

Environmental Resources Technical Working Group “ERTWG”

A dive into Biological matters 4/21/2021

(A special thanks to Peter Anderson....)

Intro and history by Tom Bassista, IDFG

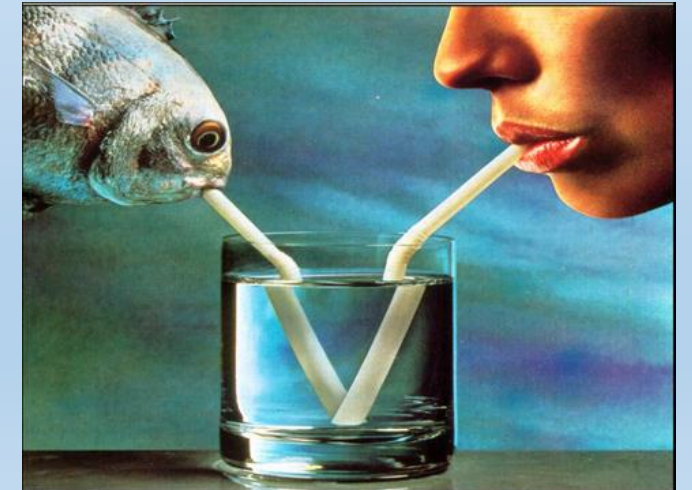
Today is less about solving issues and more about portraying the biology and what sample tools we have to help analyze future impacts and opportunities



IDFG Fishery Research Biologist 2001-2006



IDWR Stream Channel Protection 2006-2010



IDFG Technical Assistance Program 2010-present

Agenda and flow of today's meeting (4/21/2021)

- Freshet Flow analysis performed by Noah Stewart Noah.Stewart-Maddox@idwr.idaho.gov
- Brief History of MAR environmental concerns thomas.bassista@idfg.idaho.gov
- USFWS, Dave Hopper talk about ESA listed snails dave_hopper@fws.gov
- IDFG, Chris Murphy talk about Cottonwood forests chris.murphy@idfg.idaho.gov
- Idaho Power Company, Ken Lepla talk about White Sturgeon klepla@idahopower.com
- IDFG, Brett High and myself with talk about resident fisheries brett.high@idfg.idaho.gov
- Quick house keeping: time sensitive meeting-lots of topics





Freshet Flow Analysis Conclusions

- The reservoir and irrigation system has significantly lowered the magnitude of peak flows
- The timing of peak flows is similar to the natural system, however the variability is much higher
- More channel mobilization appears to currently occur on the South Fork and Main Stem of the Snake River compared to the Henry's Fork

