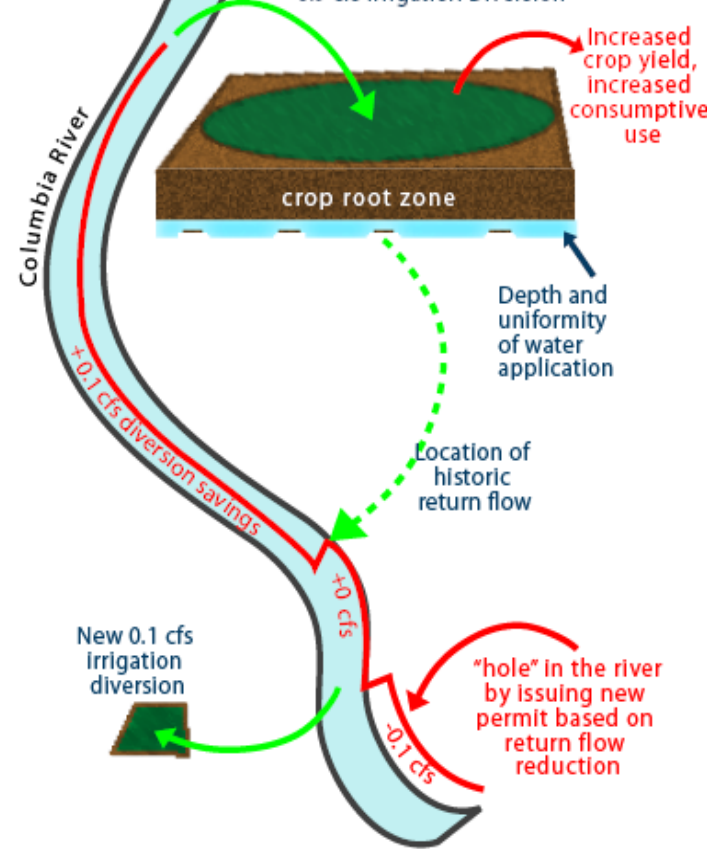
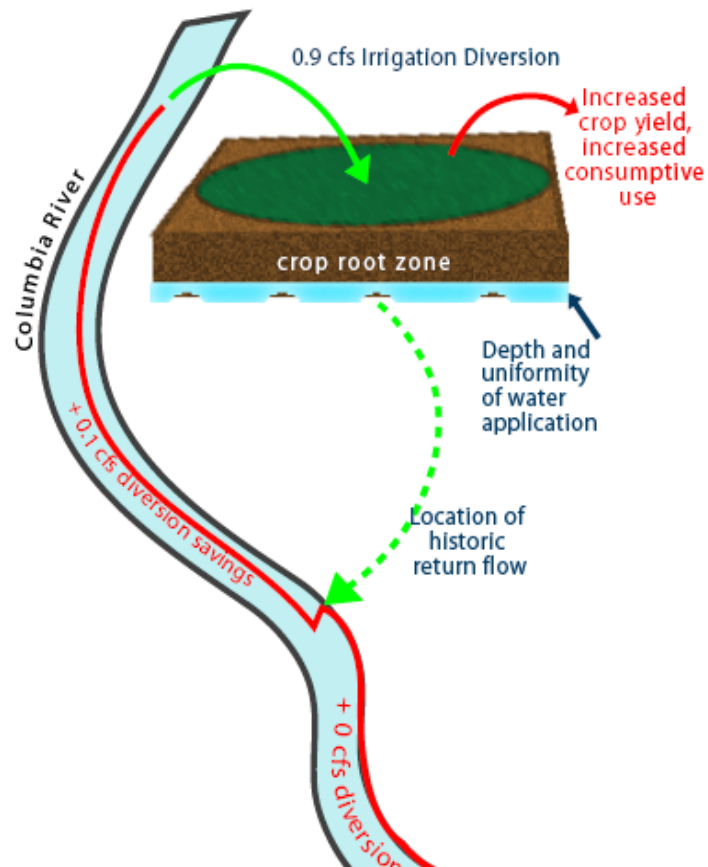
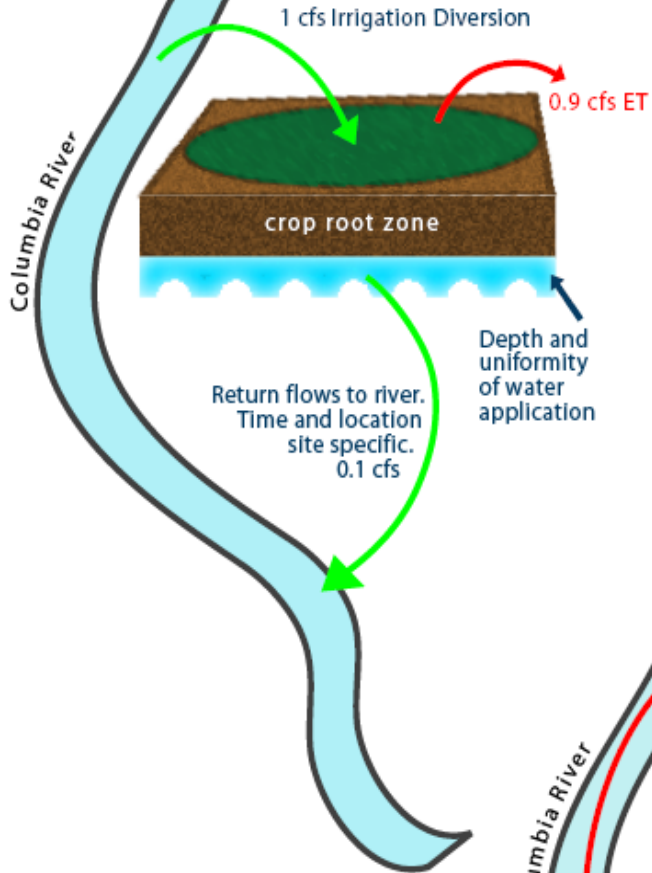


