Henry's Fork Watershed Council Annual Watershed Conference
Meeting Minutes

December 5, 2023

Introductions and Community Building

Jamie Powell, co-facilitator from the Henry's Fork Foundation (HFF) welcomed everyone to the Henry's Fork Watershed Council annual watershed conference. The group went around with introductions. Then, Jamie introduced Rob Van Kirk (HFF) to share Watershed Council history in honor of the 30th Anniversary of the Henry's Fork Watershed Council.

Watershed Council History in Honor of 30th Anniversary

Rob Van Kirk, Henry's Fork Foundation

Rob read from the proceedings from the first ever conference. The Watershed Council (HFWC) started in 1993 and was chartered in 1994. One of the traditions is inviting the IDWR Director to address the group, and we are continuing that tradition today. One of the four chartered duties is to serve as an educational resource by providing an opportunity for the public to learn about work in the watershed via the watershed conference. The 1992 drawdown of Island Park Reservoir was one of the events that precipitated the formation of the HFWC. It was a low water year to begin with; then it seemed to be a good opportunity to do a chemical treatment of reservoir by IDFG for nonnative fish. The drawdown lead to nearly 100 tons of sediment being sent down the river. Henry's Fork Basin Plan was also in progress at the time and there was a bit of contention around what would be included.

Rules of Community Building as done in first meeting: 1. Seating in a circle, which breaks down barriers of someone in charge at podium vs audience. 2. No one is forced to speak or has to speak. The group sits in silence until someone is moved to speak. When speaking, use only your first name and no agency affiliation, etc. In community building, we're all individuals, not our agencies or organizations. That makes it personal, so you're saying what you feel personally, not representing your agency/organization. 3. After someone speaks, there is no obligation for anyone to respond to that. 4. Three minutes of silence.

Rob then called for three minutes of silence. Afterwards, Rob opened up the meeting for community building.

Brandon thanked Rob for bringing the Watershed Council back to its roots.

Jan said the person who really made a difference was Dale Swensen and she would like to honor him. She also said the Watershed Council has been so successful because folks put aside personal differences for the good of the whole.

Keynote Speaker
Mat Weaver, Director of Idaho Department of Water Resources

It's an honor to follow in the footsteps of IDWR Directors before. The state of Idaho is nearing completion of adjudication for all of its water districts. Idaho would be the first state to do so.

The statewide managed aquifer recharge (MAR) program is currently recharging only on the Eastern Snake Plain Aquifer (ESPA). The ESPA program aims to support aquifer recovery by recharging an annual average of 250,000 ac-ft of water. The state is prioritizing optimization of recharge operations to allow as much recharge as possible each year. Cloud Seeding puts an additional 5-10% into the system based on current science.

Eastern Snake Plain Aquifer Management
Jaxon Higgs, Idaho Ground Water Association

We recognize there are differing perspectives on this topic. The Eastern Snake Plain Aquifer is 10,000 sq miles and holds millions of acre-ft of water. At $10,000/acre, the 1,000,000 groundwater irrigated acres is worth about $10 billion. The ESPA deficit (how much being taken out that doesn't return) is somewhere between 300,000 – 600,000 acre-feet. If you assume 500,000 acre-feet, that's ~230,000 irrigated acres (25% of IGWA). That's worth a lot of money and is very large in magnitude. Recharge is one of the tools that could be used to address curtailment. Through 2024, the Idaho Water Resource Board (IWRB) has spent about $17,000 per cfs. Recent projects have cost $50,000 per cfs and some private projects as much as $400k/cfs. But, 10,000 cfs at $100,000/cfs is $1 billion. We're talking a lot of money.

The ESPA groundwater level has followed a 10-to-12-year cycle, 4 to 5 wet years and 6 to 7 dry. Our efforts can get dwarfed by Mother Nature. Given the cost and time it took to get where we're at, we can expect it will take a lot. Stabilization at this scale has not been done before. There is general acceptance that something should be done. What can we do? Recognize the true value of water, recognize the magnitude of the issue, prepare to work hard and be patient, and realize that the more we fight, the less that gets accomplished.

