

20 UPLIFT

REPORT 20

MISSION

TO PRESERVE AND RESTORE FRESHWATER ECOSYSTEMS

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FRIENDS OF THE FRESHWATER TRUST,

MOMENTUM.



It's likely not the first word that comes to mind when considering the last year and a half. A pandemic was the force that stopped the movement of our communities and economies in their tracks. While The Freshwater Trust (TFT) has not been immune to challenges presented by such a massive event, we've gained significant momentum toward creating a new standard operating procedure for fixing freshwater ecosystems.

TFT is not in business to do some projects on some parts of rivers. **We are here to fix entire basins within our lifetimes and to fundamentally change how freshwater conservation and restoration is practiced — not just in the U.S. — but globally.** The need for a new direction could not be more acute. The \$2 trillion spent on freshwater health and restoration in our country since the 1970s has missed the mark. We have more than half of U.S. waterways failing to meet Clean Water Act standards. And with 70% of the American West in moderate to extreme drought year after year, there is an urgent and unmistakable need to improve the systems that guide restoration.

Altering an entire system is ambitious and bold. But it is doable. Chances are if you are reading this now, you believe in the need for this and in our capabilities. We have never been — nor ever will be — an organization that just goes through the motions. **We're catalyzing transformational change that will allow us to see ecosystems achieve resilience within our lifetimes. This report is proof of that.**

The following pages showcase how our method is working on behalf of key Western basins right now. They tell the story of how technical innovation behind the scenes underpins every on-the-ground action taken now and serves as the heart of our systems-changing, results-achieving approach.

You will learn how we mapped 4,000 fields in a key Northwest basin and precisely identified that by upgrading irrigation on only the top 10% of projects, we could reduce 60% of nitrogen runoff in that system. We spotlight how \$200K became \$25 million precisely invested in a basin and yielded an unprecedented fish response. We'll introduce you to the team that builds the solutions that are big enough and bold enough to match the scale of the freshwater problems in our country.

Any student of physics knows that impact is a combination of momentum, velocity, and mass. In organizations, momentum is only gained under the right conditions, and your support ensures we have the ingredients needed to solve — rather than just patch — our freshwater crisis.

Thank you for your continued support.

Joe Whitworth
President & CEO

OUR EQUITY STATEMENT

Delivering environmental outcomes that secure a resilient freshwater future will require changes to our economy. We acknowledge that the current structure of the economy is connected to and built upon systemic inequities. We recognize that rivers cannot be restored without focusing on and integrating people — and the impacts our work will have on local communities — into our decision making and solutions. We realize that our programs have indirect, positive impacts on downstream users, but that when optimizing programs, we must also consider direct Diversity, Equity and Inclusion (DEI) impacts.

WE ACKNOWLEDGE THAT FIXING FRESHWATER ECOSYSTEMS AND IMPROVING WATER QUALITY IS INEXTRICABLY LINKED TO ENVIRONMENTAL JUSTICE, A MOVEMENT THAT EXISTS BECAUSE ENVIRONMENTAL POLLUTION DISPROPORTIONATELY AFFECTS LOW-INCOME PEOPLE AND OFTEN SPECIFICALLY BLACK, INDIGENOUS AND PEOPLE OF COLOR.

We have long partnered with agricultural communities and tribes to implement best management practices and provide economic incentives to bring about quantified benefits. We have hired local contractors and businesses as partners in our work to improve native fish habitat. We have received grants that help us learn from marginalized communities and help them to disseminate information about freshwater resources in the state of California.

