CSKT Presentation
10-15-2014 Compact Negotiation Meeting

Presentation Outline

- Overview
- Physical and Administrative Basis For Adaptive Management
- Instream Flows / River Diversion Allowances
- Opportunities for Saved Water
- Appendix Review
  - Adaptive Management,
  - Operational Improvements,
  - Rehabilitation and Betterment

Terms Used in Presentation

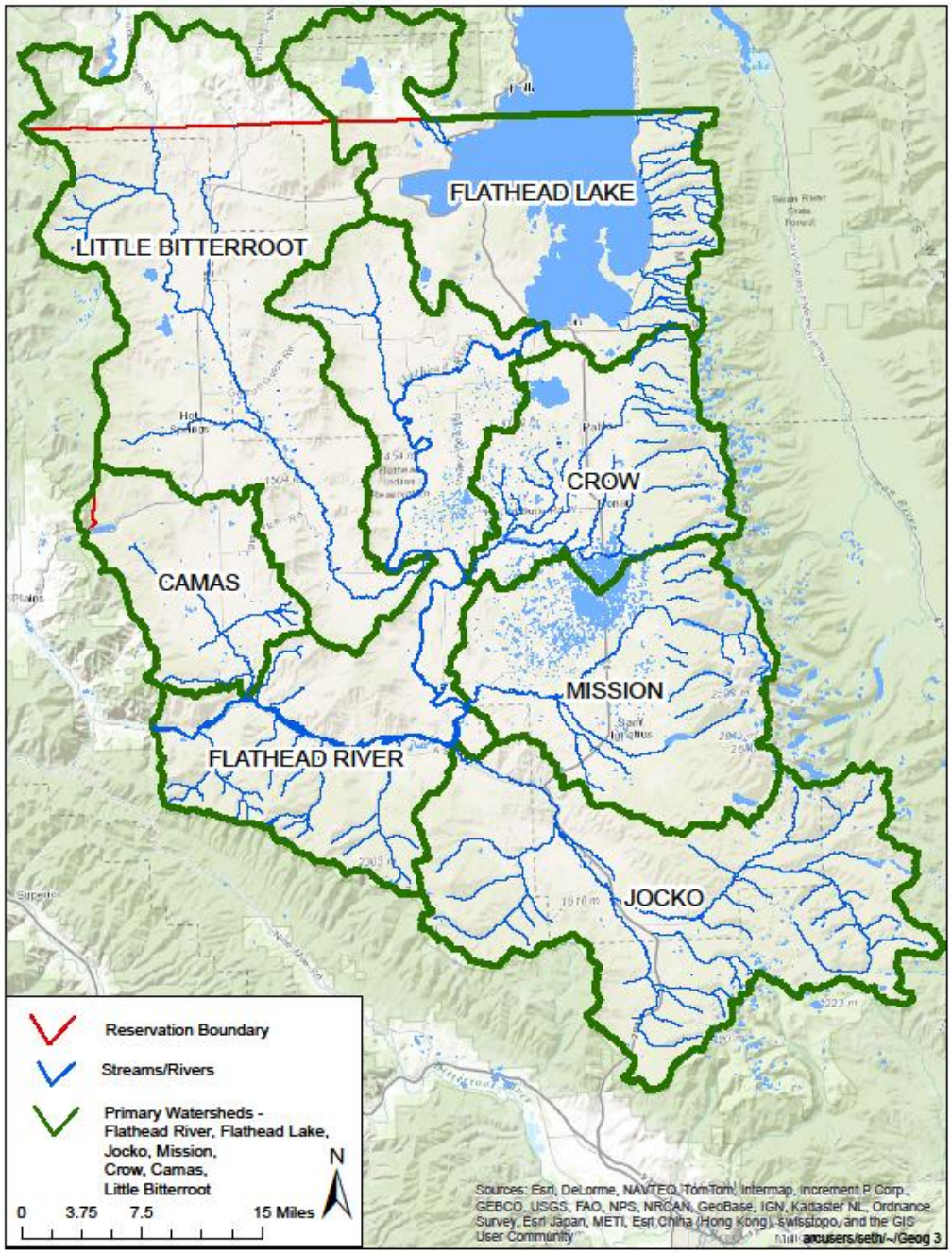
CSKT Draft Compact Definition

- "**Adaptive Management**" means an ongoing process of measurement, reporting, and adaptation of decision-making based on measurement to continuously manage and improve allocation of water between instream and reservoir uses of the Tribal Water Right and irrigation uses of the FIIP Water Use Right.

- **Operational Improvements**, as distinct from Rehabilitation and Betterment, generally mean practices that improve the ability to plan for and manage natural and regulated streamflows, reservoir storage and allocation of water between instream flows and irrigation uses of water. Operational improvements will be primarily supported by State of Montana appropriations directed to the CSKT settlement, with additional support from federal appropriations.

- **Rehabilitation and Betterment** generally means improvement to FIIP infrastructure, including modification from original design.

- **CSKT Draft Compact Definition**
- "**FIIP Reallocated Water**" means that portion of any given FIIP diversion or RDA that is saved through Operational Improvements and/or Rehabilitation and Betterment. Reallocated water shall be dedicated first to meet the Tribes' Instream Flows. After those are fulfilled, Reallocated Water shall be split equally between the Tribes' Instream Flows and FIIP irrigation purposes.



Overview - Surface Water Resources

Measured flows at mouth of larger watersheds – round numbers

Flathead River at Perma near confluence with Clark Fork River

Average for 1984-2013 period
8.2 million acre-feet per year
11,590 cfs average daily flow

Jocko River near mouth

Average for 1991-2013 period
178,400 acre-feet per year
245 cfs average daily flow

