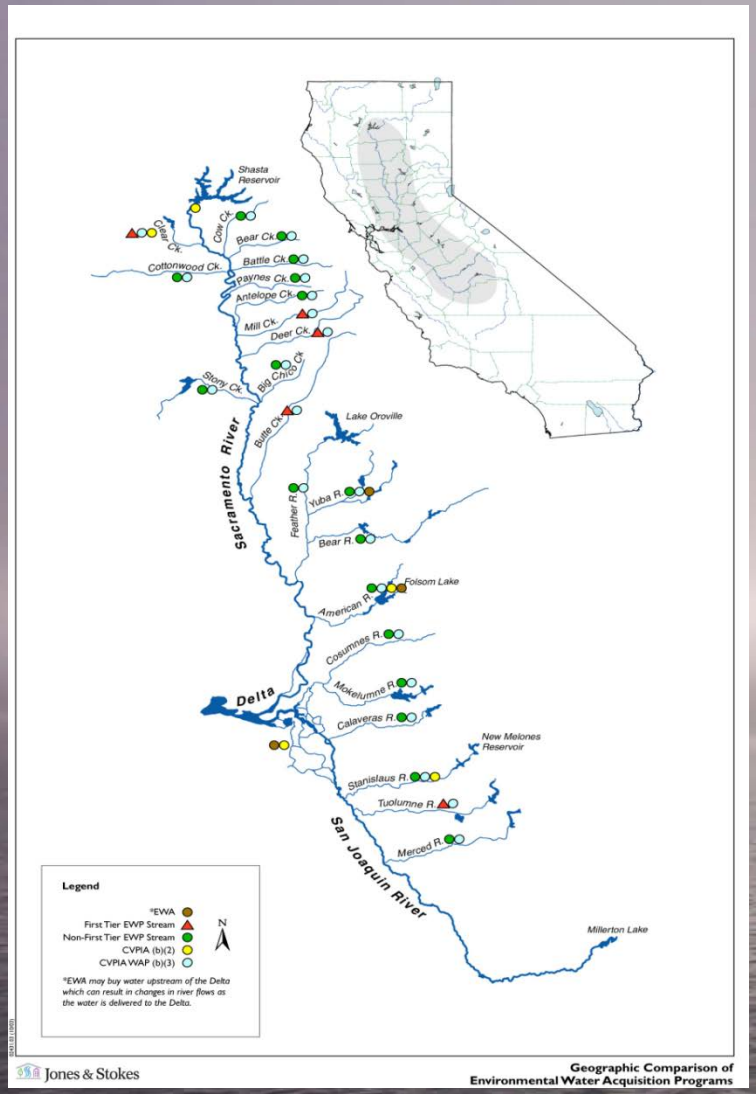
Comments for the SWRCB San Joaquin River (Vernalis) Flow SED



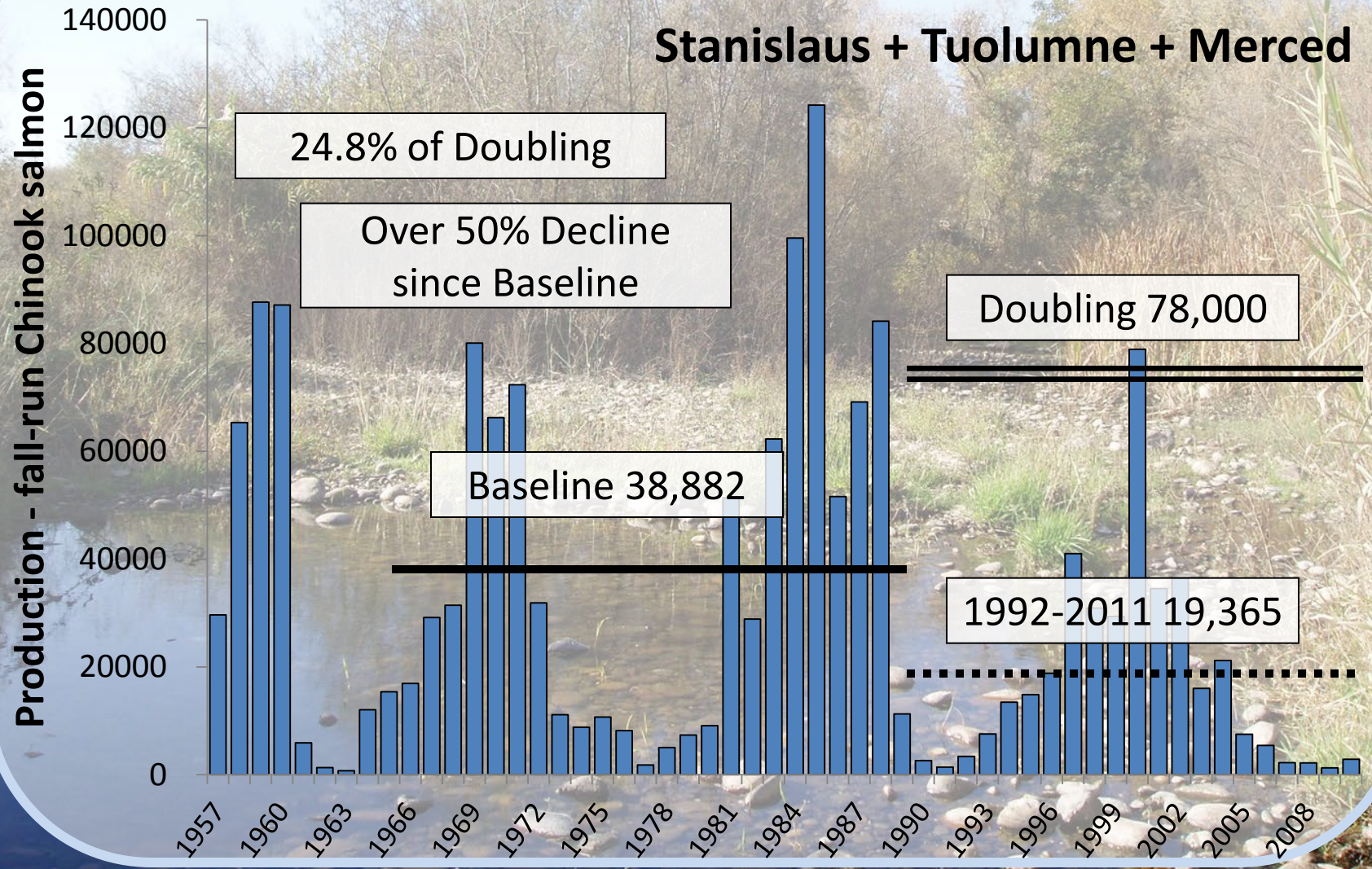
State Water Resources Control Board Scoping Meeting, March 20, 2013

