

Andrew Purkey:

#### Slide 1 – Presentation Title

Well, you start today with a double dose of Oregonians. My name is Andrew Purkey, and I'm with the National Fish and Wildlife Foundation (NFWF) in our Portland, Oregon program office. For those of you who aren't familiar with us, NFWF is what we call ourselves. In fact, our softball team is called the "*Nifwhiffers*", which I think is just an awesome softball team name. The National Fish and Wildlife Foundation is a 501(c)(3) organization based in Washington, D.C.. It was created by Congress to leverage public and private money, and make investments in voluntary conservation efforts across the country. I direct our Western Water Program, which is focused on restoring freshwater to ecosystems around the Western United States.

I really appreciated Aaron Wolf's talk. He didn't mention the Colorado River Delta as one of his examples of celebrations around water. But, since that is an area that we've been funding use of water markets to try to get water back instream, I want to start my talk about water markets (because it can get fairly dry, fairly quick) by saying that the day that the water began to flow back to the delta, people came out from their communities, and they celebrated in the river, and they played in the river, and they had barbecues near the river. I think, everybody involved in the effort there was so focused on the ecological implications of the work, that they hadn't tracked that human dimension of the restored water. I think that the key point of Aaron's speech is something we should be thinking about throughout this work, and throughout the day, or days, that we're here in Fort Collins.

#### Slide 2 – IFC, NFWF and Instream Flows

All right. I wanted to start the presentation by comparing the Instream Flow Council's mission and NFWF's Western Water Program mission, to highlight that I'm going to focus on the use of water markets for restoring instream flows, as distinct from protecting instream flows. As Christopher and I have discussed often, in some places there's still an opportunity to protect flows from future diversion, and make an impact. But, in many places where over-appropriation of water rights has occurred, it really takes that act of restoration to protect instream flows. And, water markets are a way that we are effectively achieving that restoration of water.

#### Slide 3 – Historic Challenge: Over-Appropriation

The bar graph here, for anybody who works in an over-appropriated system in the West, will be quite familiar. Which is, essentially, that there's more rights to use water in many river systems, than there actually is water to divert in that system. This is particularly true, during certain periods, like late summer, when low flows are naturally part of the hydrograph. What NFWF and our partners

are working to do is to give the environment a stake in the appropriative rights that are consistent with water availability. Whychus Creek is a great example in Central Oregon. If you don't hold a senior water right, you aren't going to get water in August. We're trying to get the environment in the seniority scheme, so that when flows are naturally low, there still is water protected for the environment under a senior instream water right.

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Let us consider the ecological impact of the historical over-appropriation of water rights I just described. The first water rights that are on the books in Oregon are from the early-1850s, pre-statehood (1859). People who were settling Oregon were looking for ways to divert water so they could grow food and build their communities. But, depleted streams, impaired lakes, degraded riparian habitats, and due to this degradation, imperiled species resulted. Even though three of the four shots here are of fish, there are all sorts of species that depend on freshwater. And, this occurred in the context of our system of appropriation, where the folks that have those rights, they view that water as gold. This is a rancher in Eastern Oregon, with whom we funded a deal that The Freshwater Trust completed. He said, "Water is gold. You don't give water rights up."

Slide 9 – Conservation Response: Water Transactions

What we're trying to do, is instead of forcing people to give water rights up, is compensate them for the water they put instream. Certainly, one approach to streamflow enhancement is use of the public trust doctrine, or regulatory enforcement. In other words, compelling people to give water to the environment. Which can be physically effective, but also very disruptive. The approach that we're talking about here, is how do we engage in voluntary actions? The goal of this approach is to build trust and try to defuse any tensions that might exist in an area by coming to willing, buyer willing seller agreements that benefit the person with the water right, but also put water back instream. This is analogous to the land protection movement that's been going on for years in the U.S., where you acquire the asset for protection from a willing seller instead of taking it.

Slide 10 – Gorge Protection

Okay, a little historical context from Oregon, in terms of evolving actions in response to these changing values. And then, a discussion of how water markets are really being formalized and institutionalized in Oregon to provide instream flows. Some of the first recognition of over-allocation in Oregon was, in the early 1900s. For folks who have been to the Columbia River Gorge, if you had gone above those beautiful water falls, there were diversions of water that occurred on those creeks. There was a real concern, that if people kept diverting more water, the waterfalls would dry up, at least during dry periods. And, this scenic attraction would be no more. So, those streams were withdrawn from

further appropriation of additional water rights, making sure of no additional diversions being authorized.