Mission Creek near mouth

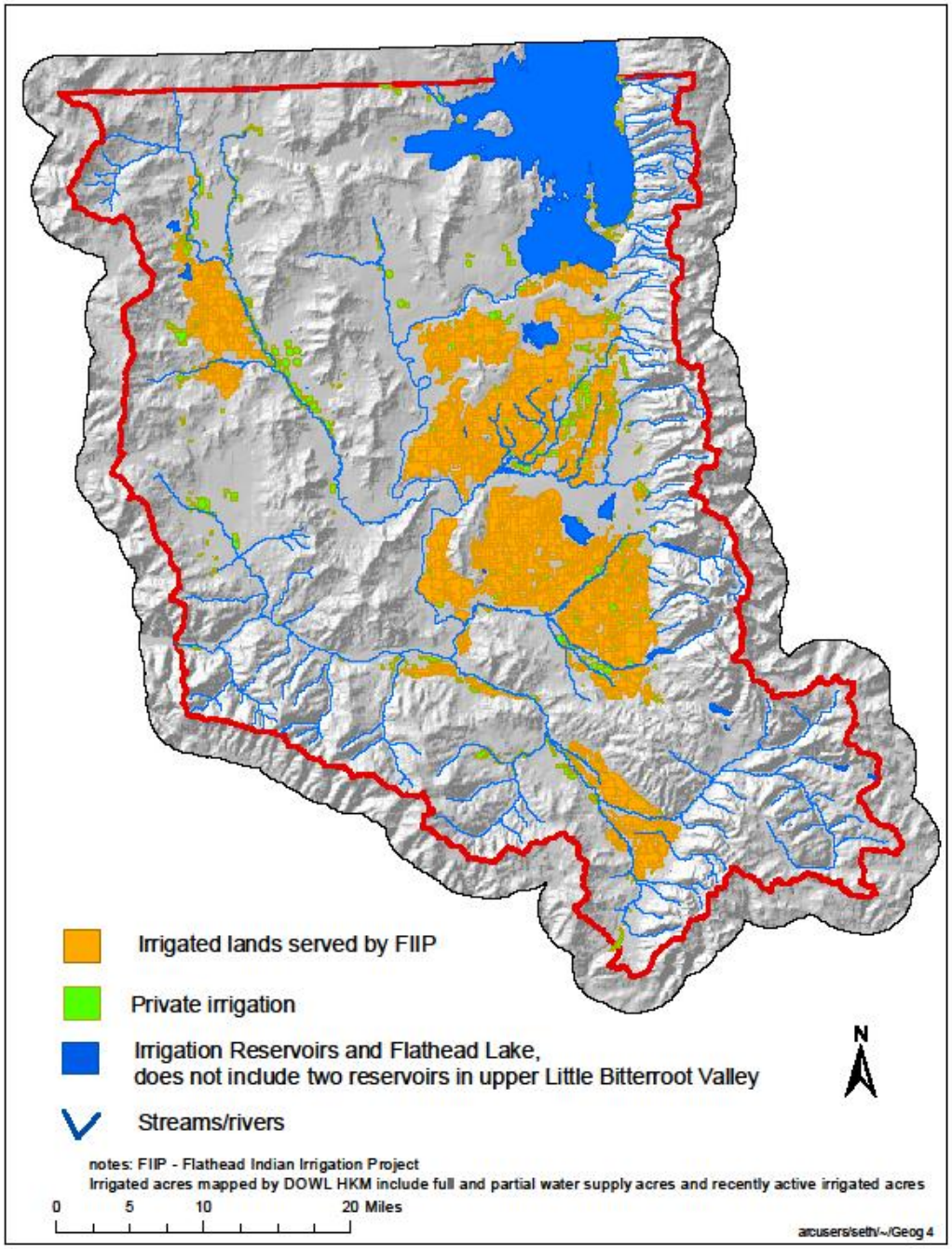
Average for 1991-2013 period
118,700 acre-feet per year
164 cfs average daily flow

Crow Creek near mouth

Average for 1991-2013 period
38,775 acre-feet per year
54 cfs average daily flow

Little Bitterroot River near mouth

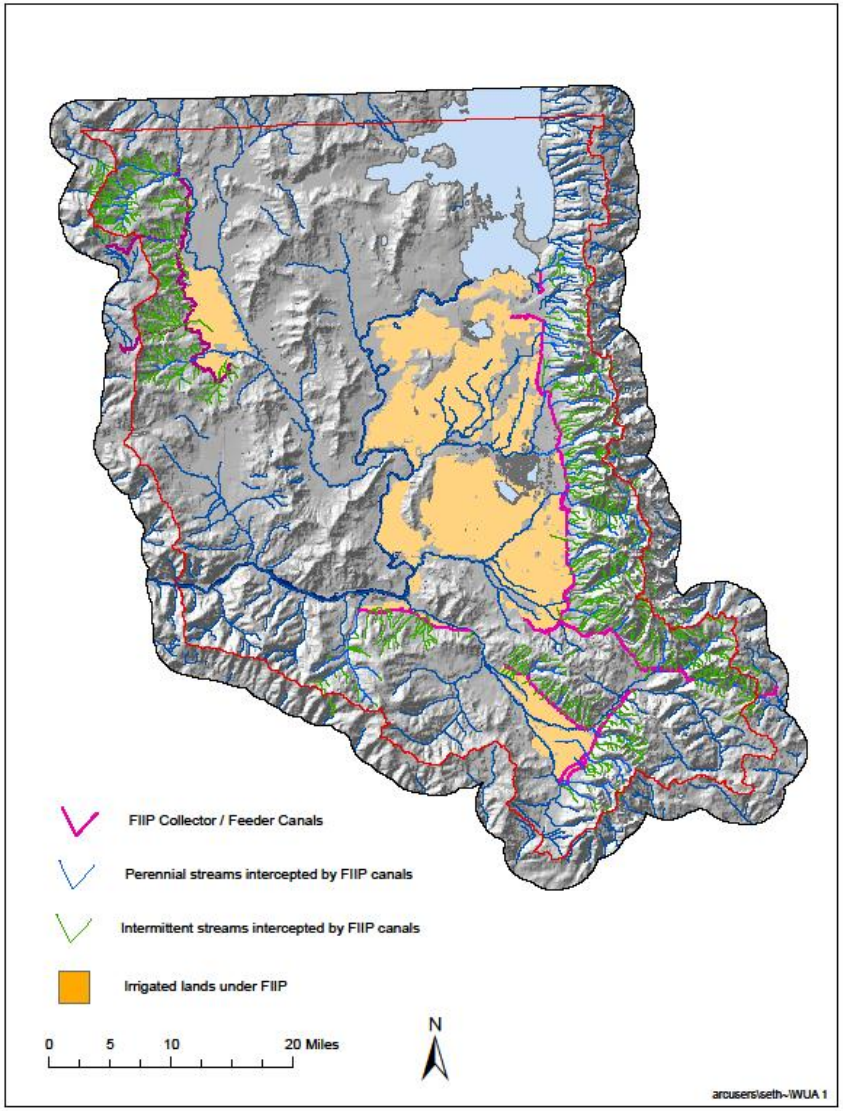
Average for 2000-2013 period
14,180 acre-feet per year
20 cfs average daily flow



Existing Irrigation Uses

Active Irrigation	acres
Mission Valley	
FIIP	101,585
Private SW	6,117
Private GW	1,438
Subtotal	*109,140*
Jocko Valley	
FIIP	9,908
Private SW	2,740
Private GW	00
Subtotal	*12,648*
Little Bitterroot	
FIIP	11,839
Private SW	4,913
Private GW	2,075
Subtotal	*18,827*
Other areas	3,799
Total	***144,414***

Basis for Adaptive Management - FIIP irrigation infrastructure closely interconnected to natural watercourses