Yakima River Basin Integrated Water Resource Management Alternative

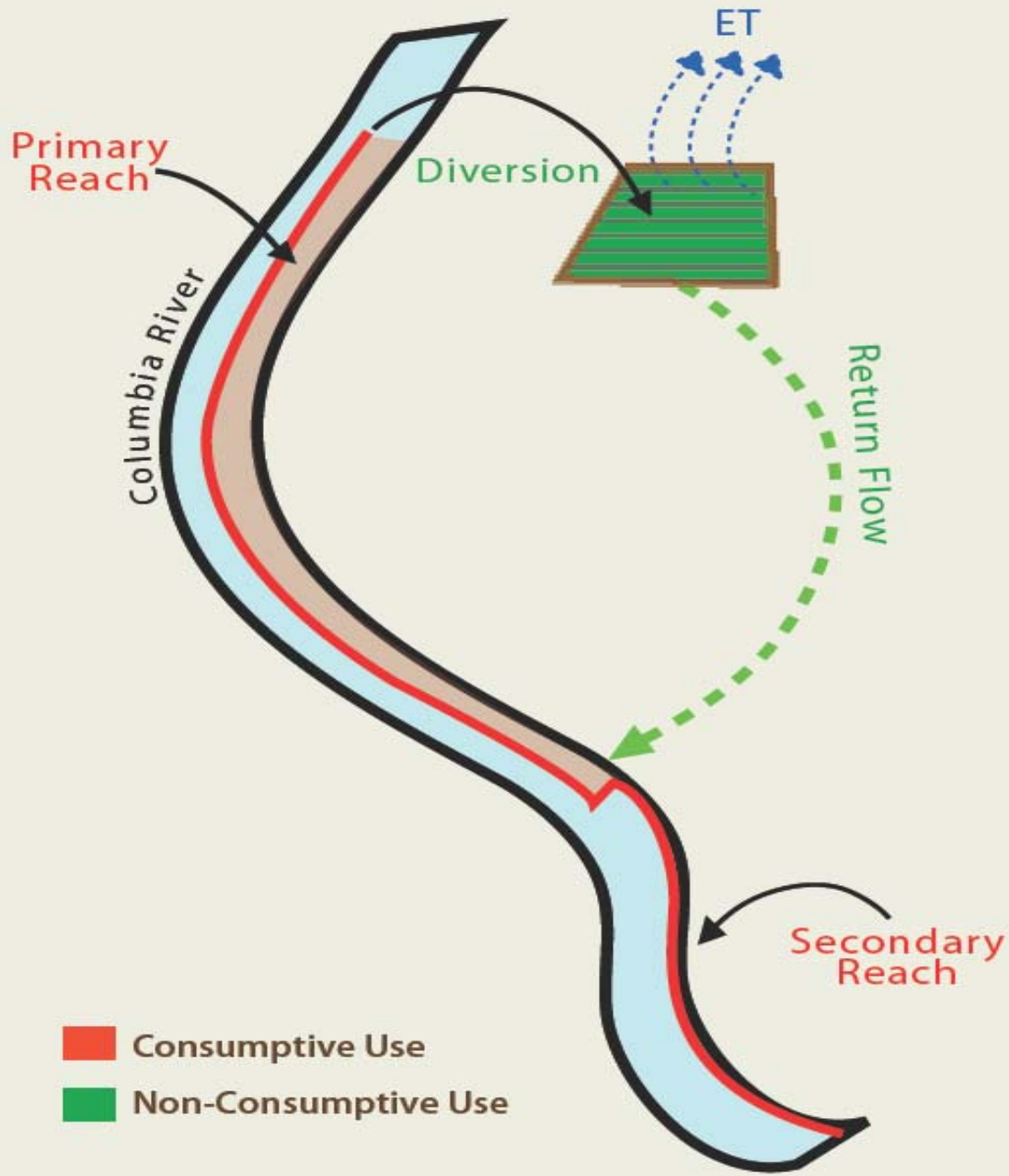
- Package of elements designed to improve water supply and fish habitat
 - Fish passage
 - Structural and operational changes
 - New or expanded storage reservoirs
 - Ground water storage
 - Fish habitat enhancements
 - Enhanced water conservation
 - Market-based reallocation