Julie Zimmerman, PhD.
Roger Guinee
USFWS, Region 8, Sacramento

The narrative objective in the SED is not specific or measurable.

It is unclear why the SED does not evaluate the FWS' proposed alternative from the AFRP 2005 report.

SJ Basin FRCS Adult Production

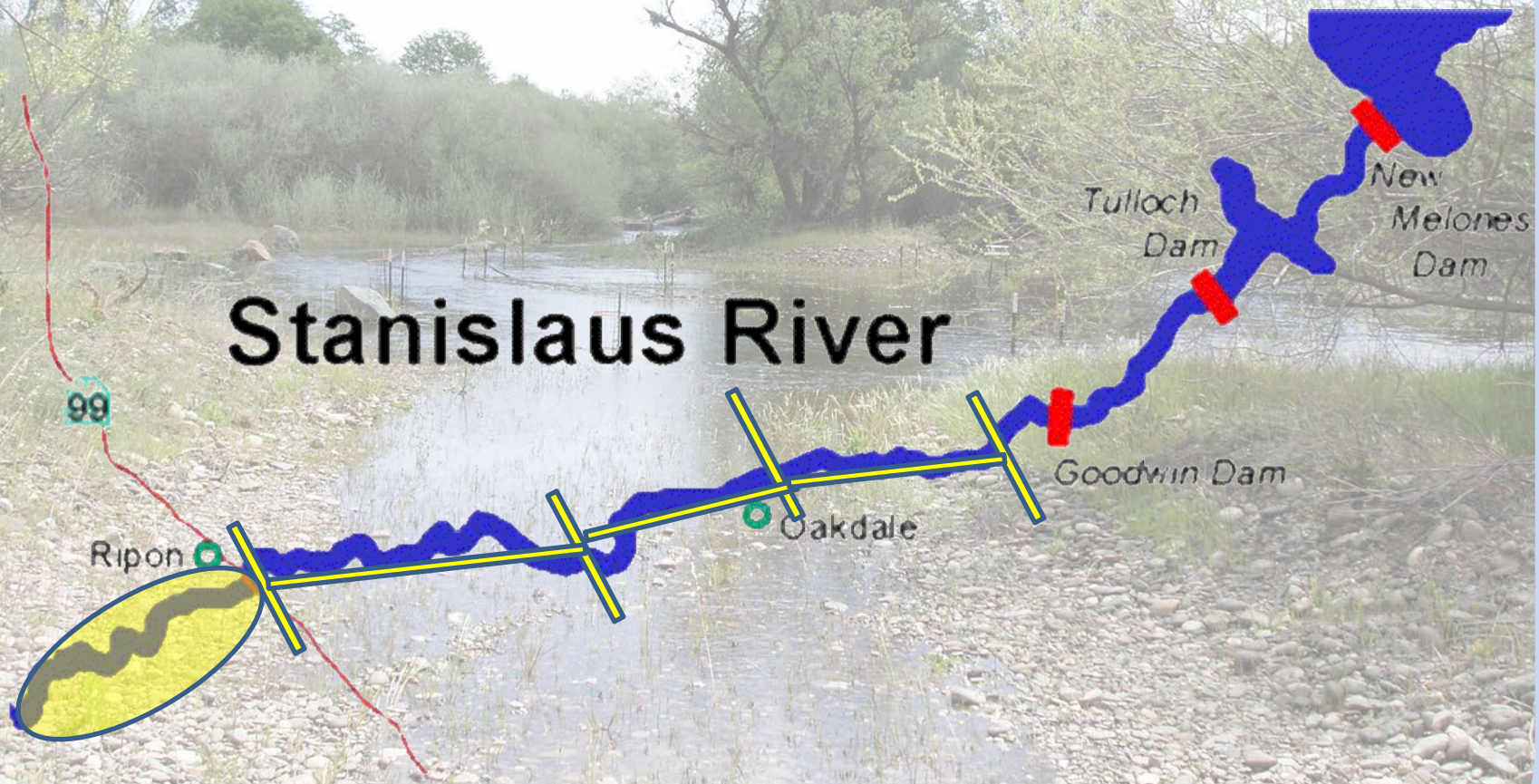


AFRP 2005 Flow Schedules

- Provide habitat variability
- Mimic natural patterns and enhance ecological functions
- Inundate floodplain habitat
- Provide emigration cues for salmonids

