Andy Rossi

From: tom@tomsharp.com
Sent: Sunday, October 17, 2021 11:21 PM
To: 'Doug Monger'; haskywild; redmondjv; kpbrennersteamboat; Lyn Halliday; 'Nicole Seltzer'; 'Ron Murphy'; webster jones
Cc: Andy Rossi; Bob Weiss
Subject: T. Sharp concerns with proposed CWT 10-year contract for consideration at Oct 20 UYWCD Board Retreat

Andy Rossi
Bob Weiss
Directors of UYWCD

In reviewing the proposed CWT 10-year contract to be considered at next Wednesday's Board of Directors Retreat, I read Section 9.4 on Limitations, and the second sentence of such Section 9.4 verbiage does not necessarily cover the breadth of the Section 4(g)(iii) prohibition in the District approved water marketing policy for ERC water, which reads: "so long as such Reuse Contractor or its affiliates does not use the subcontracted reuse water to replace water lawfully available to such Reuse Contractor or its affiliates from direct flow water rights or other storage supplies (including storage supplies from a District project)." I believe that the breadth of this 4(g)(iii) should be reflected in the Section 9.4. Just as a "for example," if the recovery program has leased water from Elkhead, then it cannot forego that lease in order to sublease stored water from CWT. The 4(g)(iii) water source limitation is NOT just from UYWCD, but the second sentence of Section 9.4 is limited to a Reuse Contractor foregoing only Stagecoach water under a pre-existing contract. I believe the second sentence of Section 9.4 should be verbatim of the limitation contained in Section 4(g)(iii) of the Water Marketing Policy.

I also am wondering if the words "to use the Contracted Water for its anticipated beneficial use" in Section 10 of the proposed CWT contract should be expanded to read "to use the Contracted water for its anticipated beneficial use or to permit or authorize subsequent re-use of the Contracted Water pursuant to Sections 9.2, 9.3, and 9.4 above." Making that change would make it clear that in the Reuse situation, CWT bears the burden of being sure that legal and administrative approval, if any are required, is obtained for the Reuse, so that the District is not indirectly or impliedly responsible for that.

Section 13.2 makes no sense regarding the ability of UYWCD to collect for money owed. No court will award equitable relief in the form of specific performance for nonpayment of a money obligation, since it has long been a basic tenet of jurisprudence that equitable relief will not be given when legal relief can provide full relief. So, the clause in Section 13.2 that says the only remedy for UYWCD when payment is not made shall be equitable relief must be revised. UYWCD must have a remedy to sue at law for judgment against CWT in the amount of monies owed. If you don't change that Section 13.2, it means UYWCD has no remedy to collect money owed.

The phrase "unless otherwise determined by a Court in equity" at the end of Section 13.3 should be stricken. Courts cannot award attorney fees to the prevailing party unless a statute provides for that, or unless a contract provides for that. Again, by creating a limitation that a Court in equity could otherwise determine yes or no regarding an award of attorney fees, you have removed the "contract" right, and therefore by clear caselaw, the equity court could NOT award attorney fees to the prevailing party since there is no clear contract right in the prevailing party to do so. That offending phrase must be removed.

In Section 15.3.2, the phrase "provided that any withholding of consent or conditions be reasonable", with respect to the requirement that the Board of the UYWCD must approve any assignment by CWT of the contract, should be deleted. The UYWCD has the right to deny an assignment in its sole discretion. The provisions of Section 4(k) of the District Water Marketing policy do not include a limitation on the District Board that a denial of a request by CWT to assign the contract must be subject to the vague standard of "reasonableness." The offending phrase must be removed.

What is the amount for Volume 1? I assume that will be discussed or inserted Wednesday? I assume that amount, under the contract, will be fixed for each of the 10 years of the term.

As you all are aware, I remain concerned about any ERC contract beyond 3 years. I recall that the remainder of the UYWCD Board Members do not share my concern about such duration limitation.

I recommend, Andy or Bob, that you forward this email to CWT and, if appropriate, to CWCB, so that they will be aware of my concerns prior to Wednesday's meeting. Thanks.

Tom

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Revisiting the Yampa IWMP Flow Workshop

October 20, 2021 - UYWCD Board Meeting
Revisiting the 9/16 joint presentation by Seth Mason (Lotic) and Lisa Brown (Wilson Water Group)

Outline

- Overview by Andy
- Motivation for the IWMP Flow workshop
- Data sources for hydrological assessment
- Appropriate model use
- Assessment results (organized by geography)
  - Andy and Lisa to present Seth’s environmental results
  - Lisa to discuss consumptive use and reservoir results
    - New! Coal Creek Diversion to Yamcolo Reservoir

Motivation

A comprehensive view of streamflow conditions: past, present and future

Recent Efforts

Yampa/White/Green BRT and UYWCD have been busy!

Goals:

1. High-level take home points from these recent efforts
2. Help the Flow Committee prioritize actions for the Yampa IWMP

- BIP Update (May 2020 - Jan 2022)
  - BIP Committee directing Lisa Brown, Dan Birch, and Ryan Golten (Local Expert Team).
  - Final Draft submitted for copy editing July 2021
  - Public Comment period opens soon
- 2021 Yampa River Hydrology Review and Needs Assessment
  - Seth Mason with Lotic
  - Streamflow trends analysis
  - Impact of water use/administration on E&R attributes
  - Results incorporated into recently completed remote environmental assessment of the Yampa watershed
- 2021 Yampa Storage Modeling
  - Funded by Colorado River District, Tri-State, and UYWCD
  - Lisa Brown examined one of the alternative management strategies from the BIP Update in the daily time step model
- 2021 UYWCD's Coal Creek Supply for Yamcolo Modeling
  - Preliminary results

Appropriate Use of Models

"All models are wrong, some are useful"
- all of my engineering professors

Data Used for Hydrological Assessments

Observed Historical Streamflow Records

- USGS/DWR Streamflow Gauging Stations
- Provide a very detailed view of streamflow conditions under different year types
- Long records support trends assessment
- ...but, record lengths are variable
- Relatively sparse spatial coverage

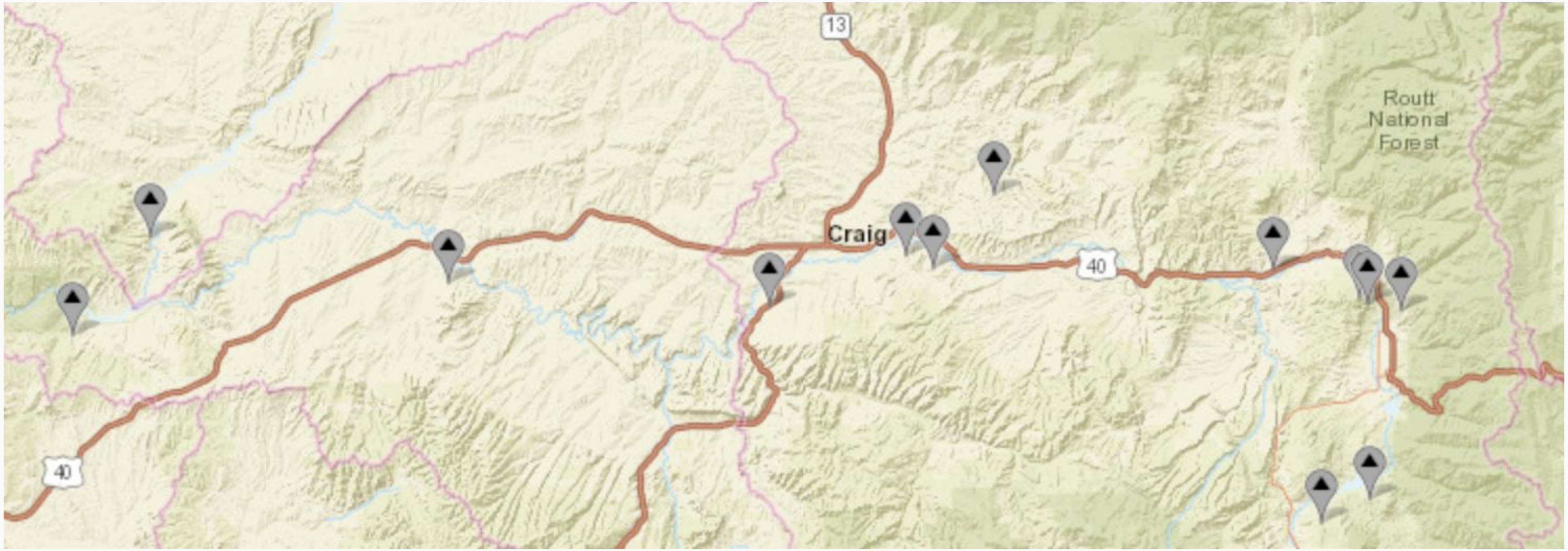
Hydrological/Water Rights Simulation Models

- Tool for approximating conditions streamflow conditions at locations where no current or historical record is available
- Means for exploring potential future conditions under different hydrological/administrative/demand futures

Historical Streamflow Observations

Current Historical

Current Streamflow Observations



Limitations of Observed Data

- Not available at all locations where stakeholders have questions about flow behaviors
- Not possible to infer “natural” conditions from historical records at locations below reservoirs or points of surface water diversion
- Not possible to assess the effects of alternative future conditions on streamflows

These limitations lead us to develop simulation modeling tools that predict streamflows at locations across the watershed as they are affected by reservoir operations and water rights administration

Models as a Tool for Comparisons

- Establish "**natural conditions**" (what the river would have looked like without the impacts of humans)
- Establish "**baseline conditions**" (today's infrastructure, operations, and demands layered on historical hydrology)
- "**What If**" scenarios - understand the impacts of doing something differently

Examples: three "What If" scenarios from the BIP Update:

1. Convert 20% of flood irrigated acres to sprinkler irrigation
2. New uses for existing reservoirs
3. Expand existing storage

Understand **How** Water is Used in the Basin

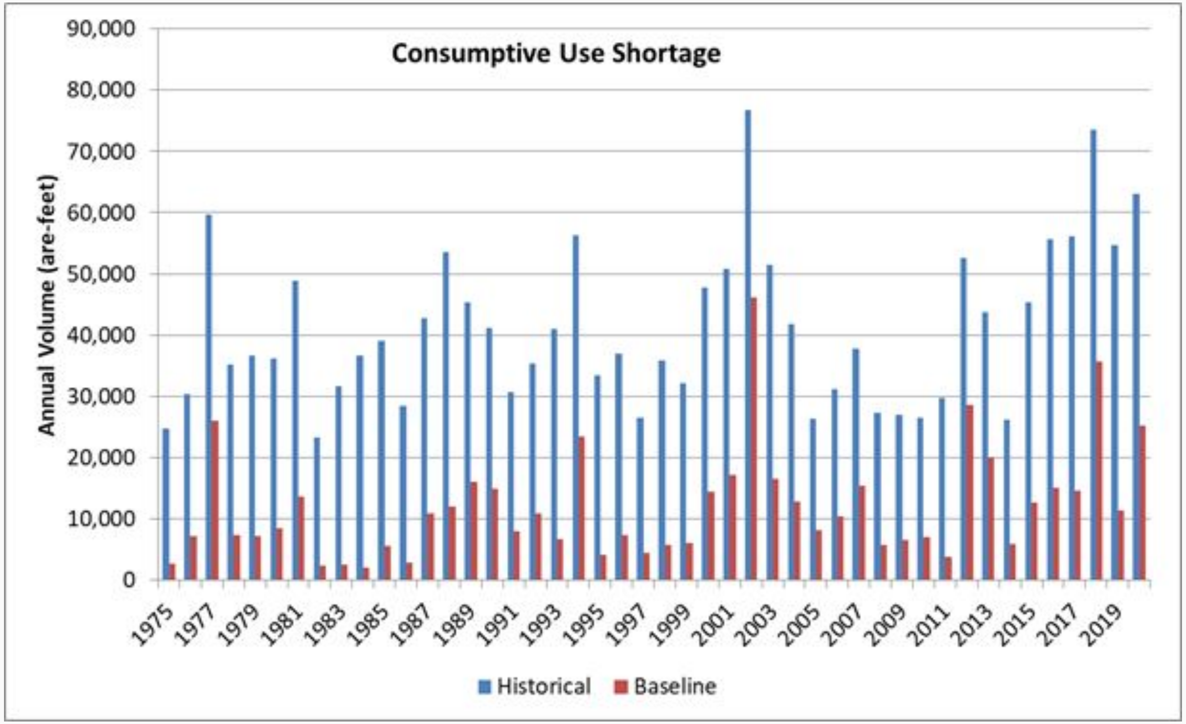
- Historical records show WHAT happened
- The model can help explain WHY
- Agriculture is the primary consumptive use sector
- Working with agriculture reps to build trust
    - Trust the model accurately represents their needs, operations, and contributions
    - Trust the IWMP process is considering their interests (not stealing water)
- Work with reservoir owners to represent operations
    - Build trust with stakeholders
- Work with DWR to understand water administration
    - Build trust with Division Engineer and Water Commissioners

A Bit More on Baseline

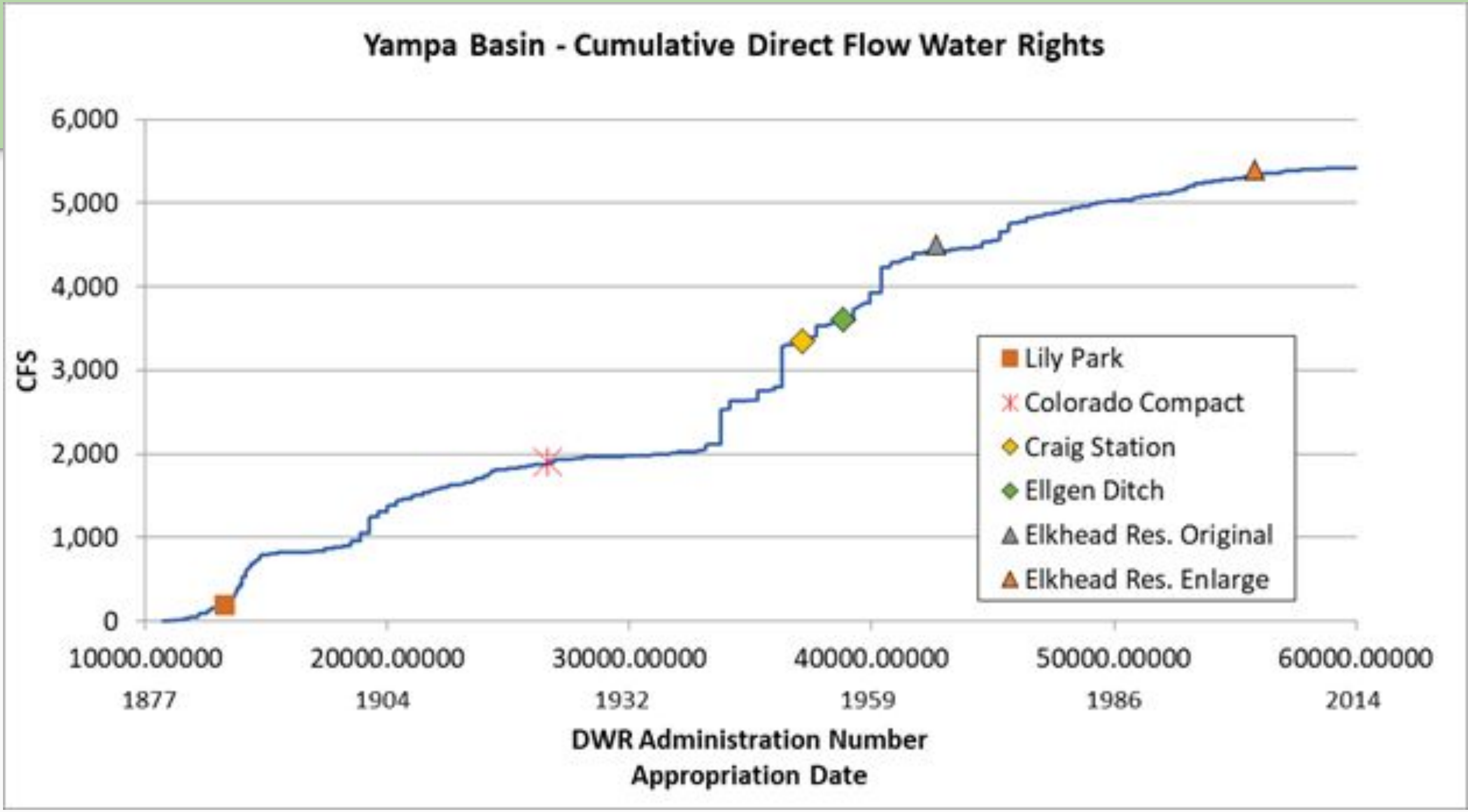
- Historical Model
  - Average CU Short = 41,000 af or 13%
- Baseline Model
  - Average CU short = 12,000 af or 4%

Why are streamflows from the Baseline model lower than Historical?