Orange – FIIP irrigated lands

Green/Blue – Streams/Rivers

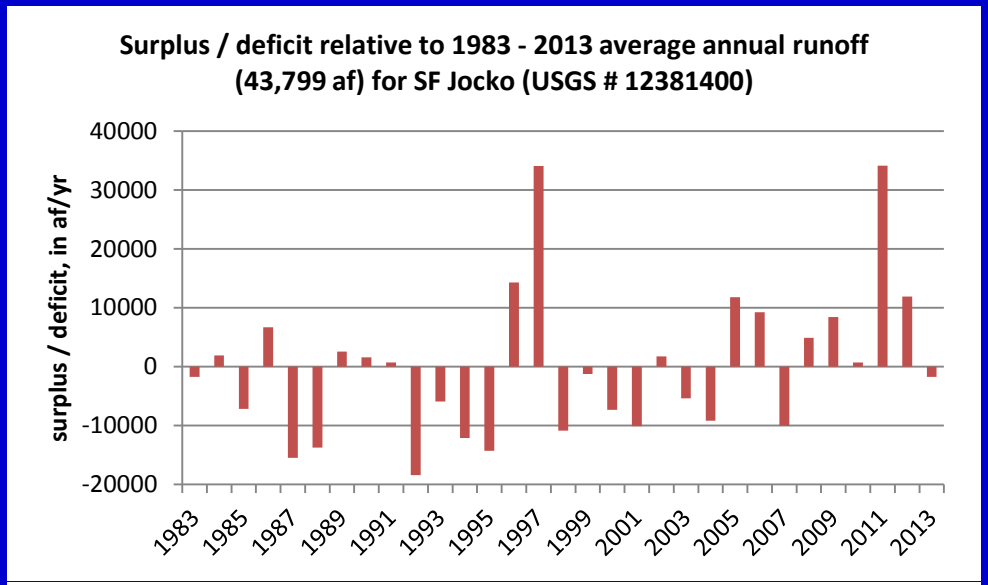
Pink-Feeder Canals that intercept streams

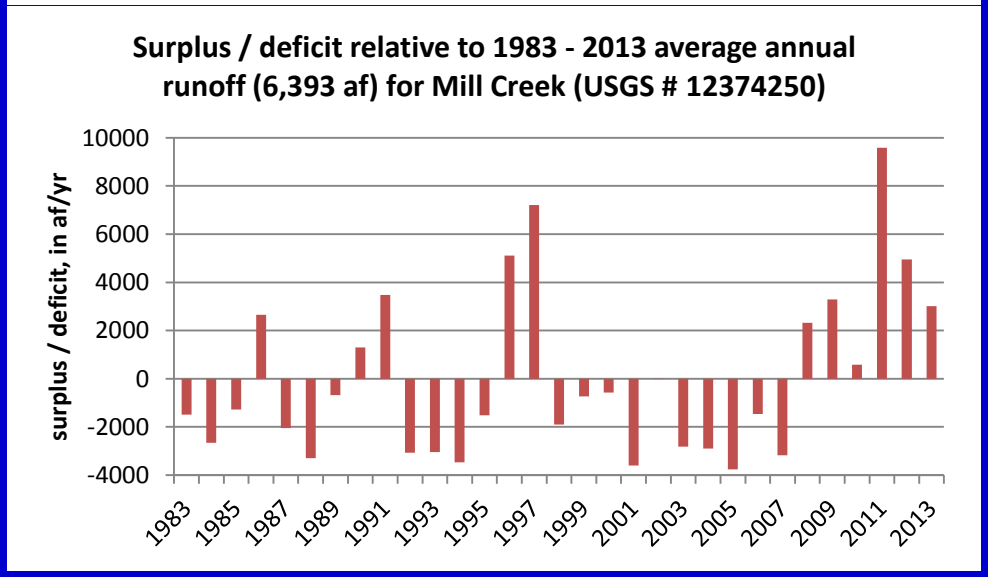
Upstream

Downstream

NF Jocko River – Tabor Feeder Canal Intersection

Basis for Adaptive Management - Instream Flows, River Diversion Allowances vary for wet, normal, and dry years years





Annual runoff at two USGS gages

Bars show + or – the average annual runoff

South Fork Jocko gage

1992 - 42% below average;

2011 - 78% above average

Mill Creek gage

1994 - 54% below average;

2011 - 150% above average

Basis for Adaptive Management - Proposed Interaction between Instream Flow and Irrigation Uses of Water

Effective Date of Compact

Water Use

Interim Instream Flows
Existing Irrigation Practice
Potential incremental increases in ISF

Water Use

MEF's met
RDA's met
TIF's met when water available

Actions on FIIP

Operational Improvements
Rehabilitation and Betterment

Actions on FIIP

Operational Improvements - Ongoing
Rehabilitation and Betterment - completed at some point

Reallocated Water

Water saved through Operational Improvements and Rehab. and Better. dedicated to instream flows