AFRP 2005	W	AN	BN	D	C
TAF (UF%)	*53% Increase*				
Stanislaus	604,286 (33%)	487,578 (38%)	422,911 (48%)	384,882 (60%)	334,899 (73%)
Tuolumne	877,247 (29%)	673,275 (32%)	549,579 (37%)	510,996 (44%)	435,634 (50%)
Merced	513,068 (32%)	394,518 (38%)	340,966 (47%)	279,861 (52%)	241,566 (61%)
	Doubling				
Stanislaus	1,000,557 (55%)	785,985 (62%)	614,584 (70%)	525,231 (82%)	445,016 (97%)
Tuolumne	1,530,914 (51%)	1,169,192 (55%)	885,659 (59%)	783,854 (68%)	653,656 (76%)
Merced	869.671 (54%)	624,749 (59%)	503,572 (69%)	404,055 (75%)	343,591 (86%)

Floodplain Modeling

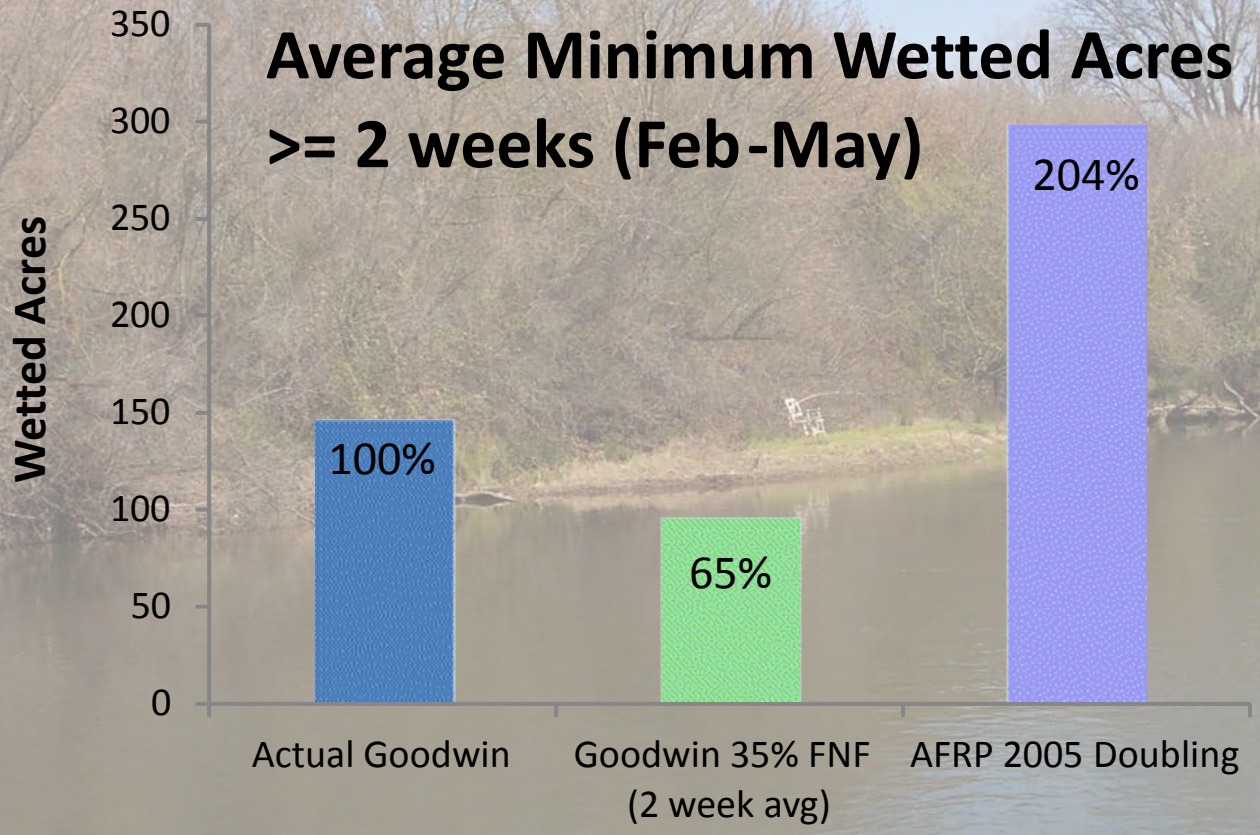


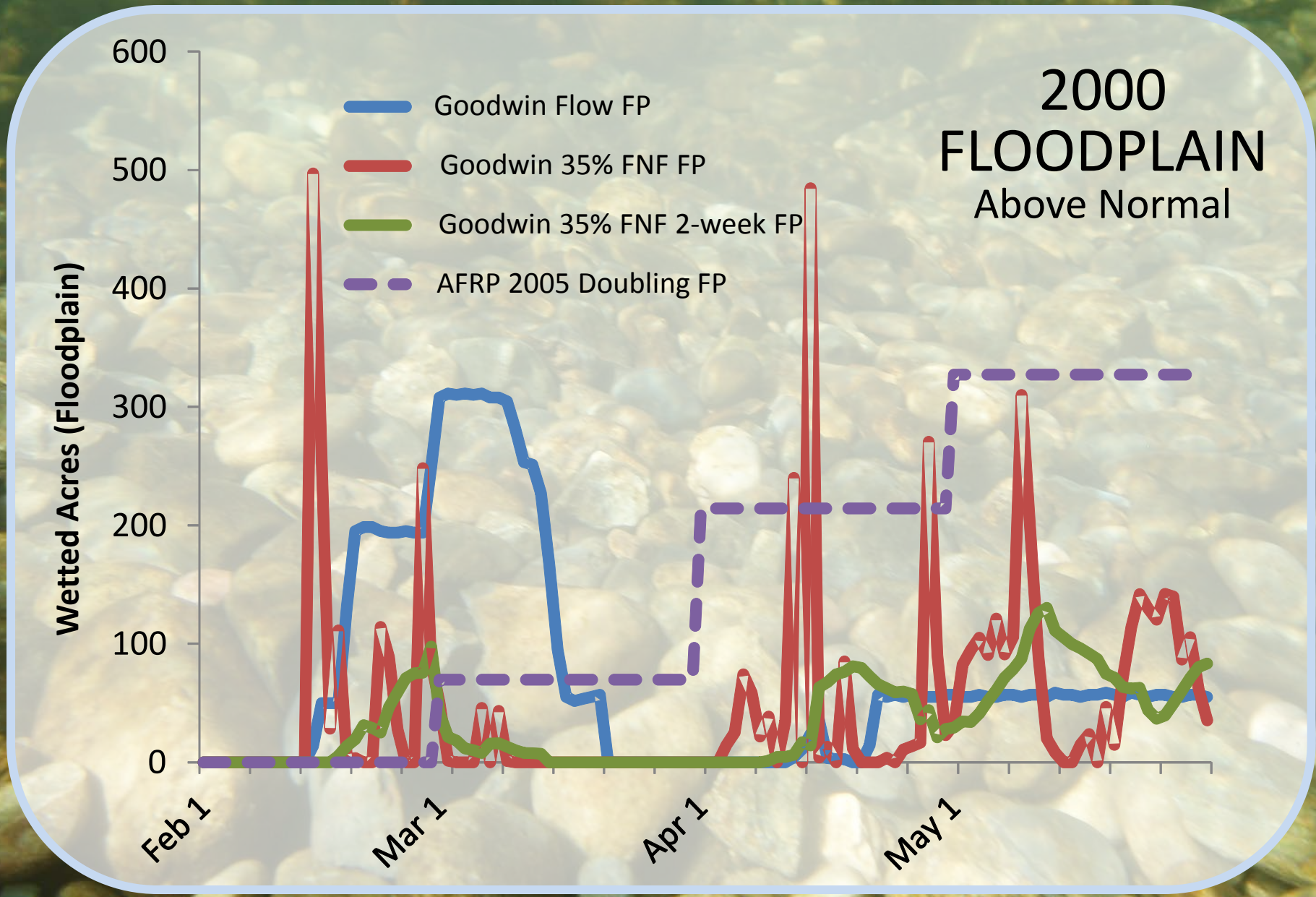
SRH-2D Model of Discharge to Wetted Area

