

Passage Behavior and Survival for Radio-tagged Subyearling Chinook Salmon at Lower Monumental Dam, 2008



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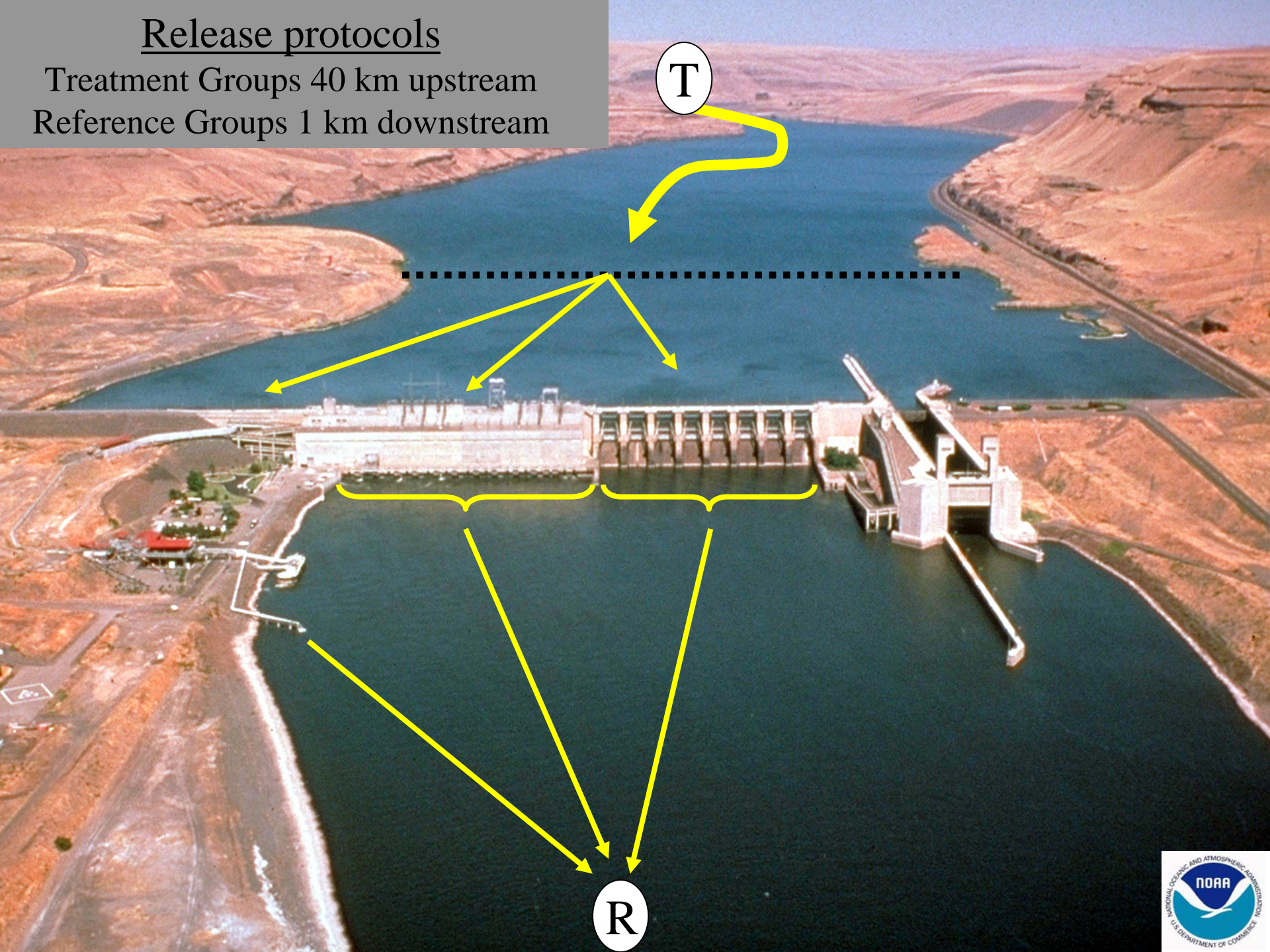


2008 Lower Monumental Dam Study Design

- Evaluate Passage Behavior
 - Forebay residence time
 - Arrival distribution
 - Passage distribution
 - Tailrace egress time
- Estimate Relative Survival Using a Paired Release Design
 - Dam
 - Concrete
 - Route specific survival
- Evaluated one operation/condition