Reallocated Water

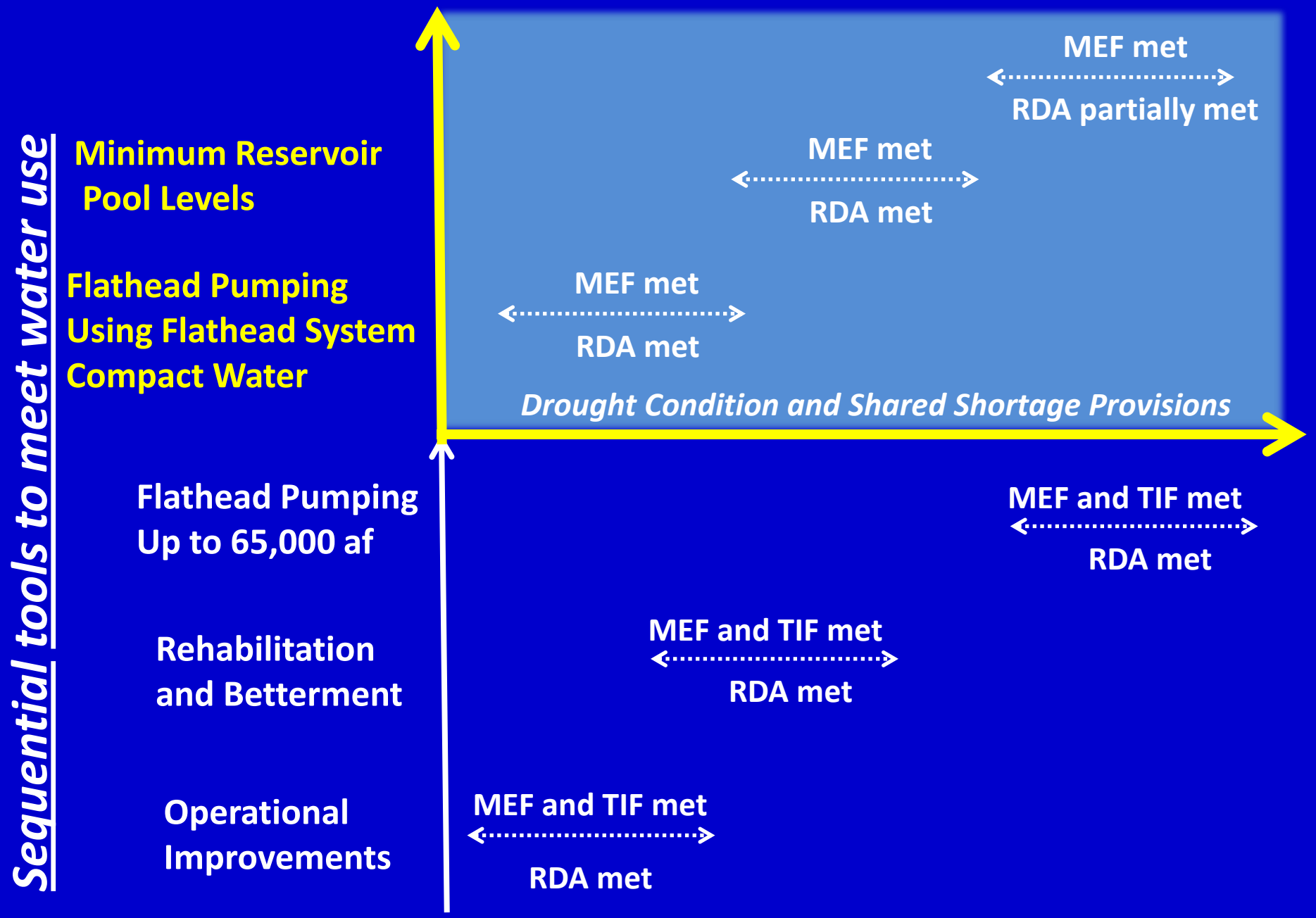
After TIFs met saved water split between ISF and Irrigation

Time

Deferral Period

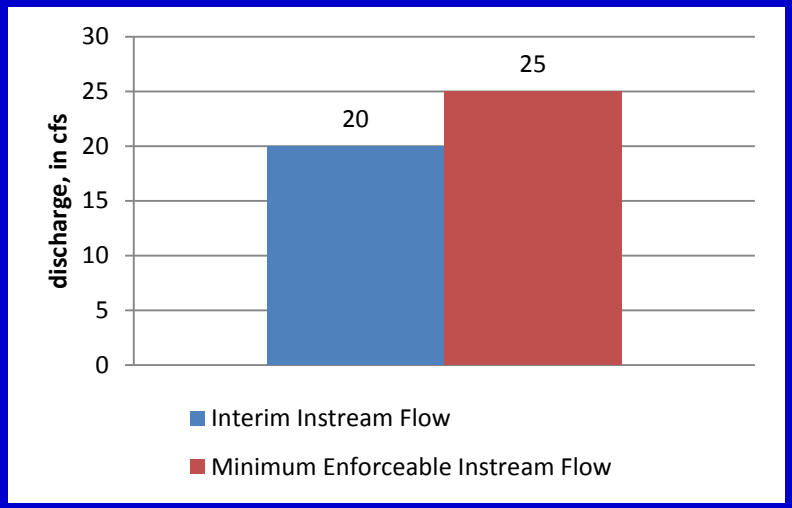
Full enforcement of MEF, RDA, TIF

Implementation of Water Use during Deferral and Shared ShortagePeriods



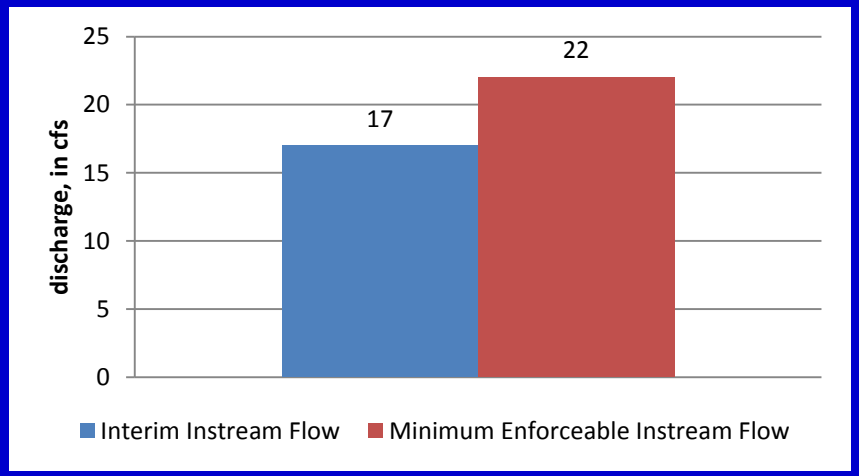
Sample of August Minimum Enforceable Instream Flows