Ongoing Groundwater-Surface Water Settlement
Dan Davidson, Minidoka Irrigation District

Been canal manager for 25 years. Grew up in Ashton, Firth area. No one wants to see anyone go broke. They've always been willing to stay at the table. They have a limited amount of water to work with as the aquifer continues to decline and it's important to turn that around. In the 2015 agreement, both sides wanted to be able to plan their irrigation season. The agreement provided safe harbor for the ground water district. They could make their plan and had to cut back. To handle cut backs, some used recharge and some dried up some acres. After 2015, one thing we did have was leadership from IDWR saying 'here's the goal'. We know we're going to need to do even more than initially expected. There were some wet years after 2015, but were followed by recent dry years, making it hard for ground water users to meet the requirements of the agreement. Ground water pumping affects surface water supply. In 2022, American Falls didn't fill, part of that is due to over pumping by Ground Water Districts. In 2023, it was just under 10,000 acre-feet.

To achieve the goals of the 2015 agreement, we need to recover/stabilize the aquifer, we need to get to a point where we keep as much agricultural ground going as possible. First, measure in real-time. Second, if someone is diverting more water than they're supposed to, there needs to be enforcement to shut them off. Last, one person's efficiency is another person's natural flow. Better communication and measurement, so folks know and are accountable for the amount of water they're using. Also, exploring crops that use less water or use water at different times.

Assessment of the Potential for MAR via Flood Irrigation in the Lower Henry's Fork
Christina Morrisett, Henry's Fork Foundation

Groundwater return flows from inefficient irrigation practices are important for farms and fish. These return flows provide instream flow for downstream irrigators and cool water refuge for trout during the summer, when streamflow is low and warm. However, recently published HFF research found that converting to sprinkler irrigation gradually reduced groundwater return flows to the Henry's Fork by 240,000 acre-ft between 1978 to 2000.

Using a series of simulation models, HFF found that aquifer recharge can be a way to recover these return flows in the lower Henry's Fork—even under future water supply conditions and while adhering to prior appropriation rules. This research used five potential recharge sites—two with junior managed aquifer recharge rights and three where recharge could be conducted incidental to normal irrigation operations with senior natural streamflow rights. Simulations found that, on average, 12% of natural streamflow (or 283,000 acre-ft) could be diverted for recharge. This water was largely available in October and April and reduced streamflow by 50% in those months. Return flows increased streamflow by 9-14% in the winter (Nov–Mar) and 6-14% in the summer (July–September). Diverting streamflow for recharge also decreased peak streamflow by 10–14% and pushed the peak streamflow date 1–2 days earlier in the spring. Water was available in all years, regardless of annual natural flow, at the three incidental recharge sites—accounting for 95% of water the model allocated for recharge. In contrast, the managed recharge sites were only able to recharge 5% of the water available for recharge, specifically due to their junior water rights.

Takeaways: 1) Flood irrigation paired with senior water rights can be a mechanism for drought resiliency for irrigators and aquatic habitats and 2) Managed aquifer recharge expands recharge capacity during wet years.

An Analysis of Injected Water Quality in a Fractured Basalt Aquifer
Cooper Fritz, Idaho Dept. of Water Resources

Idaho Water Resource Board conducted an experiment to test water quality related to injection wells. Likely 900-acre feet of operational spill injected from May to June 2023. Took 87 total samples and analyzed for major ions, bacteria, select metals and nitrate, with chloride being the ion of focus and bacteria the contaminant of focus. There is a lack of primary constituents (harmful contaminants) across the region. So there is a lack of these pesticides and other contaminants in the canal water, but we do see bacteria. But, bacteria populations rapidly attenuate below ground.

Effects of Increased Forest Cover on Watershed Yield in the Upper Henry's Fork
Sarah Newcomb, Idaho State University and Henry's Fork Foundation

- Since the beginning of the NRCS SNOTEL period of record, there has been a statistically significant decline in the portion of annual precipitation that becomes streamflow in the Upper Henry's Fork watershed but insignificant declines in Fall River and Teton River.
- Forests have regrown following logging, bark beetle infestations, and fire in the 1970s, 1980s and early 1990s. Change in forest density has been greatest in the Upper Henry's Fork, following widespread forest disturbance prior to 1989.
- Warmer, drier springs and summers have significantly increased atmospheric evaporation since 1989 in all three watersheds.
- Due to warmer summers and more tree cover, evapotranspiration (ET) is significantly increasing by over an inch per decade in the Upper Henry's Fork, Fall River, and Teton River.
- As the largest, lowest-elevation watershed with the most forest cover and history of disturbance, ET is increasing most quickly in the Upper Henry's Fork, resulting less precipitation going to streamflow and more being returned to the atmosphere through ET. On average since 2002, ET has increased from just over 40% of annual precipitation to 50% currently.