Release protocols

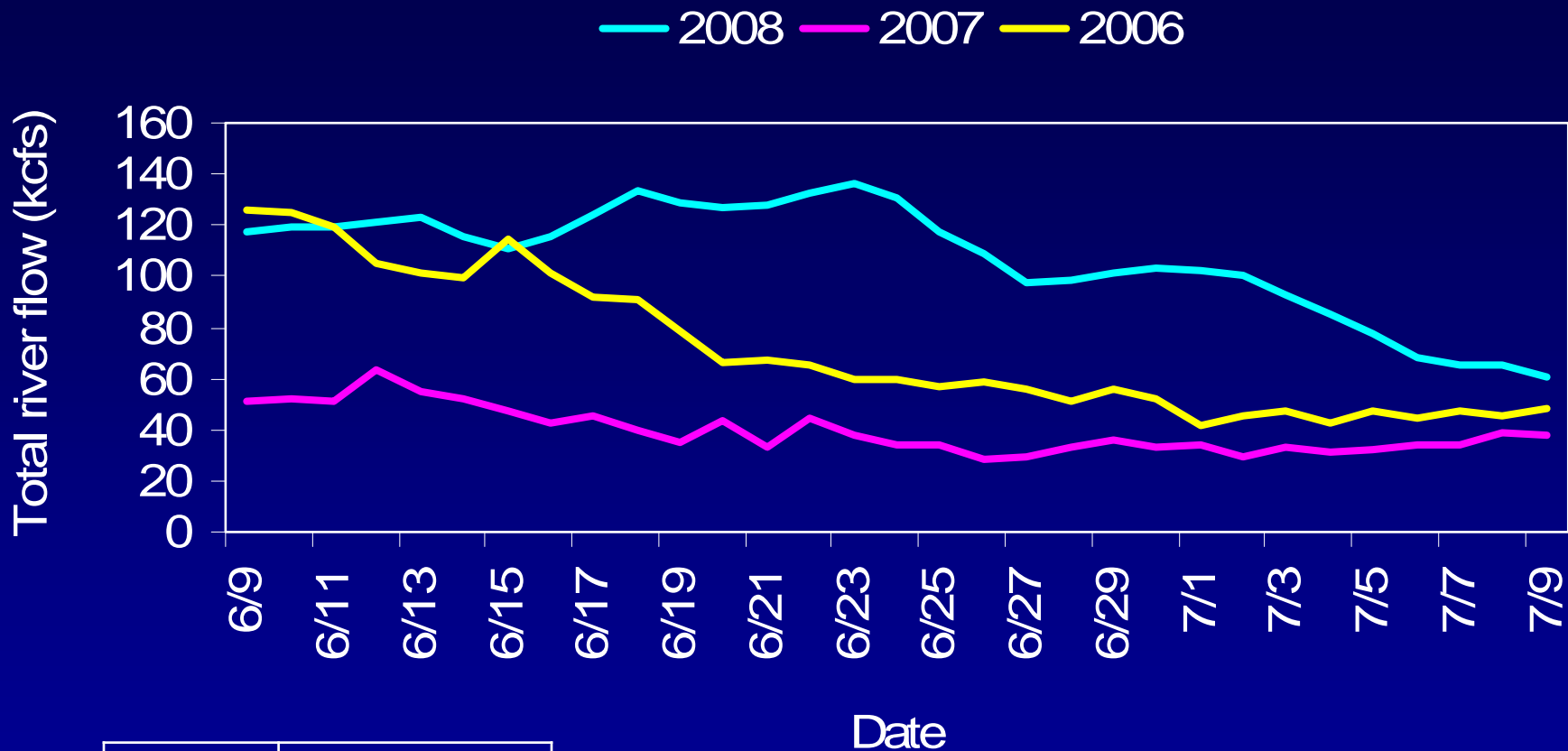
Treatment Groups 40 km upstream
Reference Groups 1 km downstream