Mission Creek at Highway 93 – August Flows

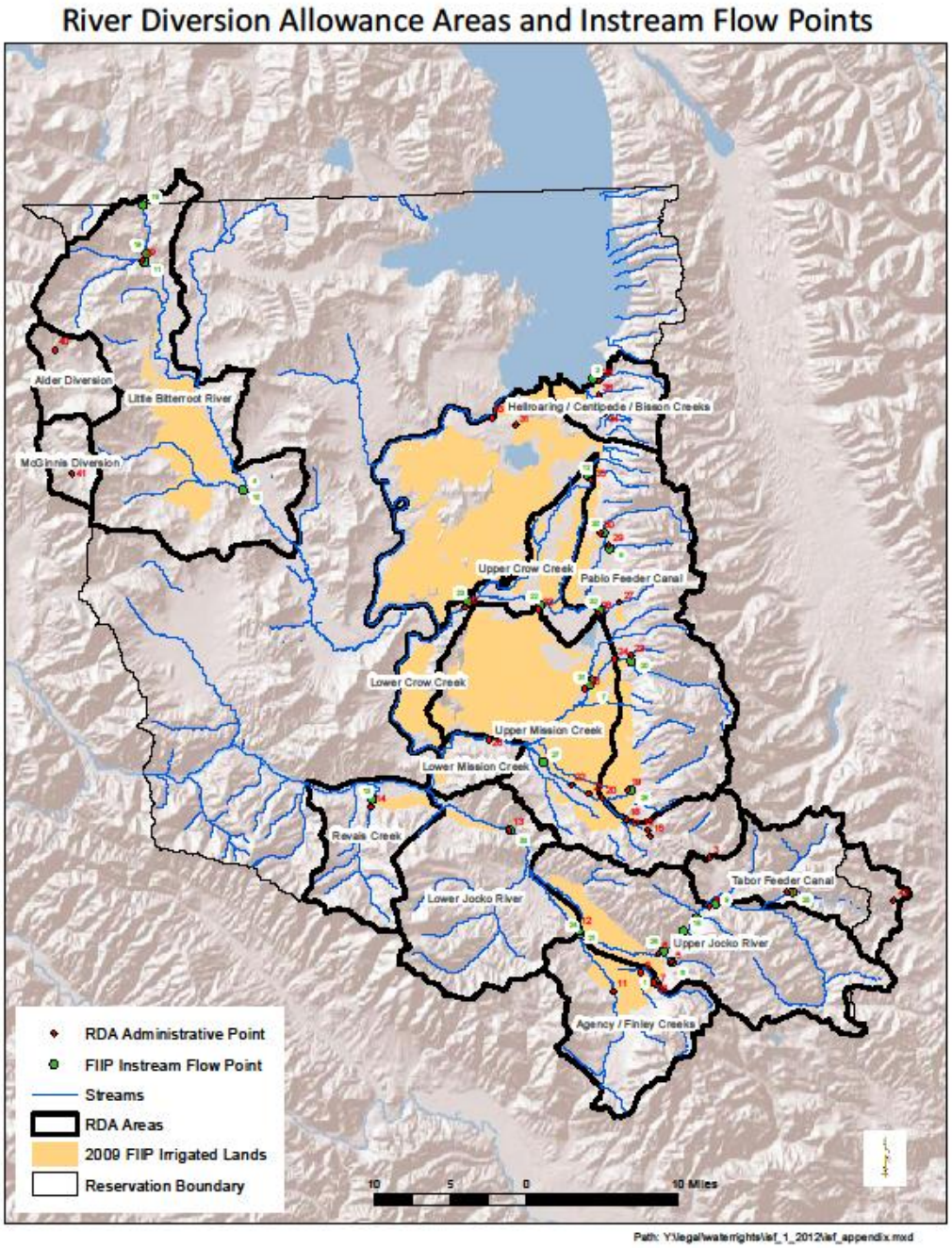


For 1992 – 2013 measurement period, flows at HW 93 have been greater than 25 cfs 75 % of time

Crow Creek above Crow Reservoir – August Flows

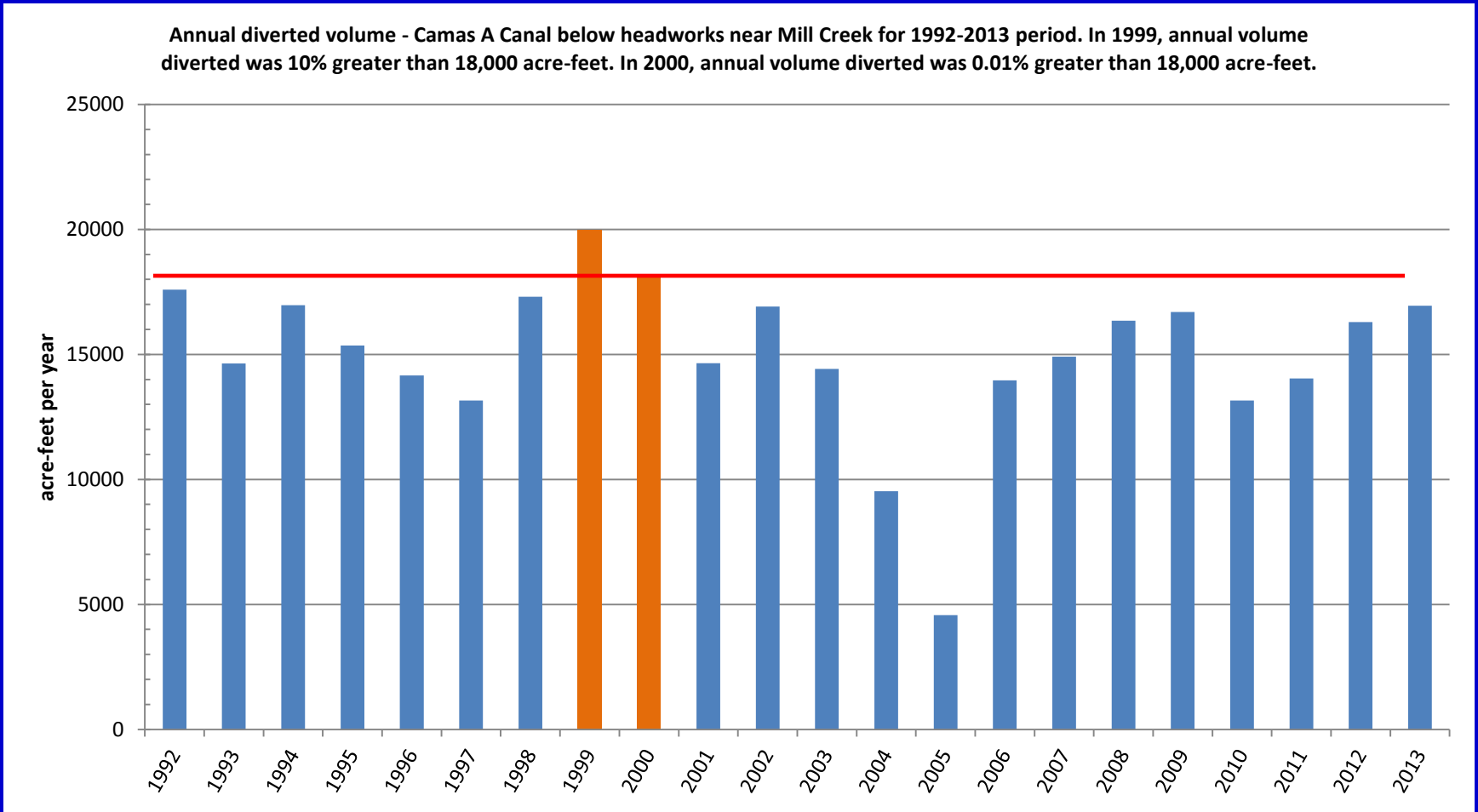


For 1992 – 2013 measurement period, flows above reservoir have been greater than 22 cfs 86 % of time