Henry's Fork near Rexburg

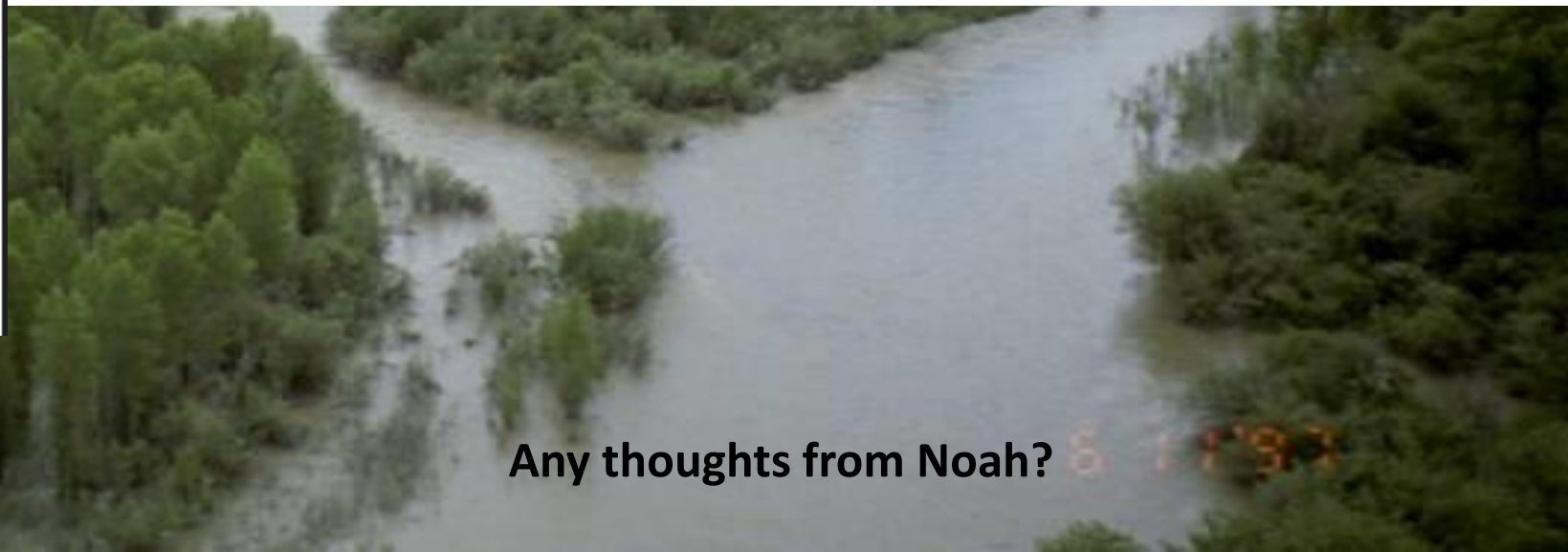
	Natural Flow	Actual Flow
Maximum	16,137	12,463
75th Percentile	11,347	8,585
Median	8,773	6,083
25th Percentile	6,888	3,809
Minimum	4,795	2,542

South Fork near Heise

	Natural Flow	Actual Flow
Maximum	54,303	40,571
75th Percentile	32,868	20,745
Median	25,852	17,840
25th Percentile	20,760	14,773
Minimum	12,572	12,782

Snake River at Blackfoot

	Natural Flow	Actual Flow
Maximum	69,709	40,088
75th Percentile	44,181	19,329
Median	34,705	11,242
25th Percentile	27,008	7,052
Minimum	16,032	3,794



Any thoughts from Noah? 8 17 57



Where have we been?

FEASIBILITY OF LARGE-SCALE MANAGED RECHARGE OF THE EASTERN SNAKE PLAIN AQUIFER SYSTEM

The IWRB filed applications in March 1998 to establish 19 water rights for use in its ongoing aquifer recharge program. Each application is associated with an existing diversion structure and irrigation canal; most of the canal companies that own these facilities have entered into agreements with the IWRB to allow the use of the facilities for managed recharge. While the filings do not apply to the new managed recharge program addressed in this report, the application and review process will provide information applicable to the new program. If the applications filed by the IWRB are approved in some form, they could be used for the new managed recharge program, following an amendment of the water right. A change in point of diversion or place of use would require filing an application and responding to protests.

*Managed Recharge Feasibility Report – Eastern Snake Plain
December, 1999*

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APPENDIX B. IDAHO FISH AND GAME DEPARTMENT ISSUES

Prepared by
Idaho Department of Water Resources

In Cooperation with:
U.S. Bureau of Reclamation
Navigant Consulting, Inc.

December 1999

MANAGED RECHARGE OF THE EASTERN SNAKE RIVER PLAIN AQUIFER



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Eric Leitzinger
Tracey Trent

Idaho Power Company

Jon Bowling

Navigant Consulting and JUB Engineers

Jeffery Lefkoff
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Special thanks to Cody Kinney (IDWR) for her dedication of time and effort in preparing this report.



B. FISH AND WILDLIFE HABITAT

In order for large scale managed recharge to be feasible, the needs of fish and wildlife in the Snake River system must be considered and addressed. Large-scale managed recharge will decrease flows during the winter, changing existing flow conditions provided recharge objectives are achieved annually over a period of years. Increased base flows in the river during the summer and during extended droughts will also result. The question is how to design and implement a recharge program that preserves existing fish and wildlife resources in an already highly-modified river system. This question requires ongoing consultation with the agencies responsible for protecting fish and wildlife.