Lower Monumental Dam Project Operations

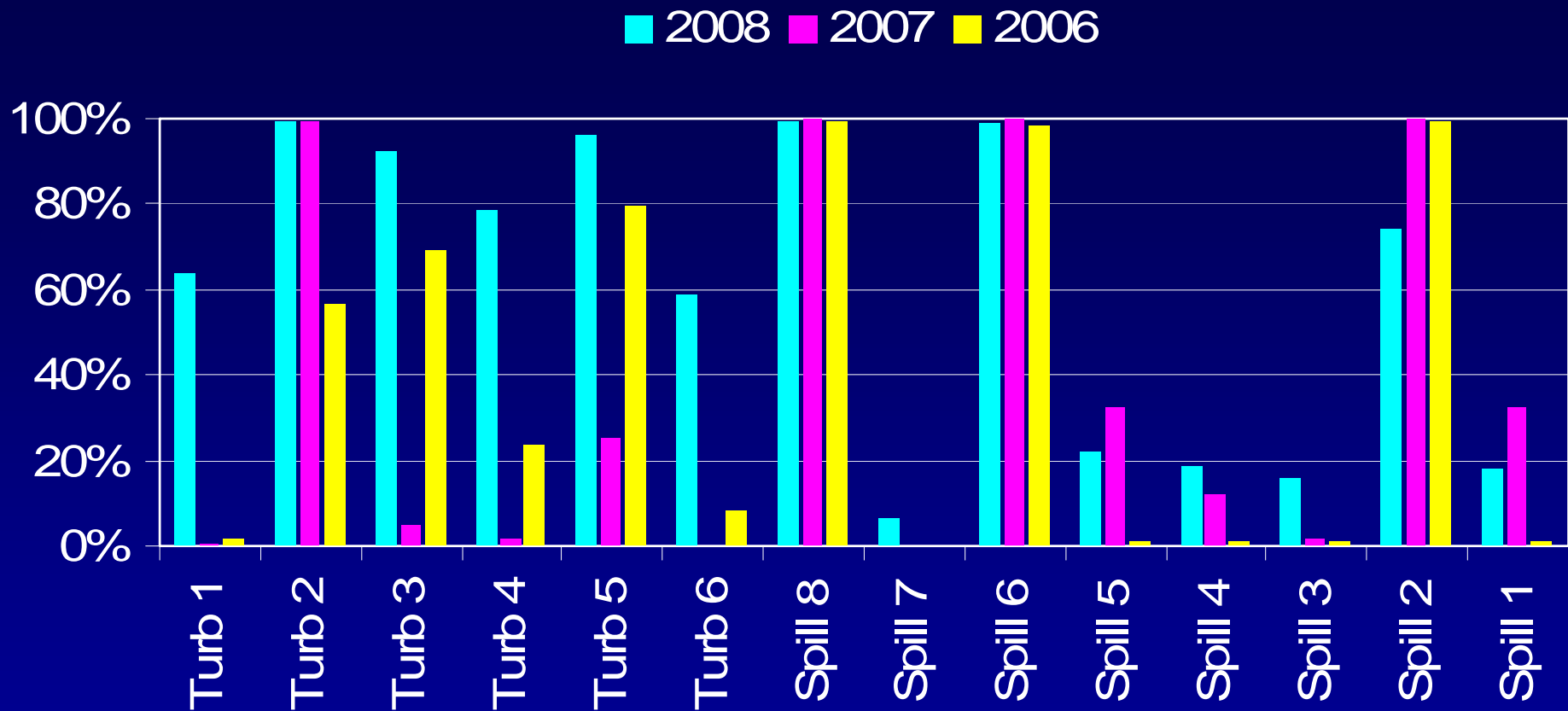
	2006	2007	2008
Project discharge (kcfs)	51	38	107
Tailwater elevation (ft msl)	438	438	441
Spill volume (kcfs)	16	19	26
Percent spill	31	50	24