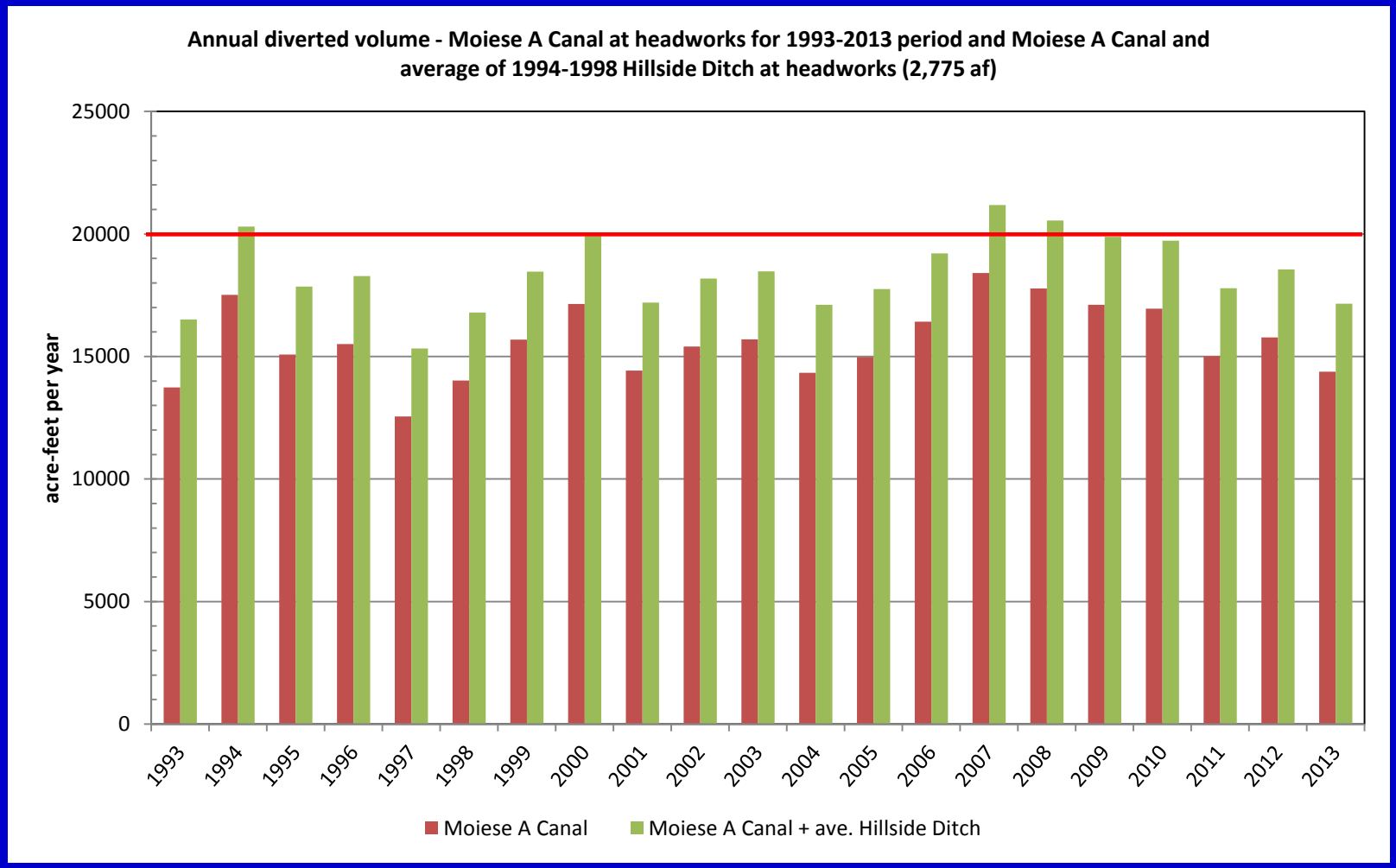


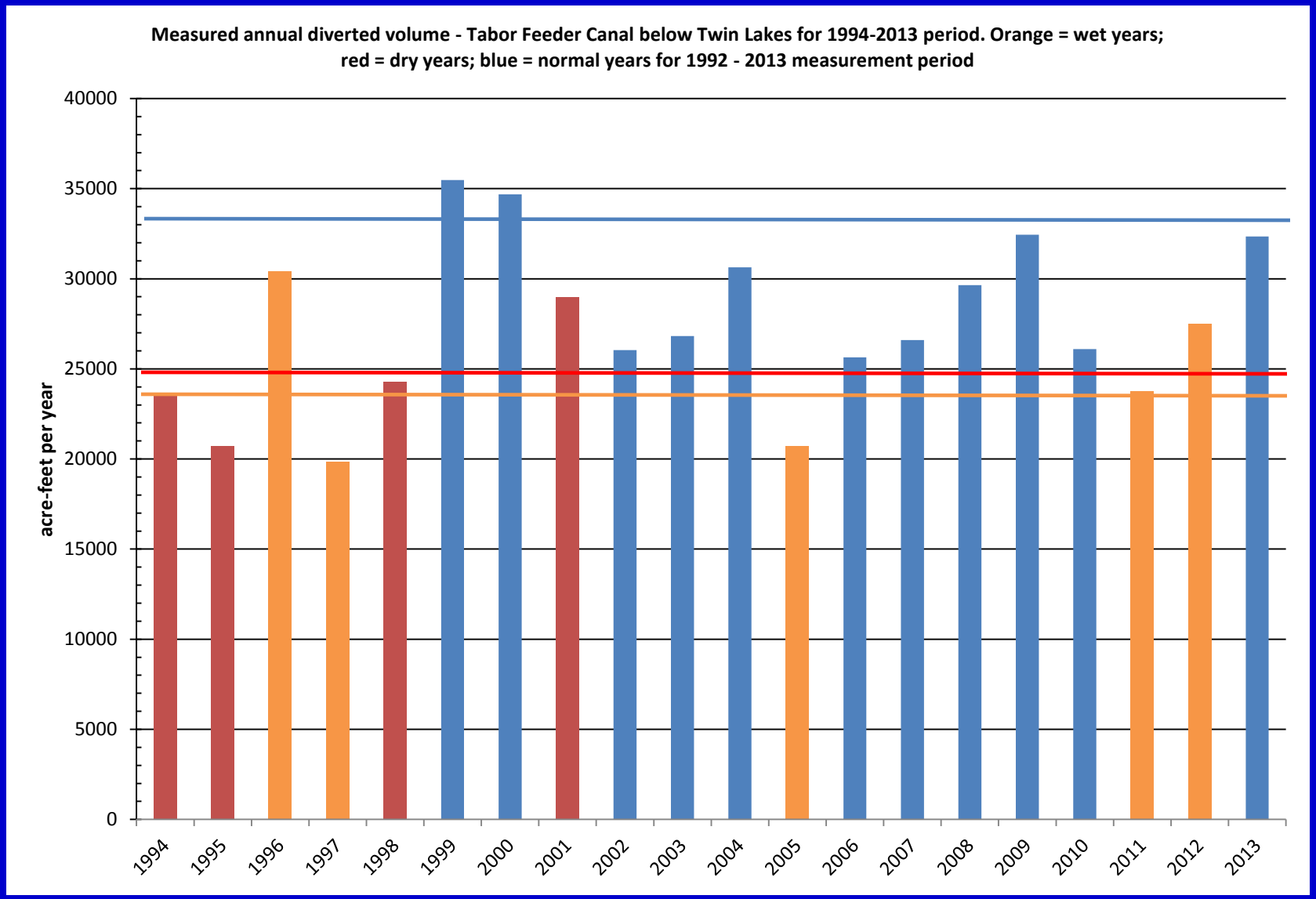
River Diversion Allowance Areas

River Diversion Allowances: Little Bitterroot Valley: Measured Camas A Canal Diversion compared to River Diversion Allowance (18,000 af)