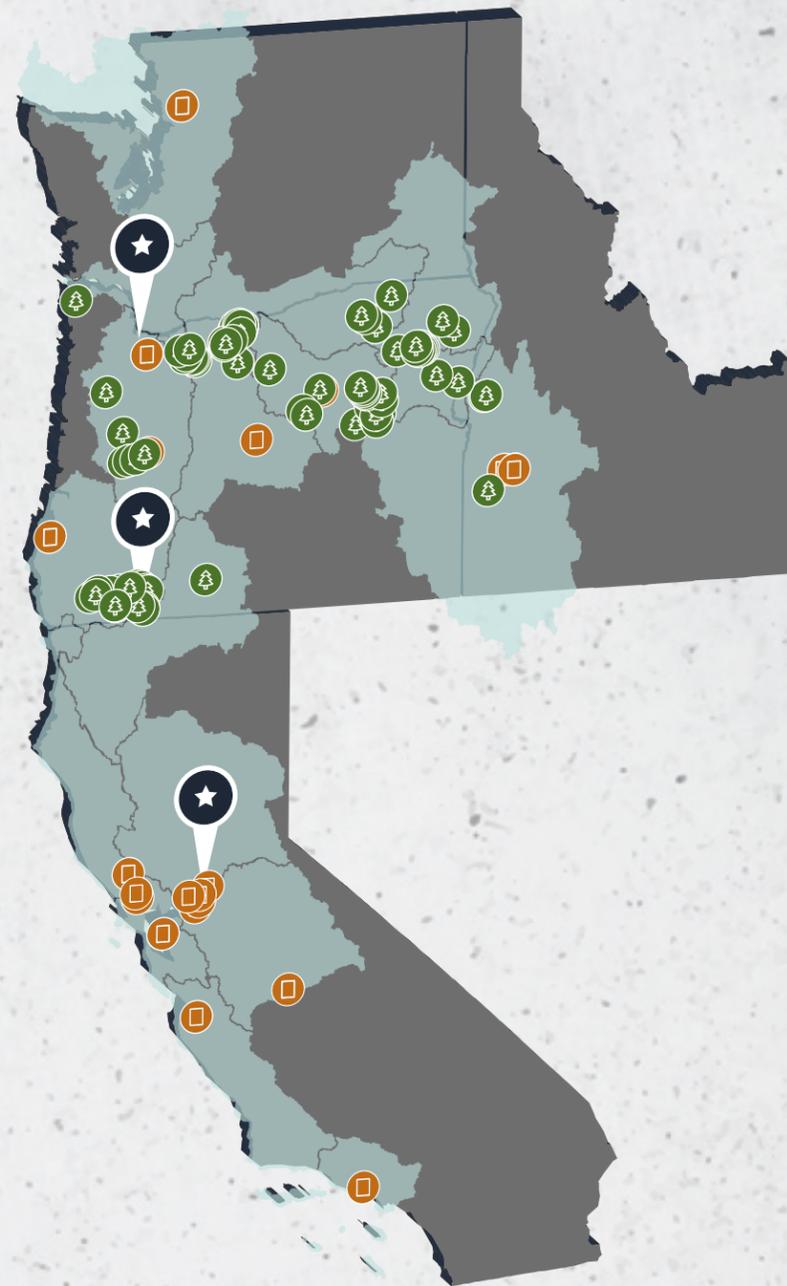
While these are examples of the ways in which our mission has overlapped with people, TFT recognizes the internal and strategic work that needs to continue to ensure equity of multiple forms remains at the heart of who we are, what we do, and why we do it. To this end, we have developed a set of commitments and opportunities to help us formally progress in our equity journey to recognize and work to correct systemic racism in our society. Recognizing the abundance of work and learning we have to do to support that effort, we are also committed to revisiting this statement and updating it on a frequent basis.

While we cannot address hundreds of years of inequitable systems, we can affirmatively commit to:

- Actively engaging our work with an equity lens. We will further anti-racist and anti-inequitable outcomes through our work;
- Focusing on disparate impacts, rather than intentions, and recognizing that if we identify a disparate impact, we will confront it regardless of intent;
- Respectfully calling out bias and responding from a place of action, learning, and growth; and
- Recognizing that talking about this openly and candidly is something that we have an obligation to do and that doing so is not an indictment of anyone, but an institutional commitment to confront and correct current and ongoing bias in the restoration sector, even if the discussions are uncomfortable.

WE COMMIT TO APPROACHING THESE ISSUES WITH LEARNING, PATIENCE, AND A DESIRE TO CHANGE MINDS AND OUTCOMES.

OUR IMPACT



Nearly 40 years ago, TFT was founded as Oregon Trout, the first wild fish conservation group in the Pacific Northwest. While our mission — to preserve and restore freshwater ecosystems — has remained steadfast, our operations have burgeoned. Our analytical expertise and on-the-ground work now spans five states.