Upstream of Milner Dam, the non-irrigation season has been identified as a critical time period for fish (mainly trout) with low flows during this time identified as a major factor limiting fish survival and population size. The river downstream of Milner Dam is considered water-short year round. A spring-time peak in the hydrograph is critical for successful sturgeon spawning and early development. Summer and winter flows are extremely low, resulting in water quality problems and negative impacts to the fishery. The importance of periodic high flows during the spring has been recognized for creating and maintaining riparian, floodplain, wetland, and instream habitats for fish and wildlife throughout the basin, as well as improving water quality by flushing sediment and nutrients. These flows have also been lacking in the basin. The removal of this springtime peak has led to extensive human encroachment into the floodplains.



Emphasis is that this was a good starting point but we have more data to bring to the table, as you will here in the talks.

Flow recommendations

AQUIFER RECHARGE IMPACTS ASSESSMENT

IDFG has worked cooperatively with IDWR by assisting in evaluating potential impacts to fish and wildlife resulting from large-scale managed recharge and to develop flow regimes that would attempt to minimize negative impacts from a recharge program.

The questions IDWR has asked IDFG to answer are: 1) **What flows are needed** that will provide long-term protection of the existing fish and wildlife resources in the Snake River basin and perhaps allow for some improvement in the fish populations? and 2) What will be the impacts of aquifer recharge on these fish and wildlife resources? These flows would be used by IDWR along with information from other entities to assist in determining the feasibility of large-scale managed recharge in the mid and upper Snake River basins. The specific reaches where flow recommendations were requested are the Snake River from **Milner Dam downstream to approximately C. J. Strike Reservoir**, from **American Falls Dam downstream to Minidoka Dam**, from **Blackfoot downstream to American Falls Reservoir**, and the **Henrys Fork from St. Anthony downstream to the mouth**.

Stream maintenance flow recommendations for river reaches (both above and below Milner Dam) are expressed as “trigger” flows, which are the flows needed at the four recharge diversion locations: i.e., Milner Dam, Minidoka Dam, Idaho Falls, and St. Anthony (table 4-5), in order to satisfy fisheries flow recommendations downstream. The trigger flows at Milner Dam and Minidoka Dam reflect needs of fisheries in the Milner to Brownlee Reservoir reach of the river. **Flows exceeding the trigger flows at these locations could potentially be diverted for managed recharge.** At Blackfoot and St. Anthony there is an additional IDFG flow recommendation which would limit recharge diversion to one half of the flow exceeding the stream maintenance recommendation in table 4-5.

Table 4-5. Trigger Flows to Satisfy Stream Flow Maintenance Recommendations Downstream (IDFG, 1999)

	Trigger at Milner Dam (Milner to Lower Salmon Falls) cfs	Trigger at Minidoka Dam (Milner to Lower Salmon Falls) cfs	Trigger at Idaho Falls* (Blackfoot to Neeley) cfs	Trigger at St Anthony* (Lower Henrys Fork reach) cfs
October	4850	5050	2070	1450
November	4075	4380	3750	2100
December	3800	4140	3750	2100
January	3800	4140	3750	2100
February	3800	4140	3750	2100
March	6700	6650	5100	2100
April	7227	7110	7030	2300
May	12300	11510	10450	4400
June	13525	12580	9040	3370
July	8400	8130	not specified	1680
August	5600	5700	not specified	1470
September	5050	5220	not specified	1360

*Plus ½ of flow exceeding the trigger flow.

The seasonal differences in flow recommendations reflect the specific biological requirements of resident fish with respect to water quality, food, escape cover, passage, and reproduction. At Milner Dam the mean annual stream-maintenance flow



Table 2. Recommended mean monthly flows at Milner (Dam plus bypass), plus predicted flows and associated 95% confidence intervals at the Buhl, Lower Salmon Falls, King Hill, C.J. Strike, Murphy, and Weiser gages on the Snake River. All values are rounded to the nearest 10 cfs.

