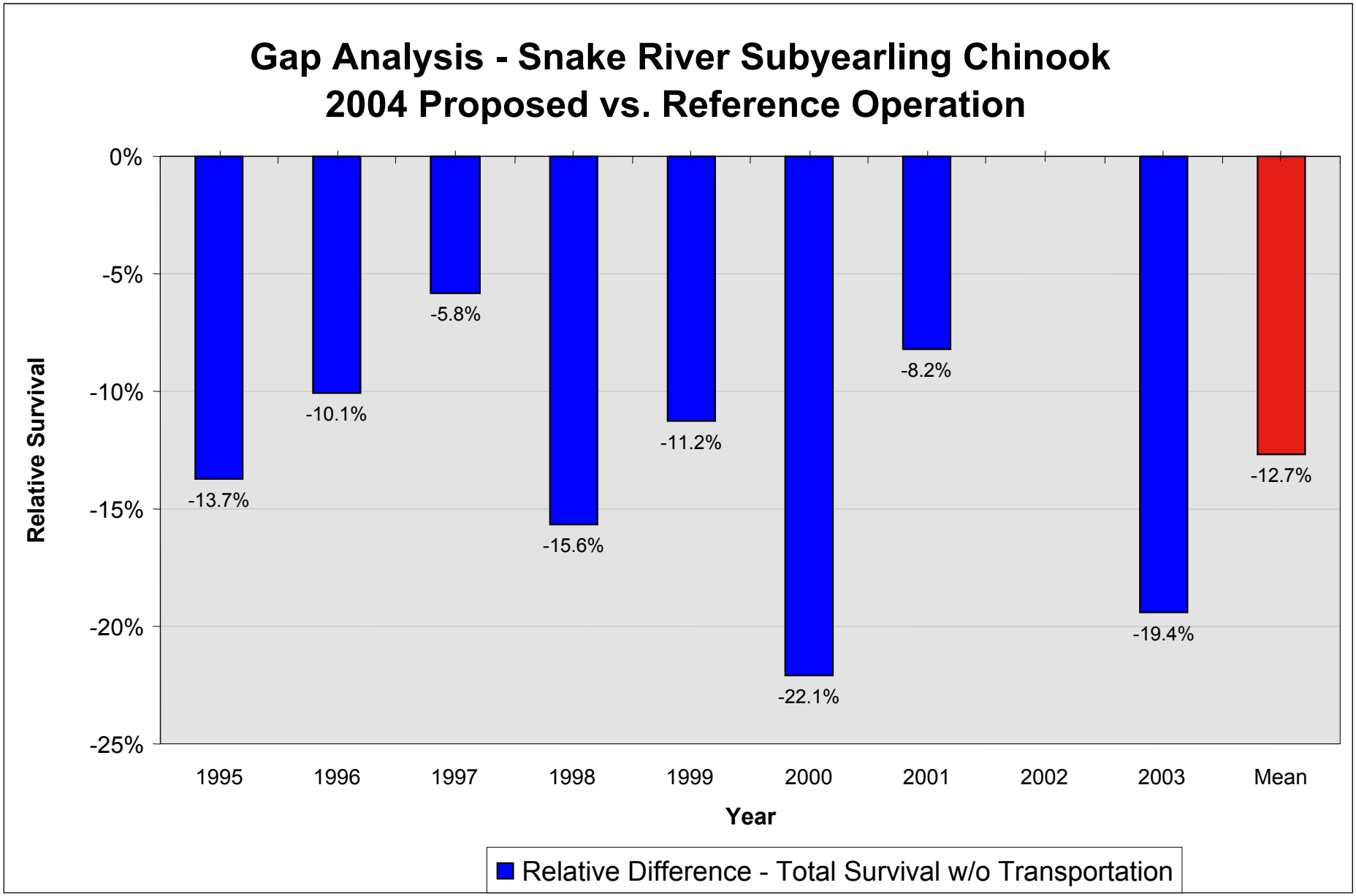
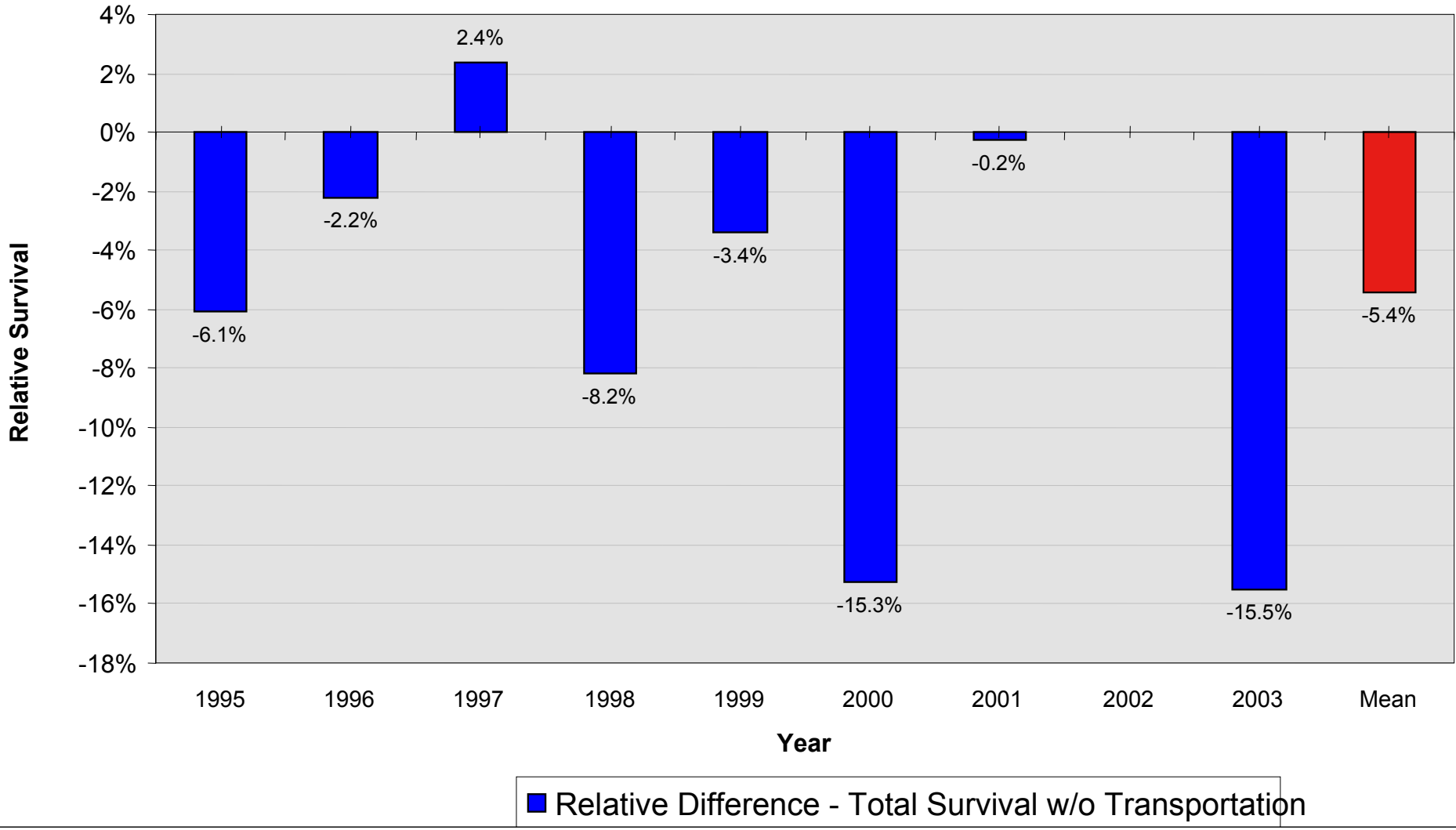
2002
2003
Mean
Year
Relative Difference - Total Survival