-  **TFT OFFICES**
Portland
Ashland
Sacramento
-  **ANALYSIS BEHIND THE SCENES**
-  **PROJECT ON THE GROUND**
-  **WATERSHEDS IMPACTED**

ROGUE RIVER BASIN

In 2010, \$200K in philanthropic dollars became the foundation of The Freshwater Trust's (TFT) work in the Rogue basin. Ten years later, many stories have been added. 2020 marked a decade of implementing an interwoven network of on-the-ground restoration actions in the highest priority places and of forging new partnerships with private landowners, public agencies, and local businesses. TFT catalyzed an initial small investment into more than \$25 million worth of restoration on the ground and into the local community. Our approach here — high-impact, holistic, and basin-wide — has yielded high-impact, holistic, and basin-wide results. The ability to employ analytics to take precise action, to leverage multiple sources of funding to achieve maximum results, and to keep rural communities supported, is no longer a possibility. It was made real in the Rogue.

A MILESTONE ACHIEVED EARLY

Under our initial contract with Medford, TFT was charged with ensuring it could counter the impacts of the city's wastewater treatment facility through natural infrastructure, such as planting trees and shrubs. To remain in compliance with the Clean Water Act, the plants would need to generate enough shade to offset 600 million kilocalories of solar load on the river. This year, nine years after the program began, TFT implemented restoration on 49 acres, reaching a threshold needed to satisfy the city's permit requirements two years ahead of schedule.

"It's been impressive to see how resilient these projects are, when it was so hard to believe that natural sites could hold up in the same way as the constructed option," said Dustin Hagemann, water reclamation division manager with the City of Medford.

The thousands of plants tucked into the ground over the years have also helped prevent erosion, provide habitat, increase wildfire resiliency, filter nutrients, suppress invasive species growth, provide future woody debris for fish habitat, and beautify the river corridor for recreation. And the contract has supported local jobs by directing millions to local businesses, such as plant nurseries and landscape professionals.

"IT'S REWARDING TO WITNESS AND BE A PART OF HOW EFFICIENT AND EFFECTIVE WE CAN BE WITH ACHIEVING A TANGIBLE TARGET. IN REALITY, HOWEVER, THIS PROGRAM IS JUST ONE PIECE OF A GREATER BASIN-WIDE PLAN AND VISION."

- EUGENE WIER, RESTORATION PROJECT MANAGER

Implementing a successful restoration program with Medford opened doors with others, including the City of Ashland, the U.S. Forest Service, Oregon Department of Transportation, and the Bureau of Reclamation.

"Each of these entities has a different goal, but TFT is a central hub between many partners," said Wier. "This is how you take piecemeal efforts and achieve better results, faster. There's nothing ad hoc or coincidental about our approach. Everything is strategic. Everything builds upon everything else."

MOMENTUM, EVEN IN 2020

When Covid shut down much of the world, we were gearing up for another summer and fall of implementing and monitoring projects. By taking precautions, we were able to safely stay in operation. This meant that many of the partners that rely upon us for business still received it. And for the rural communities in which we work, that mattered greatly.

"We have come to understand just how critical our role is in implementing these projects to the local economy," said Katelyn Detweiler, restoration project manager. "There are many businesses here who have told us how important the significant infusion of investment has meant to their own stability. At a time when nothing seemed certain, the fact that we could still do business was critical."

SOLAR LOAD BLOCKED



Hilary Cosentino and Katelyn Detweiler, project managers, performing a vegetation monitoring survey along Bear Creek, a tributary in the Rogue basin. This site was one of the first planted as part of TFT's partnership with the City of Ashland.



Staff assess impacts of the Almeda Fire along Bear Creek.

In 2020, TFT broke ground on its second water quality trading program in the basin with the City of Ashland. Two new projects were placed along Bear Creek that will help keep the city in compliance with the Clean Water Act, while improving native fish habitat and water quality. Seven acres have been planted to date, and another eight are slated for the fall of 2021.

Another season of progress was also made in our long-term partnership with the Bureau of Reclamation. Since 2015, we have improved habitat complexity through the placement of large wood structures throughout the Rogue. Also on Bear Creek, 85 new woody structures were put in place in 2020, allowing water to expand and extend to nearly 10 acres of new floodplain and reconnecting five historic side channels that had been disconnected.

FIRE RECOVERY AND RESILIENCE

In early September, after months of the organization proving its resilience and momentum by continuing to put projects on the ground safely during a global pandemic, our projects proved their own resilience. Unprecedented wildfires swept through Southern Oregon. While the devastation to many communities was severe, the fire underscored another benefit of our projects. The creeks and rivers plagued with invasive plants and shrubs burned hotter, while the restored sites endured the fire and prevented it from spreading rapidly.