MONTH	MILNER FLOW (Milner to Lower Salmon Falls - measured at Milner Dam)	FLOW AT BUHL (Milner - Upper Salmon Falls Dam) $r^2 = 0.99$ (95% C.I.)	FLOW AT LOWER SALMON FALLS (Lower Salmon - Bliss Dam) $r^2 = 0.95$ (95% C.I.)	FLOW AT KING HILL (Bliss to CJ Strike Pool - measured at King Hill) $r^2 = 0.89$ (95% C.I.)	FLOW AT CJ STRIKE DAM (CJ Strike - Swan Falls) $r^2 = 0.83$ (95% C.I.)	FLOW AT MURPHY (Swan Falls - Boise R.) $r^2 = 0.94$ (95% C.I.)	FLOW AT WEISER (Payette R. - Brownlee Pool) $r^2 = 0.80$ (95% C.I.)	FLOW AT AMERICAN FALLS (American Falls Dam - Minidoka Pool) $r^2 = 0.88$ (95% C.I.)	FLOW AT MINIDOKA (Minidoka Dam - Milner Pool) $r^2 = 0.95$ (95% C.I.)
OCTOBER	4,850	7,330 (± 420)	10,990 (± 860)	13,090 (± 1,500)	12,310 (± 1,930)	13,750 (± 1,300)	26,150 (± 7,570)	5,240 (± 1,010)	5,050 (± 490)
NOVEMBER	4,080	6,550 (± 420)	10,290 (± 820)	12,280 (± 1,440)	11,490 (± 1,850)	12,760 (± 1,240)	23,240 (± 7,260)	4,410 (± 750)	4,380 (± 360)
DECEMBER	3,800	6,270 (± 420)	10,040 (± 820)	11,980 (± 1,420)	11,190 (± 1,830)	12,400 (± 1,230)	22,170 (± 7,180)	4,110 (± 690)	4,140 (± 330)
JANUARY	3,800	6,270 (± 420)	10,040 (± 820)	11,980 (± 1,420)	11,190 (± 1,830)	12,400 (± 1,230)	22,170 (± 7,180)	4,110 (± 690)	4,140 (± 330)
FEBRUARY	3,800	6,270 (± 420)	10,040 (± 820)	11,980 (± 1,420)	11,190 (± 1,830)	12,400 (± 1,230)	22,170 (± 7,180)	4,110 (± 690)	4,140 (± 330)
MARCH	6,700	9,210 (± 510)	12,670 (± 1,000)	15,054 (± 1,740)	14,280 (± 2,240)	16,120 (± 1,500)	33,170 (± 8,780)	7,220 (± 1,860)	6,650 (± 900)
APRIL	7,230	9,750 (± 540)	13,150 (± 1,050)	15,620 (± 1,820)	14,850 (± 2,350)	16,790 (± 1,580)	35,170 (± 9,210)	7,790 (± 2,120)	7,110 (± 1,020)
MAY	12,300	14,910 (± 850)	17,760 (± 1,650)	21,000 (± 2,870)	20,260 (± 3,690)	23,280 (± 2,480)	54,390 (± 14,500)	13,220 (± 4,690)	11,510 (± 2,270)
JUNE	13,530	16,160 (± 930)	18,880 (± 1,810)	22,300 (± 3,150)	21,570 (± 4,060)	24,860 (± 2,730)	59,050 (± 15,950)	14,540 (± 5,320)	12,580 (± 2,580)
JULY	8,400	10,940 (± 600)	14,220 (± 1,190)	16,860 (± 2,030)	16,100 (± 2,620)	18,290 (± 1,760)	39,610 (± 10,290)	9,040 (± 2,700)	8,130 (± 1,310)
AUGUST	5,600	8,100 (± 470)	11,670 (± 910)	13,890 (± 1,590)	13,110 (± 2,040)	14,710 (± 1,370)	29,000 (± 7,990)	6,040 (± 1,340)	5,700 (± 650)
SEPTEMBER	5,050	7,540 (± 490)	11,170 (± 870)	13,300 (± 1,520)	12,520 (± 1,950)	14,000 (± 1,310)	26,910 (± 7,670)	5,450 (± 1,100)	5,220 (± 530)