#### Slide 11 – Oregon Minimum Streamflow Program

In the 1950s, there was more and more awareness about the impacts of over-appropriation of water on fish and wildlife in Oregon. There was an effort then to establish minimum instream flows that set base targets. But, of course, the challenge was this was 1955 when the legislation was passed. On many of these stream systems, water rights for diversion and consumptive out of stream uses had been issued since 1855. So, the new instream flows established had a 1955 priority date and were junior to those old appropriative water rights. Thus, they weren't met during low flow periods and did very little to restore water for fish.

#### Slide 12 – Oregon Instream Water Rights Act

So, in 1987 the legislature enacted the Instream Water Rights Act (Oregon Revised Statute 537.348) to truly address the problem of inadequate flows. As an aside, I actually worked in the Oregon Legislature in 1987, fresh out of college. And yet, I have no recollection of this act, though I wish I could have said I was instrumental in getting it passed!

But, the Oregon Instream Water Right Act was passed then. Each state, and I'll get into legal regimes in a bit, has different laws and policies regarding instream flows. Arguably, Oregon's is the most comprehensive in terms of what it allows, and really sets a clear foundation for the use of water markets to restore water. First, at its core, the act allowed instream use to become a beneficial use, akin to all the other legal uses of water. Second, the act gave existing water right holders the authority to lease, transfer, or donate part or all of their water right to an instream use that would retain the original priority date of that water right. So, when we go back to that over-appropriation bar graph, the oldest water right on the stream system could now theoretically be an instream water right.

#### Slide 13 – Oregon Water Trust

Six years later, there was an organization created in response to the 1987 Instream Water Rights Act called the Oregon Water Trust. They hired this young kid, who had a lot more hair then, to be the first executive director. I didn't really know much at all about water then. If I was interviewing for the job five years later, I probably never would have gotten it. But, they figured this young guy has got energy, and he'll come in and do this thing. However, the key to the success of the Oregon Water Trust was the diversity of the board of directors. The folks that founded this group represented irrigated agriculture and ranching, legal experts, wild fish advocates, instream flow advocates, and tribal representatives. They came together and said, "We may not agree on all aspects of natural resources management, but we agree on taking this market-based

approach to restoring flow." Fortunately, one of the first people who came on board to work with me at the Oregon Water Trust was a PhD hydrologist, who set the approach for prioritizing streams, assessing water rights, and then going out to those water right holders to see if they'd be willing to do a voluntary deal for the environment.

#### Slide 14 – Columbia Basin Water Transactions Program

In January, it will be 25 years since I first started working on this voluntary approach to flow restoration. It's something that I'm extremely grateful for in my career. After nine years of the Oregon Water Trust, there was enough momentum between our work, the Deschutes River Conservancy in Bend, and other flow enhancement efforts in the Columbia Basin, that the Bonneville Power Administration (BPA), which is the federal hydropower marketing agency in the Pacific Northwest, established what was the first watershed scale transactions program in the United States. This was done in response to their need to restore habitat for anadromous and resident fish. A couple of the participants in this program are here today. The Columbia program has been a partnership between NFWF and Bonneville Power Administration (BPA) since 2002. And, BPA has committed upwards of between five and six million dollars a year that NFWF grants to the four state water agencies in the Basin, as well as the nongovernmental organizations that are out completing these transactions and projects with the water right holders. I'm going to get into more detail about the Columbia Program soon.

#### Slide 15 – Walker Basin Restoration Program

I want to point out that the Columbia Basin work really beget NFWF's Walker Basin Restoration Program. Christopher's point about inflows to restore and protect adequate water levels within lakes really comes to bear here. Walker Lake is an amazing desert terminal lake in Nevada. The headwaters of the Walker Basin are in the Eastern Sierra Nevada range. Since irrigation diversions of water began in valleys in California and Nevada, the lake level has been dropping due to reduced inflow. You probably saw an image earlier in my presentation, and it marked the lake level in a certain year. There's a road down to the lake that has a series of sign posts showing where the lake was in different years. And, it's dropped significantly since irrigation began in the late-19<sup>th</sup> century. The implication of this reduced volume of water is that the salinity level has spiked in the lake, and Lahontan Cutthroat Trout can't exist there anymore.

Starting in 2009, NFWF, with the Bureau of Reclamation, undertook a massive effort to acquire water rights from willing sellers to deliver freshwater to the lake, so that the lake level and volume could go back up and the salinity level could go back down. It's a work in progress, but NFWF has made a lot of acquisitions of both land and water, that are intended to bring the lake level back up and provide other conservation benefits.