“WE SAW HOW HAVING A HEALTHY RIPARIAN AREA MAKES A DIFFERENCE FOR FIRE EVENTS LIKE THIS. THAT’S A GOOD THING, BECAUSE WE KNOW THEY’LL BE MUCH MORE SEVERE AND FREQUENT WITH CLIMATE CHANGE.”

- EUGENE WIER, RESTORATION PROJECT MANAGER

Three of the five projects planned with the City of Ashland set to be implemented in 2021 are located on lands that were burned during the Almeda fire.

“The projects will accelerate the recovery process and secure the resilience of the landscape,” said Wier. “The benefits of these projects continue to make themselves known.”

MISSION OF THE BASIN:

Coordinate and leverage funding from multiple sources to vastly improve water quality and native fish habitat

RESTORATION ACTIONS:

Streamside revegetation | Large wood installation | Fish passage repair | Side channel reconnection

TOTAL PROJECTS IN BASIN:

37

NEW PROJECTS IN 2020:

5

TOTAL LARGE WOOD STRUCTURES BUILT IN 2020:

85

TOTAL LARGE WOOD STRUCTURES BUILT:

343

TOTAL ACRES PLANTED IN 2020:

16.82

TOTAL ACRES PLANTED:

117

LANDOWNER PARTNERS:

54

DOLLARS INVESTED:

\$25 MILLION

PARTNERS:

City of Medford | City of Ashland | U.S. Bureau of Reclamation | Oregon Department of Transportation | Oregon Watershed Enhancement Board | U.S. Bureau of Land Management | Oregon Department of Fish & Wildlife | Rogue Basin Partnership | Patagonia | Rogue River Watershed Council

SPECIES BENEFITED:

Coho | Steelhead | Spring and Fall Chinook | Cutthroat Trout | Pacific Lamprey | Native Minnows and Sculpin

AREAS WORKED:

Mainstem Rogue River | Applegate River | Little Butte Creek | South Fork Little Butte Creek | Bear Creek | Kane Creek | Waters Creek | Neil Creek | Emigrant Creek | Wagner Creek

SANDY RIVER BASIN

Every summer, our habitat restoration director does his best directing. Overhead, Mark McCollister coordinates helicopters carrying trees by massive metal hooks. On the ground, he and a set of partners use a long-standing, science-backed plan to guide the large wood into just the right creeks throughout the basin. Gravel, specifically sized for spawning, is added by the ton.

The efforts accomplished in one year augment the benefits of the projects constructed in years prior. Our coordinated funding and action mirrors the interconnected nature of a watershed itself.

This approach has yielded powerful results, including that many of the threatened species here are now on a trajectory to recovery, largely due to increased spawning and rearing habitat.

Last July, despite it being only a few months into a pandemic that brought the world to a halt, McCollister and local partners moved forward with their plans to implement another year of restoration in the Sandy. The helicopters still left the ground. The logs found their homes in the streams. The basin continued to benefit from the momentum of the last decade.



“The outdoor and dispersed nature of the work has allowed us to continue to operate safely throughout the many twists and turns of the last year and a half. Being able to keep up this momentum, despite a whirlwind of unforeseen global circumstances, has not only been good for us, but for the fish and the businesses that rely on our work to continue.”

- MARK MCCOLLISTER,
HABITAT RESTORATION DIRECTOR

A DECADE MARKED

2020 marked a decade of work in the Sandy. From the onset, the goal for the basin has been to accelerate the recovery of naturally functioning conditions, so that habitat for spring Chinook, coho and winter steelhead can be improved. To that end, work each year has revolved around adding new large wood structures to restore flow to side channels and open new floodplains.

“An assemblage of funding from different sources and partners has allowed us to really tackle this basin strategically,” said McCollister, “When the restoration season begins each summer, we know how we’ll augment what was done the year prior.”

This past year, 25 new large wood structures were added to Clear Fork, a tributary of the Sandy River. These new large wood structures helped distribute flow across the entire valley, restoring connectivity to 12 acres of floodplain and improving nearly 2,000 feet of side channel.

“We’ve been actively expanding and increasing the habitat that young fish need to survive,” said Daniel Baldwin, restoration monitoring coordinator.