Lower Monumental Dam – Total River Flow

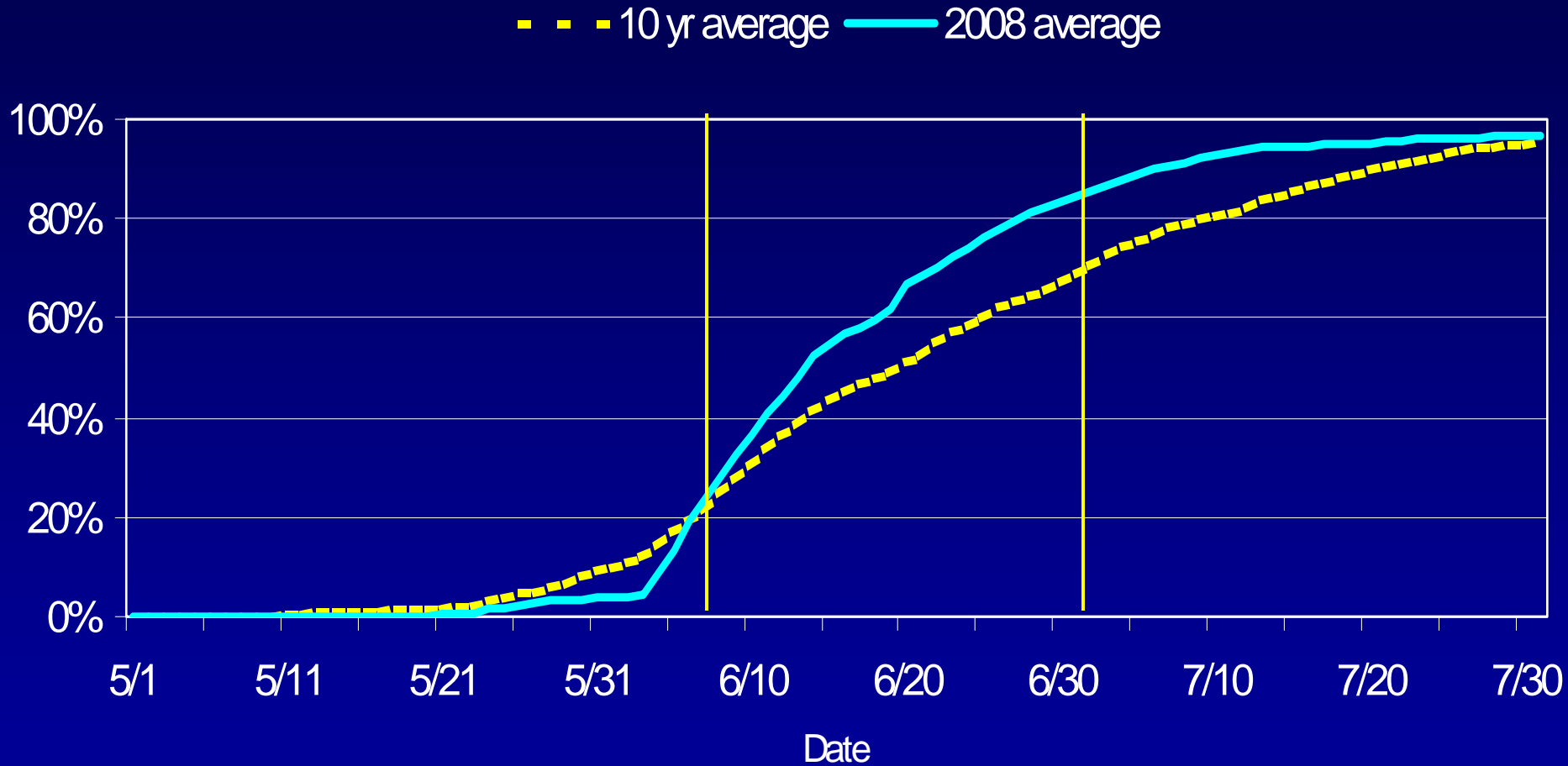


Year	Average (kcfs)
2008	107
2007	40
2006	71
10 year	65

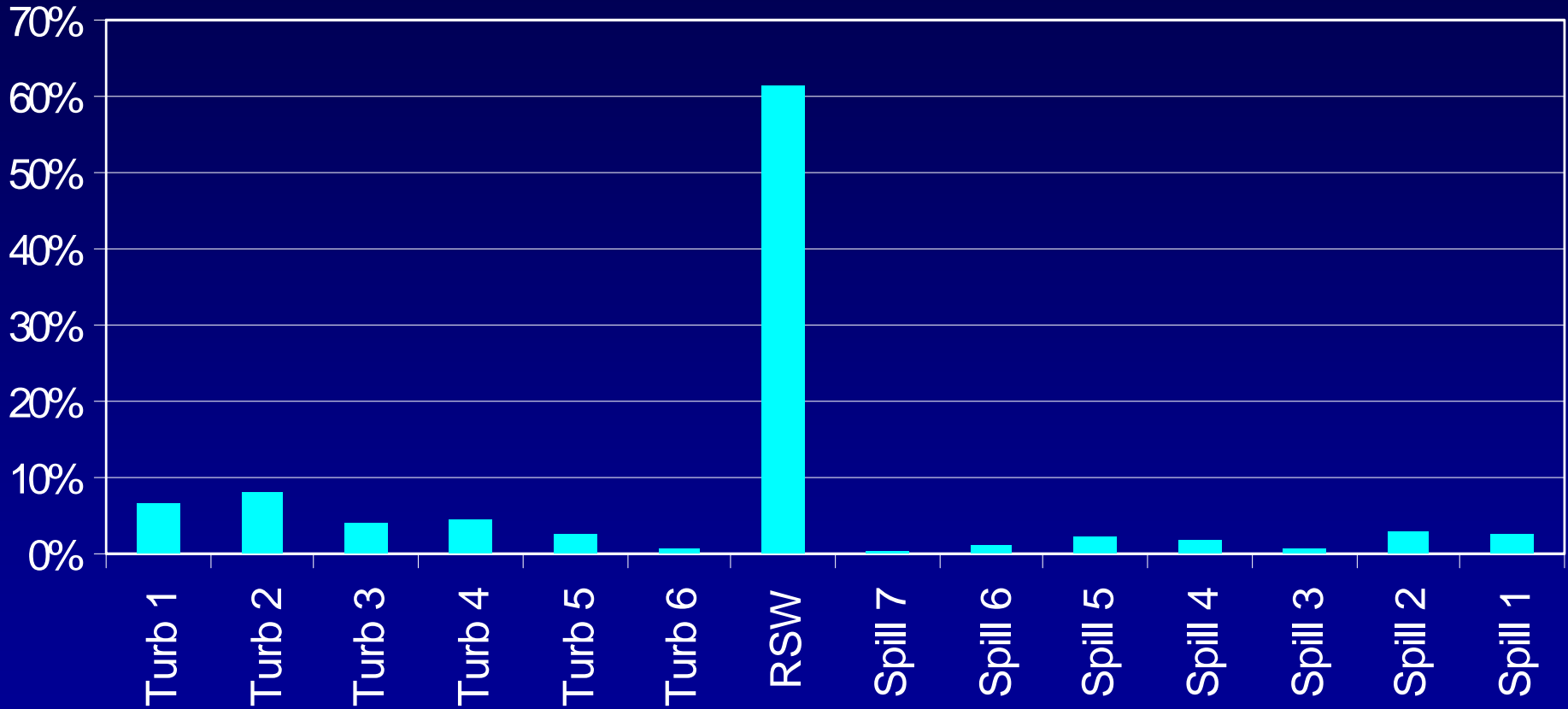