Gap Analysis - Snake River Subyearling Chinook
2004 Proposed vs. Reference Operation
Relative Survival
0%
-5%
-10%
-15%
-20%
-25%
-13.7%
-10.1%
-5.8%
-15.6%
-11.2%
-22.1%
-8.2%
-19.4%
-12.7%
1995
1996
1997
1998
1999
2000
2001
2002
2003
Mean
Year
Relative Difference - Total Survival w/o Transportation

Gap Analysis - Snake River Subyearling Chinook
2010 Proposed vs. Reference Operation



Properly defining environmental baseline for non-hydro

- Defining the action area as the area where offsetting mitigation is proposed
- Federal actions already consulted upon and therefore assumed to continue
- Continuing effects of all past actions (whether actions continuing or not)

Properly defining cumulative effect for non-hydro

- To be considered in CE section, activities must be **Reasonably Certain To Occur** As evidenced by appropriations, work plans, permits issued, or budgeting; they follow a pattern of activity undertaken by the agency in the action area; or they are a logical extension of the proposed action.

Proposed Non-Hydro Actions and the "gap"

- Habitat
  - Tributary
  - Estuary
- Evaluating the UPA
  - Tributary
  - Estuary
- Estuary (Predation – Terns)
- Predation - fish
- Offset RM&E
- Hatcheries

Proposed Non-Hydro Actions and the "gap"

- Habitat - Tributary
  - Structured Qualitative approach to determining potential to increase numbers, reproduction, distribution through tributary actions.
  - Used available information from subbasin plans, watershed assessments, NOAA Science Center assessments
  - 5 steps in analysis
  - VL, L, M , H ratings

Tributary Habitat - 5 steps in analysis Proposed Non-Hydro Actions and the "gap"

1. Compared current population status against estimates of historical population status to determine capacity of the population to increase
2. Used available assessments of historical and current tributary habitat conditions to evaluate if tributary habitat processes within the geographic area currently occupied by the population are degraded or impaired
3. Identified tributary habitat limiting factors considered most likely limiting to the anadromous salmonid population's abundance, productivity, distribution, or diversity
4. Steps 1 through 3 were integrated to derive an estimate of the capacity of the population (ecological improvement potential = EIP) to respond to improvements in habitat condition
5. Estimates of EIP adjusted based on practical constraints that may limit the ability to address limiting factors

Proposed Non-Hydro Actions and the "gap" Habitat ratings

Very low (VL): neutral or ancillary survival improvements

Low (L): < 2% survival improvements

Medium (M): = 2% - 24% survival improvements

High (H): = 25% - 100% survival improvements

Very High (VH): > 100% survival improvements

Proposed Non-Hydro Actions and the "gap"

- Estuary Habitat
  - Structured qualitative approach to determining potential to increase numbers, reproduction, distribution through estuary actions
  - Used available information from subbasin plans, watershed assessments, NOAA Science Center assessments/tech memo
  - By ESU, defined by Ocean vs. Stream type, assessed relative potential of limiting factors to affect status (all VSP parameters)
  - Estimate of potential from estuary limiting factors by Ocean vs. Stream type

Potential Improvements from off site in the Estuary

- The NWFSC evaluated the relative role of the following factors limiting salmonid viability in the estuary: water flow, availability of salmon habitats, toxics, and predation (primarily Caspian terns).

Assessment of **potential** from estuary actions by Ocean vs. Stream

Stream type ESU

	Terns	Toxics	Habitat	Total
Snake River Steelhead	9.6%	+ L	+ L	=~ 13.6%
Upper Columbia River Steelhead	22.5%	+ L	+ L	=~ 26.5%
Middle Columbia River Steelhead	9.5%	+ L	+ L	=~ 13.5%
Lower Columbia River Steelhead	7.4%	+ L	+ L	=~ 11.4%
Spring Chinook	3.3%	+ L	+ L	=~ 7.3%