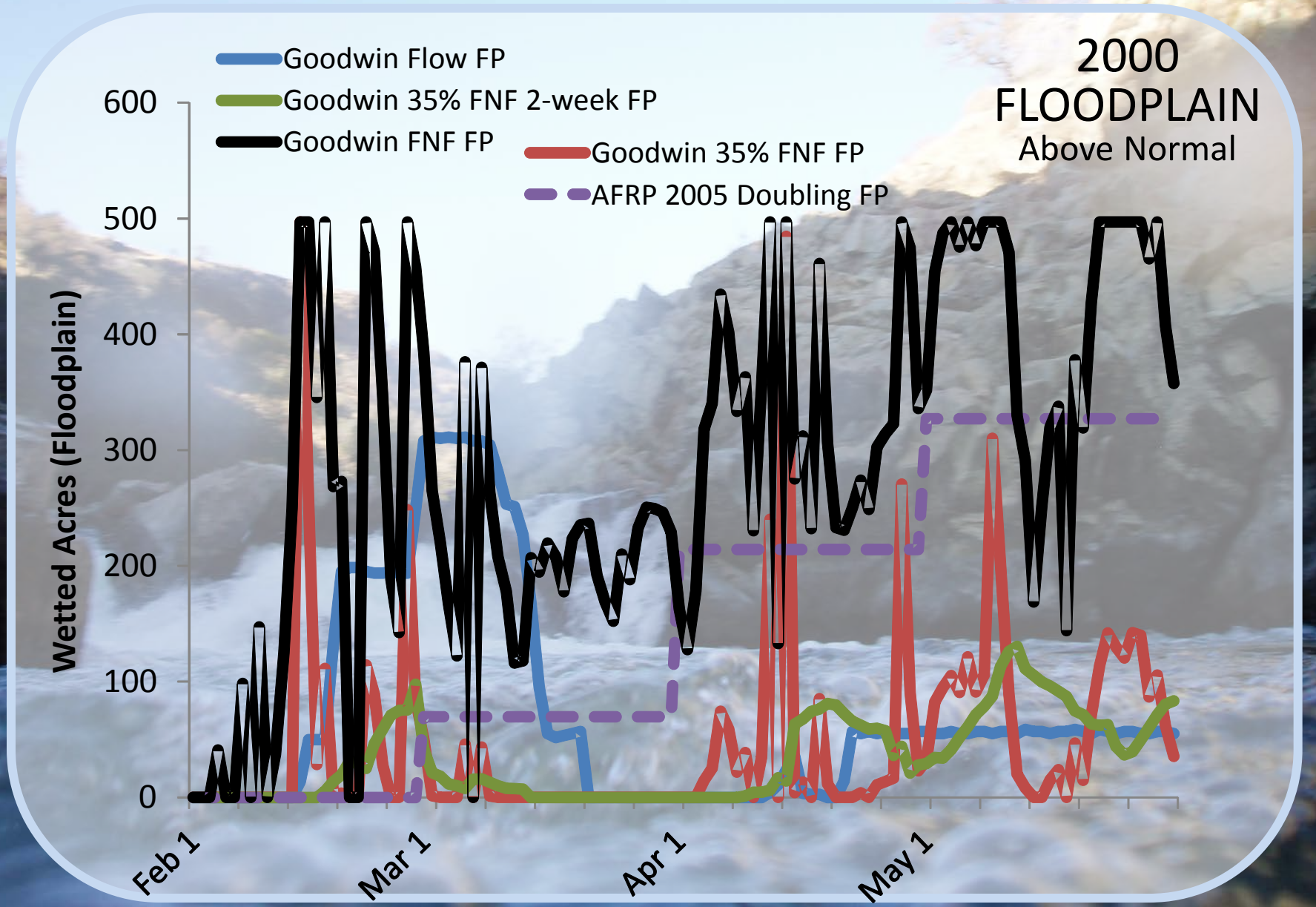
Modeled Floodplain Inundation

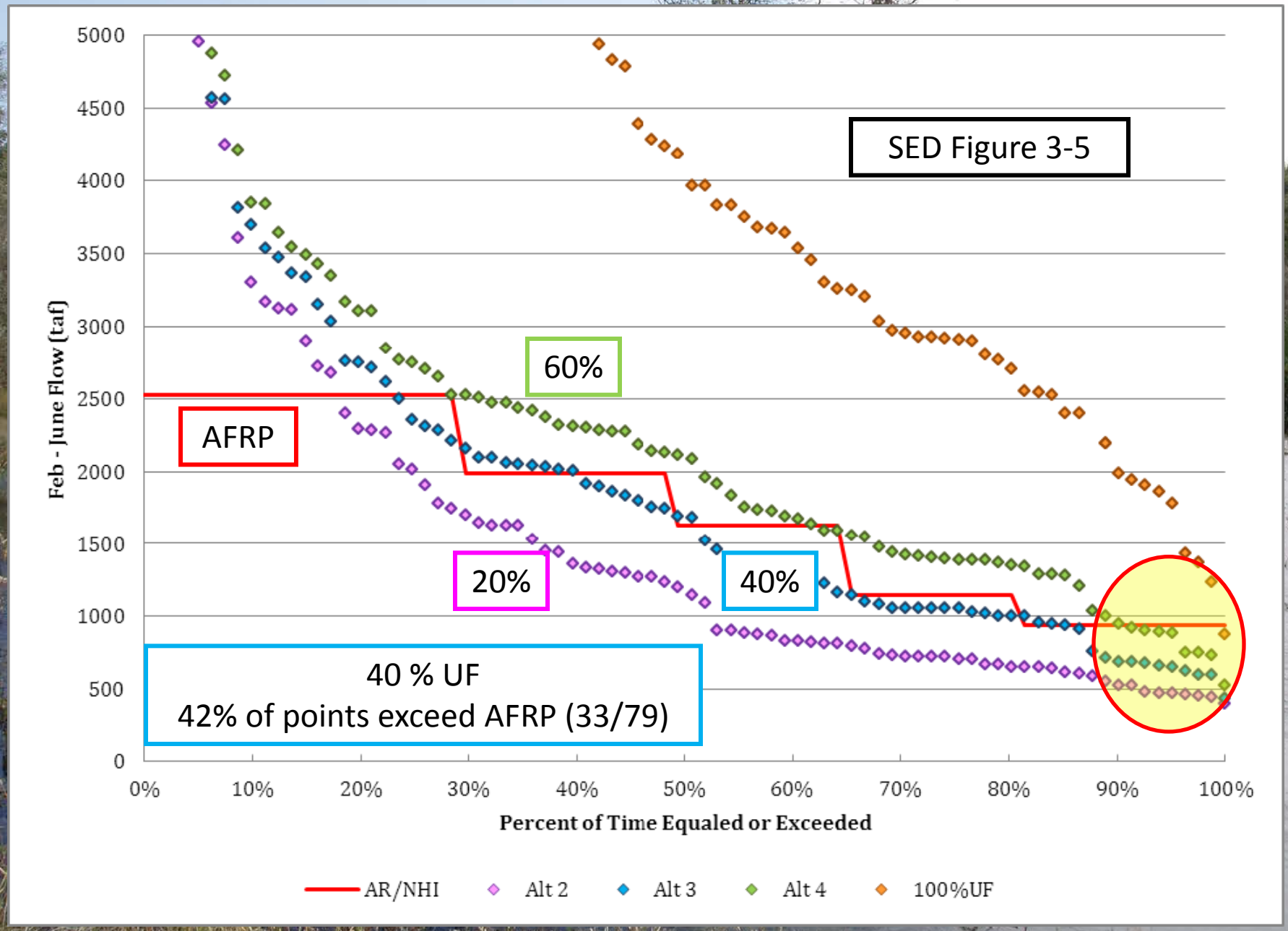
February - May	Avg Min Acres inundated for >= 2 weeks	Percent of Actual
Actual (1995-2012)	145	100%
SED 35% (14 day avg)	95	65%
AFRP 2005 Doubling	296	204%