The wide, depositional valley setting of the lower Clear Fork is uniquely well-suited for juvenile fish. By reintroducing large wood to the system, old side channels that had been cut off from the main river have been reconnected, and existing ones enhanced. The river is now connected to cool, groundwater-fed springs where young coho and steelhead can be found throughout the year.

“There is huge value in looking at a river basin as a whole and acting strategically. The outcomes are clear that when that happens, there’s a much greater chance at making a difference.”

- DANIEL BALDWIN,
RESTORATION MONITORING
COORDINATOR

MISSION:

Collaboratively partner with nonprofits, agencies, and businesses to augment the recovery of endangered species

RESTORATION ACTIONS:

Large wood placement | Improved side channels | Restored floodplain and channel complexity

TOTAL PROJECTS IN BASIN:

36

TOTAL LARGE WOOD STRUCTURES BUILT IN 2020:

25

LINEAR FEET OF STREAM RESTORED IN 2020:

4,224

DOLLARS INVESTED:

\$6 MILLION

LOCAL JOBS SUPPORTED:

120+

PARTNERS:

US Forest Service | Bureau of Land Management | Sandy River Basin Partners | National Oceanic and Atmospheric Administration | Oregon Watershed Enhancement Board | City of Portland | Pacific Power | Spirit Mountain Community Fund

SPECIES BENEFITED:

Spring Chinook | Coho | Winter Steelhead

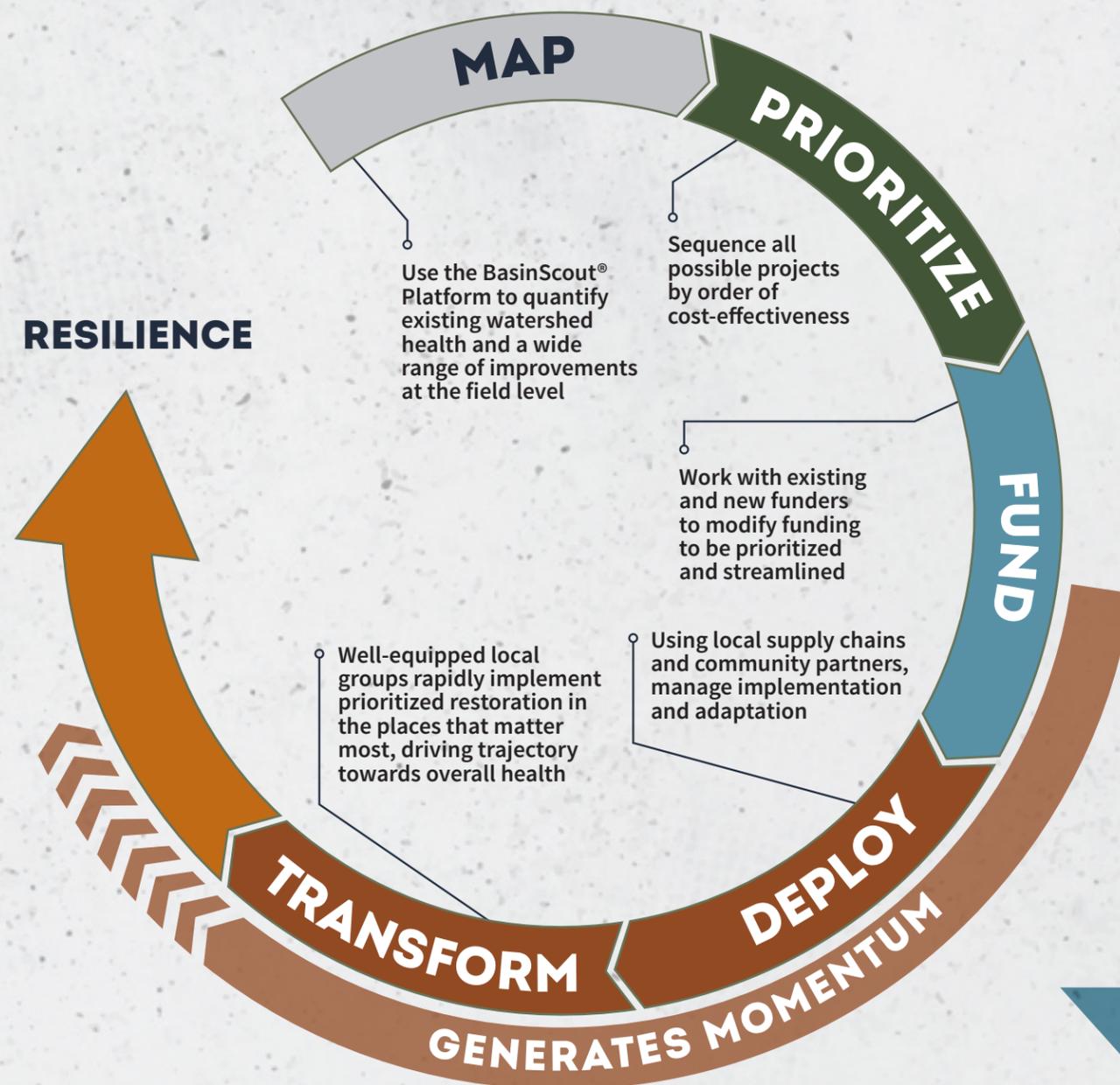
AREAS WORKED:

Salmon River | Sixes Creek | South Fork Salmon River | Clear Fork | Lost Creek | Cast Creek | Still Creek | Zigzag River

A NEW WAY FORWARD

We've come a long way playing within the boundaries of the traditional system of restoration, and we have improved it — on the margins. But gradual improvement and margins won't cut it — not when we know that more than half our waterways are impaired, billions are relying on river basins that cannot support them, and the changing climate will exacerbate the severity of the water quality and quantity issues we all face. These scenarios are grounds for systems change. The Freshwater Trust is blazing a new path forward that puts precision analytics, coordinated action, and rapid funding for outcomes at the heart of fixing all freshwater ecosystems. The graphic on the right shows the steps we take to achieve maximum benefit for an entire basin and a process we hope to see executed worldwide.

Our approach to restoration and conservation is basin-wide, analytics-driven, and coordinated. While this approach achieves more efficiency and efficacy, it is not how the current field operates. We are aiming to blaze a new path forward that ensures better and faster results for our rivers.



SACRAMENTO-SAN JOAQUIN BASIN

Head south from Sacramento and soon the buildings and pavement give way to cultivated fields of vegetables, vineyards and orchards. Keep moving into the wilder reaches of the region and riparian oak forests hug riverbanks with long grasses, while wildflowers shake in the wind. What's visible above-ground is supported by an important underground resource: groundwater. A drop in the groundwater table of 30 feet has jeopardized connected ecosystems — from irrigation wells to wetlands and forests to migrating fish and birds.

The Sacramento-San Joaquin basin is a rich nexus of surface water and groundwater. Underground springs silently fill river reaches. Rainwater finds crevices and slowly seeps through the soil, replenishing underground aquifers. A multitude of plants and animals depend on both sources of water. And certain habitats, such as riparian woodlands and vernal pools (seasonal ponds), have been reduced to five percent or less of their original area due to drought, conversion of land to agricultural and urban uses, and the proliferation of non-native plants.

“Our work in this basin centers on executing the right projects in the right places to put water back underground,” said Erik Ringelberg, California director. “Restoring groundwater to local aquifers has the added effect of raising surface water levels to sustain groundwater-dependent ecosystems. This increases drought resilience for the entire system, benefiting irrigators, at-risk drinking water supplies, and fish and wildlife species alike.”

Key partners include Microsoft and the Sacramento Regional County Sanitation District (Regional San). In 2020, we used our BasinScout® Platform (BSP) to discover cost-effective projects that benefit water quality and quantity in the Sacramento region and support Microsoft's water positive commitments. Across hundreds of thousands of acres, BSP zeroed in on the few dozen fields where conservation actions have the most impact for the least cost. These efforts facilitated a 2021 agreement with Microsoft to begin direct surface water recharge of 74,000 cubic meters on 20 agricultural acres.

Work with Regional San, which began in 2016, continued on a strong trajectory in 2020 with the planning of land management actions to protect seasonal wetlands, riparian forests, and migratory bird habitat. The goal of Regional San's Harvest Water program (formerly called South County Ag Program) is to use clean, recycled wastewater to replace groundwater in irrigated agriculture. This will help reverse some of the impacts of groundwater depletion and climate change while helping support groundwater-dependent ecosystems.