#### Slide 16 – Streams Benefitted

I now want to do a little deeper dive into the Columbia program, and also talk about some advancements in how we're accounting for the ecological outcomes of this work. Because, when I first started doing this work 24 years ago, it was good enough to say, "Oh wow, we did a one-year lease and put some water in the stream. Isn't that great!" But, the sophistication about how to track progress has really advanced. In large part, because of the collective work that the federal, state and Tribal fish and wildlife agencies are doing. This map shows the stream reaches that have benefited from the transactions and projects that have been funded in the Columbia. And, I apologize, the data is a little outdated as it goes back to 2015. What this shows is the growth in the portfolio of water that's been restored instream in these reaches.

#### Slide 17 – Cumulative Protected Flow

Also, importantly, the graph shows the water that's been permanently restored instream. Because, one of the keys about instream flows and water levels in over-appropriated systems, as a fish biologist first said to me, "*every year is a drought year for fish. It's just a matter of when the drought hits.*" Another key point is that temporary deals are key to developing landowner trust and getting water instream. But, if we're really going to be serious about dealing with drought, we have to take a long-term systemic view towards this problem, and try to restore water permanently. Because even in generally wet years, at some point that instream water right is likely going to provide an ecological value, and become water in the stream that wasn't historically there. The same idea applies regarding acquiring water rights for lake level protection.

#### Slide 18 – Before and After Photo

This slide shows what was historically the measure of success for us. We used to love to collect before and after photos, and say, "Look! There was no water, and now there's water. Isn't this great?" One of the things we were increasingly asked to do, is move beyond just that image, to really be more precise about accounting for the outcomes of the work. So, this slide shows the ecological objectives that we see in the Columbia Basin for the tributary transactions that we're funding.

#### Slide 19 – Ecological Objectives

For those of you who work in the west, in riverine systems, none of these objectives are going to be surprising. Nonetheless, what NFWF has developed, and we are working with our partners to implement, is what we call our "Flow Restoration Accounting Framework". It's a four-tiered approach to monitoring and accounting for outcomes that we work with our partners, and they work with their partners (particularly, the fish and wildlife biologists), to implement on the 150 stream reaches where we have water instream.

## Slide 20 – Flow Restoration Accounting Framework

The most important tier, first and foremost is “tier one” or contractual compliance. This is the tier that the BPA really cares about. Because, if we're going to be paying people for their water we need to make sure that the water right holder who did the transaction is complying with the terms of the deal. “Tier two” is accounting for the water that is restored instream as a result of a transaction. And, not just taking a pretty picture of a flowing stream, but making sure that there's more water in the prioritized reach, than would have been there in the absence of the transaction.

Then, once you've established the improved flow rate, say for example, one CFS more in a one mile reach of priority stream, how do we assess the habitat response to that increment of additional water? What happened to the habitat and water quality in that reach as a result of improved streamflow? And then, the “fourth”, and most difficult tier, particularly when you're dealing with anadromous fish, is determining the ecological and species response to that improved habitat.

## Slides 21-27 – Lemhi Basin Idaho

We're going to hear from Virgil later about fish habitat restoration work in Idaho. I'm going to drill down into the Lemhi Basin in Idaho. Where, some of the best work is being done by Jeff Deluca and others, at the Idaho Department Fish and Game. The Lemhi Basin provides some of the most upstream anadromous fish spawning and rearing habitat, including for spring Chinook and summer steelhead.

Biologists determined that a significant irrigation diversion on the Lemhi, what's called the L6 diversion, had become a major passage barrier for both upstream migrating adults, and also downstream out-migrating juveniles who had reared in the system. Biologists established two different flow targets for that L6 diversion, 35 cubic feet per second (cfs) in spring, 25 cfs in the summer to support fish passage. We have been supporting the Idaho Water Resources Board, the Idaho Department of Water Resources, and local partners, to engage with irrigators to implement various types of flow restoration transactions. And, the dots on this slide show you the different locations of deals that contribute to the water that is instream. You can see here in this graph that the base flow was maintained. Even in periods where the natural hydrograph was dropping, Idaho was able to keep the flow at 25 cfs or more.

On a steelhead trout bearing tributary to the Lemhi, Bohannon Creek, a very small 2 cfs target was set. It was set for the spring season, before the snow melt and the runoff occurred, but when the hydrograph would begin to drop due to early irrigation diversions. The transaction negotiated with the landowner there made sure that at least 2 cfs was maintained. This was “Tier 2” monitoring to make sure that the hydrograph responded to the instream flow restoration action in the priority reach of Bohannon Creek.