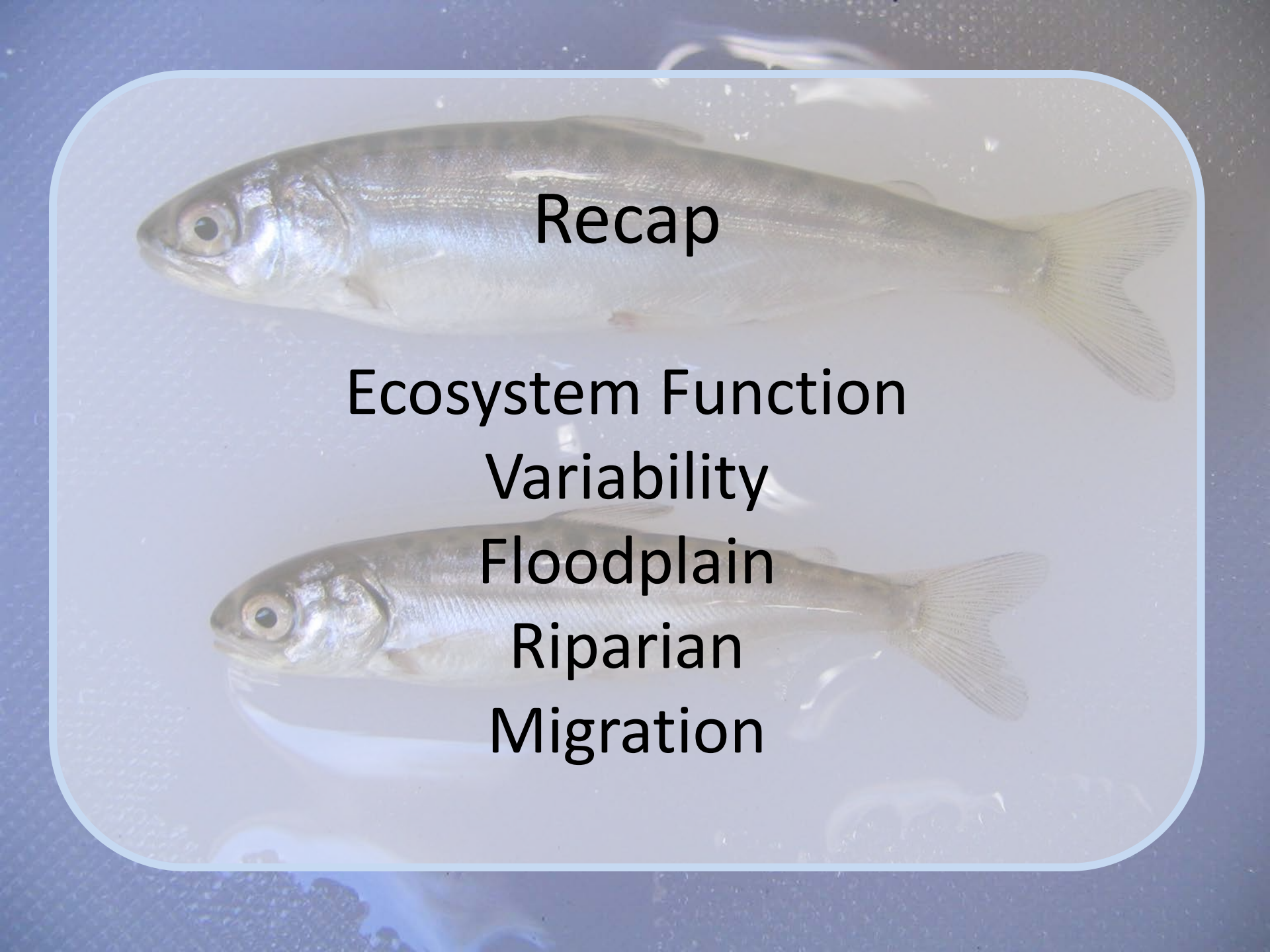
Modeled Floodplain Inundation




2000
FLOODPLAIN
Above Normal
Goodwin Flow FP
Goodwin 35% FNF FP
Goodwin 35% FNF 2-week FP
AFRP 2005 Doubling FP
Wetted Acres (Floodplain)
600
500
400
300
200
100
0
Feb 1
Mar 1
Apr 1
May 1


2000
FLOODPLAIN
Above Normal
Goodwin Flow FP
Goodwin 35% FNF 2-week FP
Goodwin FNF FP
Goodwin 35% FNF FP
AFRP 2005 Doubling FP
Wetted Acres (Floodplain)
600
500
400
300
200
100
0
Feb 1
Mar 1
Apr 1
May 1


SED Figure 3-5
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb - June Flow (taf)
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Time Equaled or Exceeded
AFRP
60%
20%
40%
40 % UF
42% of points exceed AFRP (33/79)
AR/NHI
Alt 2
Alt 3
Alt 4
100%UF