Across the western US, snowmelt fills downstream rivers and reservoirs, with more than two-thirds of this natural water supply originating from forested lands. Forests provide clean water by filtering rain and snowmelt and stabilizing soils. Forests also impact local hydrology by intercepting rain and snow in the forest canopy, some of which is returned to the atmosphere through sublimation before reaching the ground, or when it reaches the ground, returned to the atmosphere through evapotranspiration (ET), which includes water evaporated from soils and transpired by plants.

The Henry's Fork of the Snake River is an example of a watershed in which forested headwaters supply streamflow for downstream water users. Three distinct subwatersheds feed the Henry's Fork: Upper Henry's Fork, Fall River, and Teton River. Since 1989, there has been a significant decreasing trend in the amount of annual precipitation that becomes watershed yield in the Upper Henry's Fork, motivating this study to investigate what is driving the decline. Due to widespread disturbance from logging, fire, and beetle kill, large portions of the forest in the Upper Henry's have regrown, resulting in denser tree cover. Additionally, this region has experienced hotter summers, resulting in greater atmospheric evapotranspiration. The combinations of warmer growing seasons and increased tree cover have resulted in more precipitation going to evapotranspiration and less to streamflow (just under 10% less in 20 years). While the rate of forest regrowth has slowed, the rate of warming has held constant and resulted in a steady increase of ET since 2002 in all three watersheds. Since the Upper Henry's Fork experienced the greatest amount of disturbance before the start of the 1989 data record, the forests there have changed the most, which, when compounded by the warming trend, explains the significant decline in how much precipitation becomes streamflow.

Idaho Wintertime Cloud Seeding
Mel Kunkel, Idaho Power

Cloud seeding is a water management tool to provide more upper level snow during the winter season. From ground or aircraft, release silver iodide particles, merge with water, then forms ice crystals, which grow and fall out as snow. The two key ways cloud seeding is conducted is via generators on the ground at high elevations or via aircraft. Idaho Power started investigating cloud seeding in 1993 and was operational in 2003. They continue to work with partners to improve and expand operations since then. Currently, Idaho Power has 57 generators and 3 aircraft. The Upper Snake has 25 remote ground generators and 1 aircraft, plus 25 'Let It Snow' manual ground generators. An NSF grant funded a $2 million study to study winter precipitation processes.

Idaho Collaborative Cloud Seeding Program
Kala Golden, Idaho Department of Water Resources

Cloud seeding has occurred in Idaho since the 1950s. Consistent operation of programs kicked off in the 1990s. Idaho's Collaborative Cloud Seeding Program is a unique partnership between the Idaho Water Resource Board – State of Idaho, Idaho Power Company, and local stakeholders/water users. Idaho Power operates the program as described in the previous presentation. Estimated average annual runoff (unregulated) and current project costs (annually) for the Upper Snake projects are 632,000 acre-feet and $1.54 million. Estimated cost per acre foot for the entire program is estimated to be $3.4 per acre-foot ($4.2 million and 1,240,000 acre-feet runoff generated). Cloud seeding was first discovered in 1940s. Idaho's cloud seeding program is one of the most robust in the world. Other states are looking to us when it comes to how to start a cloud seeding program.

Water Supply and Management
Rob Van Kirk, Henry's Fork Foundation

What are the benefits to keeping more water in Island Park Reservoir? More management flexibility, higher winter outflow leading to a larger trout population, more trout and kokanee in the reservoir and Upper Henry's Fork, more hydroelectric production, better water quality in the reservoir, better water quality downstream of the reservoir, and more certainty for water users. How can water be conserved? Real-time data, predictive models, fine scale daily information, improved irrigation infrastructure, precise lower-watershed streamflow targets, and voluntary on-farm measures like alternative crop rotations. Water managers, irrigation entities, agricultural producers, and conservation NGOs can work together to implement these conservation actions. Since these efforts began in 2018, physical reservoir carryover increased by an average of ~27,000 ac-ft over the 1978-2017 expectation based on water supply. Essentially, only the timing of watershed outflow has changed. Water is held (“saved”) in the watershed’s reservoirs between July and September and the difference flows out in April through June. A majority of the savings was North Fork Reservoir company and Fremont-Madison Irrigation District administrative storage.

Community Building and Wrap Up

Aaron Dalling, co-facilitator from the Fremont-Madison Irrigation District (FMID) called for one minute of silence to reflect on the meeting and prepare any final announcements or comments.