Assessment of **potential** from estuary actions by Ocean vs. Stream

Ocean type ESU

	Terns	Toxics	Habitat	Total
Snake River fall chinook	L (~2%)	+ M (>2-24%)	+ M (>2-24%)	=~ 6-50%
Lower Columbia River chum	VL (~0%)	+ M (>2-24%)	+ M (>2-24%)	=~ 4-48%

Proposed Non-Hydro Actions and the "gap"

- Evaluating the UPA

  Tributary

  – Habitat potential tables for UCR ESUs, MCR ESU, SR steelhead, spring/sum chinook ESUs

  – UPA metric goals tables for above ESUs

  Estuary

  – UPA estuary habitat projects- Crims and Sandy

Evaluating the UPA- Tributary

Habitat potential table for UCR spring/sum chinook ESU

Population	Index of Potential to Increase Population	Primary Anthropogenic Limiting Factors	Ecological Intrinsic Potential	Intrinsic Potential Summary (practical constraints)
Wenatchee	Very High	Medium—Channel morphology, flood plain connectivity, flows	Medium	Medium
Entiat	Very High	High—Channel morphology	Medium	Medium
Methow	Very High	Medium—Flows, entrainment, channel morphology, water temperatures	Medium	Medium

UPA metric goals for UCR S/S Chinook

Table 5.—Updated Proposed Action, Upper Columbia Spring Chinook, Wenatchee, Entiat, and Methow Subbasin

Limiting Factor	Metric Measurement	Metric Goal in three years	Cumulative Metric Goal in six years
Entrainment	a. Number of screens addressed	5	10
Instream flow projects	a. Cubic Feet per Second (cfs) of water protected for instream flows	12 cfs	40 cfs
Channel Morphology	a. Miles of access restored b. Miles complexity restored	60 miles 5 miles	105 miles 10 miles
Riparian Protection/Enhancement	a. Number of miles protected b. Number of miles enhanced.	4 miles 6 miles	12 miles 12 miles

UPA metric goals for SR S/S Chinook and Steelhead

Table 3. US BOR Conservation Measures for Snake River Spring/Summer Chinook Salmon and Steelhead

Limiting Factor	Metric Measurement	3-Year Metric Goal
Entrainment	a. Number of screens addressed	10
Instream flow projects	a. Cubic feet per second (cfs) of water protected for instream flows	20
Channel Morphology	a. Miles of access restored	54
	b. Miles of complexity restored	0.25

UPA metric goals for Mid Columbia Steelhead

Table 9. US BOR Conservation Measures for Mid-Columbia Steelhead in the North Fork John Day, Middle Fork John Day, and Upper John Day subbasins

Limiting Factor	Metric Measurement	3-Year Metric Goal
Entrainment	a. Number of screens addressed	30
Instream flow projects	a. Cubic feet per second (cfs) of water protected for instream flows	7 cfs
Channel Morphology	a. Miles of access restored	24 miles
	b. Miles of complexity restored	3 miles

Proposed Non-Hydro Actions and the "gap"

Estuary -UPA estuary habitat projects

- **Crims Island –** Protected 473 acres and will restore 200 acres of intertidal marsh and riparian forest. *Scheduled completion: 2006*
- **Sandy River –**The project will restore 90 acres of native hardwood riparian forest and 20 acres of a seasonally wet slough in the Sandy River Delta to complete a 250-acre block of regionally scarce floodplain habitat. *Scheduled completion: 2007.*

Proposed Non-Hydro Actions and the "gap"

- Estuary Predation (terns)
  - Potential to increase survival from total removal from East Sand Island
  - UPA proposes tern reduction consistent with the implementation of the preferred alternative in DEIS for the Tern management plan

Potential Improvements from off site in the Estuary

Stream-Type	Terns	Toxics	Habitat	Total
Snake River Steelhead	6.6%	+ L	+ 0	=~ 7%
Upper Columbia River Steelhead	15.4%	+ L	+ 0	=~ 15%
Middle Columbia River Steelhead	6.6%	+ L	+ 0	=~ 7%
Lower Columbia River Steelhead	5.1%	+ L	+ 0	=~ 5%
Spring Chinook	2.3%	+ L	+ 0	=~ 2%
Ocean-Type	**Terns**	**Toxics**	**Habitat**	**Total**
Snake River fall chinook	L	+ M	+ L	=~ 4%
Lower Columbia River chum	VL	+ M	+ L	=~ 2%