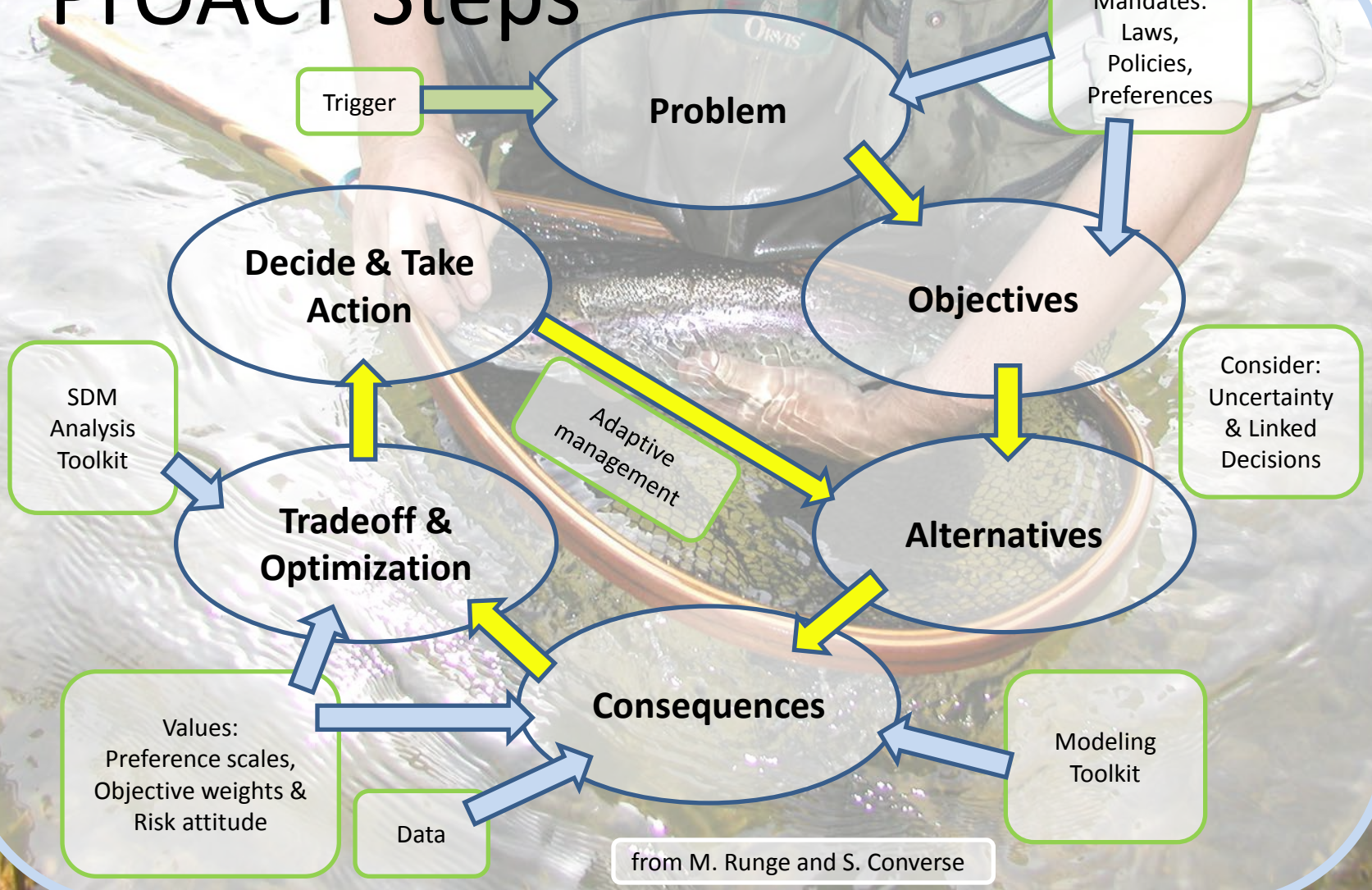
Recap

Ecosystem Function
Variability
Floodplain
Riparian
Migration

Adaptive Management

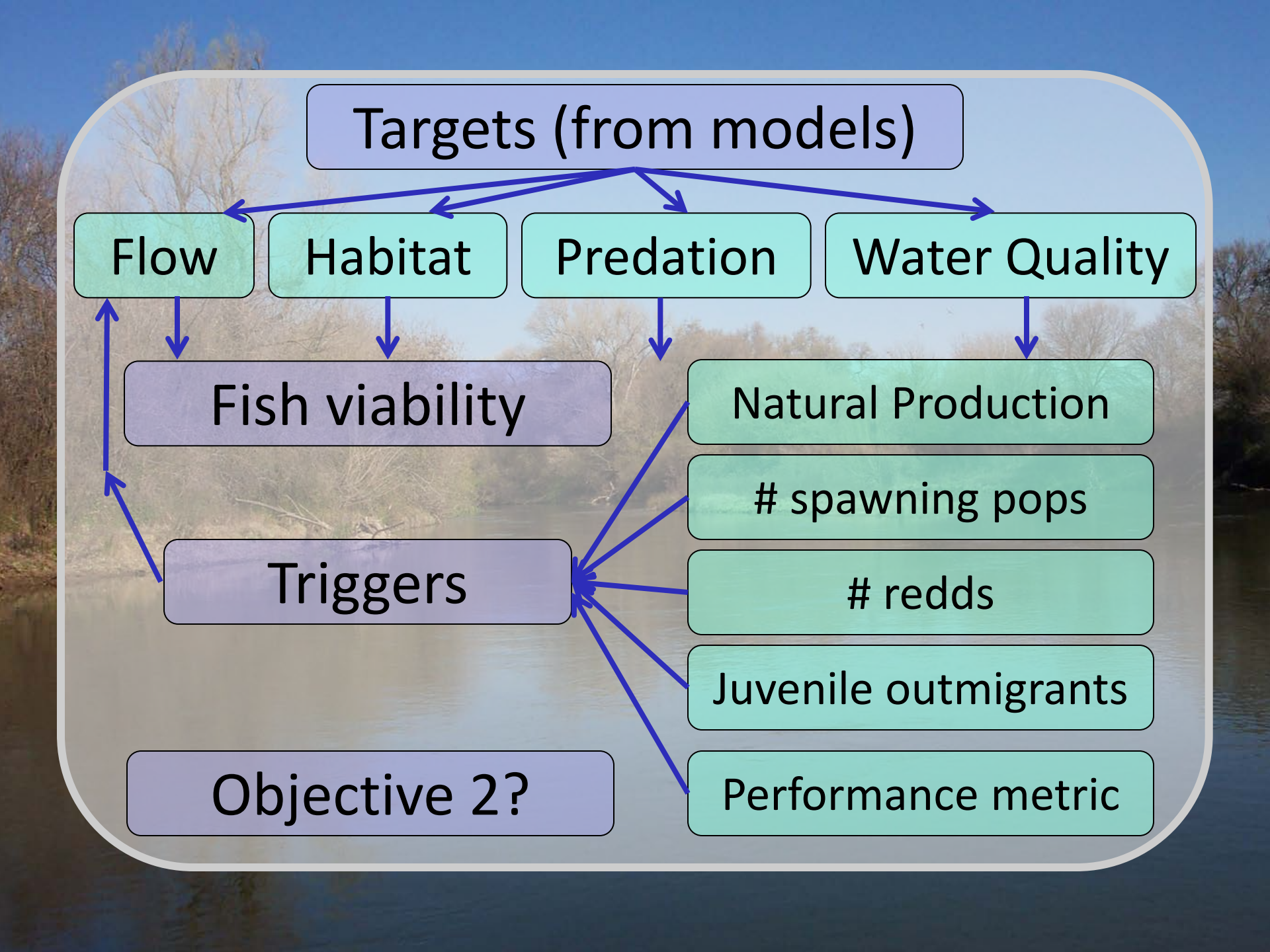
- Decision-making framework
- Define measureable objectives
- Develop models and metrics
- Evaluate trade-offs
- Quantify targets and triggers for all actions