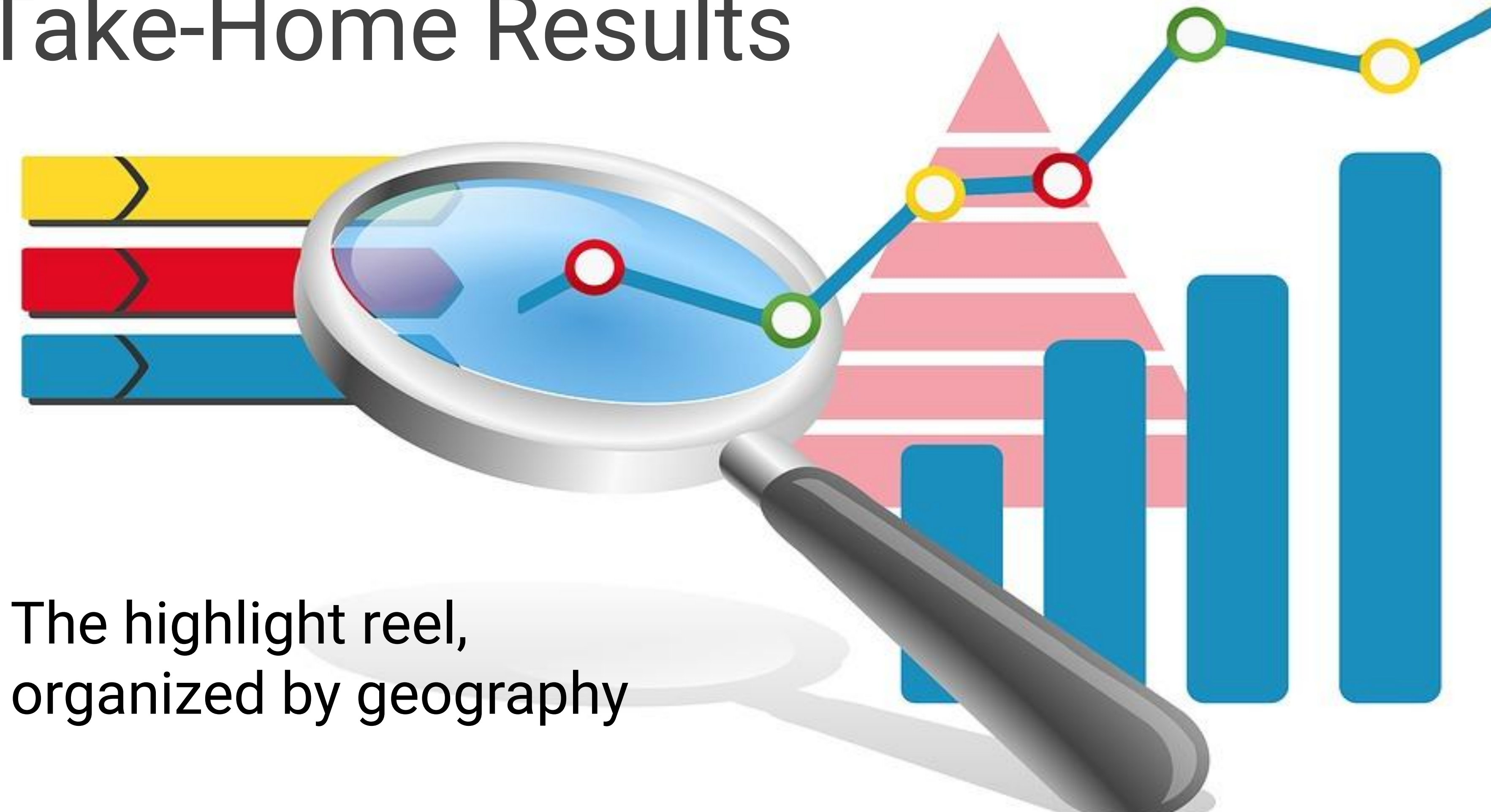
- Baseline ag demands larger than historical because the model tries to meet the full crop irrigation requirement.
- StateMod is more “aggressive” in meeting this larger demand.
  - Drying out fields before cutting
  - Fully irrigating after the last cutting
  - Low-flow infrastructure constraints



How does your water right stack up?

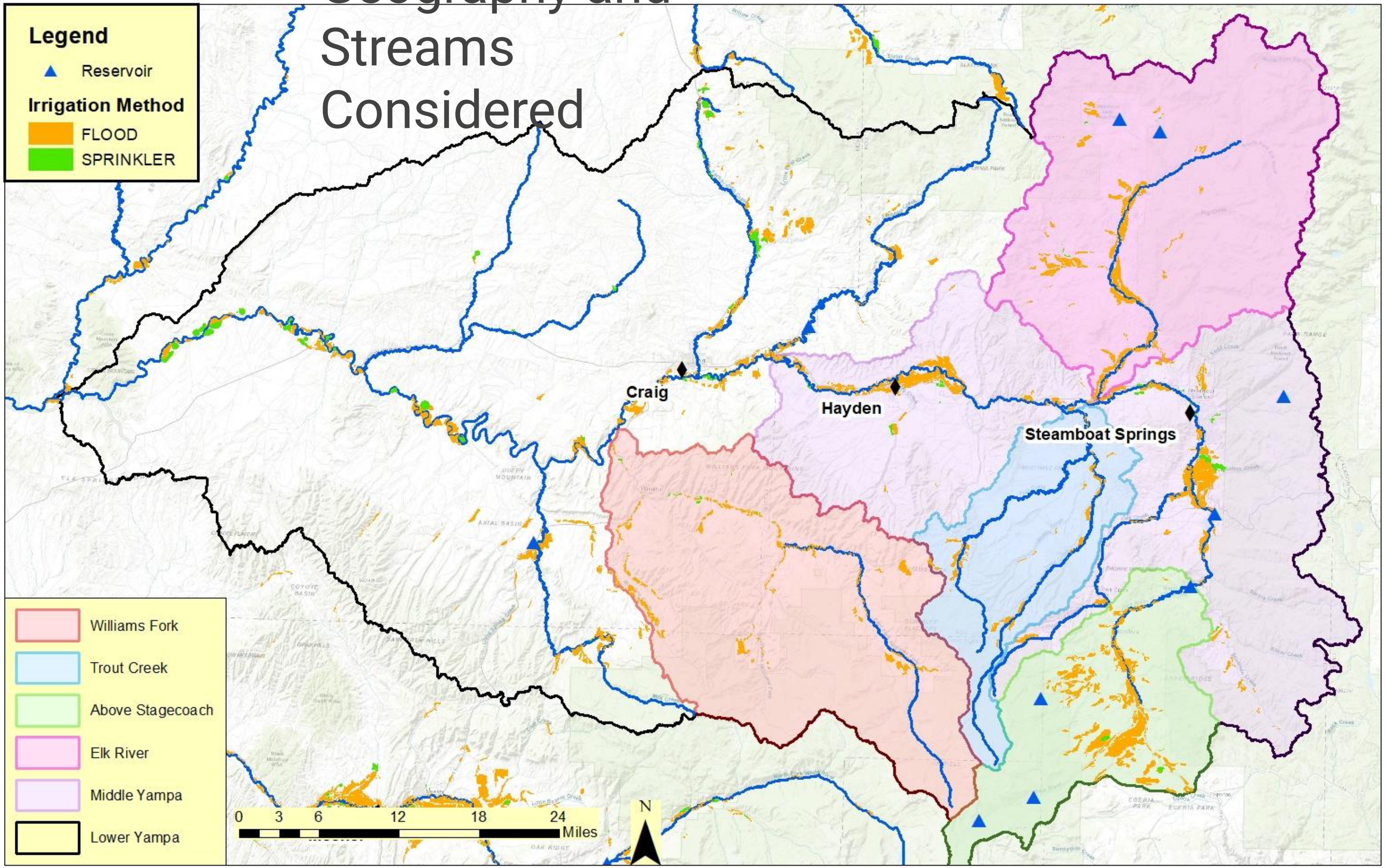


Take-Home Results



The highlight reel,
organized by geography

Geography and Streams Considered



Multi-Pronged Analysis of Streamflow and Water Use

- Use of Historical Observed Flows
  - Trends Analysis
- Use of Simulation Modeling Results
  - Hydrological Alteration and Ecosystem Risk
  - Environmental Flow Needs
    - ISF Threshold Deficits/Durations
    - Comparison to T&E Fish Targets
  - Agricultural Use Needs
    - Consumptive Use Demand Gap

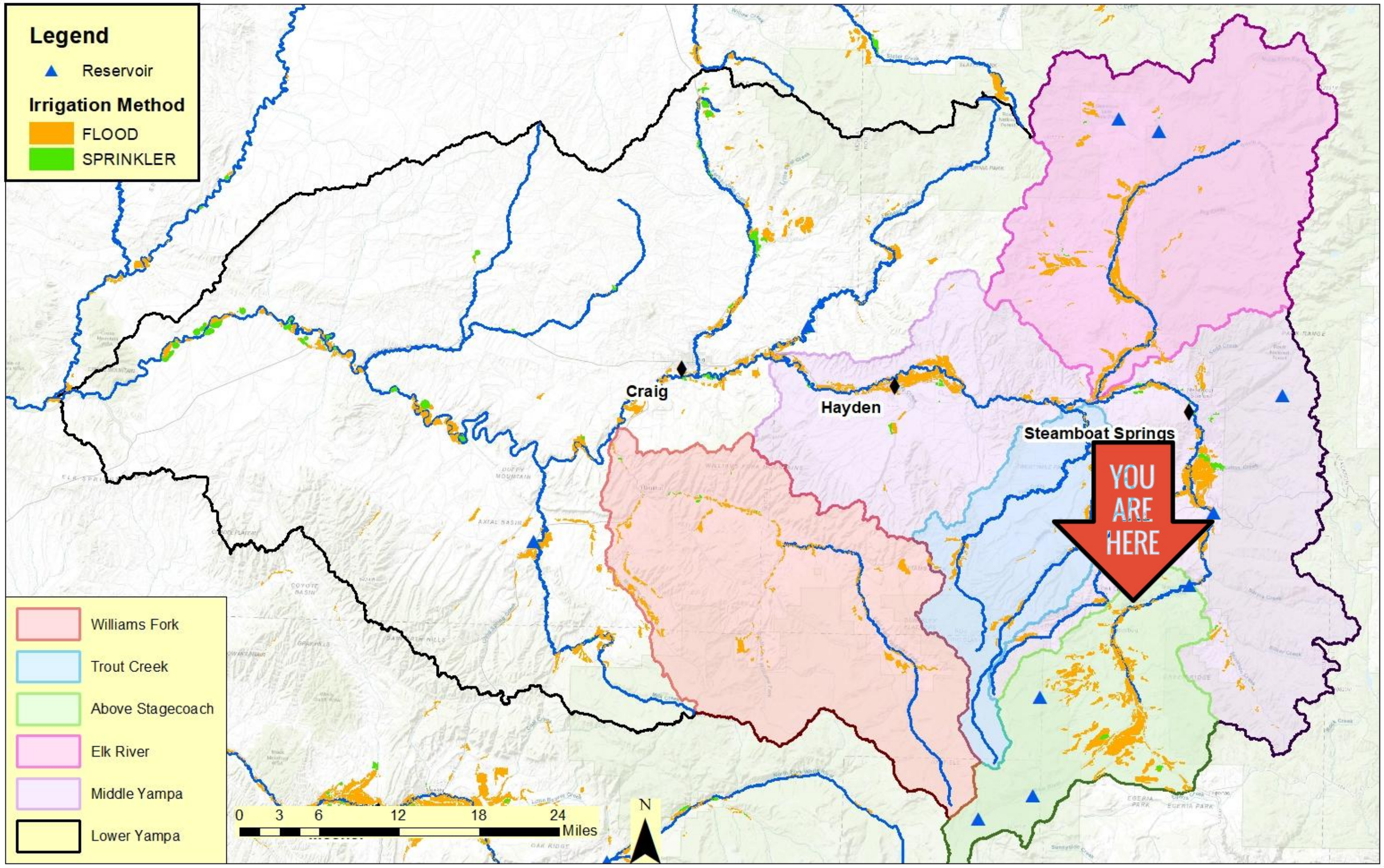
Sites Appropriate for Trends Analysis

9 gauging locations from around the watershed have contemporary records long enough to support trends analysis

Gauge ID	Name	Latitude	Longitude	Record Length (years)	Basin Area (mi^2)
09237450	Yampa River Above Stagecoach Reservoir	40.26426	-106.8918	30	206
09237500	Yampa River Below Stagecoach Reservoir	40.28654	-106.8291	30	228
09239500	Yampa River at Steamboat Springs	40.48299	-106.8324	30	567
09238900	Fish Creek at Upper Station Near Steamboat	40.47498	-106.787	30	66
09242500	Elk River Near Milner	40.5147	-106.9539	30	448
09246200	Elkhead Creek Above Long Gulch, Near Hayden	40.59164	-107.3209	26	171
09247600	Yampa River Below Craig	40.4808	-107.6142	30	2128
09251000	Yampa River Near Maybell	40.50275	-108.0334	30	3383
09260050	Yampa River at Deerlodge Park	40.45163	-108.5251	29	7931

Upper Yampa

Upstream of Stagecoach Reservoir



Upper Yampa

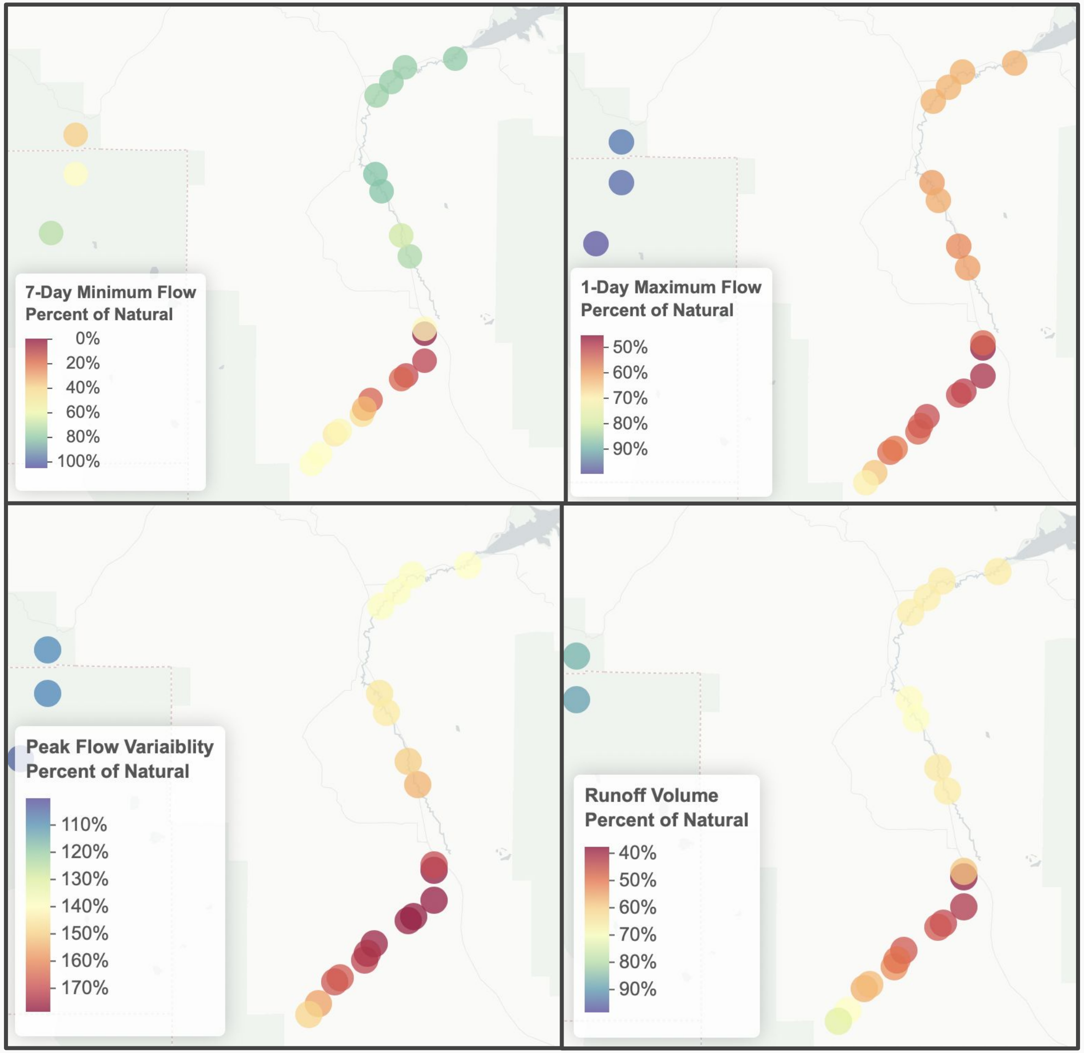
1-2% Downward Trend in October and November flow magnitude metrics on Yampa River below Stagecoach

No significant trends observed above Stagecoach.

Significant hydrological alteration evident along Bear River and Yampa above Stagecoach

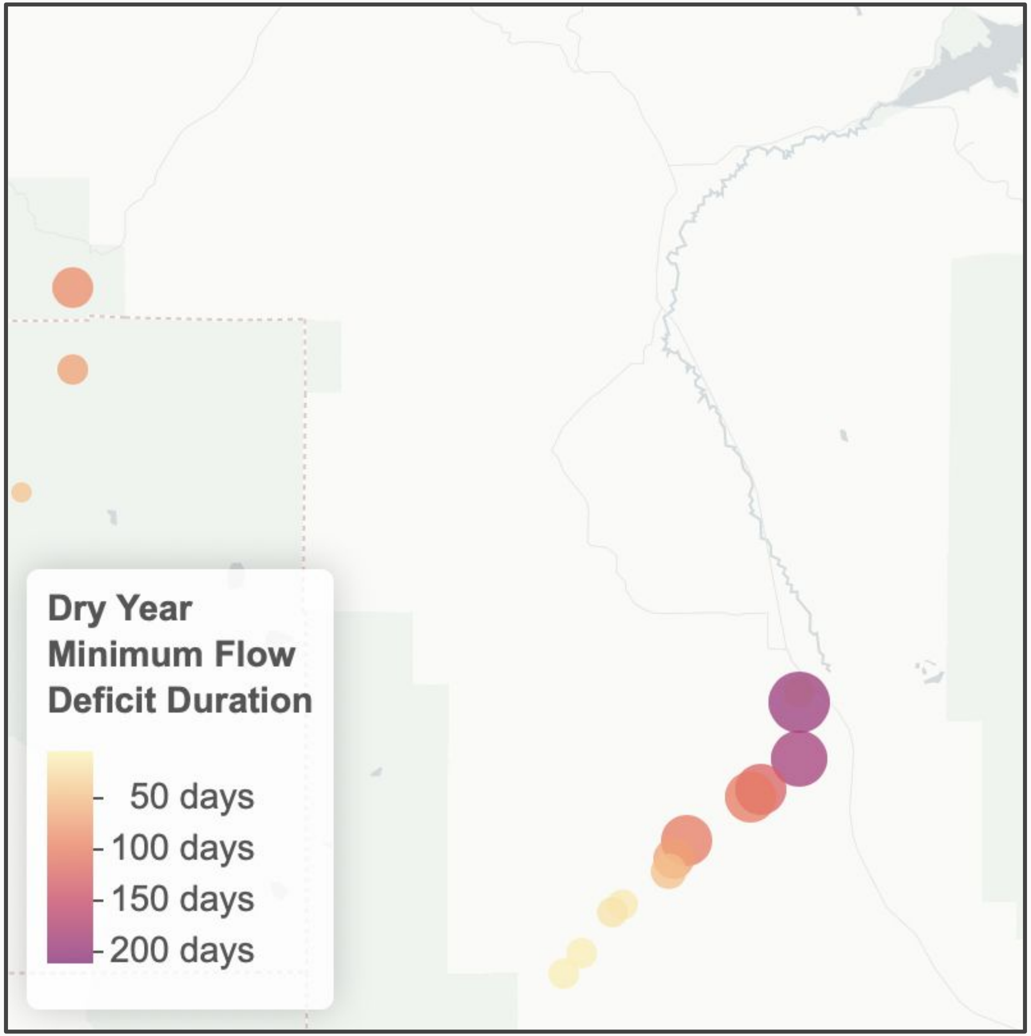
- 7-day minimum flows lower
- 1-day peak flows lower
- Peak flow variability higher
- Runoff volume lower

Most acute changes evident on lower Bear River near Yampa



Upper Yampa

ISF Deficit volumes and duration increase in the downstream direction along the Bear River.