Enhanced Water Conservation

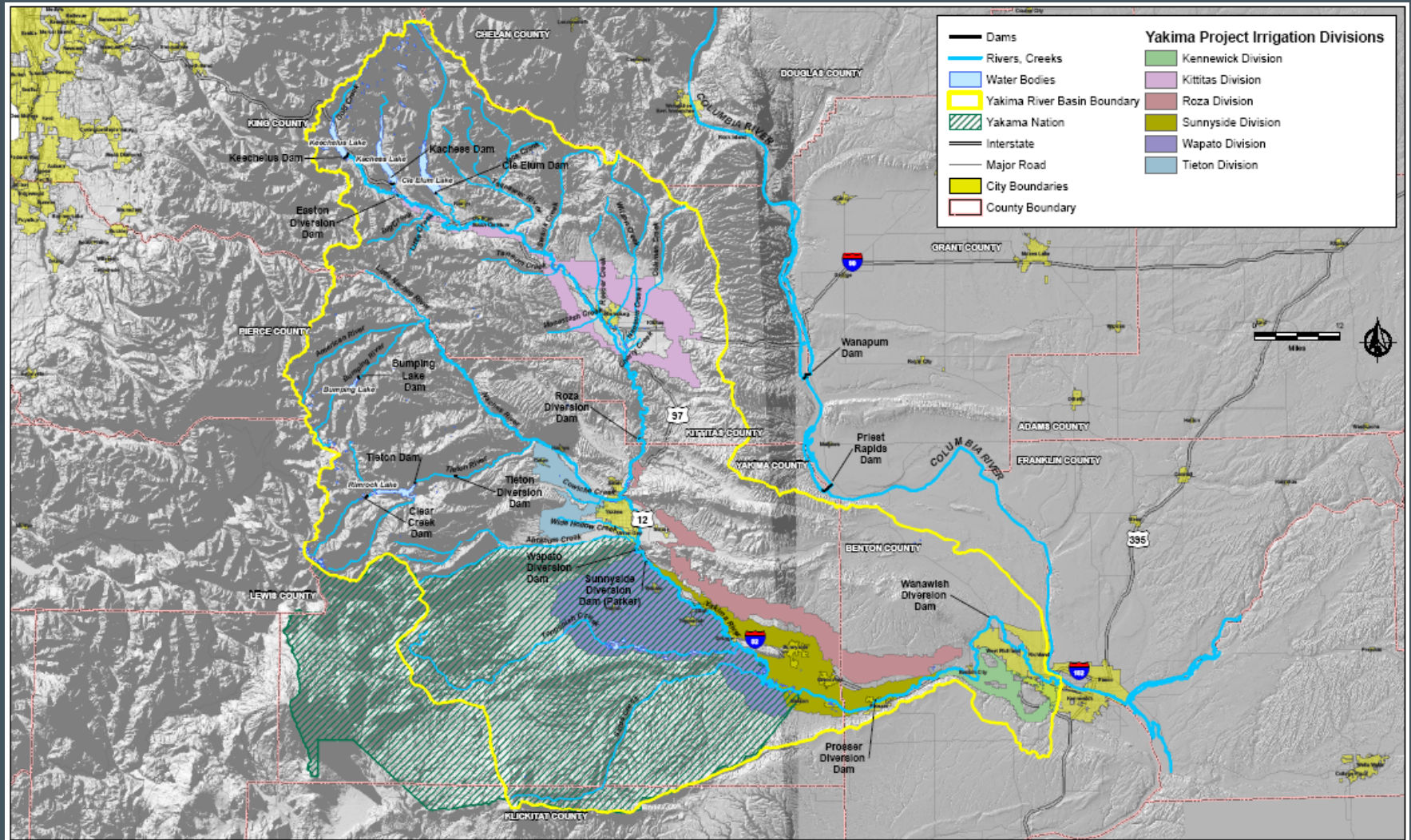
- Aggressive program of water conservation
 - Includes measures to be implemented under YRBWEP
 - Irrigation, municipal, industrial, and commercial measures not implemented under YRBWEP
 - Conserved water assumed to become part of TWSA as compared to 2/3rds going to instream flow for YRBWEP
 - Includes Lining, Piping, Re-regulation Reservoirs, On-farm Conservation, Pump Exchange, Water Management, Municipal and Industrial Water Conservation
 - 47 projects identified, total estimated cost is \$406M
 - Estimated water savings of 229,200 acre-feet annually



Trust Water Program Schematic



Yakima River Basin



Enhanced Water Conservation – YRBWEP Projects

Entity	Action	Conserved Water					
		Volume (acre-feet)			Flow (cfs)		
		Total	Instream	Irrigation	Total	Instream	Irrigation
Upper Yakima River Area							
KRD	System Improvements	47,800	31,700	16,100	132	88	44
Middle Yakima River Area							
RID	System Improvements under Basin Conservation Program	13,700	9,200	4,500	37	25	12
	System Improvements with “pay as you go approach”	30,000	NA	30,000	82	NA	82
	Total	43,700	9,200	34,500	119	25	94
UGID	Change in Diversion	13,000			36		
	System Improvements	5,600	3,700	1,900	15	10	5
WIP	Change in Diversion				50	50	
Sunnyside	System Improvements (1)	29,100	19,400	9,700	80	54	26
	System Improvements (2)	24,700	16,500	8,200	68	46	22
	Total	53,800	35,900	17,900	148	100	48
Benton ID	Change in Diversion	21,000			58		
	System Improvements	6,300	4,200	2,100	17	11	6
Naches River Area							
NSID	Change in Diversion				100		
Total No Action Alternative		157,200	87,700	72,500			