Idaho Department of Fish and Game is assessing habitat and species response to improved flow using PIT tag arrays, red counts and other monitoring methods. They are asking the question, "we got more water in the stream, what kind of response did we get?" What we did see on Bohannon Creek in 2014, when the 2 CFS was maintained? More spawning and an increase in redds there.

The point I'm really trying to make is that we're increasing the depth and complexity of the monitoring of, and accounting for, restored flows. Because, if we're going to be using public and private money to support this work, we need to do better than just show the nice before after picture to document the benefits of what we do.

#### Slide 28 & 29 – Scaling up the Western Water Program: Legal Assessment

I'm going to shift gears to legal matters, because I know folks are here from across the western states and across the U.S. I'm not going to cover Canadian law, but I will say that I am aware of some work in the Canadian provinces to try this market-based approach to flow restoration. One of the things that's critical to using markets and transactions to restore flows and lake levels, is to have a legal framework that works.

#### Slide 30 – 2015 Review of State Laws

If you really want to dive deeper into these legal topics, I encourage you to take a look at this 2015 report from the Center for Water in the West at Stanford University that NFWF funded, called Environmental Water Rights Transfers: A Review of State Laws: <http://waterinthewest.stanford.edu/sites/default/files/WITW-WaterRightsLawReview-2015-FINAL.pdf>. It covers 12 western states in the lower 48 US. I'm going to present a couple slides from this publication. It's a really nice analysis about what each state's law and policy says about instream flows. So, if you want to learn more about a particular state that was included, you'll be able to see that here.

Based on the success that we had in the Columbia and Walker basins, NFWF assessed where we could scale up our Western Water Program work. I want to first highlight the middle Rio Grande, and my NFWF colleague, Kirstin Neff. Kirstin, who's in our Denver office, is managing our new partnership with Bureau of Reclamation on the Middle Rio Grande to try water leasing to get water instream. So, if you're located in New Mexico and want to work with us on that effort, please reach out to Kirstin. Kirstin, if you could raise your hand, the NFWF jacket will give her away.

When we were assessing these different geographies, one of the criterion that we focused on was the existence of regulatory incentives, as in a political climate that was conducive to use of these market-based transactions to restore instream flows. Oregon, fortunately, because of the efforts of the 1987 legislature, was at the forefront of this political response. But, other states, not

so much. That's what you'll see in the report. What the Stanford students looked at were 10 different elements of state law and policy, and applied them to each state. These criteria are pretty straight forward, and include the following: Is environmental use of water recognized a beneficial use? Can you efficiently transfer an existing water right to an instream water right? Can you do that under a statutory provision, as opposed to some other authority? Does the state hold an instream water right or, can a private party hold an instream water right? Does the state allow permanent transfers of water? (Not all states will let you do that. Some states just allow for temporary transfers.) Conversely, is there a good process for completing short-term leases? (Short-term leases have really proved to be the kind of grease to get things going with landowners. To prove to communities and irrigators that this work is positive, and not harmful to them.) Are there any kind of restrictions, or diminishment, of environmental water rights relative to other uses, agriculture, municipal uses of water? Is there authorization to conserve water, and then be able to transfer and protect that conserved water instream, under the state statute? Can you stack multiple uses on a water right? (Oregon, for example, will only allow you to do what's called a split season lease of a water right, on a short-term basis. California, on the other hand, will let you permanently add instream to the existing agriculture use. And then, let you, as long as you stay within the limits of the water right, use the water for agriculture for part of the year and then put it instream for the time that might be really critical for the ecology of the stream.) Finally, will instream use of water protect the water right from forfeiture under the use it or lose it provision?

#### Slide 31 – Summary of Results

This table shows the results of Stanford's survey, though it's probably not that legible on the slide. More important are the five broad conclusions they reached regarding the states that are the best in facilitating these environmental transfers. They are those that have the broadest permissible types of transfers, allow for efficient short-term transfers, support informal transactions like forbearance agreements, have streamlined tools for measuring consumptive use, and, finally, use water banks. I can't emphasize the consumptive use finding enough. The way states get hung up on defining how much water was consumptively used as the basis for establishing an instream water right has been a real hindrance to this work around the west. So, in conclusion, this is a really interesting report. I'm going to pause there. Thank you for your time and attention.