Table 1. Flows (cfs) to Partially Protect Fish and Wildlife Resources in the Snake River Near Blackfoot and the Henrys Fork

Month												
Gage	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.
St. Anthony	1,450*	2,100	2,100	2,100	2,100	2,100	2,300*	4,440*	3,370* 7,580**	1,680*	1,470*	1,360*
Rexburg	1,860*	2,500	2,500	2,500	2,500	2,500	2,540*	5,170*	4,760* 11,460**	2,070*	1,640*	1,640*
Near Blackfoot	2,070*	3,750*	3,750*	3,750*	3,750*	5,100*	7,030*	10,450*	9,040* 42,860***	4,600*	2,070*	2,490*

* = The Henrys Fork and Blackfoot reach recharge “triggers” would be these mean monthly flows plus 50% of the flows above this. Also, for protection of aquatic resources and compliance with state water quality standards, recharge diversions should not be permitted when water temperatures exceed 19°C.

** = A flow scenario expected to maintain most of the woody riparian communities would be to have the mean of the 10% exceedence of monthly mean flows (average of the 10 year flow events for the appropriate period of record) for up to two weeks for each event.

*** = This flow would be expected to protect the woody riparian communities if provided for up to a two-week period once every 10 years. The number represents the average of the maximum estimated unregulated mean monthly flow for each 10-year period since 1928. Because of the existing floodplain encroachment, this flow may not be feasible today.



Flow recommendations used as WR conditions

Initial permit issued 2014

AGREEMENTS:

- 1. **Conditions To Be Included On Permit for 01-10625.** IDWR shall include the following conditions, in addition to any others that may be included by IDWR or otherwise agreed to with the other protestants (provided they do not conflict with the following conditions) in the final order issuing Permit No. 01-10625:
 - a. “Water may only be diverted under this right in an amount that does not reduce flows in the Snake River below 2,070 cfs measured in the Snake River at Blackfoot U.S.G.S. Gage No. 13062500.”

WR # 21-13144 Permit issued in 2020

12.	Subject to a written waiver of this condition granted by the Henry's Fork Drought Management Committee (or its successor in interest), this right may be diverted only when the flows in the Henrys Fork measured at the St. Anthony gauge (USGS 13050500) reach or exceed 1,000 cfs.
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Evaluate flow targets in the future, are they realistic?

Jump from 1999 to 2012

- IDFG approached by DAG Harriet Hensley (retired)
- Consolidate 1998 IWRB applications
 - Lower Valley
 - Mid Valley
 - Upper Valley
- Environmental Consultation Committee (Jan. 2013)



ERTWG-today!