Enhanced Water Conservation – Model Results

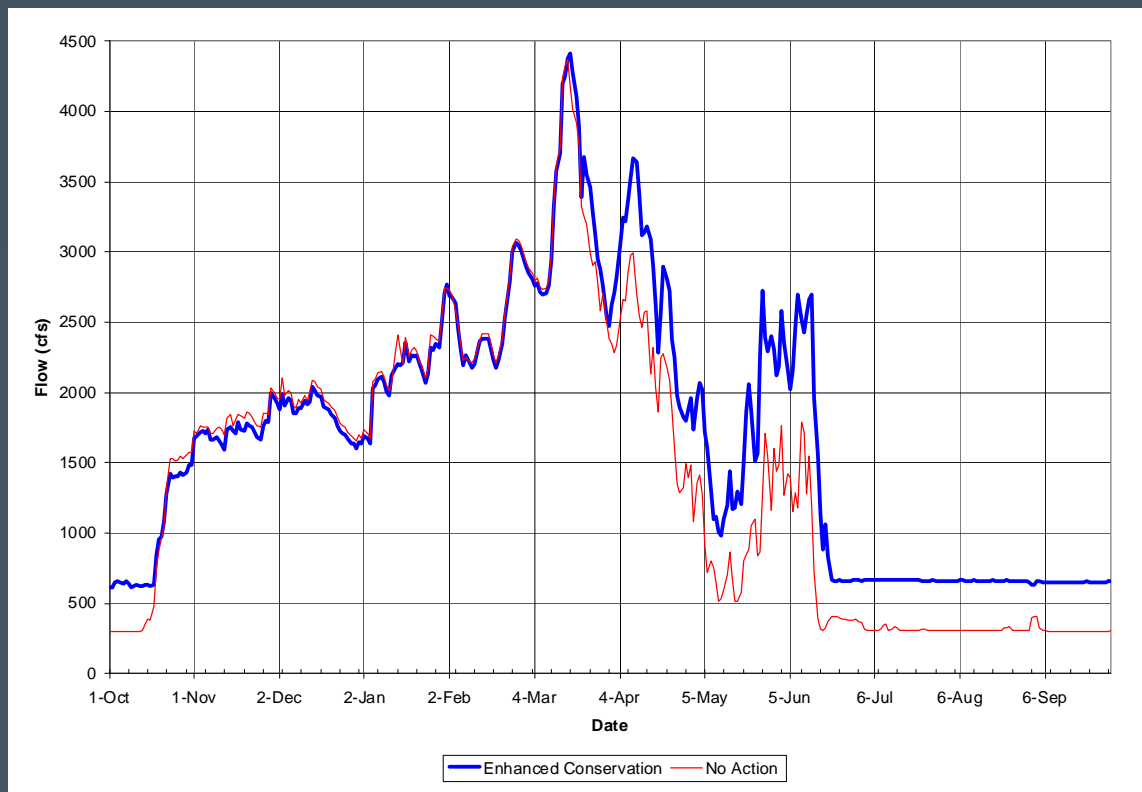
Hydrologic Indicator	Current Operation	YRBWEP Projects	Enhanced Water Conservation
	Average for Water Years 1981-2005 (maf)		
April 1 TWSA	2.82	2.84	2.86
April-September Flow Volume at Parker gage	0.51	0.62	0.66
April-September Diversion Volume upstream of Parker gage	2.02	1.91	1.85
September 30 Reservoir Contents	0.27	0.30	0.32
April-September Flow Volume at the Mouth	0.85	0.86	0.95
Irrigation Delivery Volume	1.47	1.46	1.44
	Water Year 1994 (maf and percent)		
Irrigation Delivery Volume Shortage (million acre-feet)	0.40	0.38	0.34
Irrigation Proration Level	28%	27%	28%

Enhanced Water Conservation

	April 1 TWSA (maf)				
	1992	1993	1994	2001	2005
Current Operations	2.123	2.094	1.754	1.803	1.762
Enhanced Water Conservation	2.218	2.136	1.762	1.911	1.860
Difference	+0.095	+0.042	+0.008	+0.108	+0.098

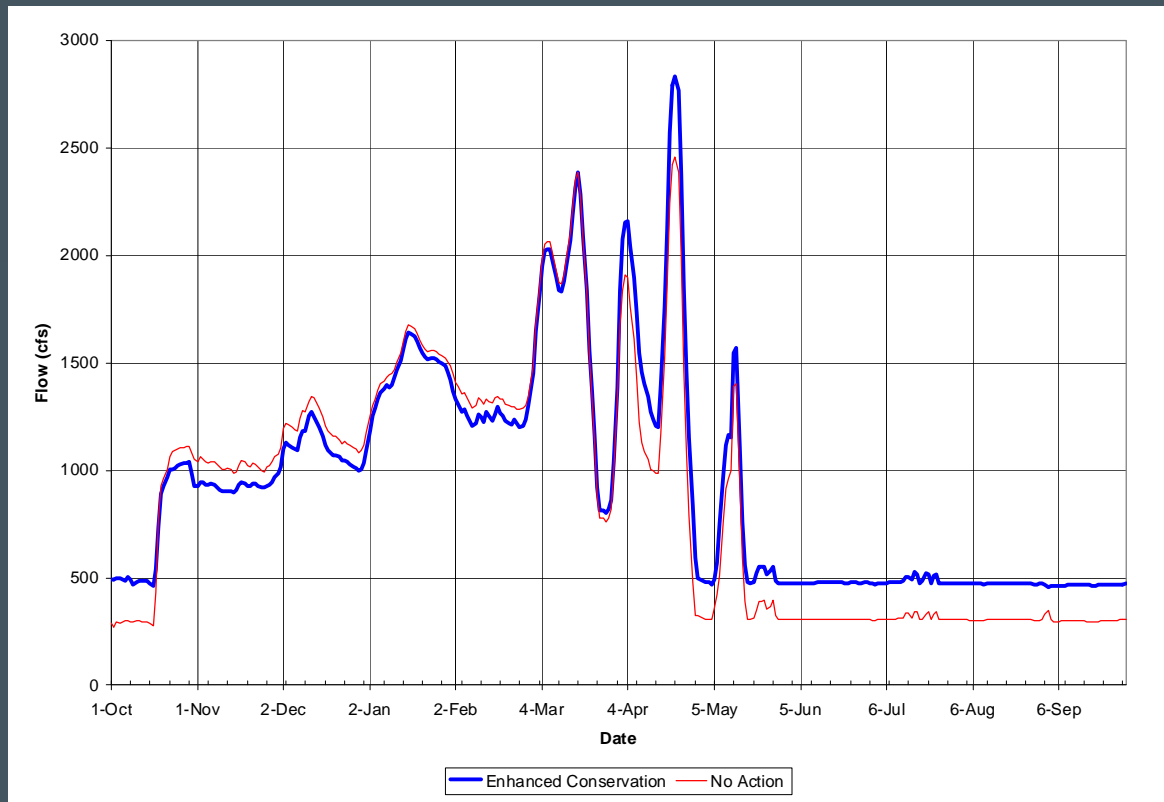
Enhanced Water Conservation – Model Results