Lower Monumental Dam Operations



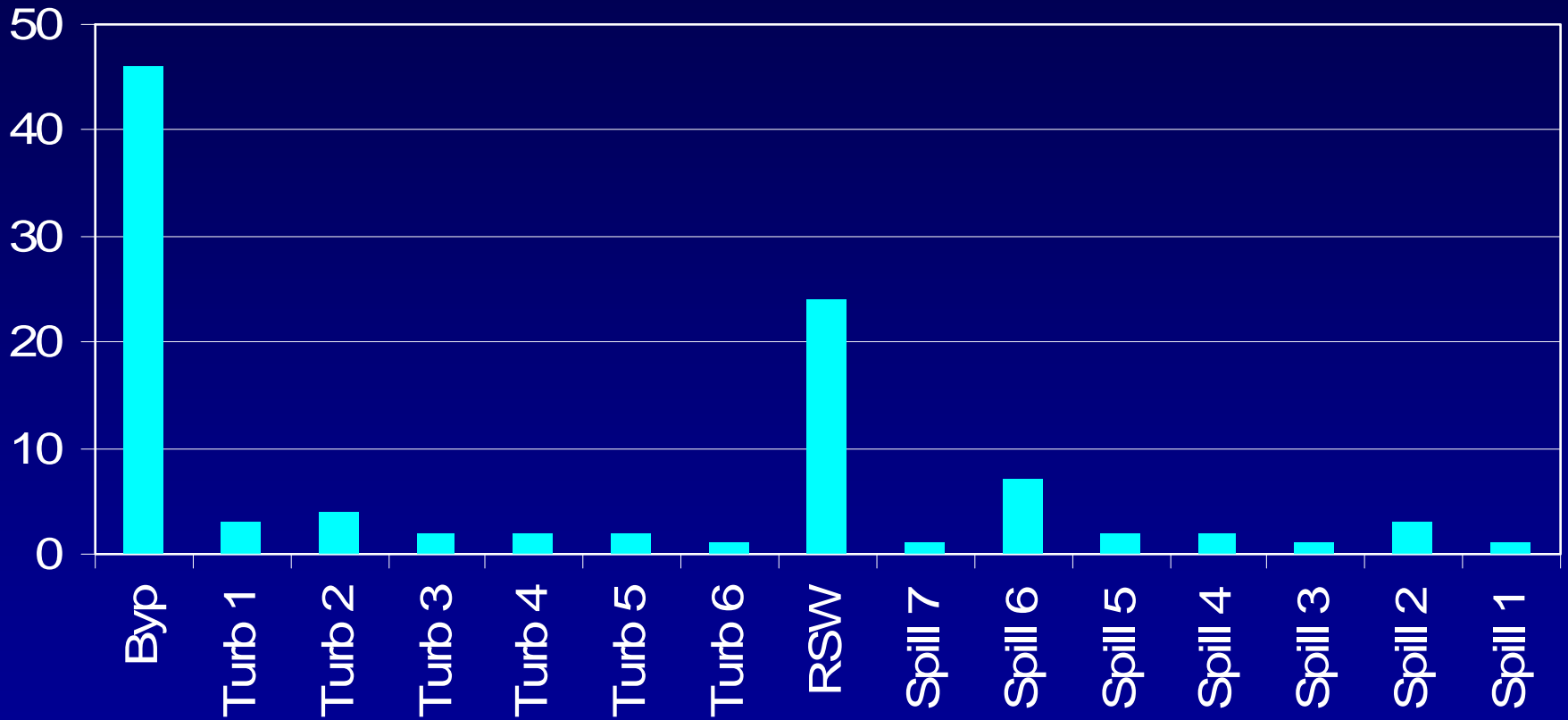
Subyearling Chinook Salmon Passage Distribution Lower Monumental Dam, 2008