Upper Yampa

Upstream of Stagecoach Reservoir

Consumptive Use

1. Agriculture
2. M&I and Domestic Use represented in aggregate

Baseline	Annual Demand (AFY)	Annual Gap (AF)	Annual Percent Gap (%)	Annual CU Gap (AF)
Average (1975-2020)	73,815	1,232	2%	670
2018 only	79,201	7,040	9%	3,844

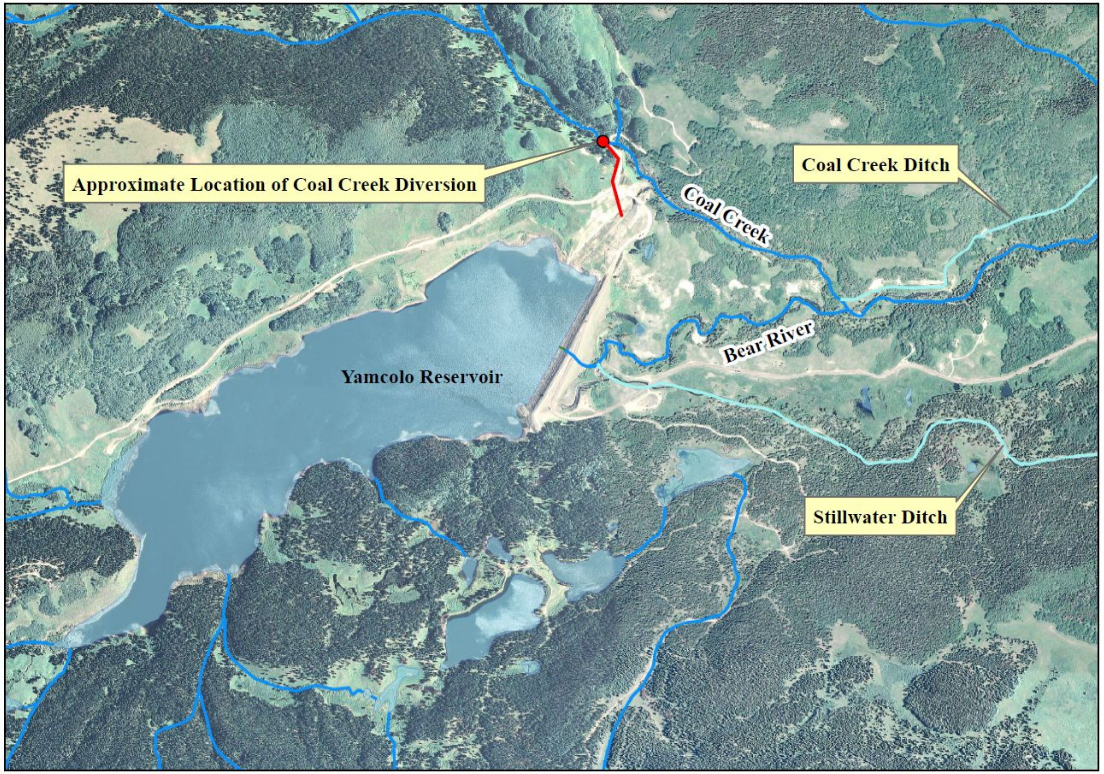
Reservoirs - all serve Ag!

1. Stillwater
2. Yamcolo
3. Allen Basin
4. Stagecoach

Coal Creek Supply for Yamcolo

Background

- UYWCD holds a 100 cfs conditional water right on Coal Creek (03CW58)
- Pipeline from Coal Creek to Yamcolo Reservoir
  - Stabilize daily streamflow fluctuations
  - Supplemental supply
  - Hydropower at Stagecoach

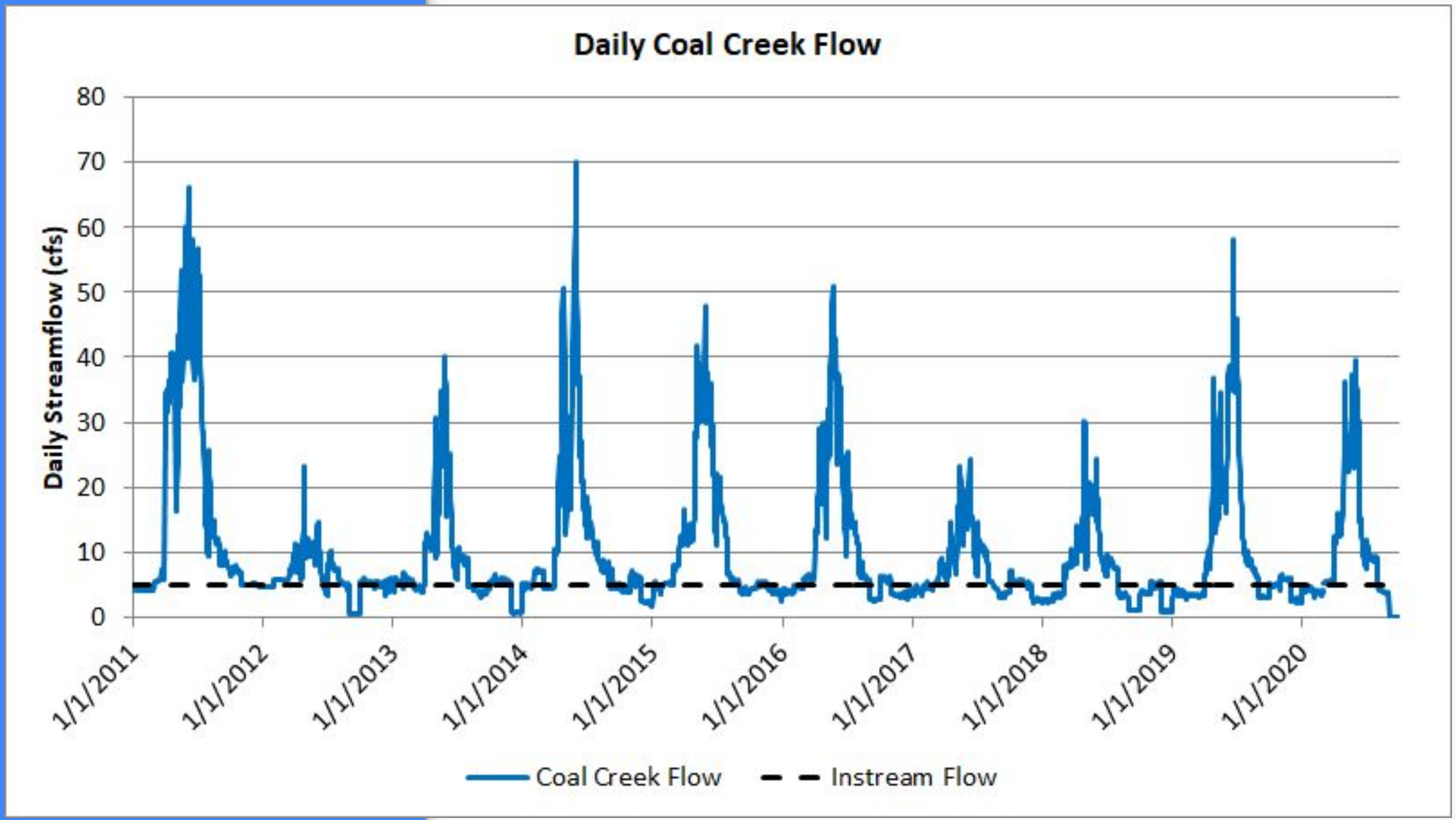


Coal Creek Supply for Yamcolo

Preliminary

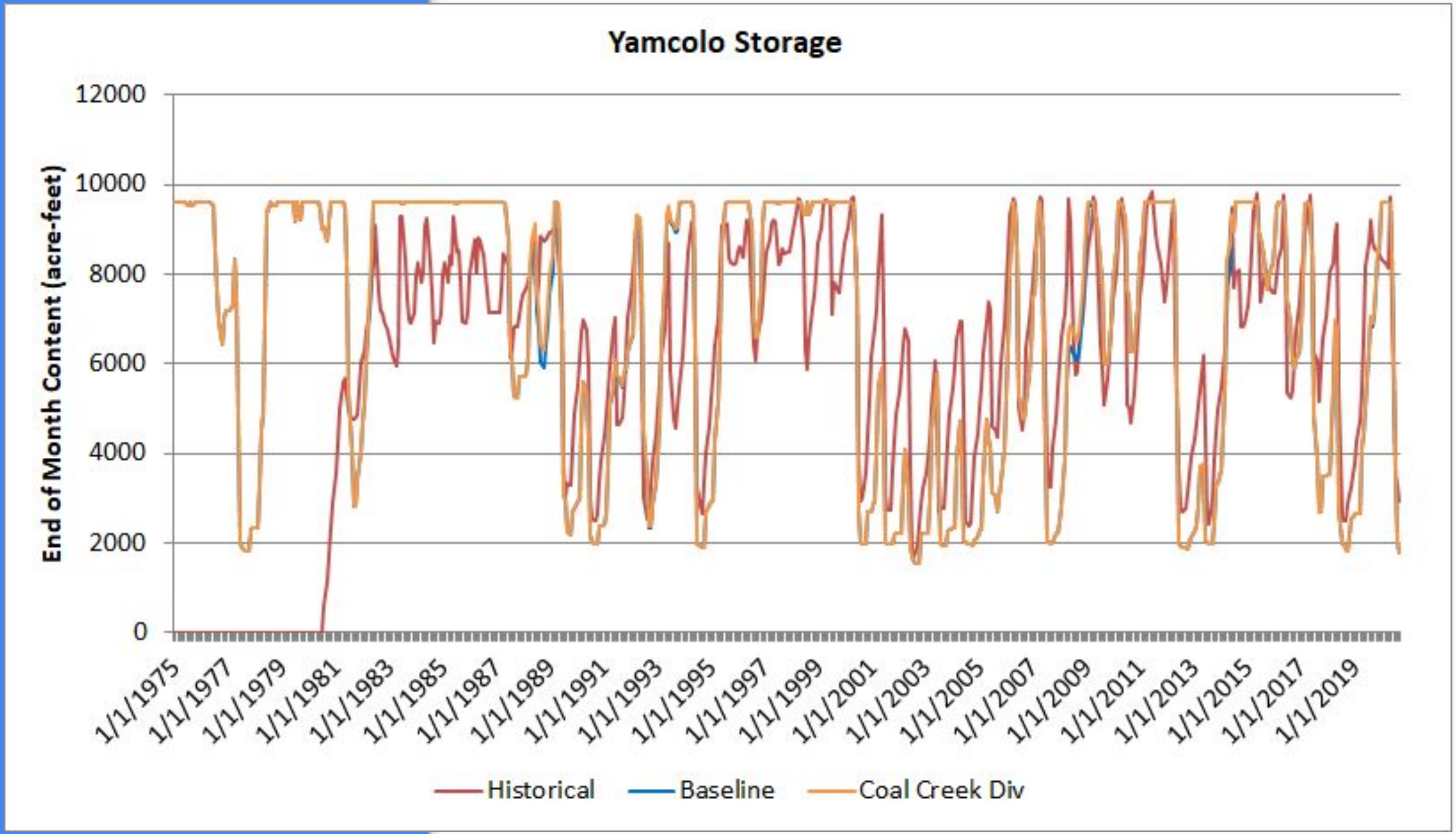
Modeling Effort by WWG for UYWCD

Objective: Estimate daily streamflow for Coal Creek available for diversion to Yamcolo Reservoir