- Modeling results as stand-alone element
 - Yakima River at Parker median flow



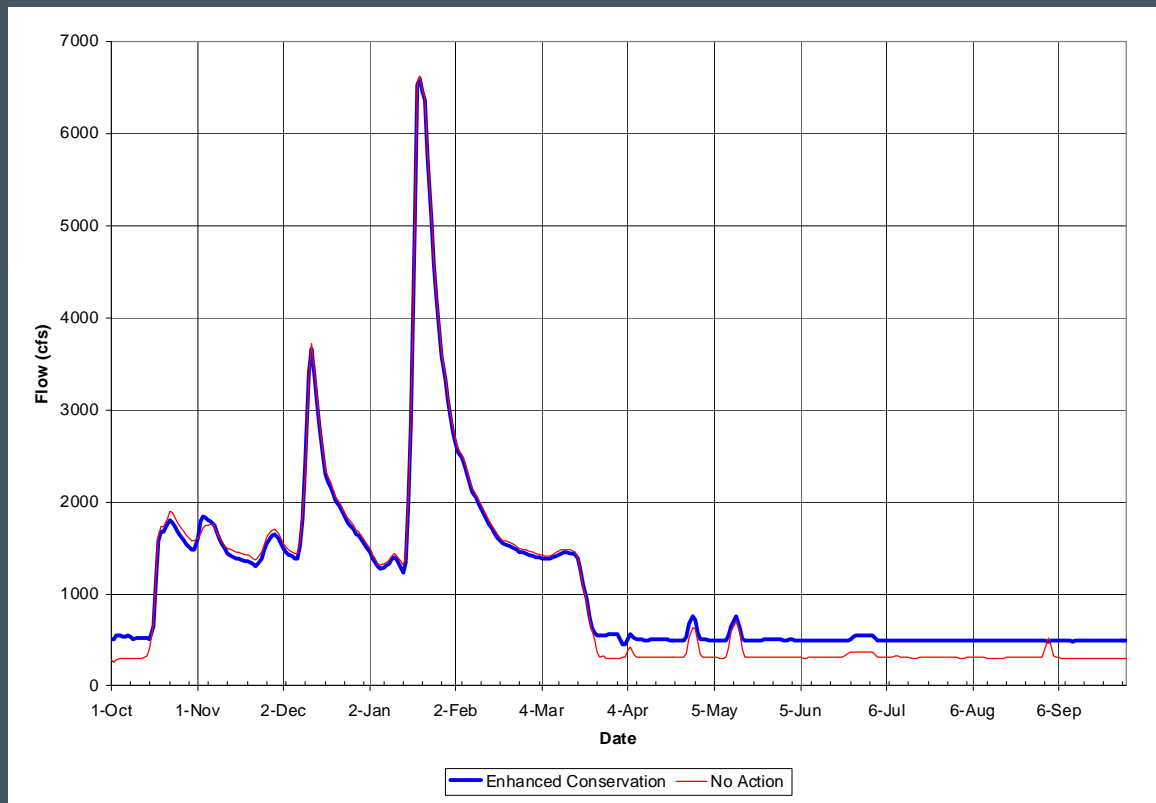
Enhanced Water Conservation – Model Results

- Modeling results as stand-alone element
 - Yakima River at Parker drought flow - 1994



Enhanced Water Conservation – Model Results

- Modeling results as stand-alone element
 - Yakima River at Parker drought flow - 2005



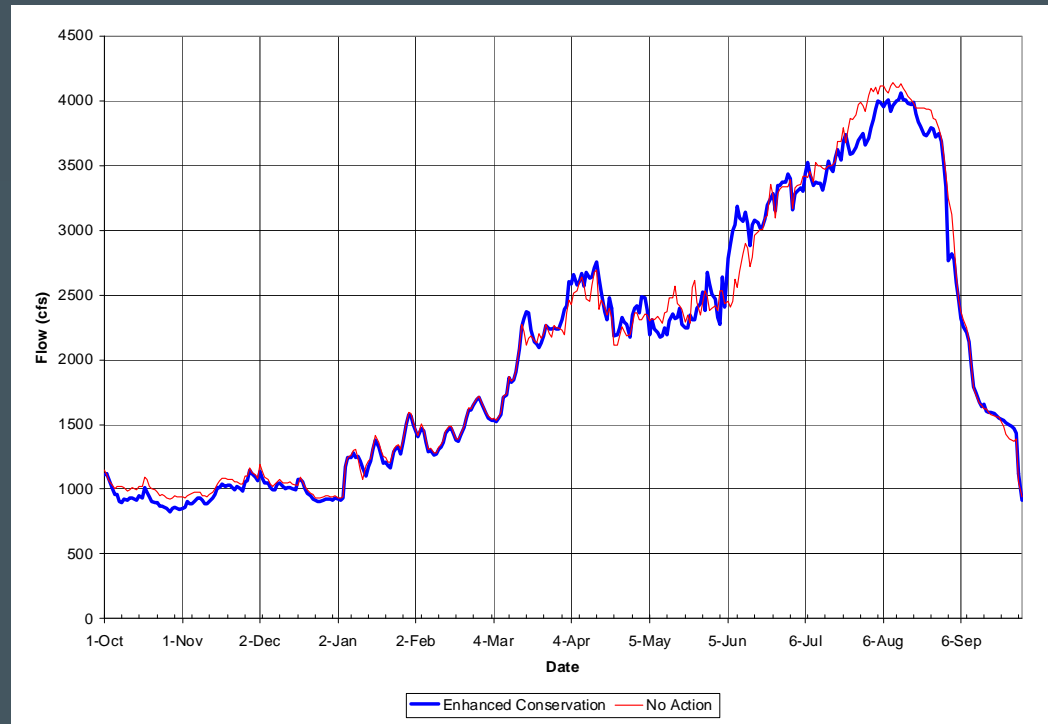
Enhanced Water Conservation

- Summary of benefits
 - Increase in instream flow below Parker
 - Increase in TWSA and irrigation supply during most years
- Summary of Limitations
 - Does not result in increase in water supply during drought years