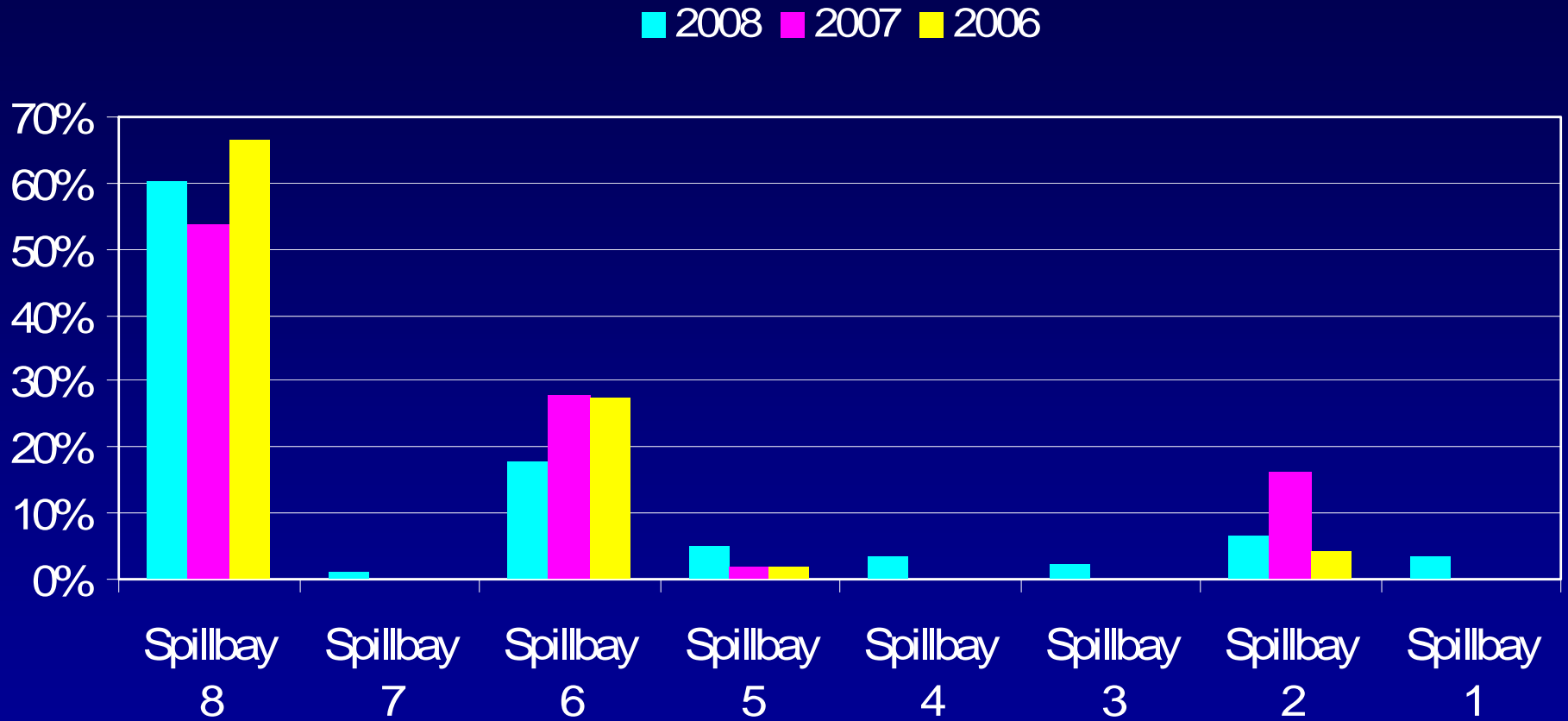
Results – Approach Distribution (overall) - 2008