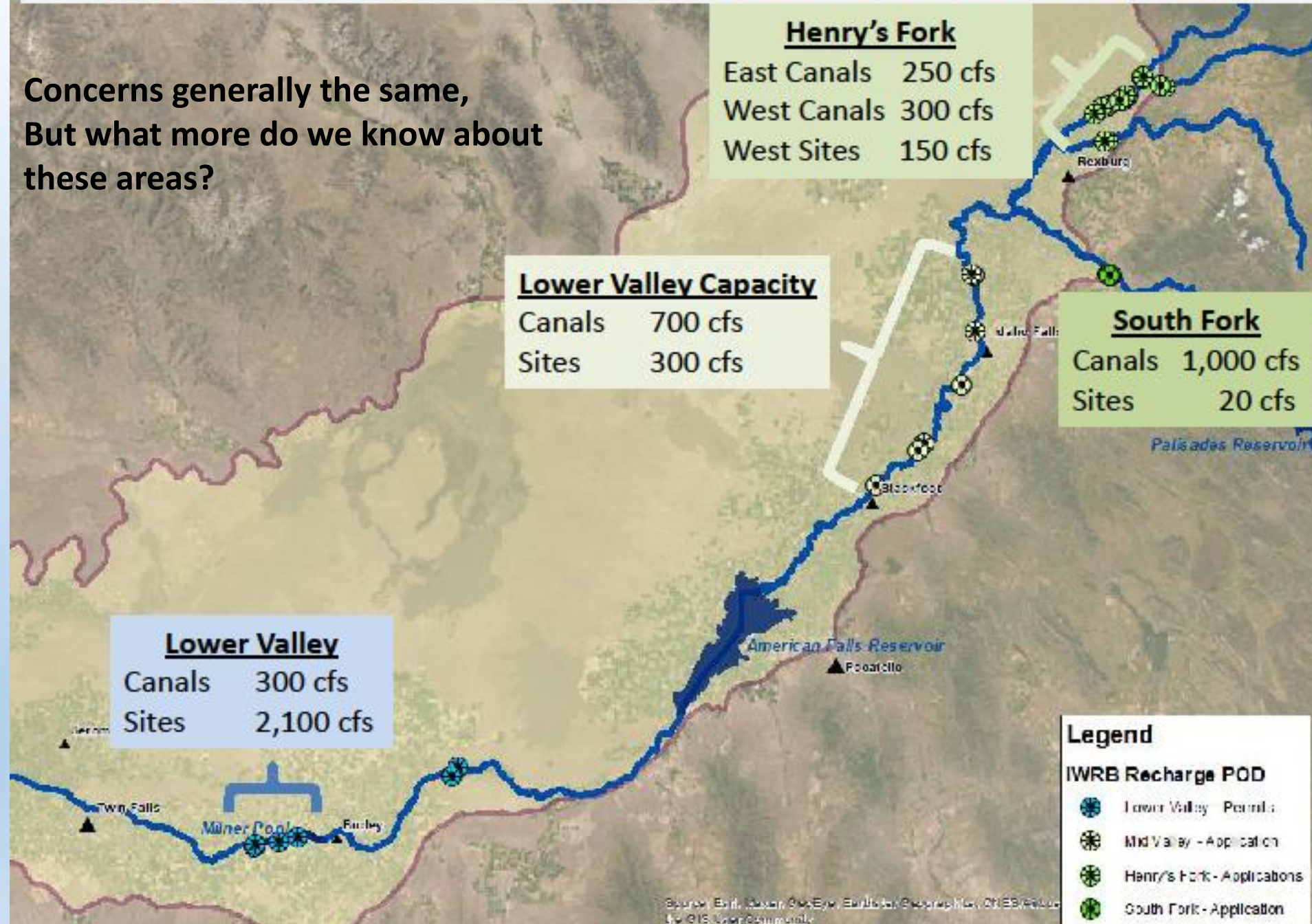


These water right matters take time....



IWRB Recharge POD & Potential Current Capacity

Concerns generally the same,
But what more do we know about
these areas?



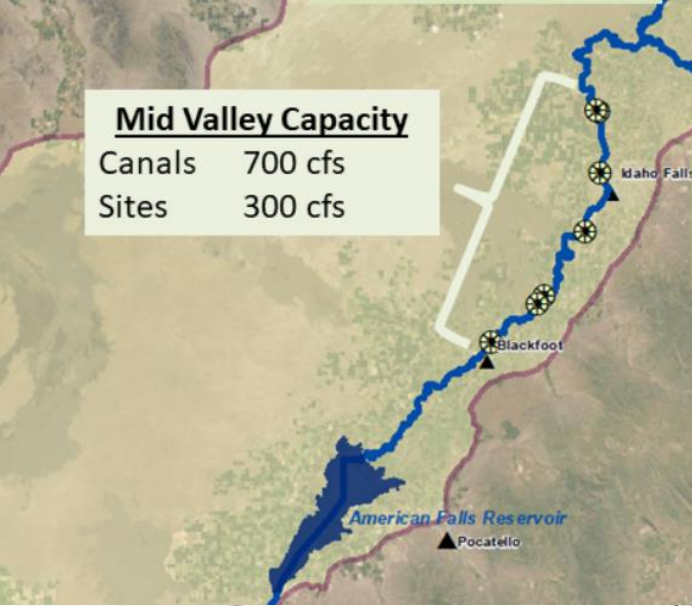
Resident Fisheries Continued, by Tom Bassista IDFG