- Extra hydrographs

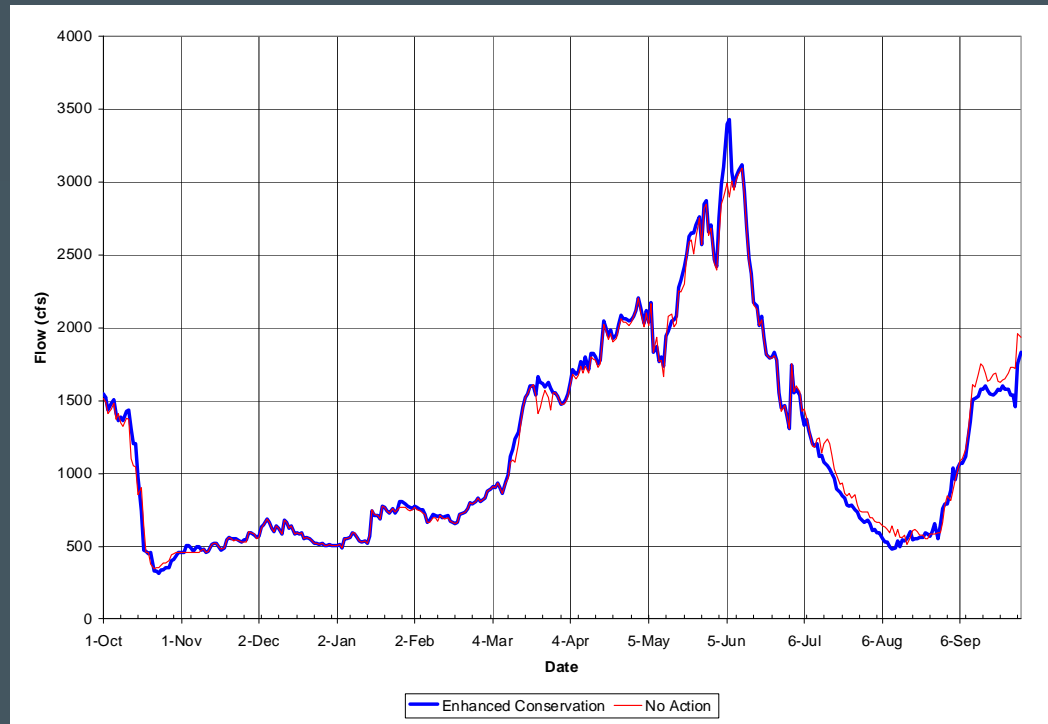
Enhanced Water Conservation

- Modeling results for Enhanced Water Conservation as stand-alone element
 - Yakima River at Umtanum median flow



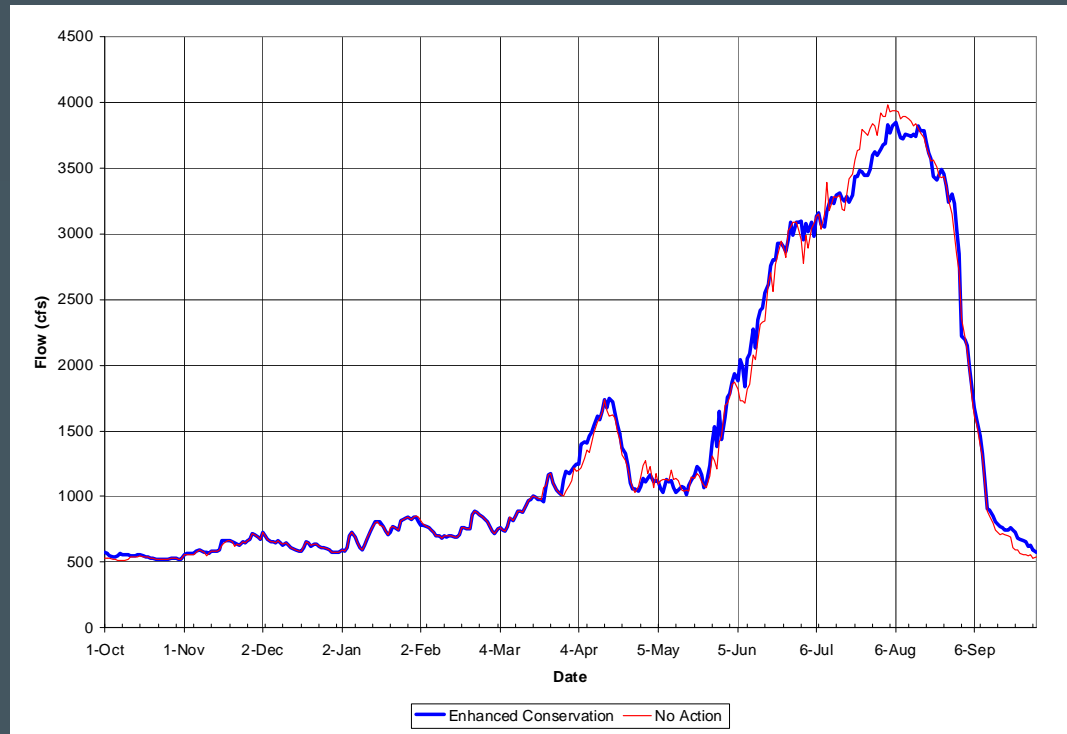
Enhanced Water Conservation

- Modeling results for Enhanced Water Conservation as stand-alone element
 - Naches River near Naches median flow