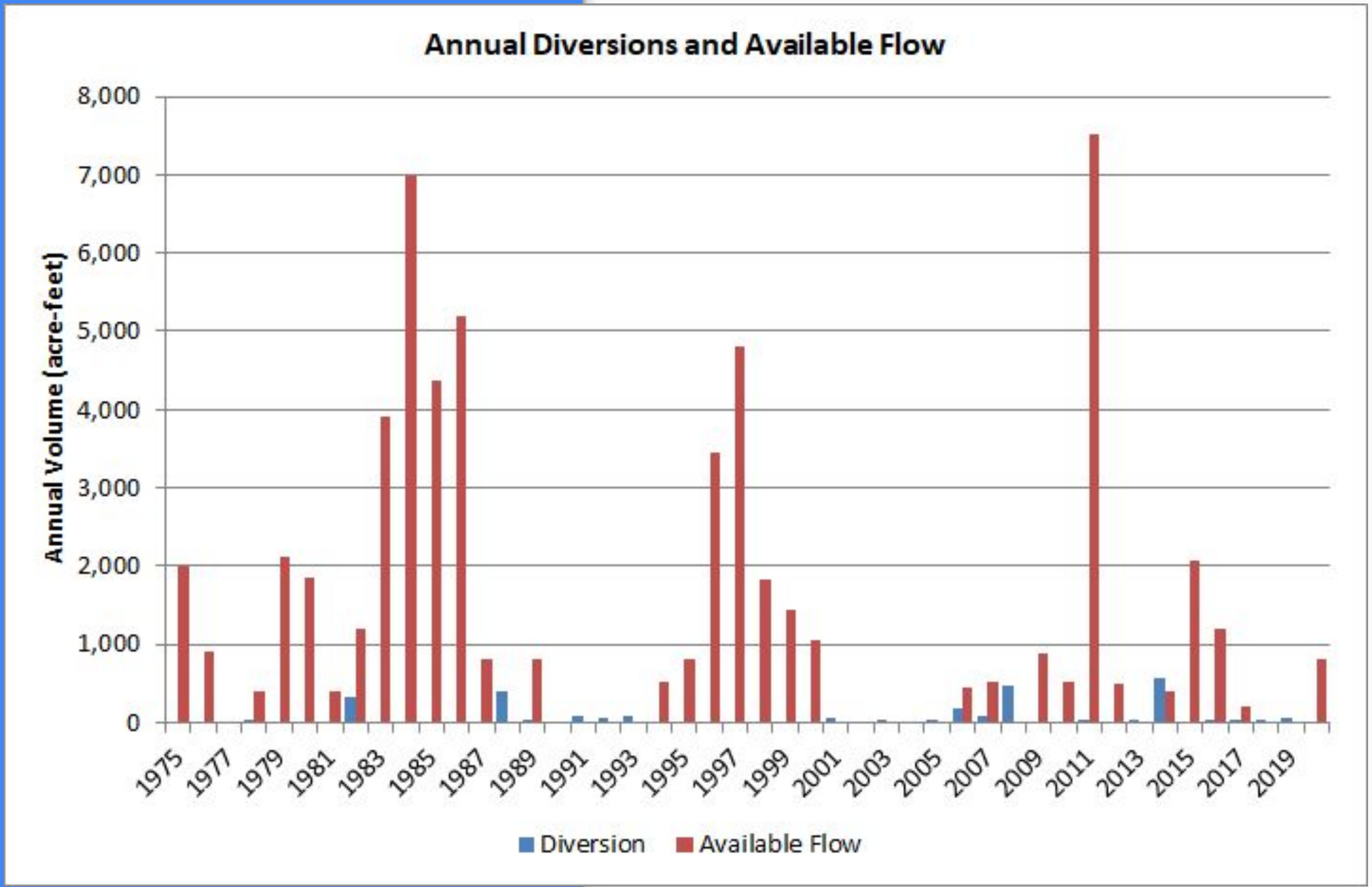
Coal Creek Supply for Yamcolo

Preliminary



Coal Creek Supply for Yamcolo

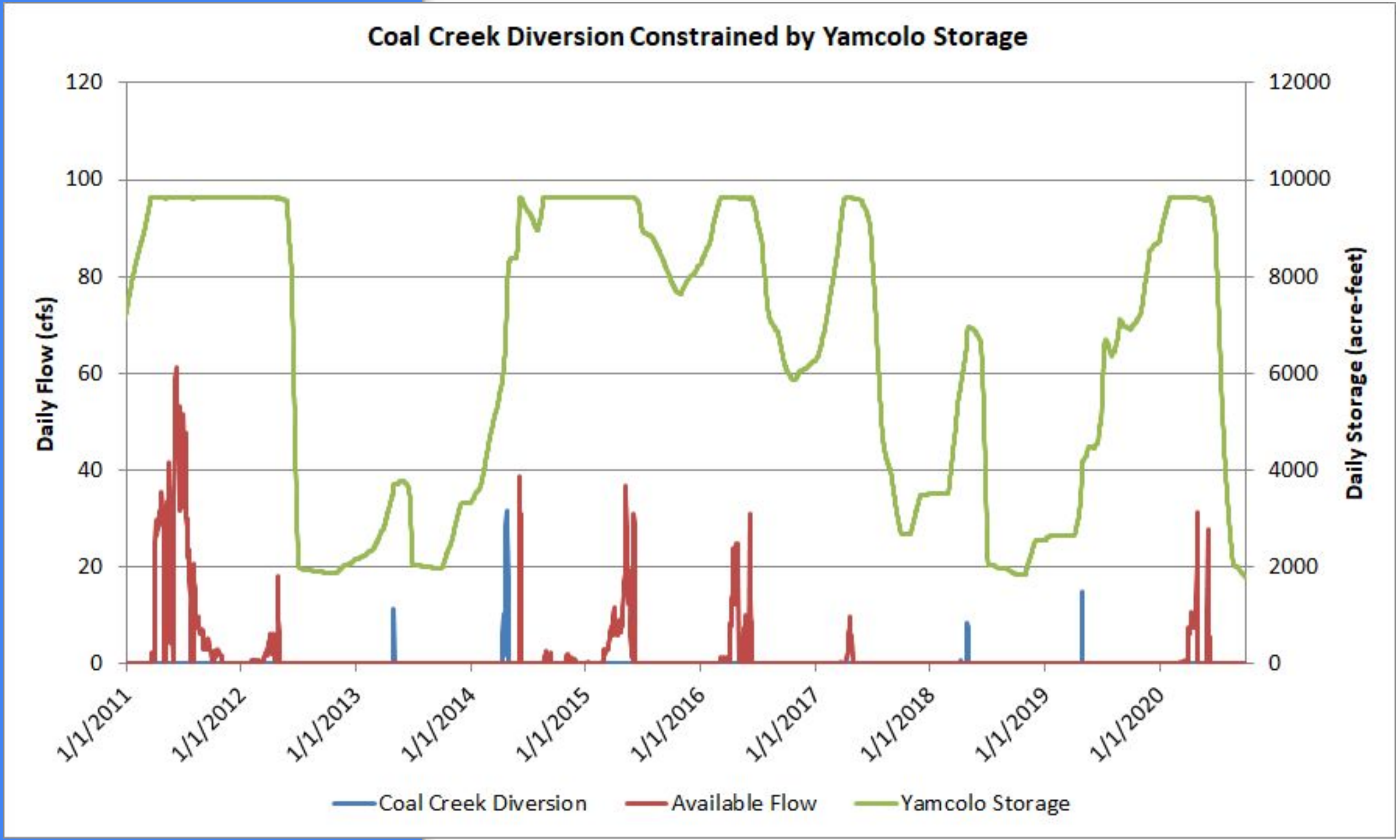
Preliminary



	Div (AFY)	Avail Flow (AFY)
Max	572	7,524
Min	0	0
Med	0	523
Ave	55	1,302

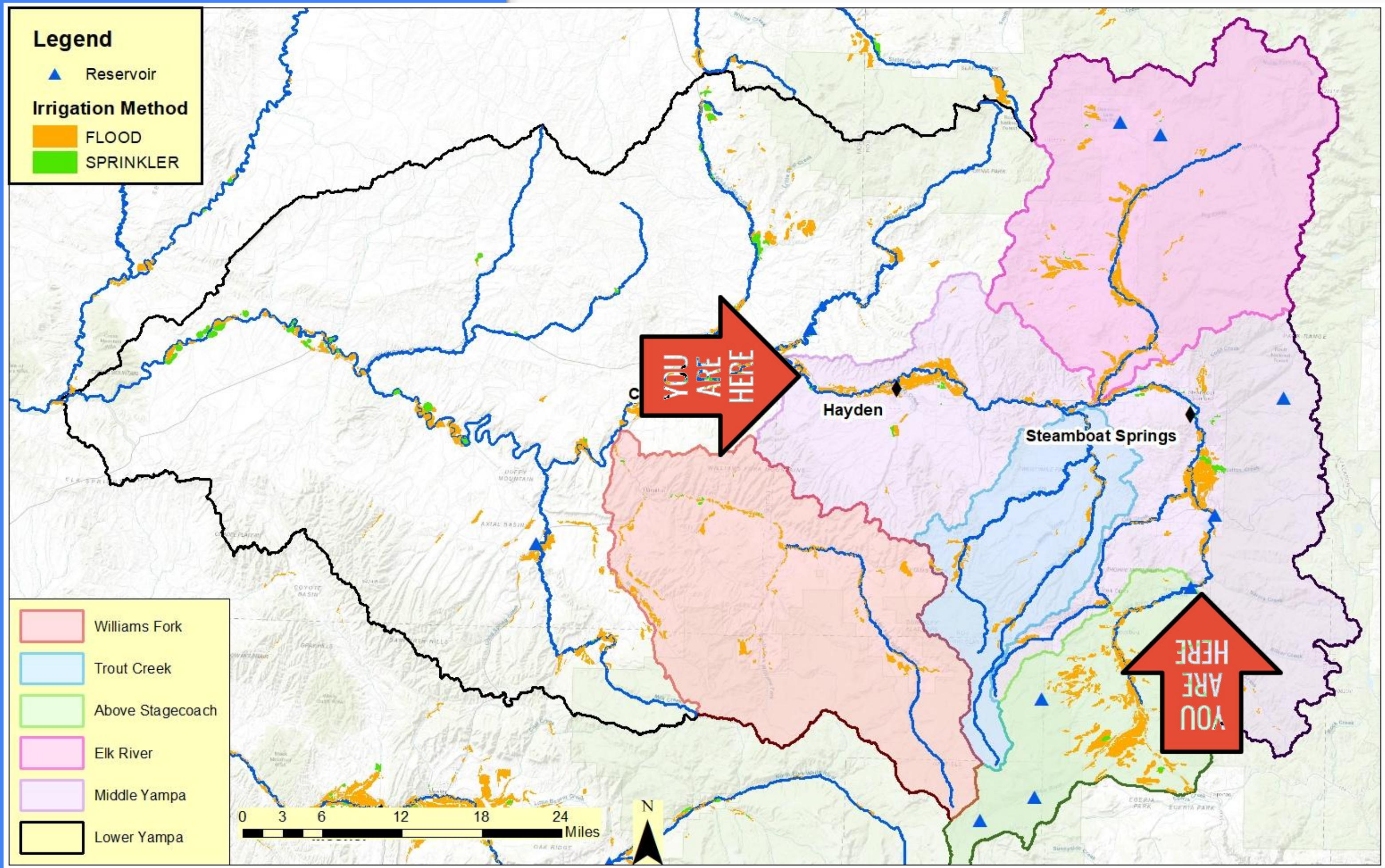
Coal Creek Supply for Yamcolo

Preliminary



Middle Yampa

Downstream of Stagecoach to the confluence with Elkhead Creek



Middle Yampa

1-2% upward trend in March and April flow magnitude metrics on Yampa River @ Steamboat

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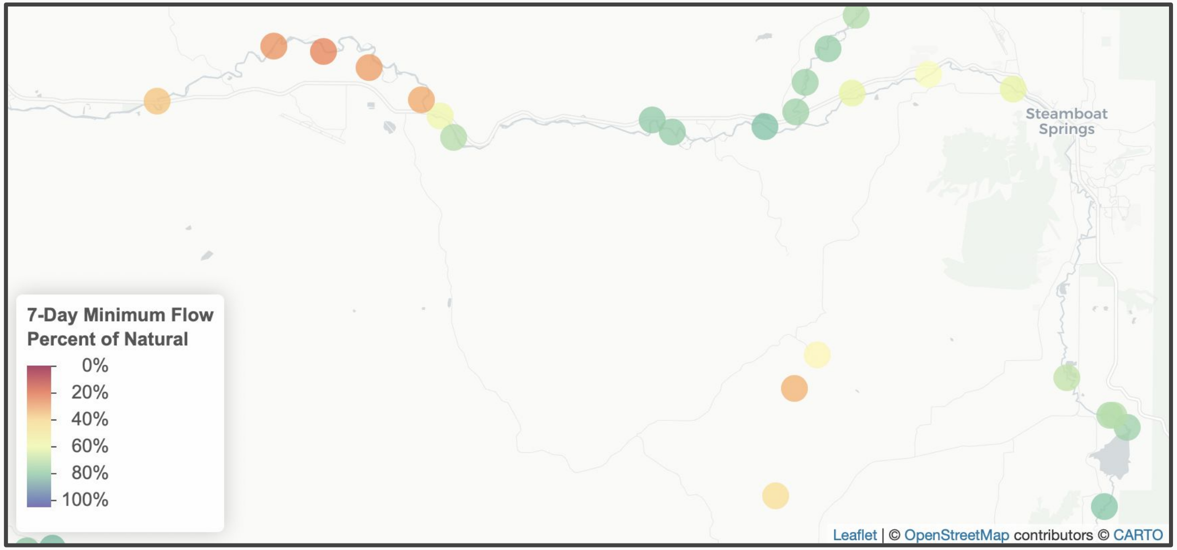
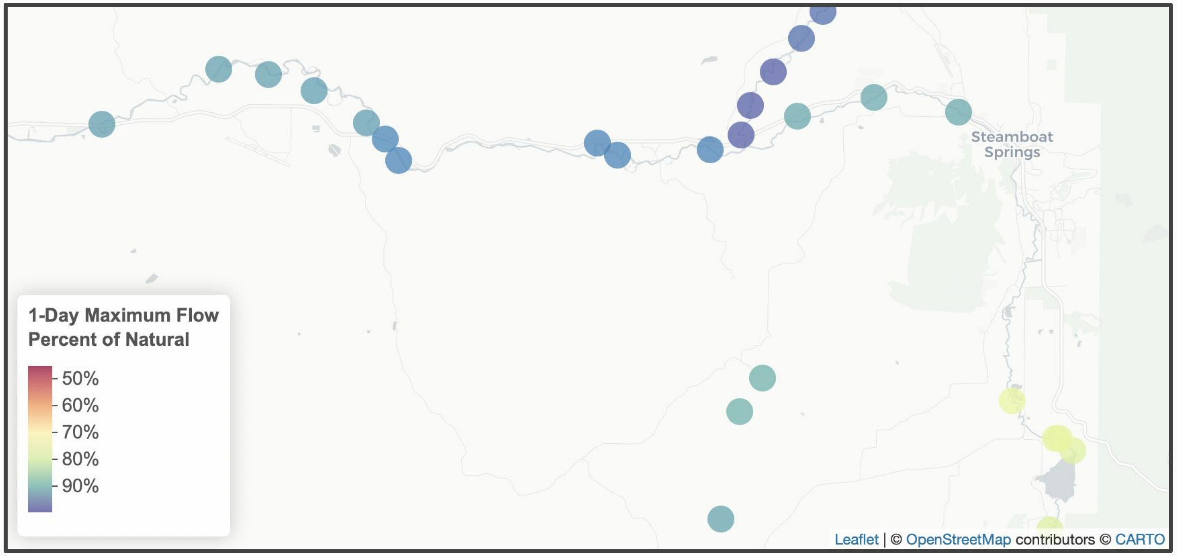
Hydrological alteration varies across the segment

- 7-day minimum flows lower near Hayden
- 1-day peak flows lower below Stagecoach/Catamount
- Peak flow variability higher below Stagecoach/Catamount, unchanged elsewhere
- Runoff volume slightly lower throughout

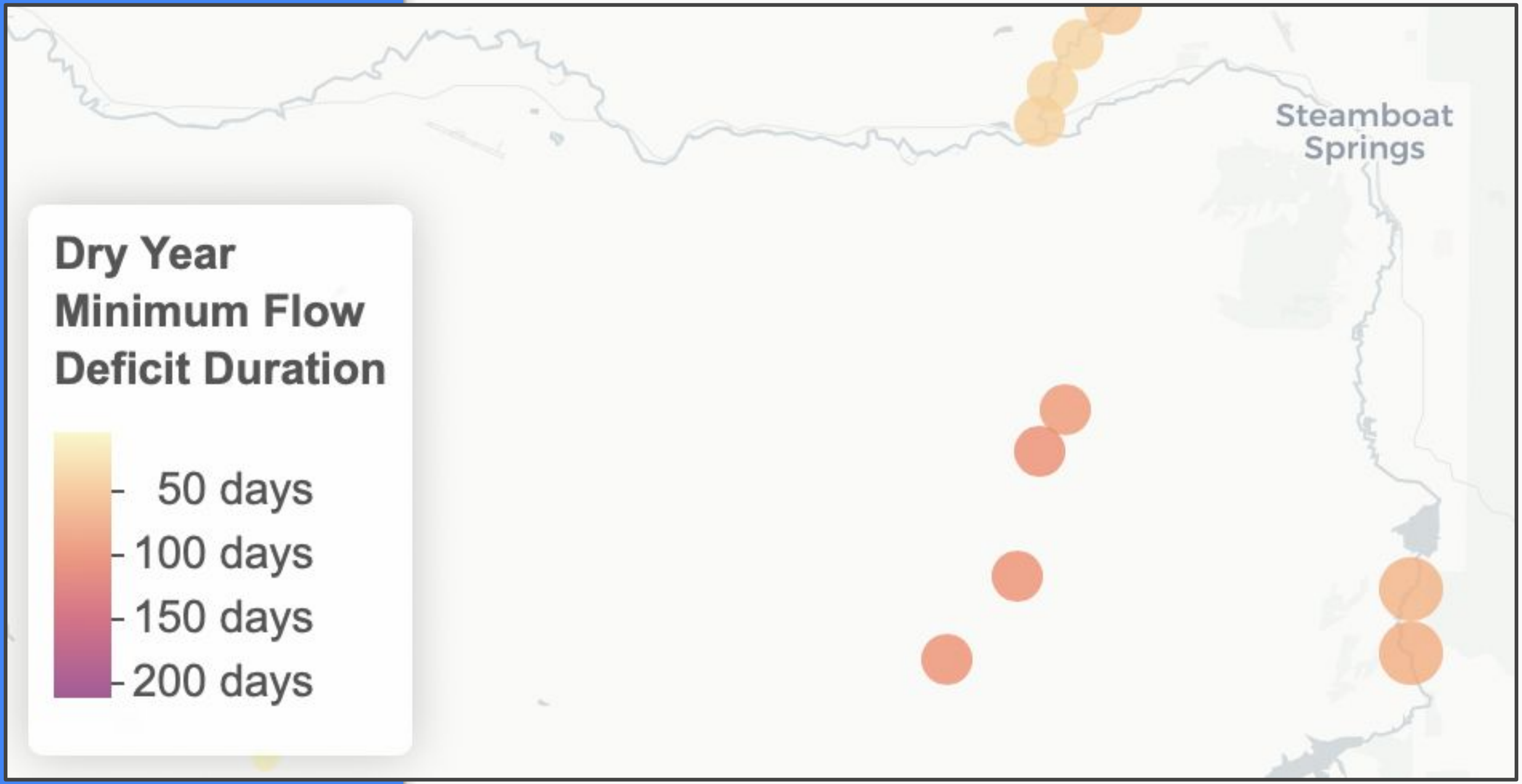
Upper and lower ends of the reach indicate the greatest alteration, but less acute than upstream reach.





Middle Yampa

ISF Deficit durations/volumes highest below Stagecoach Reservoir



Middle Yampa

Downstream of Stagecoach to the confluence with Elkhead Creek

Consumptive Use:

1. Agriculture
2. Steamboat Resort Snowmaking
3. City of Steamboat/Mt. Werner
4. Hayden Station
5. Other M&I use represented in aggregate

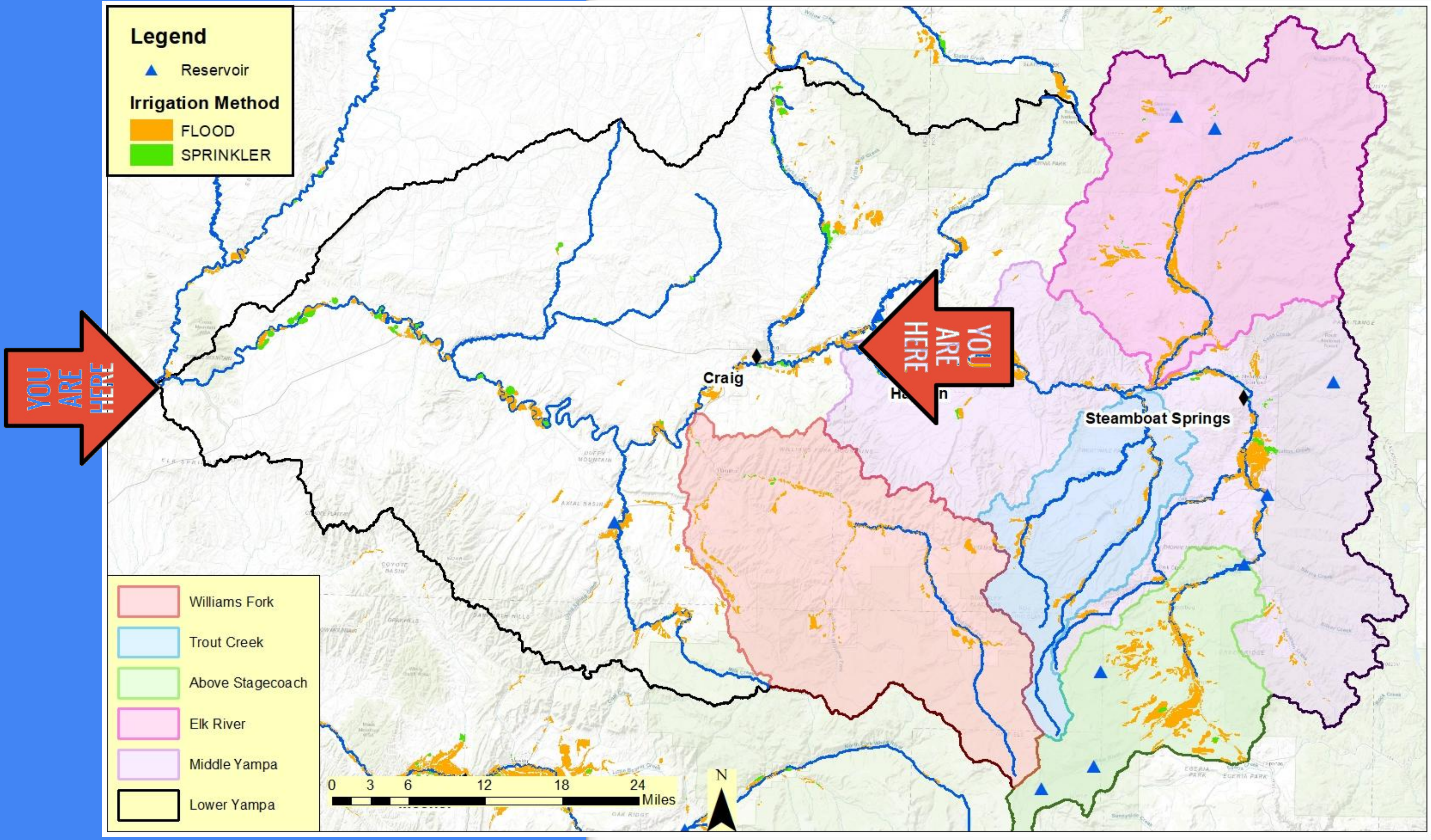
Baseline	Annual Demand (AFY)	Annual Gap (AF)	Annual Percent Gap (%)	Annual CU Gap (AF)
Average (1975-2020)	71,631	60	0%	32
2018 only	87,021	305	0%	167