Proposed Non-Hydro Actions and the "gap"

- Predation (fish)
  - Expanded pikeminnow program (to 2001/2004 level)
  - AA's calculation of 0.6% (L) improvement for all ESUs
  - Other fish predator programs to be studied, piloted - not counted towards gap

Proposed Non-Hydro Actions and the "gap"

- Hatcheries
  - What hatchery programs apply towards filling the "gap"
  - How much did they fill it for affected ESUs?

Net Effect of Actions and Jeopardy Determinations

- Basic methods
- Translation from qualitative to quantitative (table)
- Net effects results - Table 6.9
- Jeopardy determinations - key considerations for selected ESUs

Table 6.1. Qualitative Categories for Potential Improvements in VSP Characteristics

Ranking	Description
"**Very Low**"	Little or no potential for improvement; very high risk that these activities would not result in any beneficial effects.
"**Low**"	Small potential for improvement, possibly on the order of a percentage or two relative change in survival rate or abundance (i.e., possibly up to 1.01-1.02 times the current survival rate or abundance level).
"**Medium**"	Significant potential for improvement in population status, perhaps as high as a 24% improvement in survival rate or abundance (i.e., up to 1.24 times current survival rate or abundance level).
"**High**"	Potential for improvement is high, possibly resulting in a doubling of survival rate or abundance (i.e., up to 2 times current survival rate or abundance level).
"**Very High**"	Potential for improvement is very high, possibly resulting in more than a doubling of the current survival rate or abundance level.

Table 6.9

ESU	Major Population Groups (MPGs)	Year	(-) Relative Hydro Survival Gap (% survival difference and qual. est. including habitat effects)	(+) Estuary Habitat	(+) Tributary Habitat	(+) Fish Predation	(+) Bird Predation	(+) Hatchery	(+) Combined Non-hydro Improve-ment	(=) MPG Net Effect	ESU Net Effect
SR Spring/ Summer Chinook	All	2004	-1.5% L	0	VL	L	0	0	L	Reduce	Reduce (short-term)
		2010	+.3%	0	VL (for a few pop-ulations)	L	L	0	L- M	NC - Improve	
SR Fall Chinook	Only One	2004	-12.7% M	0	0	L	0	0	L	Reduce	Reduce (short-term)
		2010	-5.4% M	L	0	L	L	0	M	NC	
	Note: The hydro survival gaps shown in this assessment are for about half of the SR Fall Chinook ESU which remains in-river for its entire migration and is not transported. Measures to fill the gap apply to the entire ESU. The "NC" determination in 2010 takes the proportion of affected fish into consideration.										
UCR Spring Chinook	Only One	2004	-6.6% M	0	VL	L	0	0	L	Reduce	Reduce (short-term)
		2010	-1.2% L	0	L-M	L	L	0	M	NC	
LCR Chinook	Cascade Spring MPG (0 dams)	2004	VL	0	0	0	0	0	0	NC	Reduce (short-term)
		2010	VL	0	0	0	L	0	L-M	NC - Improve	
	Gorge Spring MPG (1 dam)	2004	-0.8% L	0	0	L	0	0	L	Reduce	
		2010	-0.4% L	0	0	L	L	0	L-M	NC - Improve	
	3 Fall MPGs (0 dams)	2004	L	0	0	0	0	0	0	Reduce	
		2010	L	L	0	0	L	0	L	NC	
	Gorge Fall MPG (1 dam)	2004	-1.4% L	0	0	L	0	0	L	Reduce	
		2010	-1.3% L	L	0	L	L	0	L-M	NC	
UWR Chinook	All	2004	VL	0	0	0	0	0	0	NC	NC
		2010	VL	0 (for yearlings) L (for subs)	0	0	L	0	L	NC - Improve	
SR Steelhead	All	2004	-0.2% L	0	VL	L	0	0	L	NC	NC
		2010	+0.7%	0	VL (for a few pop-ulations)	L	M	0	M	NC - Improve	