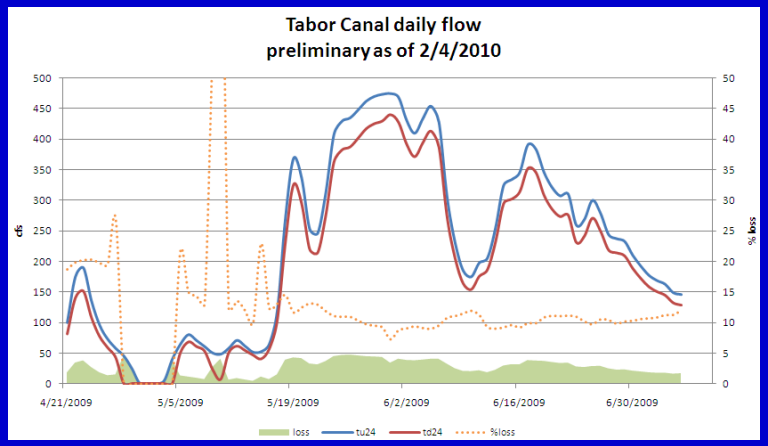
River Diversion Allowances Moiese Valley: Measured Moiese A Canal + average Hillside Ditch inflow compared to River Diversion Allowance (20,000 af)



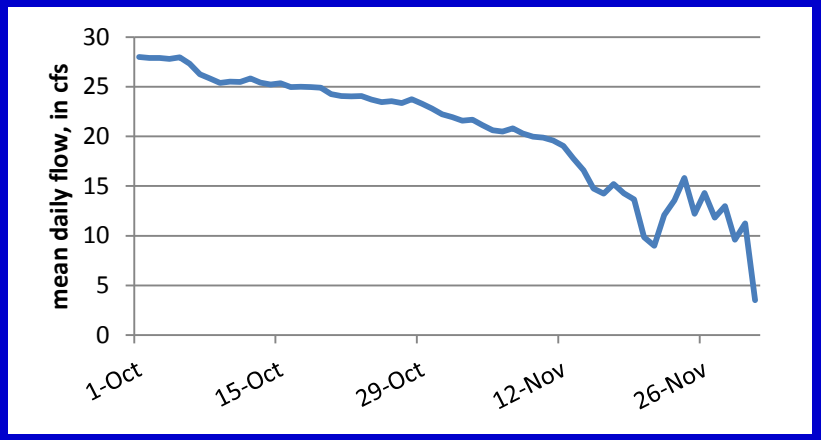


River Diversion Allowance - Tabor Feeder Canal below Twin Lakes
Wet year RDA + incremental inflow = 23,870 acre-feet; Normal year RDA + incremental inflow = 33,700 acre-feet;
Dry year RDA + incremental inflow = 24,700 acre-feet
RDA location above St. Mary's Reservoir, station includes diversion from Middle Fork and North Fork Jocko River into canal
RDA includes incremental inflow from Falls Creek, S-14 Creek, Grizzly Creek

Opportunities to Save and Reallocate Water



Canal Seepage - RWRCC data on canal losses in Tabor Feeder Canal, loss in green



Stockwater - Jocko K Canal diversion record – Oct- Dec average daily flow 1993-2013

Canal Conveyance losses

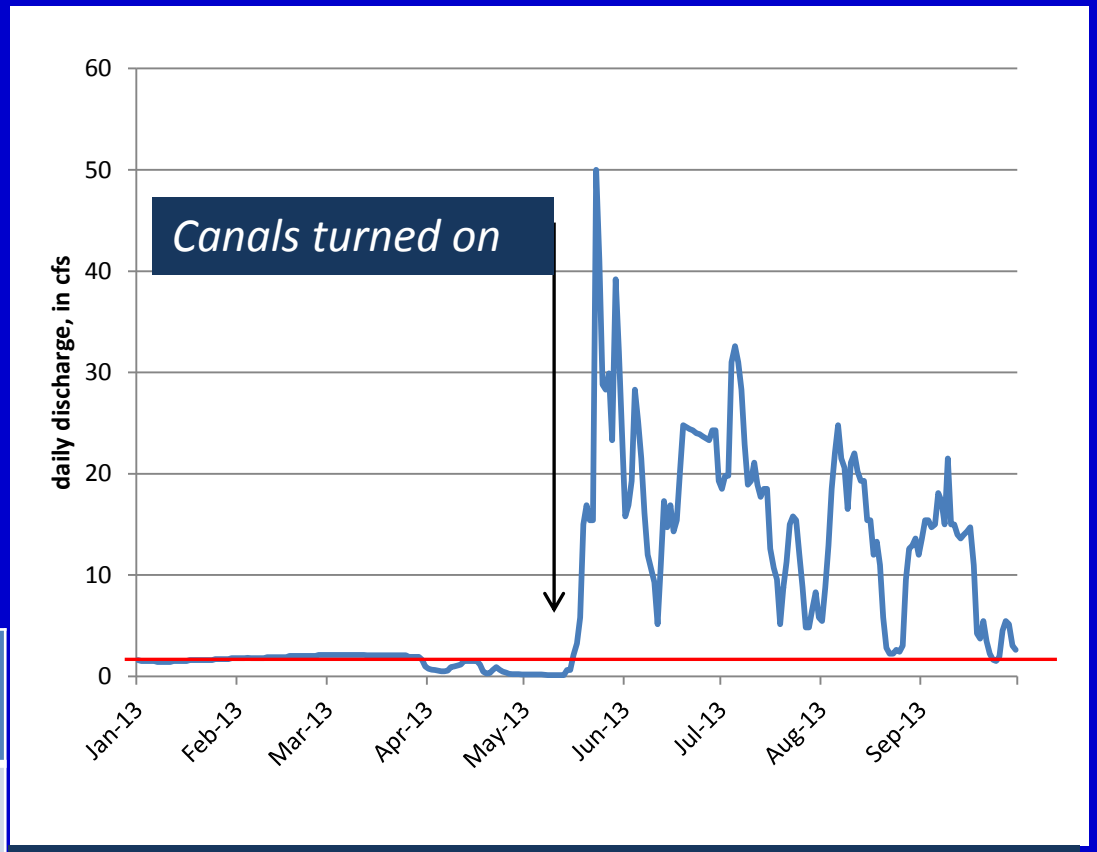
Onfarm Efficiency

Opportunities to Save and Reallocate Water

Water Measurement

	2012 April-Sept. Discharge
Hopkins Draw (Round Butte)	~ 1,588 acre-feet
Westphal Coulee (Valley View)	~ 1,524 acre-feet

Wasteway Discharge



Coleman Coulee wasteway. 2013 Irrigation Season Accumulated Flow = 4,250 acre-feet. Red Line Biological Opinion flow limit at Coleman Coulee

Tribal Proposal - Adaptive Management

CSKT Draft Compact Definition

"Adaptive Management" means an ongoing process of measurement, reporting, and adaptation of decision-making based on measurement to continuously manage and improve allocation of water between instream and reservoir uses of the Tribal Water Right and irrigation uses of the FIIP Water Use Right.