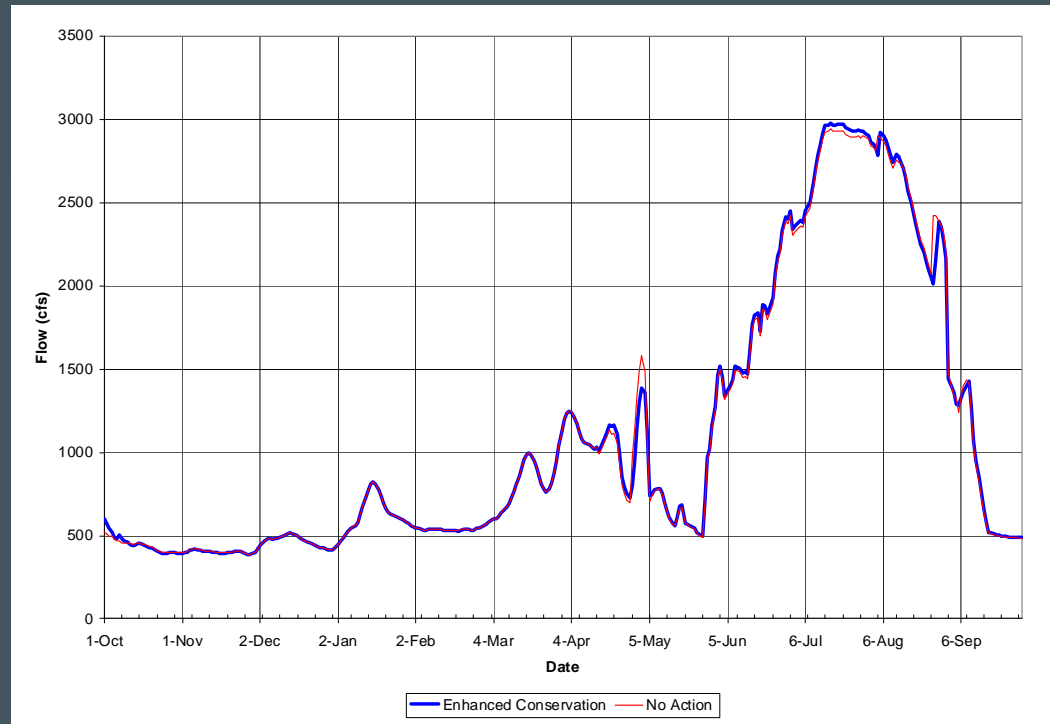
Enhanced Water Conservation

- Modeling results for Enhanced Water Conservation as stand-alone element
 - Cle Elum River below dam median flow



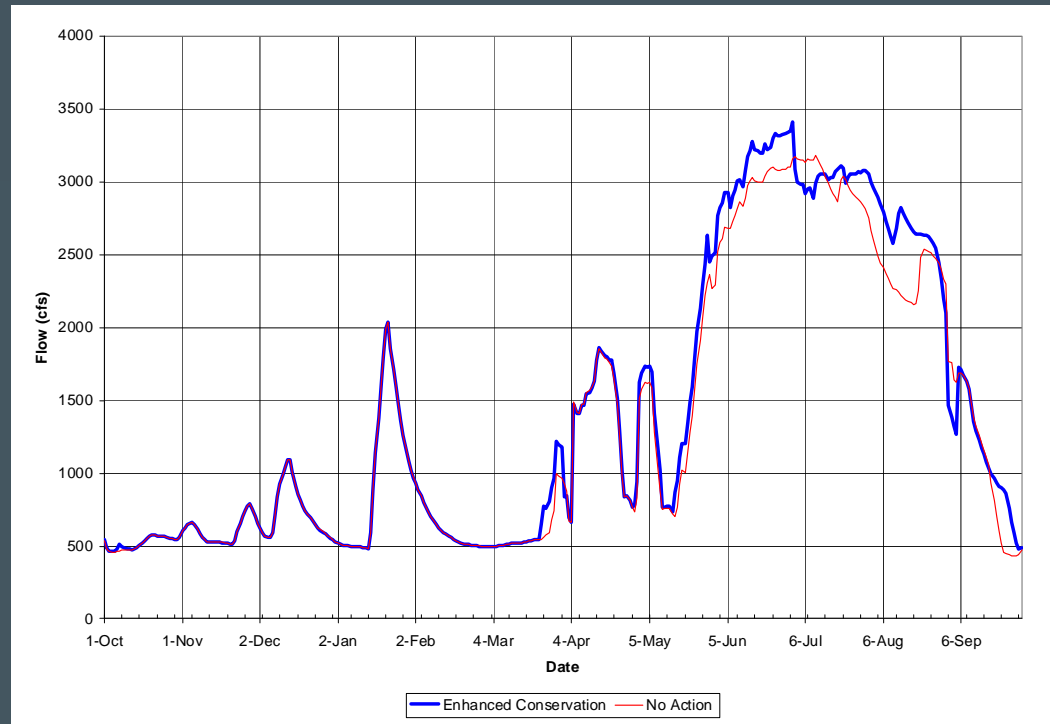
Enhanced Water Conservation

- Modeling results for Enhanced Water Conservation as stand-alone element
 - Cle Elum River below dam drought flow – 1994