Reservoirs - serve muni, recreation

1. Fish Creek
2. Long Lake
3. Lake Catamount

Lower Yampa

Elkhead Creek confluence to the mouth



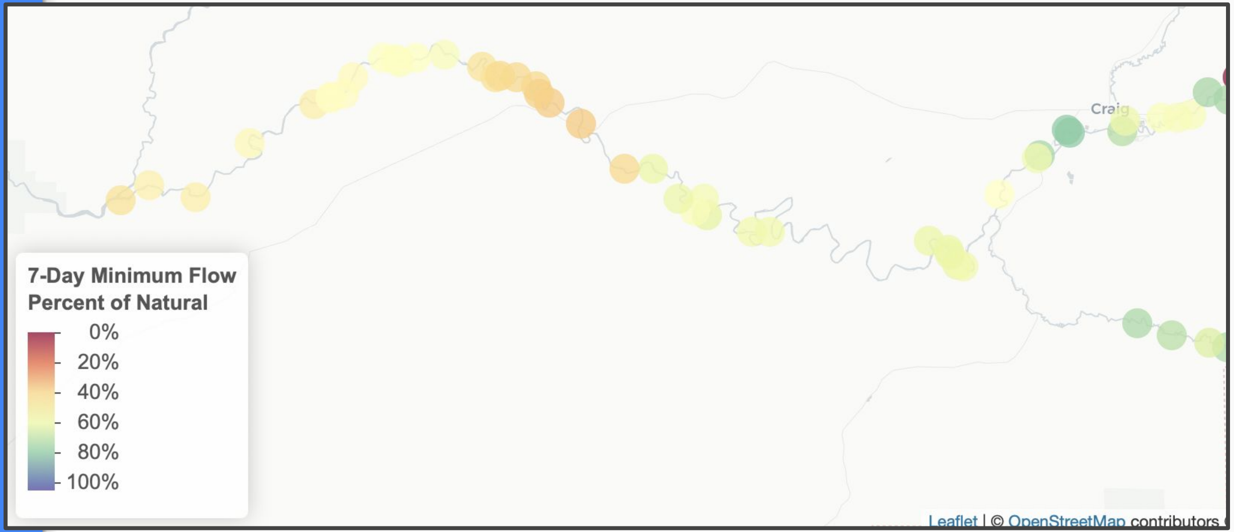
Lower Yampa

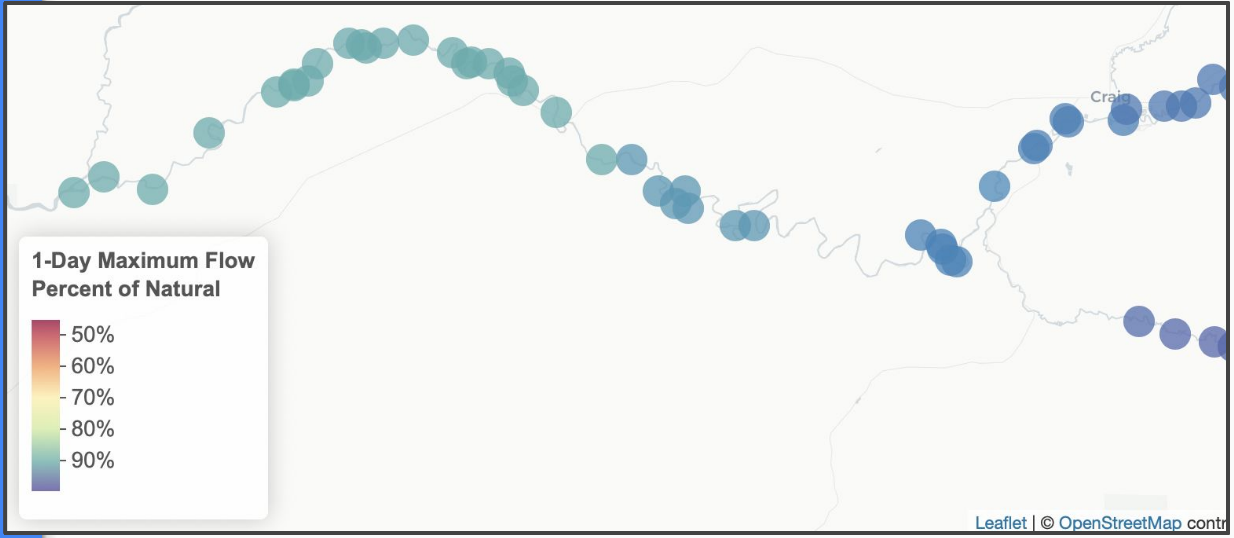
1-2% downward trend in March low flow metrics on Yampa River below Craig and at Deerlodge Park

Hydrological alteration varies across the segment

- 7-day minimum flows increasingly altered in downstream direction
- 1-day peak flows relatively natural
- Peak flow variability relatively natural
- Runoff volume slightly lower below Craig

Impacts to hydrology are greatest in the vicinity of Maybell





Lower Yampa

Elkhead Creek confluence to the mouth

Consumptive Use:

1. Agriculture
2. City of Craig
3. Craig Station
4. ColoWyo
5. Maybell Mill Pipeline

Baseline	Annual Demand (AFY)	Annual Gap (AF)	Annual Percent Gap (%)	Annual CU Gap (AF)
Average (1975-2020)	88,556	526	1%	297
2018 only	89,085	5,316	6%	3,095

Reservoirs - Muni, Industrial, Fish, Recreation

1. Elkhead
2. Wilson

Lower Yampa

Elkhead Creek confluence to the mouth

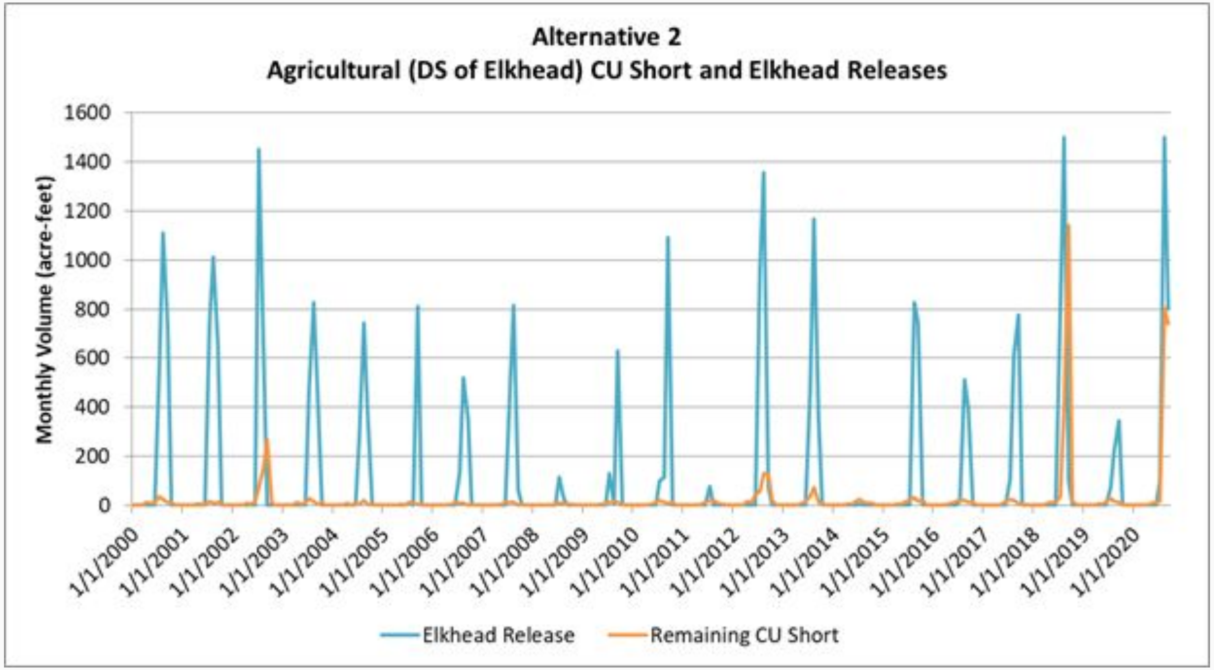
Three Big Questions from Yampa Storage Modeling:

1. What if the River District Pool is made available to ag diversions?
2. What if Tri-State Pools are made available to the Recovery Program Targets and release limits increased?
3. What if Stagecoach can supplement Elkhead releases to the Recovery Program Targets?

Agricultural Users

Shortages greatly improved

- Release about 1,000 af/yr
- Reduce shortages on average by 80%
- Reduce shortages in dry years by 95%



Recovery Program Targets

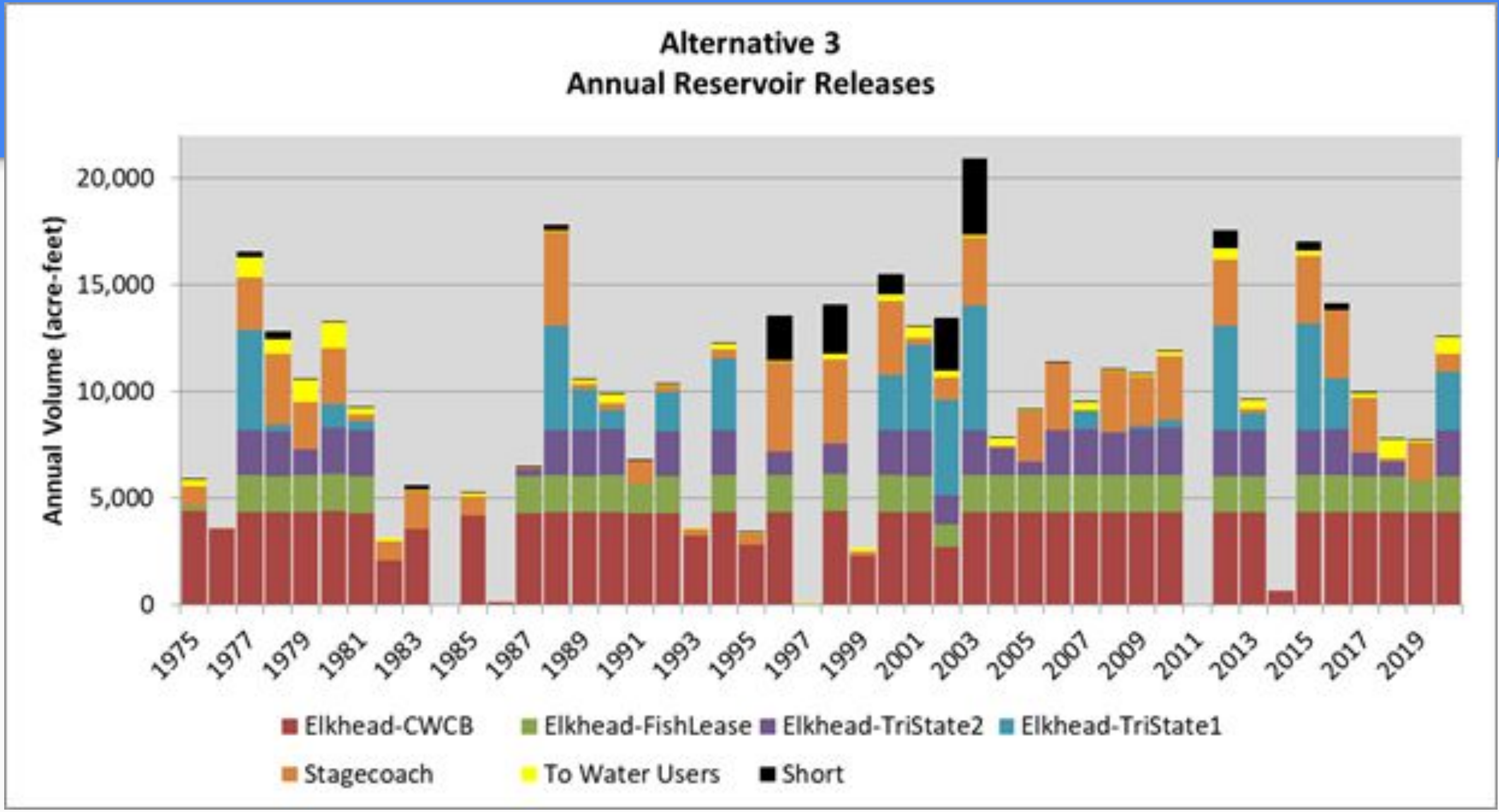
Percent of Days that Streamflow Target is Met

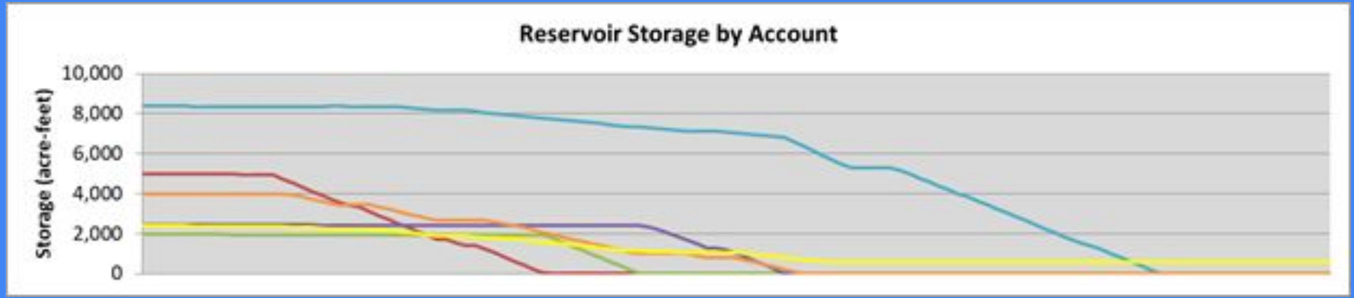
Scenario	July	August	September	October
Historical	91%	80%	58%	90%
Baseline	83%	59%	36%	83%
Alternative 2	100%	95%	80%	92%
Alternative 3	100%	99%	92%	95%

Baseline has more shortages (recall that Baseline has more CU, therefore, less streamflow)

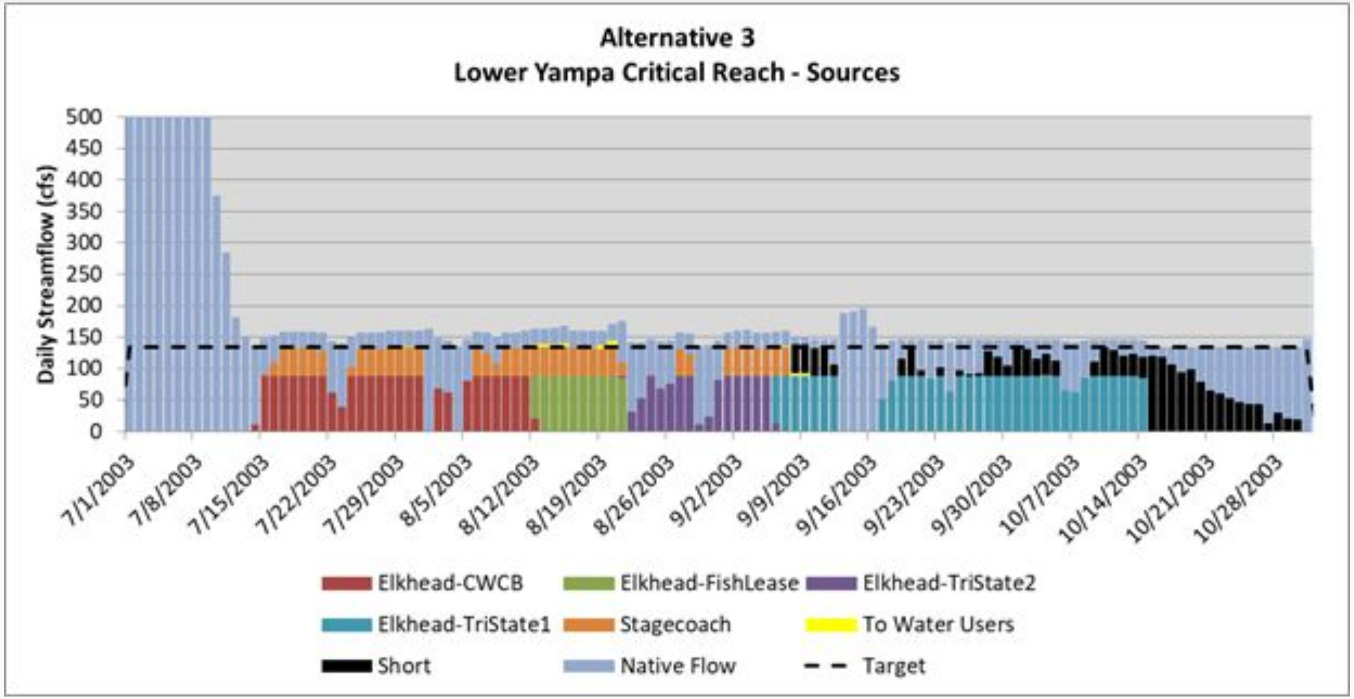
Providing additional reservoir water improves shortages beyond historical conditions

Elkhead or Stagecoach? (Both)