Results – *Passage Distribution - 2008*



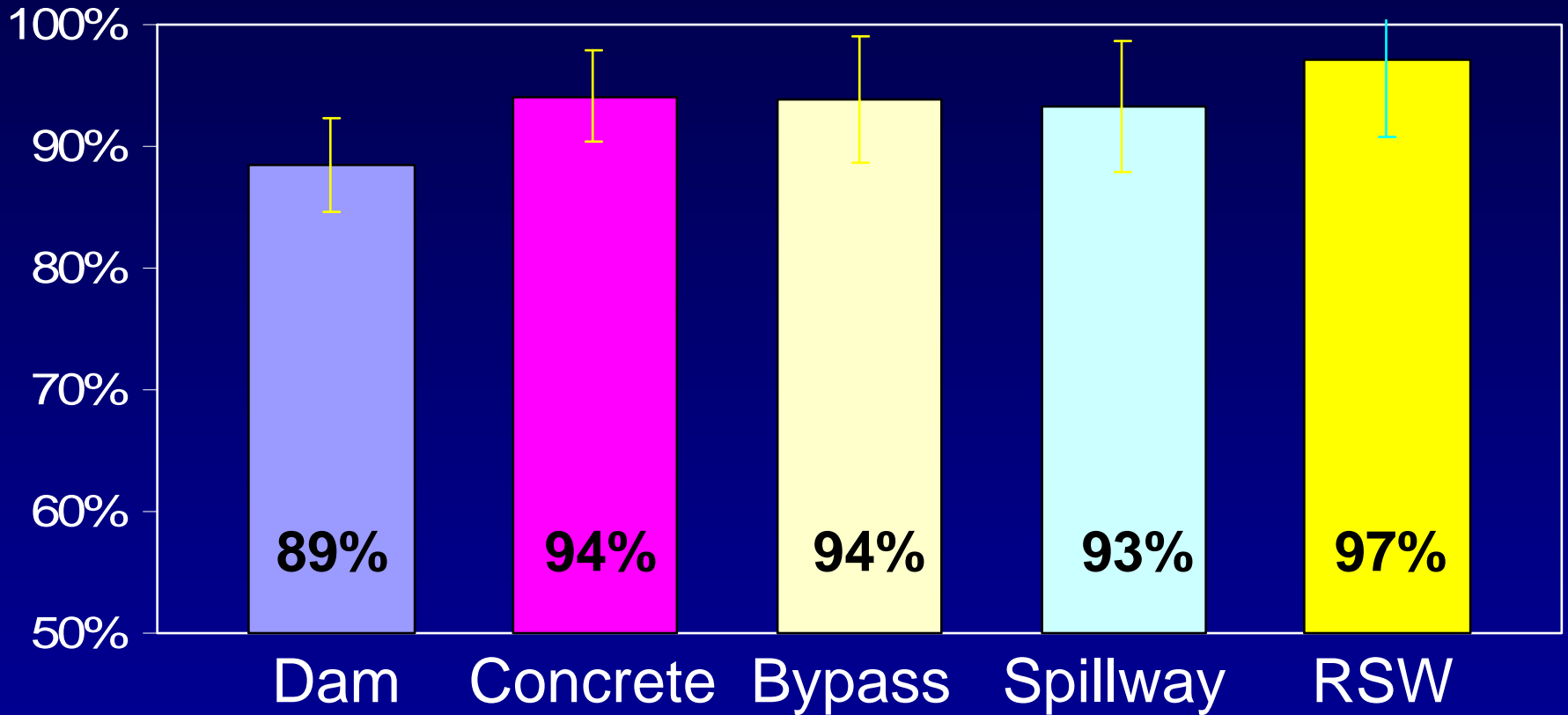
Results – *Spillway passage*



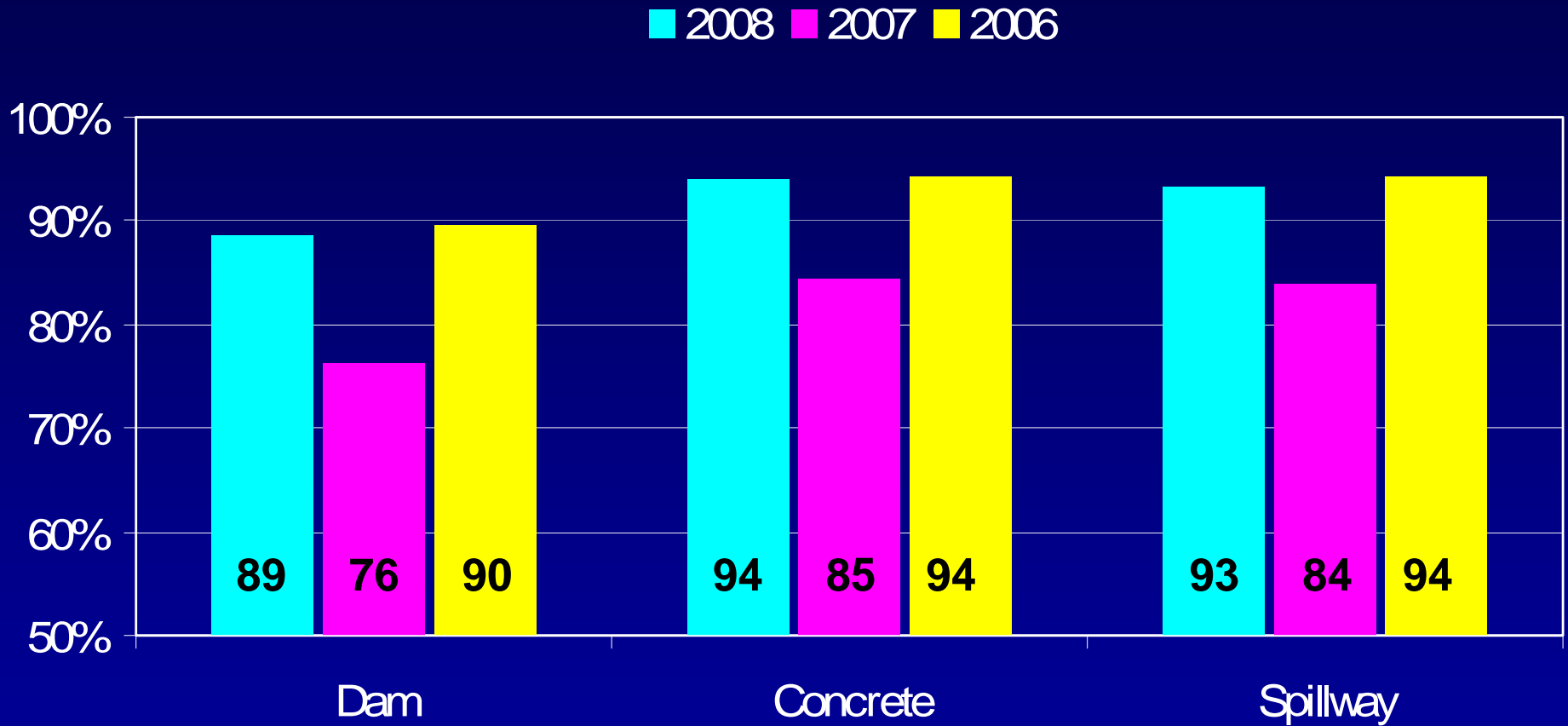
Results - *Fish Passage Metrics*

Metric	2006	2007	2008
Fish Guidance Efficiency	0.645	0.796	0.775
Fish Passage Efficiency	0.947	0.982	0.866
Spill Efficiency	0.820	0.914	0.404
Spill Effectiveness	2.58	1.84	1.46
RSW Efficiency			0.240
RSW Effectiveness			3.33
Forebay Residence Time (hrs)	2.7	3.6	2.3
Tailrace Egress Time (min)	11	13	8

Results - *Relative Survival, 2008*



Results - *Relative Survival*



Summary of Results, 2008

- River flow the was highest since 1999
- Forebay residence and tailrace egress times were shorter than both 2006 and 2007
- Fish passage efficiency, spill efficiency, and spill effectiveness were all lower than both 2006 and 2007
- Fish guidance efficiency was similar to 2006 and 2007
- Survival estimates were similar to 2006 and higher than 2007
- RSW survival estimate was 97%

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