- Quick time check
- Focus on fisheries above American Falls Reservoir (mid Valley)
- Briefly touch on resident fisheries below American Falls (Magic Valley)



IDFG Southeast Snake River boundary (Gem Dam to Minidoka NWR)

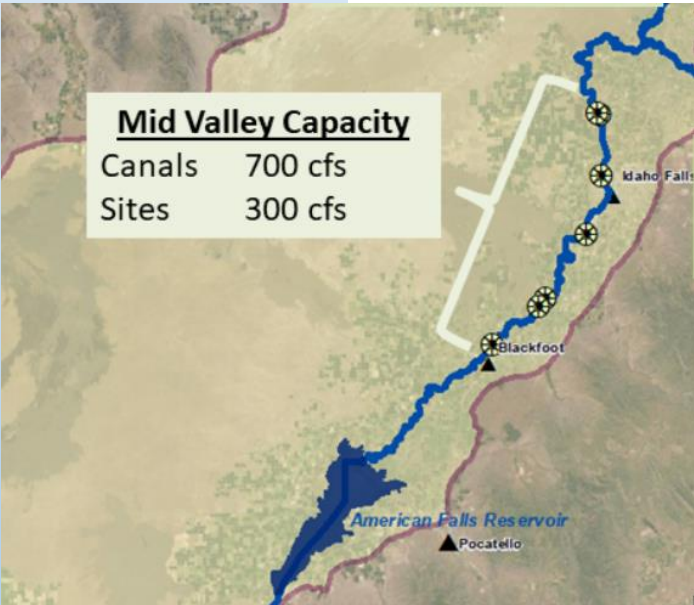
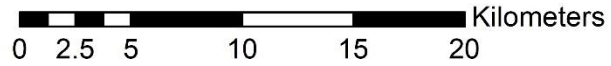
Mid Valley Capacity	
Canals	700 cfs
Sites	300 cfs



Carson Watkins
Regional Fisheries Manager



Mid-Valley IDFG Sample locations on Snake River



American Falls Reservoir

Pocatello
★

Chesterfield Reservoir

- **Sampled in 2020**
- **25 sites**
- **Sample every 3 years**



Number of trout capture in Snake River (Mid-Valley) 2020

Species	Number
Brown trout	350
Rainbow trout	200
Rainbow X Cutthroat	8
Hatchery Rainbow trout	80
Cutthroat trout	40



“Trout catch rates are comparable to many other rivers and it supports a decent fishery.”

Critical Flow Periods:

Winter (for overwinter juvenile trout habitat)

Spring (supporting spawning-Yellowstone Cutthroat Trout)

Building a data set for future analysis



IDFG Magic Valley Snake River boundary (Minidoka to CJ)



Mike Peterson
Regional Fisheries Manager



Magic Valley Resident Fisheries (IDFG sampling)

- Periodic Sampling done in Milner Reservoir and Lake Walcott
 - Milner-Smallmouth Bass size structure
 - Walcott Rainbow Trout exploitation and angler use
- Milner-good Smallmouth & Channel Catfish stocked
- Walcott-popular Smallmouth and Rainbow Trout fisheries
- Lower reservoir winter levels impact fisheries
- Canal entrainment largely unknown



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Opportunities related to MAR:

- Increase water levels in Murtaugh and Wilson Lakes?
- Increase spring discharge-good for Snake River fishery and invertebrates
- Note: Added an additional Regional Fisheries Biologist



Discussion, Next Steps and Adjourn

- Time Check
- Flows at Milner-future discussion
- Closer look at Resident Fisheries Resources in Lower Valley-where can recharge help?
- Other topics of interest for future meetings?