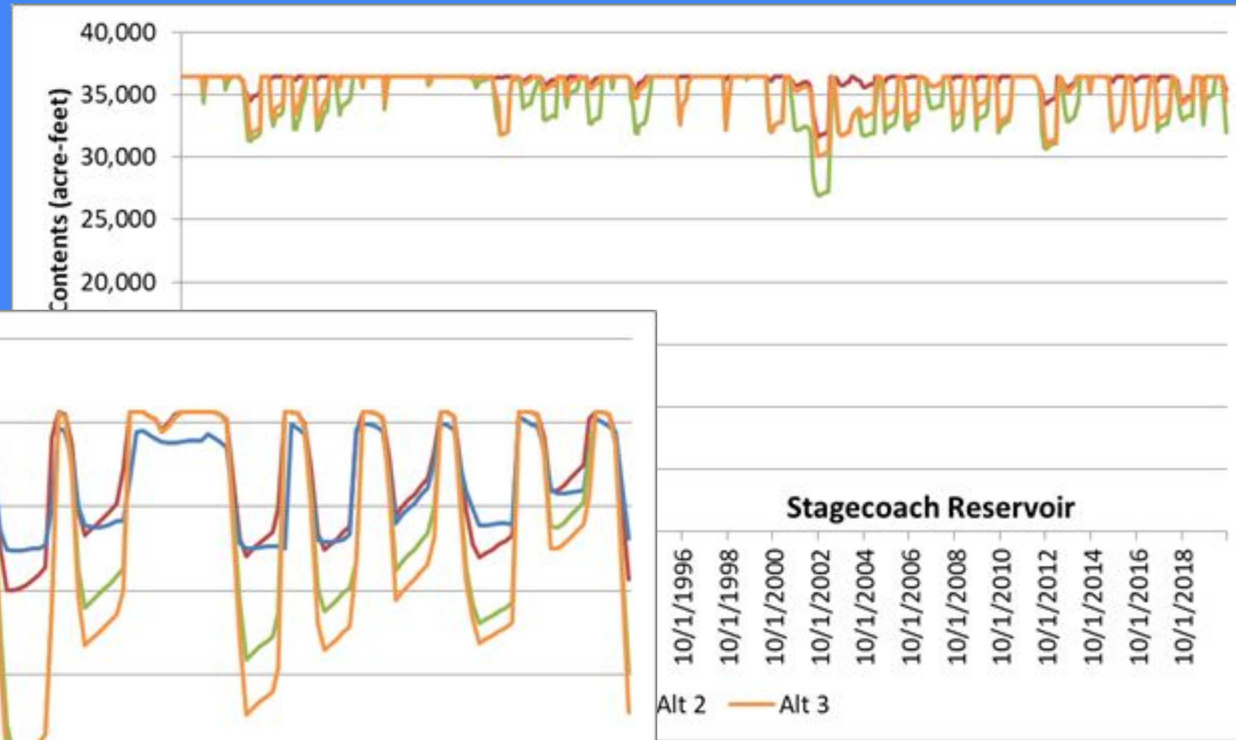


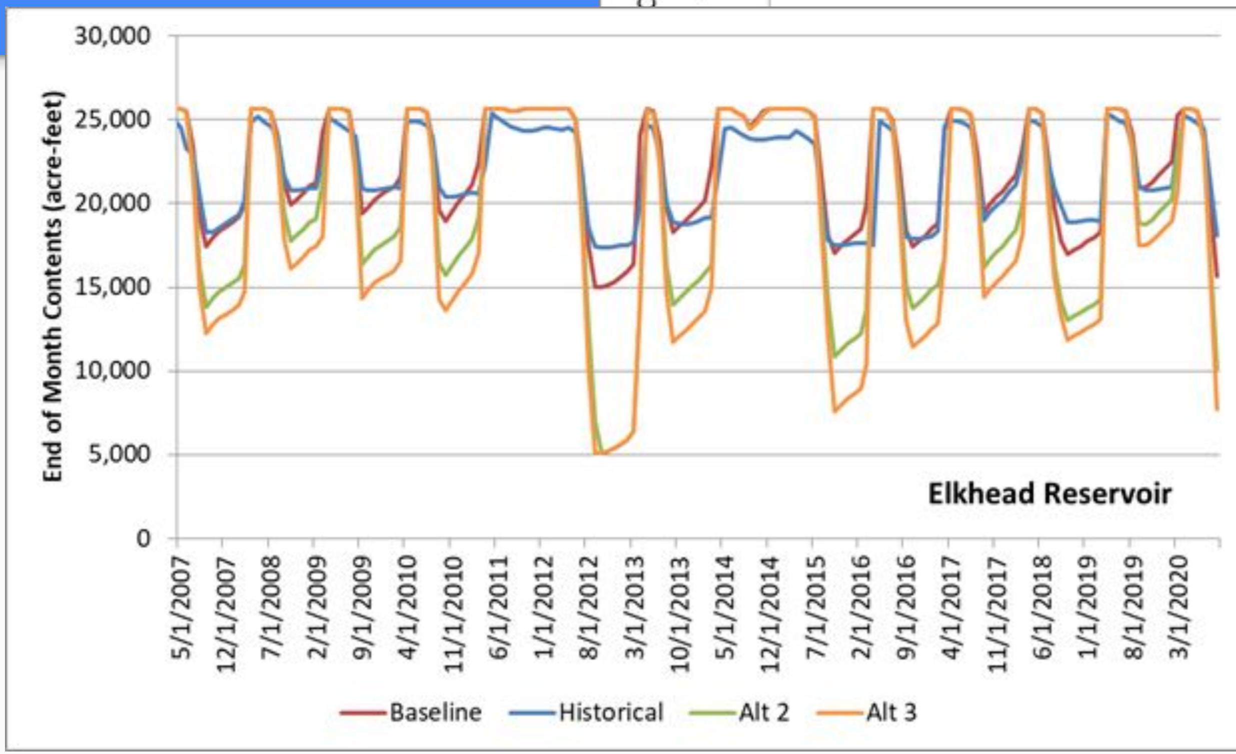


Reservoir Storage by Account
Storage (acre-feet)
10,000
8,000
6,000
4,000
2,000
0



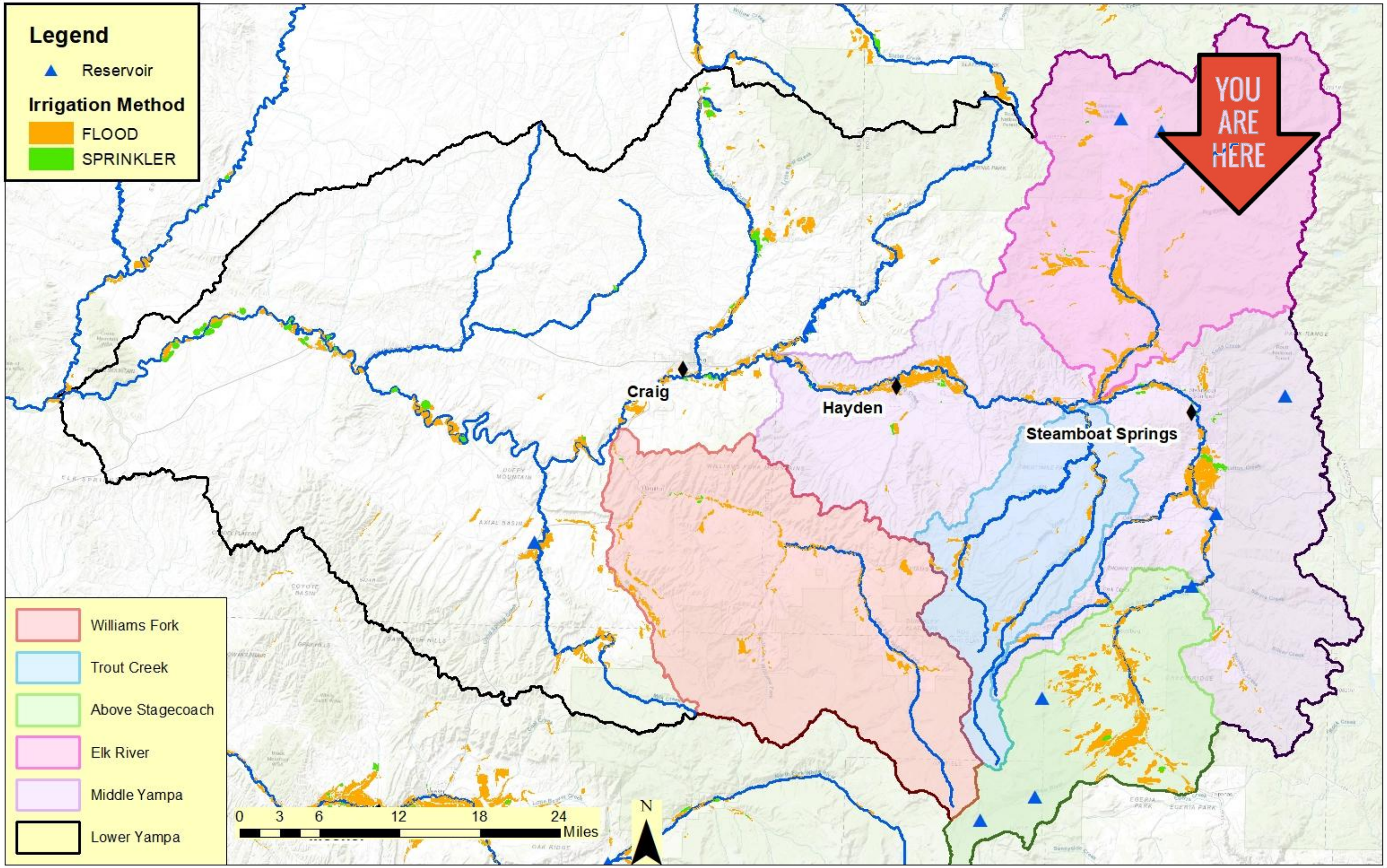
Alternative 3
Lower Yampa Critical Reach - Sources
Daily Streamflow (cfs)
500
450
400
350
300
250
200
150
100
50
0
7/1/2003
7/8/2003
7/15/2003
7/22/2003
7/29/2003
8/5/2003
8/12/2003
8/19/2003
8/26/2003
9/2/2003
9/9/2003
9/16/2003
9/23/2003
9/30/2003
10/7/2003
10/14/2003
10/21/2003
10/28/2003
Elkhead-CWCB
Elkhead-FishLease
Elkhead-TriState2
Elkhead-TriState1
Stagecoach
To Water Users
Short
Native Flow
Target


40,000
35,000
30,000
25,000
20,000
Contents (acre-feet)
Stagecoach Reservoir
10/1/1996
10/1/1998
10/1/2000
10/1/2002
10/1/2004
10/1/2006
10/1/2008
10/1/2010
10/1/2012
10/1/2014
10/1/2016
10/1/2018
Alt 2
Alt 3


30,000
25,000
20,000
15,000
10,000
5,000
0
End of Month Contents (acre-feet)
Elkhead Reservoir
5/1/2007
12/1/2007
7/1/2008
2/1/2009
9/1/2009
4/1/2010
11/1/2010
6/1/2011
1/1/2012
8/1/2012
3/1/2013
10/1/2013
5/1/2014
12/1/2014
7/1/2015
2/1/2016
9/1/2016
4/1/2017
11/1/2017
6/1/2018
1/1/2019
8/1/2019
3/1/2020
Baseline
Historical
Alt 2
Alt 3

Elk River

Elk River Watershed



Elk River

1-2% Upward Trend in spring flow magnitude metrics and slight downward trend in fall flow metrics on Elk River near Milner

Trends generally conform to pattern of earlier runoff and lower baseflows

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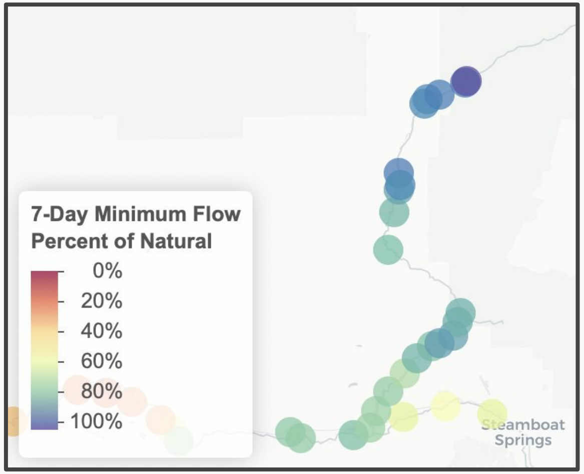
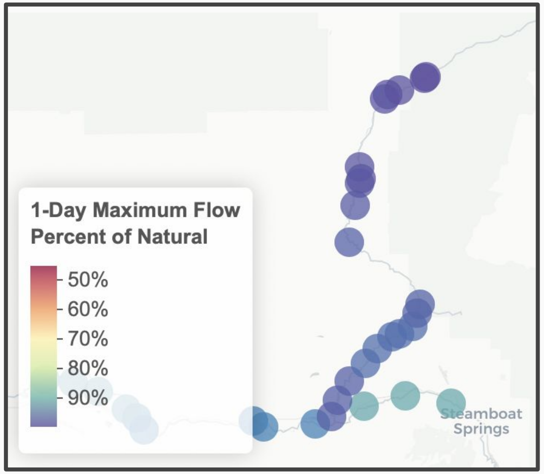
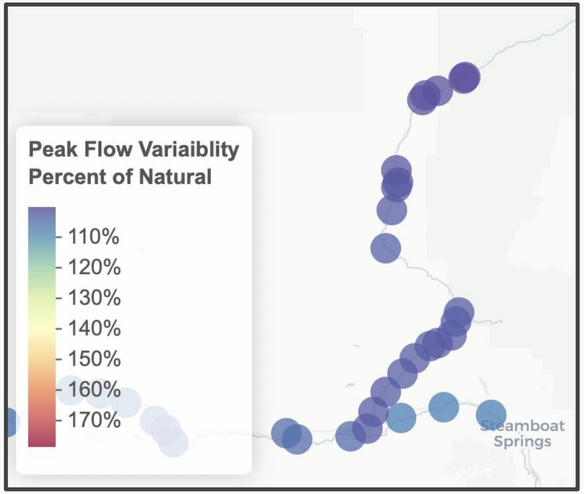
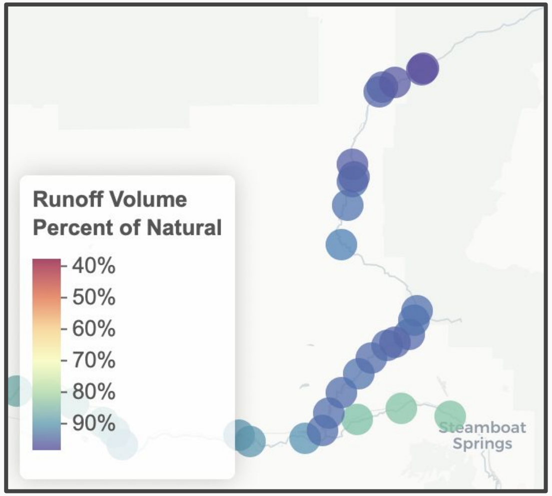
Hydrological alteration is modest throughout the reach

- 7-day minimum flows get progressively lower near Milner
- Peak flow and annual volume metrics are relatively unaltered





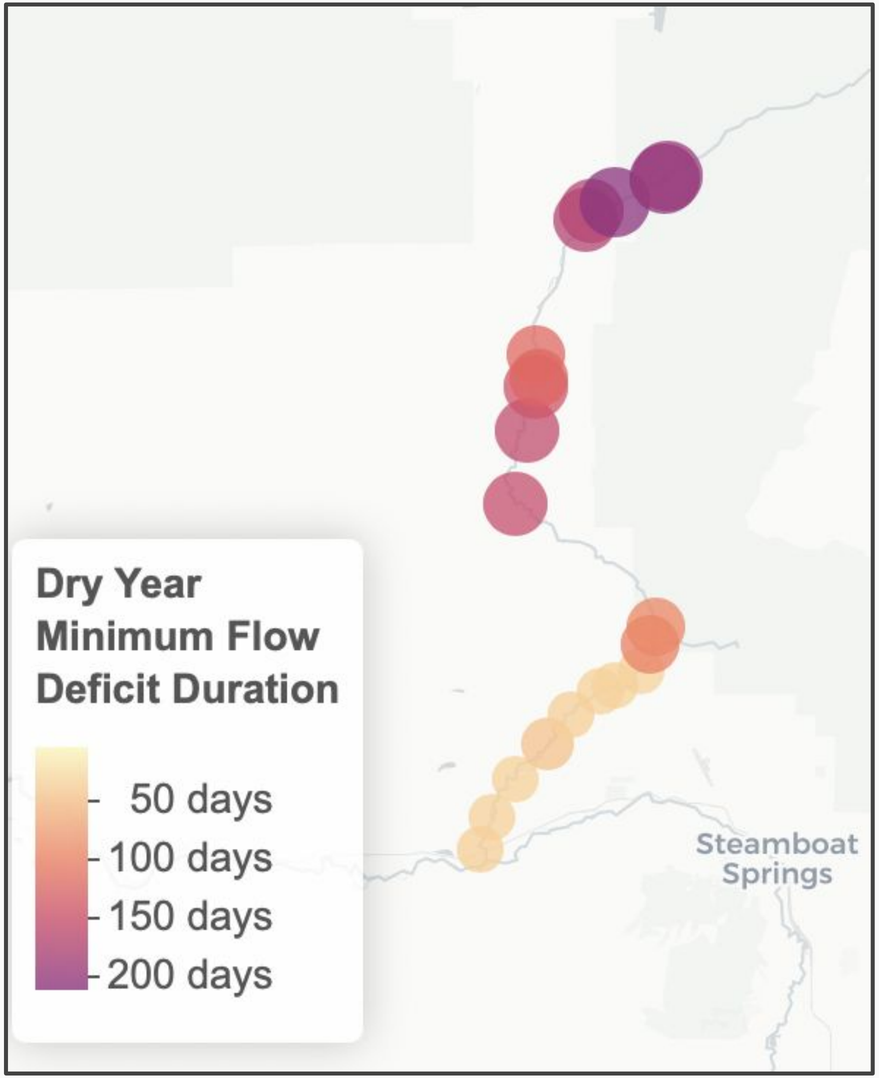




Elk River

Despite low levels of hydrological alteration, ISF deficit durations and volumes are relatively high in the upper watershed