UCR Steelhead	Only One	2004	-8.6% M	0	VL	L	0	0	L	Reduce	Reduce (short-term)
		2010	-3.1% M	0	L-M	L	M	0	M	NC	
MCR Steelhead	2 MPGs (1-2 dams)	2004	-0.3 to 0% L	0	0	L	0	0	L	NC	Reduce (short-term)
		2010	-0.3 to +1.6% L	0	0	L	M	0	M	NC-Improve	
	John Day MPG (3 dams)	2004	-0.5% L	0	VL	L	0	0	L	NC	
		2010	+2.2%	0	VL	L	M	0	M	Improve	
	2 MPGs (mostly 4 dams)	2004	-8.6% M	0	0	L	0	0	L	Reduce	
		2010	-3.1% M	0	0	L	M	0	M	NC	
UWR Steelhead	All	2004	VL	0	0	0	0	0	0	NC	NC
		2010	VL	0	0	0	M	0	M	NC	
LCR Steelhead	2 MPGs (0 dams)	2004	VL	0	0	0	0	0	0	NC	NC
		2010	VL	0	0	0	M	0	M	NC	
	2 MPGs (mostly 1 dam)	2004	-0.3% L	0	0	L	0	0	L	NC	
		2010	+0.3%	0	0	L	M	0	M	NC	
CR Chum	1 MPG (1/2 pops 1 dam)	2004	L	0	0	L	0	0	L	NC	Reduce (short-term)
		2010	L	L	0	L	VL	0	L-M	NC	
	2 MPGs (0 dams)	2004	L	0	0	0	0	0	0	Reduce	
		2010	L	L	0	0	VL	0	L	NC	
LCR Coho	2 MPGs (0 dams)	2004	VL	0	0	0	0	0	0	NC	NC
		2010	VL	0	0	0	L-M	0	M	NC	
	1 MPG (2/3 pops 1 dam)	2004	L	0	0	L	0	0	L	NC	
		2010	L	0	0	L	L-M	0	M	NC - Improve	
SR Sockeye	Only One	2004	L	0	0	L	0	H	L	Reduce	Reduce (short-term)
		2010	L (close to VL)	0	0	L	0 (no info)	VL	L	NC	

Factors Considered For "Appreciably Reduce" Determination

- # major population groups (MPG) in ESU
- Proportion of MPGs with reduced numbers, reproduction, or distribution
- Magnitude of reduction(s) for MPG(s)
- Range-wide status of ESU
- Status in action area
- Cumulative effects
- Uncertainty

Table 8.1. Summary of conclusions.

ESU	ESU Net Effect - Change in Numbers, Reproduction, or Distribution?	ESU Jeopardy Determination - Appreciable Reduction in Likelihood of Survival and Recovery?	ESU Adverse Modification Determination
SR Spring/ Summer Chinook	Reduce (short-term)	No Jeopardy	Not addressed pending review of recent Court decisions
SR Fall Chinook	Reduce	No Jeopardy	Not addressed pending review of recent Court decisions
UCR Spring Chinook	Reduce (short-term)	No Jeopardy	N/A
LCR Chinook	Reduce (short-term)	No Jeopardy	N/A
UWR Chinook	No Change	No Jeopardy	N/A
SR Steelhead	No Change	No Jeopardy	N/A
UCR Steelhead	Reduce (short-term)	No Jeopardy	N/A
MCR Steelhead	Reduce (short-term)	No Jeopardy	N/A
UWR Steelhead	No Change	No Jeopardy	N/A
LCR Steelhead	No Change	No Jeopardy	N/A
CR Chum	Reduce (short-term)	No Jeopardy	N/A
LCR Coho	No Change	No Jeopardy	N/A
SR Sockeye	Reduce (short-term)	No Jeopardy	Not addressed pending review of recent Court decisions