Adaptive Management Team – Tribes, State, Federal, FIIP Project Operator

- Adaptive Management Team would have long-term responsibilities to:
  - Measure water and report on information
  - Develop forecast planning tools and operations models
  - Complete coordination for water management planning
  - Implement Operational Improvements and Rehabilitation and Betterment
  - Reallocate water saved through Operational Improvements and Rehabilitation and Betterment

Tribal Proposal - Adaptive Management: Water Measurement

Adaptive Management Team collectively plans Water Measurement Program and ensures data are available to Public

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- Measure – natural and regulated streams, instream flows, river diversion allowances, reservoirs, wasteways
- Prepare annual report of measurement information

Project Operator

- Measure – lateral (interior) canals, onfarm water use

Tribal Proposal - Adaptive Management: Water Management Planning Tools

Adaptive Management Team collectively works on Water Management Planning Tools

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- Develop Forecast Procedures

Adaptive Management Team

- Develop Operational models for day-to-day Irrigation Water Management
- After development, Project Operator runs and maintains Operational Models

Project Operator

- Develop Water Accounting Program to store and track onfarm water use and report to FIIP water users and AMT

Tribal Proposal - Adaptive Management: Coordination and Within-Year Water Management

Adaptive Management Team maintains Continuous Coordination process to allocate water

Adaptive Management Team

- Defines TIF levels and RDA levels based on forecast and realized water supply
- Implement Shared Shortages Provisions during deficit water supply conditions
- AMT may agree to move MEF flows forward one month or backward one month
- After Water Management Tools in-place, AMT may break MEF flows into weekly blocks, so long as monthly total volume does not change

Tribal Proposal - Adaptive Management: Operational Improvements

Adaptive Management Team prioritizes and plans for Operational Improvements

Water Measurement – responsibilities above

State of Montana

- Stock water Mitigation
- Onfarm Efficiency upgrades

CSKT will cause to be completed

- Infrastructure upgrades considered Operational Improvements (ex: diversion automation)

Tribal Proposal - Adaptive Management: Rehabilitation and Betterment

Adaptive Management Team prioritizes and plans for Rehabilitation and Betterment

CSKT will cause to be completed

- Infrastructure upgrades considered Rehabilitation and Betterment

Tribal Proposal - Adaptive Management: Reallocated Water

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CSKT, in consultation with Adaptive Management Team

- Determine through measurement or calculation water saved through Operational Improvements and Rehabilitation and Betterment
- Develop report and assign saved water to instream flow location(s)

AMT

- Maintain record of Reallocation Water
- Complete Resource Mitigation to avoid adverse effects to Tribal Water Right or Water Rights Arising Under State Law
  - Base Resource Mitigation requirements on measurement or calculation
  - Resource Mitigation Water comes from Reallocated Water
  - Cost is borne by the Operational Improvement or Rehabilitation and Betterment Project Resource Mitigation required for

Tribal Proposal – Operational Improvements Appendix

Operational Improvements, as distinct from Rehabilitation and Betterment, generally mean practices that improve the ability to plan for and manage natural and regulated streamflows, reservoir storage and allocation of water between instream flows and irrigation uses of water. Operational improvements will be primarily supported by State of Montana appropriations directed to the CSKT settlement, with additional support from federal appropriations.

Operational Improvements

- Water Measurement
- Water Management Planning Tools
- Stock Water Management
- Onfarm Efficiencies
- Diversion Headworks Automation

Tribal Proposal – Rehabilitation and Betterment Appendix

Rehabilitation and Betterment projects that are identified below are intended to be supported from federal appropriations directed to the CSKT settlement. As such, implementation of projects cannot be guaranteed until federal appropriations are specifically made available for FIIP rehabilitation and betterment. The full list of projects may not be completed due to the level of federal appropriations

Projects (or Groups of Projects in order of priority)

1. **Lateral and Sub-Lateral Canal Rehabilitation and Betterment with emphasis on closed pipe**
    a. Mission Valley south of Crow Creek
    b. Mission Valley north of Crow Creek
    c. Jocko Valley
    d. Little Bitterroot Valley

Tribal Proposal – Rehabilitation and Betterment Appendix

2 through 6. FIIP Large Headworks that have Fisheries Issues

7 through 9. FIIP Pumping plants – Flathead, Crow, Revais

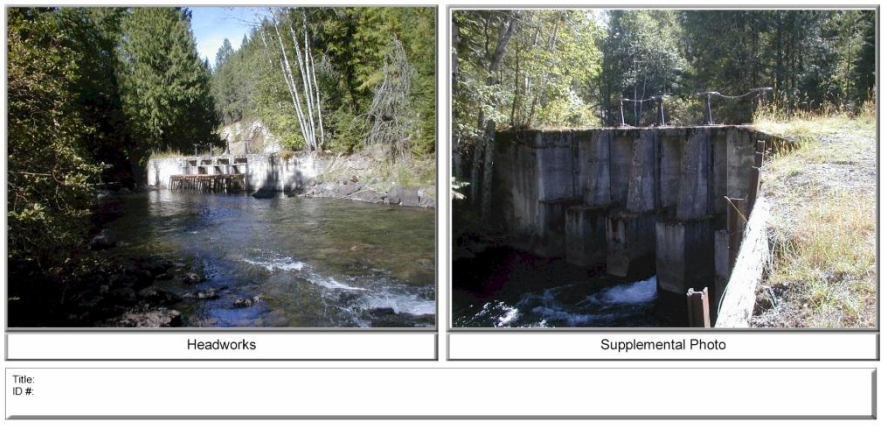
10 through 14. FIIP Large Headworks that intercept streams

15. Structure Rehabilitation through FIIP Distribution System

Tribal Proposal – Rehabilitation and Betterment Example Headworks

Pablo Feeder Canal at S Crow Creek

Pablo Feeder Canal at S Crow Creek

Camas A Canal Headworks on L Bitterroot

Pablo Feeder Canal at Post Creek