This pattern moderates--but does not disappear-- in average and wet year types



Elk River

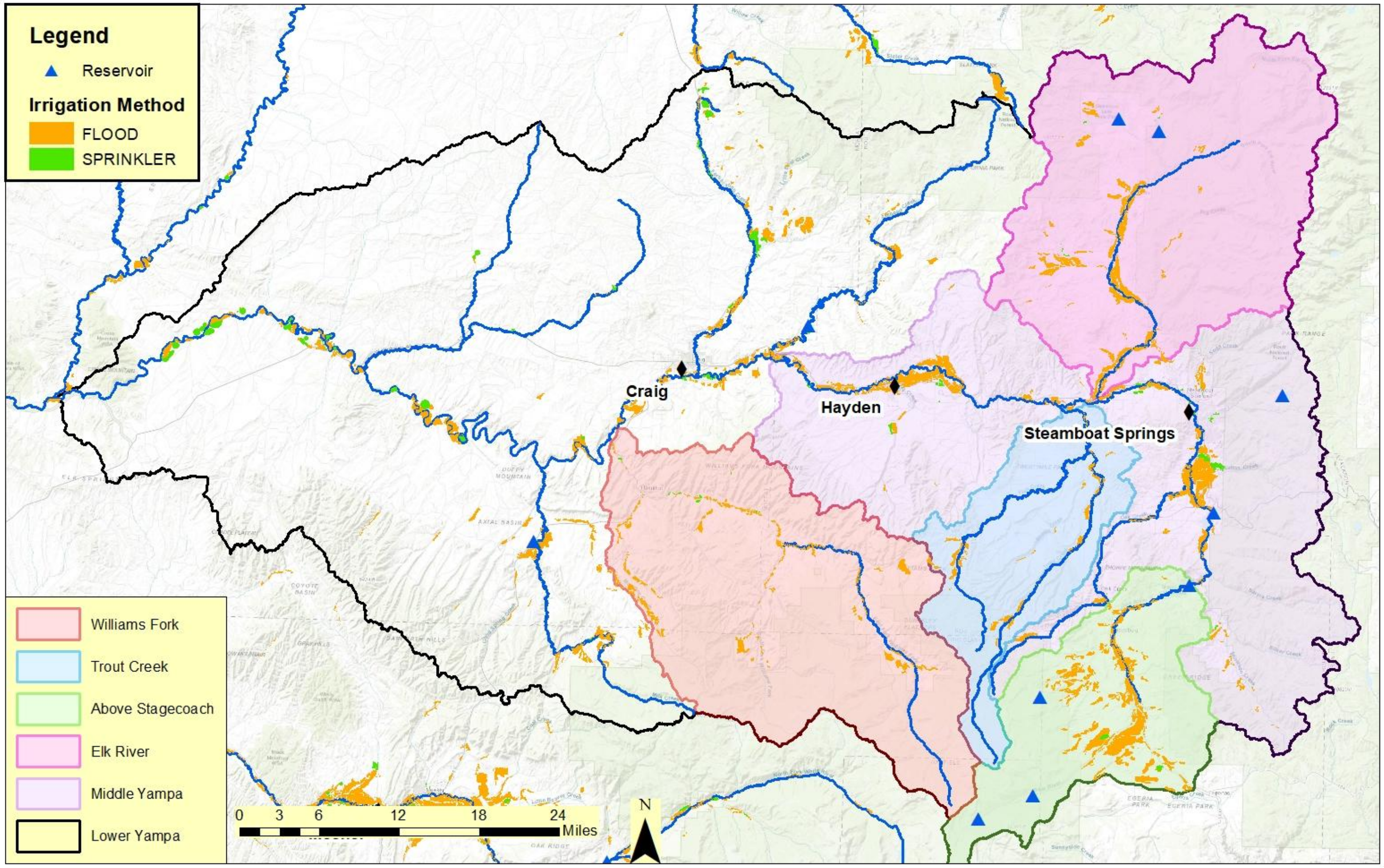
Elk River Watershed

Consumptive Use
1. Agriculture
2. M&I and Domestic Use represented in aggregate

Baseline	Annual Demand (AFY)	Annual Gap (AF)	Annual Percent Gap (%)	Annual CU Gap (AF)
Average (1975-2020)	51,196	997	2%	542
2018 only	56,199	3,897	7%	2,120

Reservoirs - serve recreation, industry, augmentation, future plans for muni
1. Steamboat Lake
2. Lester aka Pearl Lake

Other Major Tributaries



Other Major Tributaries

Trout Creek, Fortification Creek, etc

Consumptive Use:

1. Agriculture
2. M&I and Domestic Use represented in aggregate

Baseline	Annual Demand (AFY)	Annual Gap (AF)	Annual Percent Gap (%)	Annual CU Gap (AF)
Average (1975-2020)	93,579	8,741	9%	4,975
2018 only	99,691	21,688	22%	12,303


Let’s zoom out for a moment...

CU Summary

Yampa Basin Agricultural Gap Results by Region (Period Avg)

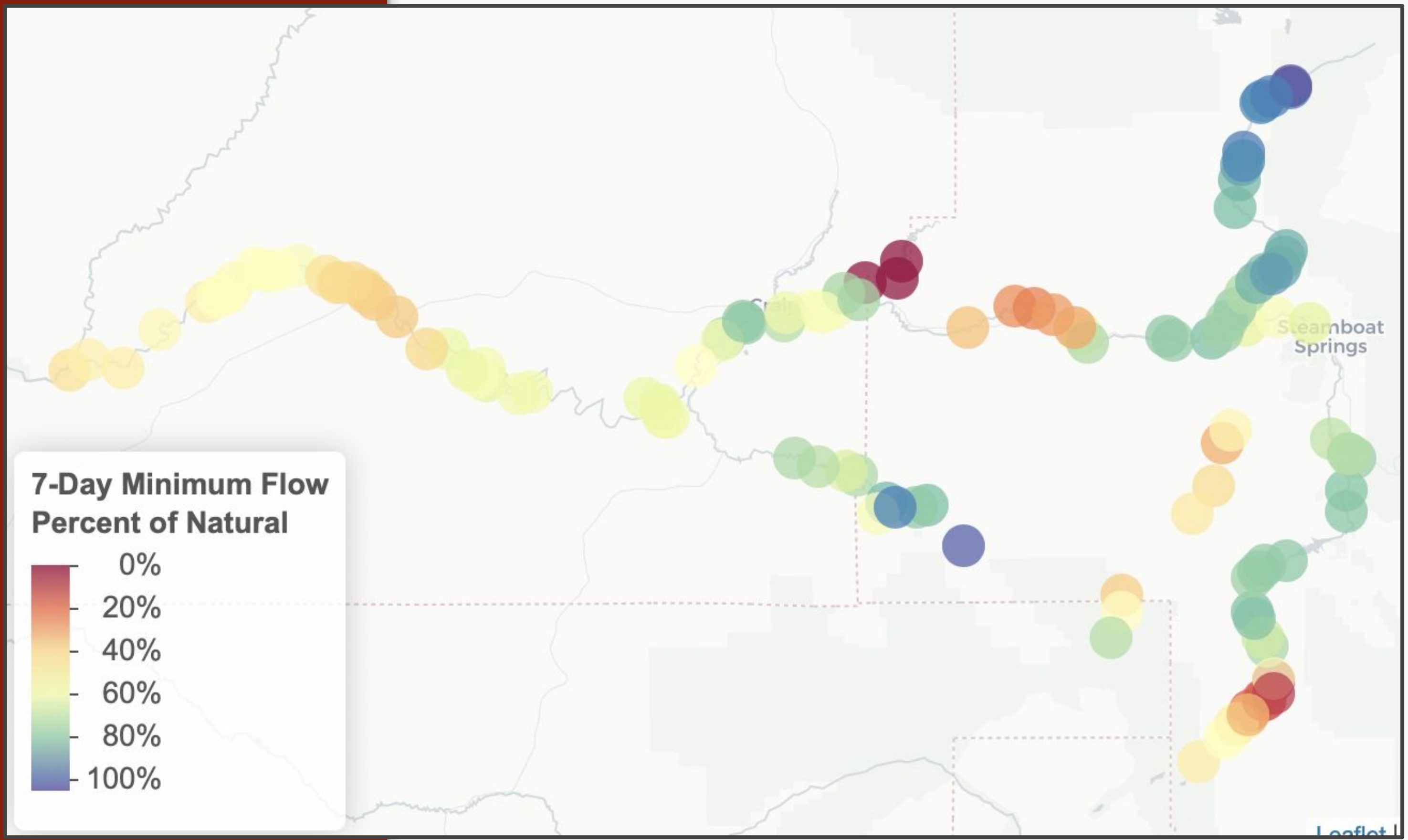
Tributary	Average Annual Demand	Average Annual Gap	Average Annual Percent Gap	Average Annual CU Gap
Baseline				
Above Stagecoach	73,815	1,232	2%	670
Elk River	51,196	997	2%	542
Williams Fork	47,011	3,431	7%	1,853
Middle Mainstem	71,631	60	0%	32
Lower Mainstem	88,556	526	1%	297
Little Snake River	112,552	6,011	5%	3,350
Other Tribs	93,579	8,741	9%	4,975

CU Summary

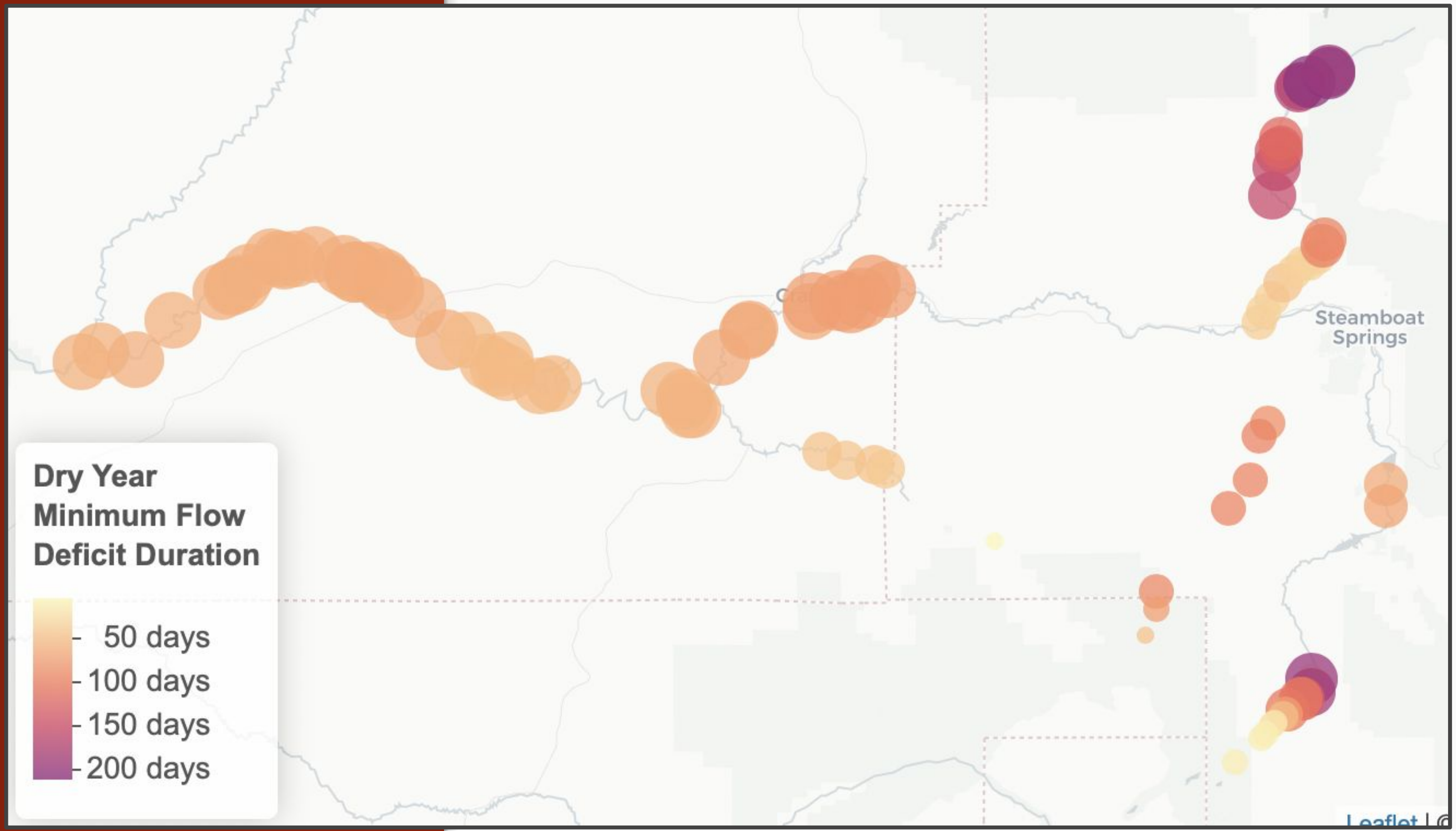
Yampa Basin Agricultural Gap Results by Region (2018)

Tributary	Average Annual Demand	Average Annual Gap	Average Annual Percent Gap	Average Annual CU Gap
Baseline				
Above Stagecoach	79,201	7,040	9%	3,844
Elk River	56,199	3,897	7%	2,120
Williams Fork	48,233	8,566	18%	4,635
Middle Mainstem	87,021	305	0%	167
Lower Mainstem	89,085	5,316	6%	3,095
Little Snake River	99,973	18,842	19%	10,502
Other Tribs	99,691	21,688	22%	12,303

7-day Min. Flow Alteration



Dry Year Env. Flow Deficit Volume/Duration



Areas that are water-short get more water-short

Ag demands are at least 10 times larger than M&I.

Ag gaps get worse with climate change because:

- Crop demands increase due to warmer temperatures
- Peak runoff shifts earlier, effectively extending the “late irrigation season” (low streamflow, high crop demands)

Yampa Basin Agricultural Gap Results per Tributary

Tributary	Average Annual Demand	Average Annual Gap	Average Annual Percent Gap	Average Annual CU Gap
Baseline				
Above Stagecoach	63,377	564	1%	306
Elk River	41,458	173	0%	94
Little Snake River	72,351	2,243	3%	1,248
Mainstem	107,186	335	0%	193
Other Tribs	71,976	7,034	9%	4,013
Williams Fork	33,304	2,875	8%	1,552
Cooperative Growth				
Above Stagecoach	77,208	3,234	4%	1,758
Elk River	51,430	952	2%	516
Little Snake River	87,600	4,983	6%	2,775
Mainstem	166,964	6,954	4%	3,789
Other Tribs	84,498	14,057	16%	7,984
Williams Fork	38,918	5,059	13%	2,732
Hot Growth				
Above Stagecoach	85,142	8,382	10%	4,558
Elk River	57,732	3,024	5%	1,642
Little Snake River	99,553	8,227	8%	4,587
Mainstem	284,447	27,678	9%	14,998
Other Tribs	93,979	20,143	21%	11,392
Williams Fork	43,526	7,114	16%	3,842

Thanks!

Contact info:

Refer questions on "*2021 Yampa River Hydrology Review and Needs Assessment*" to:

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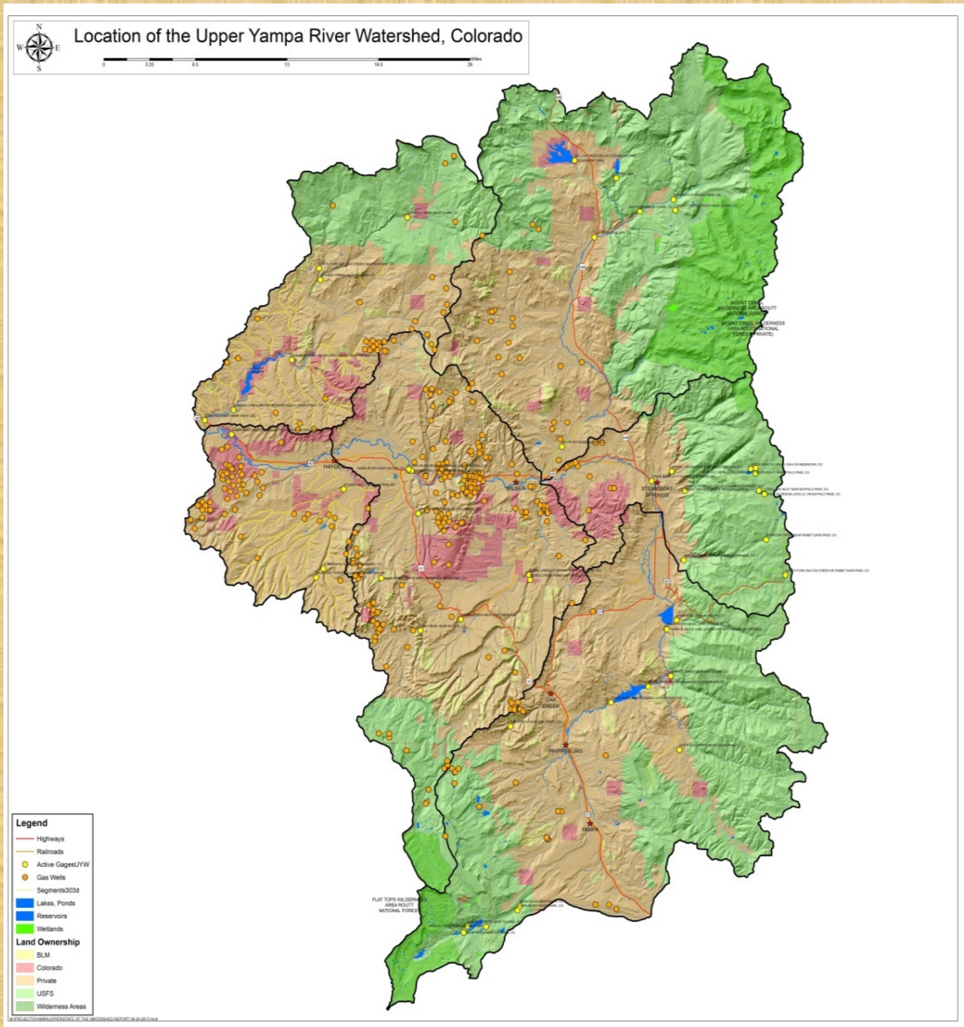
Upper Yampa River Watershed Group

CHARACTERIZATION OF STREAMFLOW, SUSPENDED SEDIMENT, AND NUTRIENTS IN THE UPPER YAMPA RIVER BASIN

Upper Yampa River Watershed Group

- The UYRWG formed in 2012
- Focus is on Watershed Health
- Published State of Watershed Report in 2014
- Published Watershed Plan in 2016
- Plan identified the increase in prolific algae occurrences, in some cases toxic blue-green algae, as an issue that needs further analysis