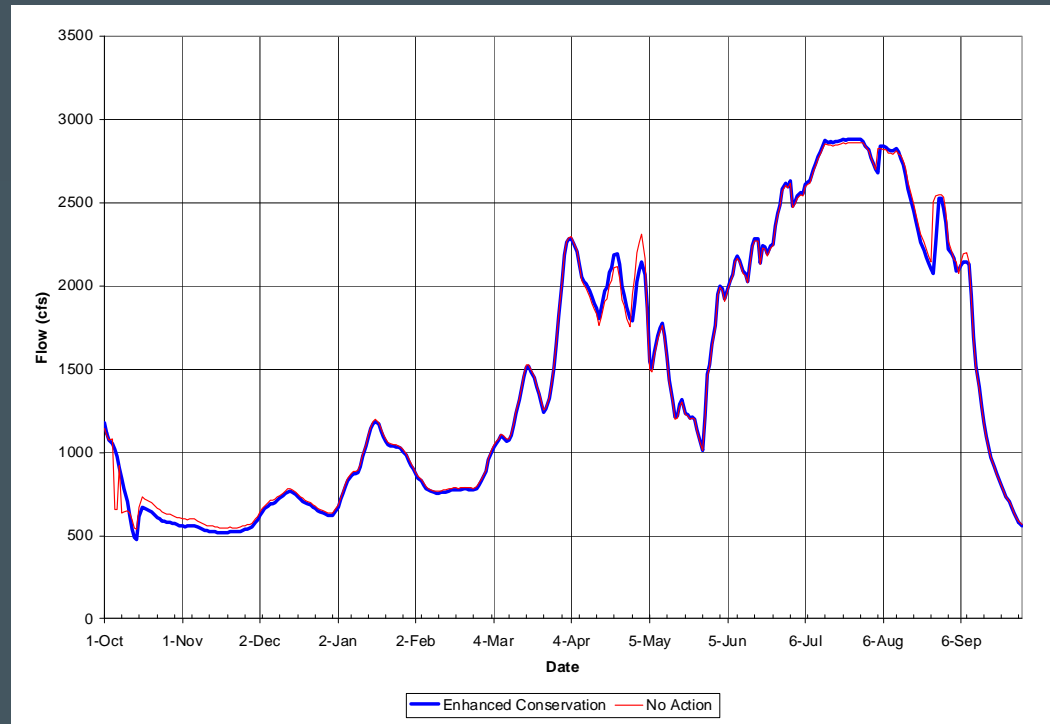
Enhanced Water Conservation

- Modeling results for Enhanced Water Conservation as stand-alone element
 - Cle Elum River below dam drought flow – 2005



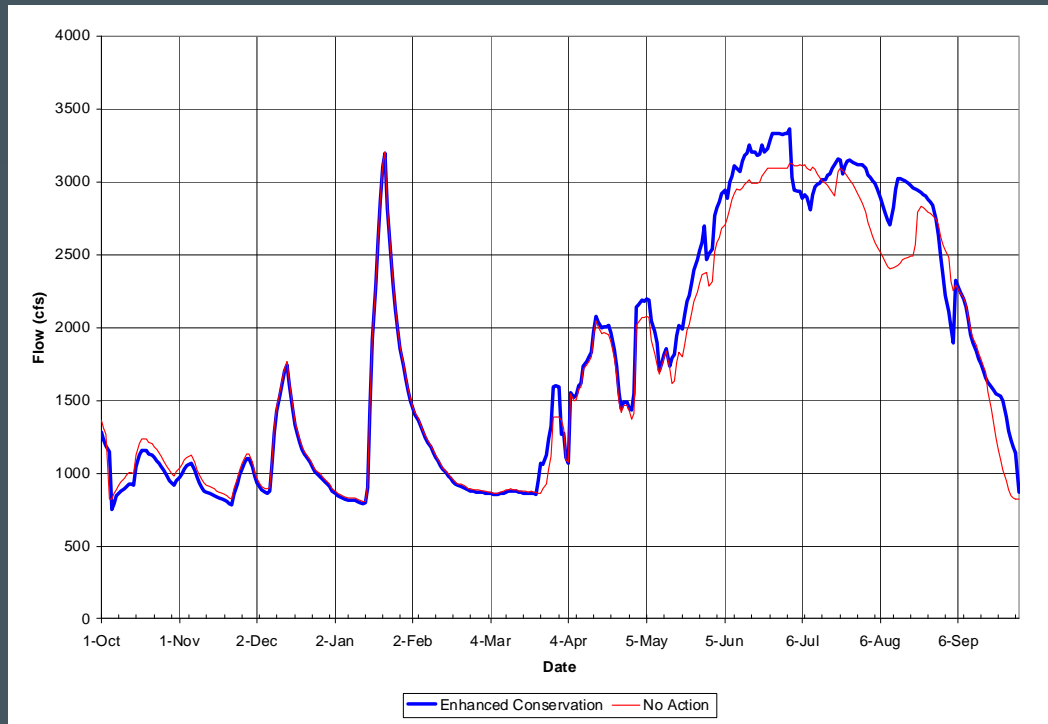
Enhanced Water Conservation

- Modeling results for Enhanced Water Conservation as stand-alone element
 - Yakima River at Umtanum drought flow – 1994



Enhanced Water Conservation

- Modeling results for Enhanced Water Conservation as stand-alone element
 - Yakima River at Umtanum drought flow – 2005



Enhanced Water Conservation

- Modeling results for Enhanced Water Conservation as stand-alone element
 - Naches River near Naches drought flow - 1994