PrOACT Steps



Develop a Plan

- Develop measurable objectives
- Determine performance metrics
- Link management actions to metrics
- Collect information that may lead to changes in a decision
- Incorporate new data to improve decision making over time

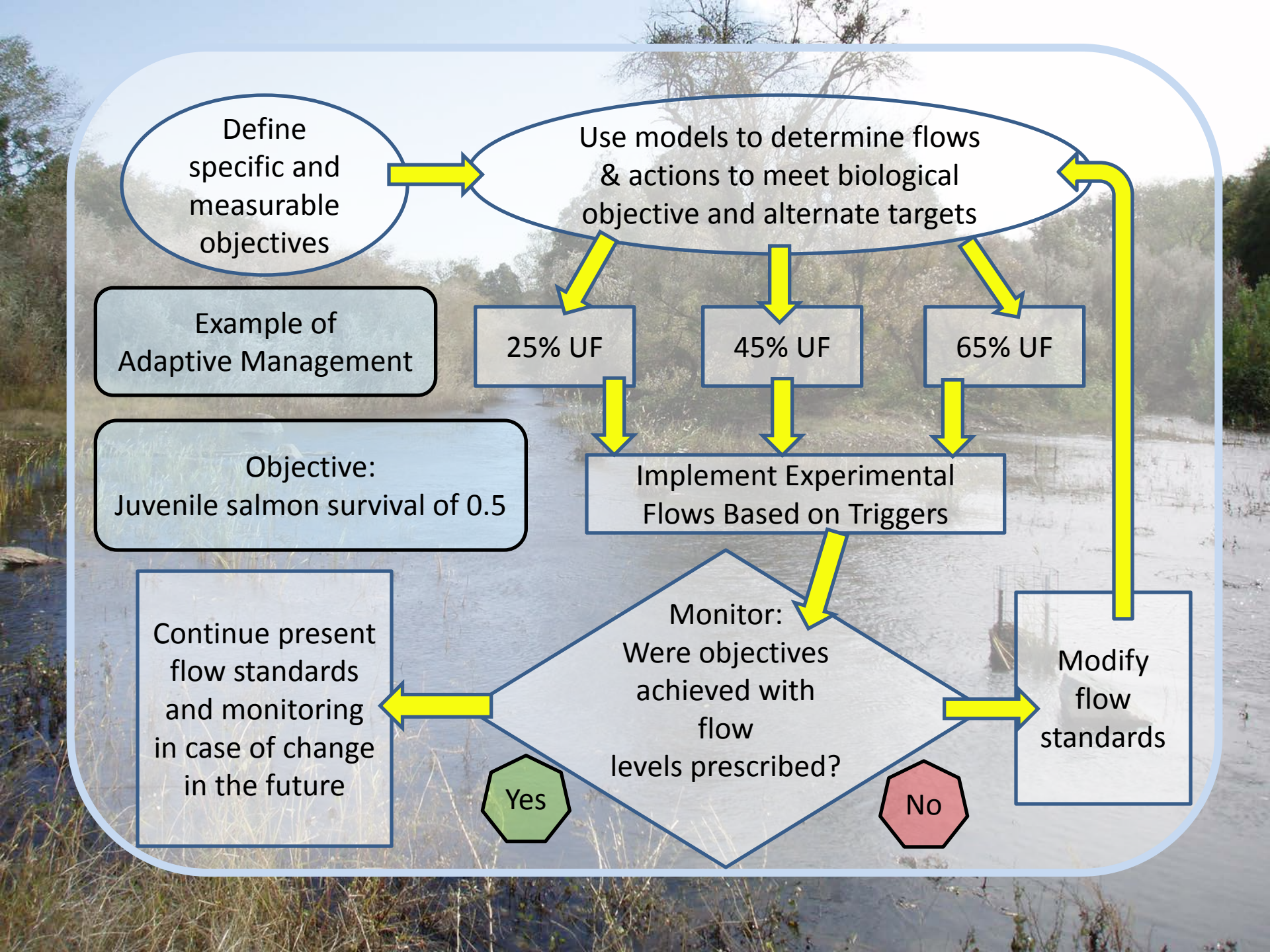

Targets (from models)
Flow
Habitat
Predation
Water Quality
Fish viability
Natural Production
spawning pops
Triggers
redds
Juvenile outmigrants
Objective 2?
Performance metric

Address Uncertainty

- Examine a flow range broad enough to detect response
- 60% UIF or above may be needed
- Evaluate
  - Sensitivity of metrics
  - Shape of relationship

Integrate Annual & Long-term Adaptive Management

- Annual - Flexible implementation?
- Long Term – Determine % UF that…
  - Provides greatest fish benefits?
  - Balances beneficial uses?


Define specific and measurable objectives
Use models to determine flows & actions to meet biological objective and alternate targets
Example of Adaptive Management
25% UF
45% UF
65% UF
Objective: Juvenile salmon survival of 0.5
Implement Experimental Flows Based on Triggers
Monitor: Were objectives achieved with flow levels prescribed?
Yes
No
Continue present flow standards and monitoring in case of change in the future
Modify flow standards

Recap: Adaptive Management

- Objectives
- Develop models
- Quantify trade-offs
- Address uncertainty
- Develop science-based plan – alternatives, metrics, triggers