Nutrients, Sediment & Algae

- **Excess nutrients such as nitrogen & phosphorus can lead to excessive algae blooms resulting in negative impacts in the watershed**

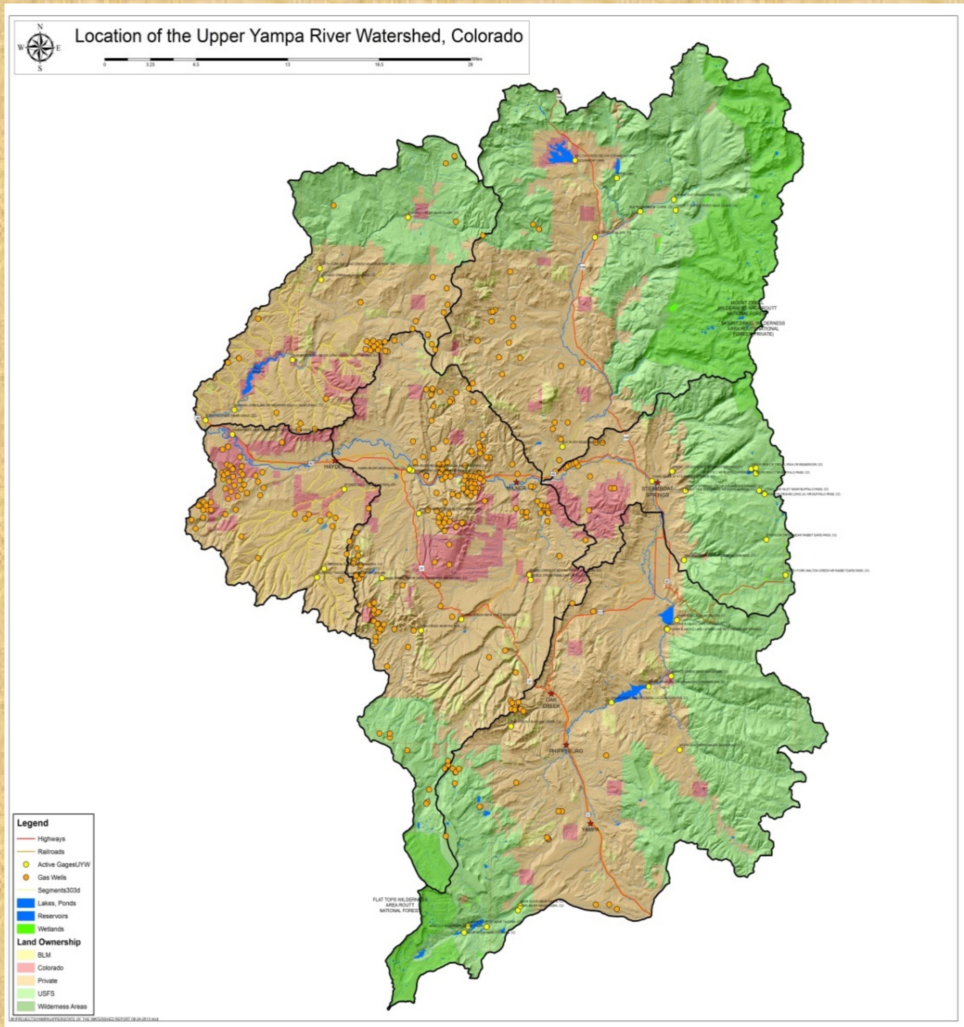
Nutrients, Sediment & Algae

- Excessive algal blooms can deplete oxygen & potentially harbor toxins that can have an effect on aquatic & human health

Stagecoach Reservoir Algae Bloom

Upper Yampa River Watershed Group

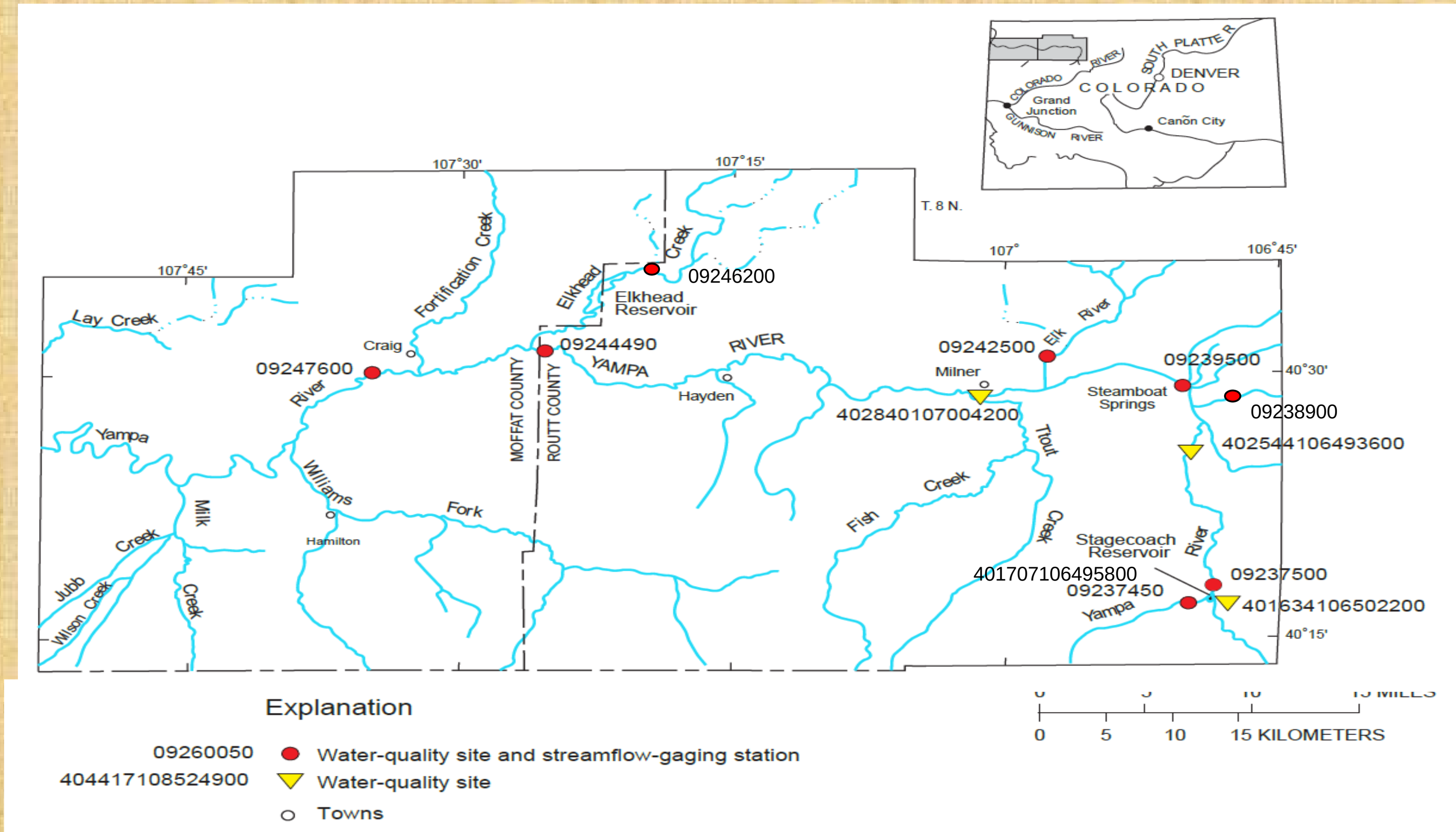
- Hired USGS in 2019 with local and BRT funds
- Nutrient & sediment loading analysis using 8 years of existing water quality data
- Purpose: to explore transport & fate to better understand sources



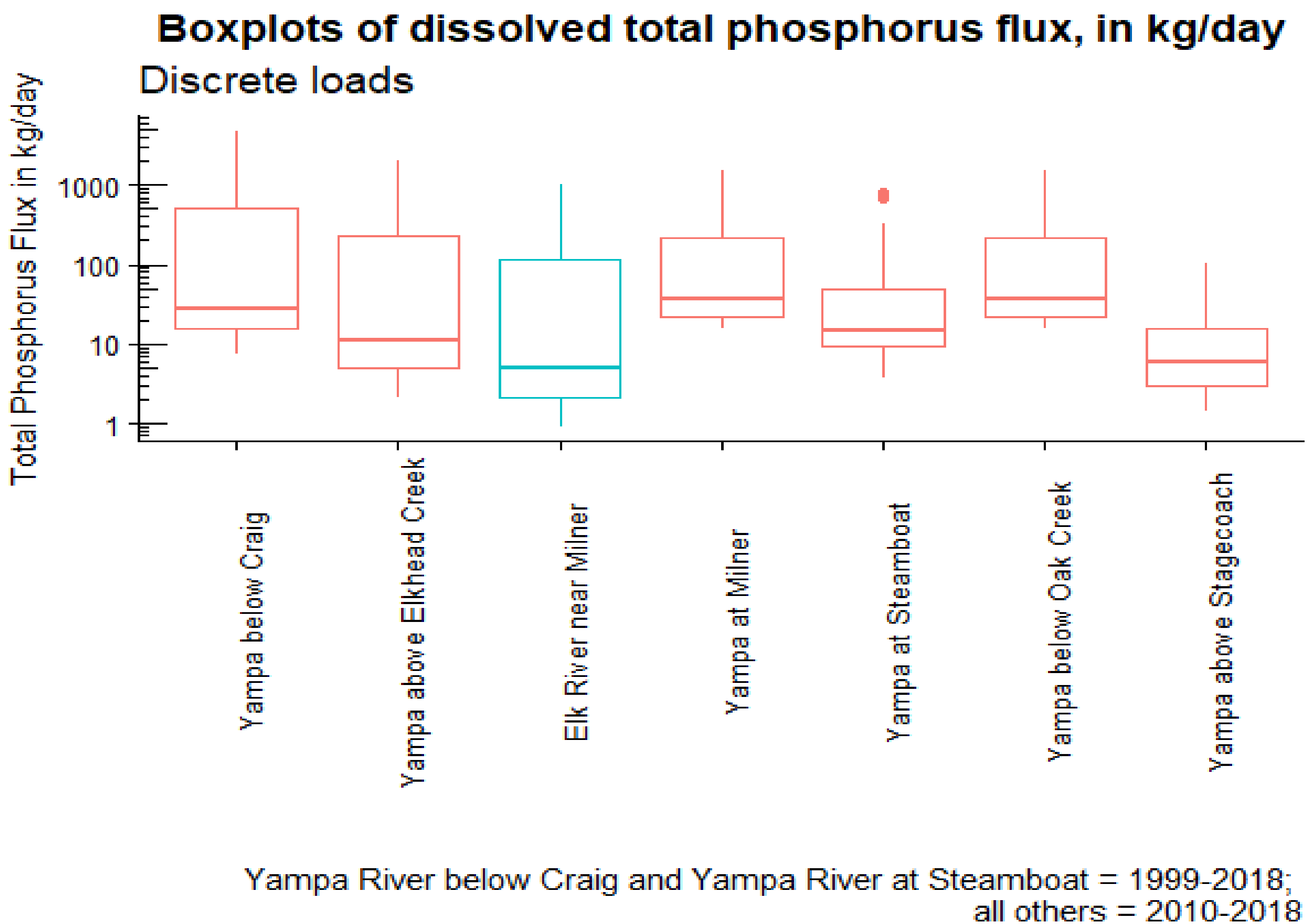
Objectives

- To better understand how nutrient and sediment loading is impacting watershed health and related water uses in the Yampa River Basin

- Water suppliers, wastewater treatment operators, recreational users, and the citizenry at large can benefit from this analysis. Water managers, including those in the agriculture industry, will be better able to make informed decisions as the dynamics of these important constituents are better understood.



YAMPA RIVER BELOW CRAIG, CO.	09247600
ELKHEAD CREEK ABOVE LONG GULCH, NEAR HAYDEN, CO.	09246200
YAMPA RIVER ABOVE ELKHEAD CREEK NEAR HAYDEN, CO.	09244490
ELK RIVER NEAR MILNER, CO.	09242500
YAMPA RIVER AT MILNER, CO.	402840107004200
YAMPA RIVER AT STEAMBOAT SPRINGS, CO.	09239500
FISH CR AT UPPER STA NR STEAMBOAT SPRINGS, CO.	09238900
YAMPA RIVER BELOW OAK CREEK NR STEAMBOAT SPG, CO.	402544106493600
YAMPA RIVER BELOW STAGECOACH RESERVOIR, CO.	09237500
YAMPA RIVER ABOVE STAGECOACH RESERVOIR, CO.	09237450
STAGECOACH RESERVOIR AT DAM, CO.	401707106495800
LITTLE MORRISON CREEK NEAR STAGECOACH, CO.	401634106502200



Boxplots of dissolved total phosphorus flux, in kg/day
Discrete loads
Total Phosphorus Flux in kg/day
1000
100
10
1
Yampa below Craig
Yampa above Elkhead Creek
Elk River near Milner
Yampa at Milner
Yampa at Steamboat
Yampa below Oak Creek
Yampa above Stagecoach
Yampa River below Craig and Yampa River at Steamboat = 1999-2018;
all others = 2010-2018

Stagecoach Reservoir

- The reservoir was also evaluated for selected constituents including total dissolved solids, nutrients, field parameters and any available data associated with algal species (including blue green algae) and algal toxicity. The data was compared to historical data collected in Stagecoach just after the reservoir filled in the early 1990’s (Tobin, 1995)

Key Findings Specific to UYWCD

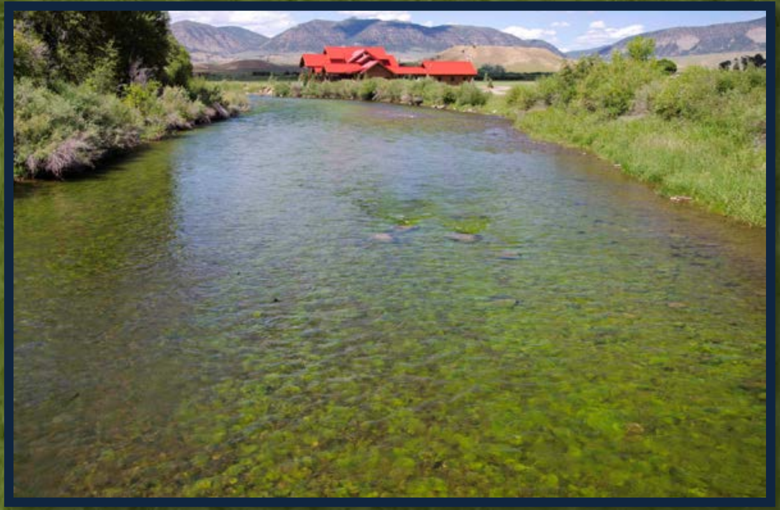
Anomalies identified above S.C. Reservoir:

- N&P concentrations occurred later than other sites
- Highest suspended sediment concentrations found in upper basin by 2 fold
- Total P concentrations exceeded CDPHE standards in spring and summer

Key Findings Specific to UYWCD

- Longer peak durations of Total P
- Total P peaks occurred later in summer than other sites
- S.C. Reservoir displays anoxic characteristics; is prone to cyano HABs, and ripe for accelerated eutrophication (pre-mature filling in)

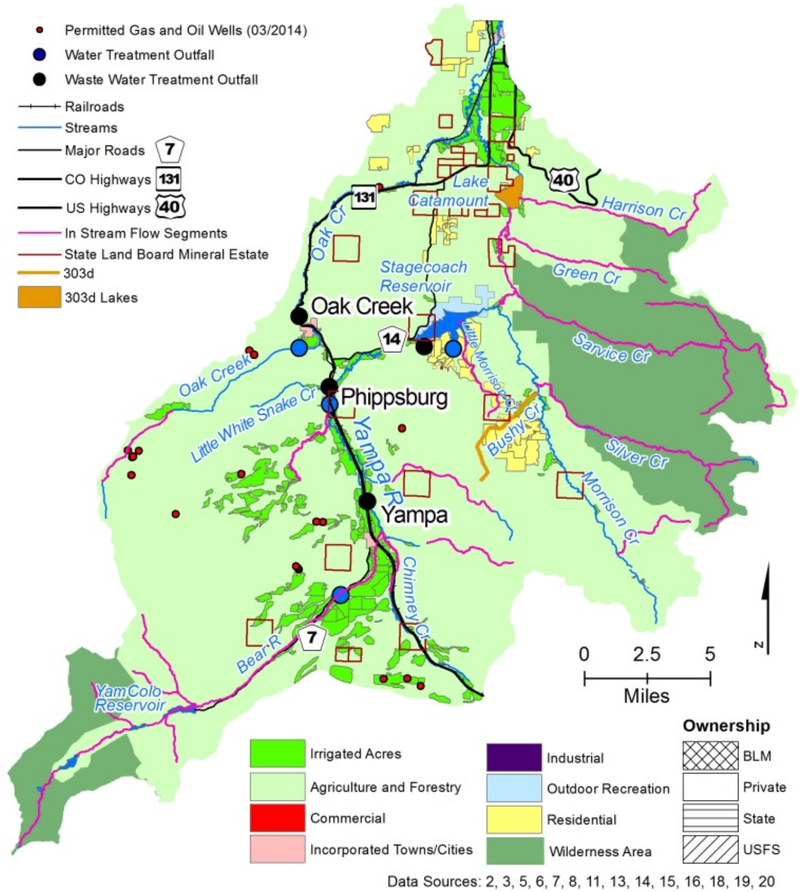
Need: Get Ahead of Potential Closures or Worse



Next Steps after USGS Study

- **Selected sub-basin above and including Stagecoach Reservoir for further exploration**
- **Seek funding opportunities**

Planning Area



Task 1

- **Create Stakeholder group to begin collaborative approach to identifying specific sources**
- **Objective: To develop voluntary, non-regulatory, cost effective mitigation strategies**

Task 2

- Detailed inventory of land uses / possible stressors
- Determine if additional water quality sampling is needed
- Hire outside expertise to guide process

Measurable Outcomes

-Create GIS mapping layers at a smaller scale

-Develop best practices

-Implement case studies

-Outreach & education

-Expand successful practices on a basin-wide scale

Thank you!

Contact Information

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