Additionally, TFT made noteworthy progress in developing a groundwater use monitoring system that will also serve as a trading platform to enable the transfer of groundwater rights between users. As part of this effort, TFT's partner, SweetSense, began transmitting groundwater monitoring data to the Swarm satellite network, a novel development that will help facilitate low-cost groundwater monitoring

in remote locations. Work also continued throughout the basin on developing Groundwater Sustainability Plans to protect the Delta's economy, communities, and environment. This involves building trust with surface water irrigators as we refine our models; and creating multilingual outreach materials for underrepresented and vulnerable groundwater communities.

FUNDING THE FUTURE

We often describe the Sacramento basin in terms of its agricultural productivity, natural habitats, and as a source of drinking water to major urban centers. These qualities are key in our approach to systems change. Another integral component is financial: the ability to fund large-scale restoration that will have an impact.

“CALIFORNIA IS THE WORLD'S FIFTH LARGEST ECONOMY. THE STATE GOVERNMENT PRIORITIZES SPENDING ON THE ENVIRONMENT. AND OUR WORK WITH PARTNERS TO SECURE STATE FUNDING HAS BEEN A DRIVER OF OUR MOMENTUM.”

– ERIK RINGELBERG, CALIFORNIA DIRECTOR

Examples include more than \$280 million in state bonds with Regional San and more than \$1.2 million in state and federal grants. We continue to build the funding scaffolding for future projects.

MISSION OF THE BASIN:

Improve regional water supply reliability and protect groundwater-dependent ecosystems

RESTORATION ACTIONS:

Groundwater well monitoring | Surface water diversion reporting

TOTAL PROJECTS IN BASIN:

21

NEW PROJECTS IN 2020:

3

LANDOWNER PARTNERS:

80

DOLLARS INVESTED:

\$5.1+ MILLION

PARTNERS:

Sacramento Regional County Sanitation District | Dixon Resource Conservation District | Solano Resource Conservation District | Solano County Water Agency | Northern Delta Groundwater Sustainability Agency | Sacramento County Farm Bureau | Community Alliance for Family Farmers | Multiple landowners and reclamation districts | SweetSense, Inc. | Swarm Technologies, Inc. | Environmental Defense Fund | The Nature Conservancy | Water Foundation | Gordon and Betty Moore Foundation | USDA Natural Resources Conservation Service | California Department of Water Resources | AmeriCorps CivicSpark | Upstream Tech | Pacific Institute | Microsoft | California Water Action Collaborative

SPECIES BENEFITED:

Fall-run Chinook Salmon | Sandhill Crane | Swainson's Hawk | Giant Garter Snake

AREAS WORKED:

Northern portion of the Sacramento-San Joaquin River Delta | Cosumnes River | Sacramento Valley Groundwater Basin



The Sacramento-San Joaquin River Delta lies below sea level, creating an interconnected system of groundwater and freshwater.



Capturing excess water on post-harvest fields not only replenishes groundwater but also creates the additional benefit of temporary habitat for migrating birds.

DESCHUTES RIVER BASIN (CROOKED SUBBASIN)

The Crooked River subbasin of the Deschutes suffers from classic and pervasive problems of Western watersheds. It experiences too much nutrient runoff, too much water removed to support agriculture, the impacts of dams, and increasingly warmer water temperatures. As a result, water quality of this 125-mile, critical tributary of the Deschutes has put a renowned trout and steelhead fishery at risk. Over a decade ago, Portland General Electric spent more than \$100 million to install a selective water withdrawal tower at Pelton Round Butte dam where the Crooked, Metolius, and Middle Deschutes rivers meet at a reservoir, Lake Billy Chinook. This tower was intended to blend warm water from the reservoir with cold water from below to keep the temperature downriver of the dam more balanced and hospitable for native fish. Yet water quality issues not only persist, algal blooms and plant overgrowth are on the rise.

In 2020, TFT analyzed the Crooked River watershed, which science suggests contributes to 80% of water quality issues downstream in the Lower Deschutes. Our goal was to understand how much quantified improvement could be generated by what type of activities on private agricultural lands and for what cost. For example, we know that upgrading from flood irrigation to more efficient and precise pivot systems can significantly reduce runoff into any system.

We assessed more than 4,000 fields, which allowed us to see and understand the total cost of all the beneficial restoration projects in the basin was upwards of \$130 million — a hefty price tag. What our analytics also highlighted, however, was that if we were able to spend \$25 million on only the top 10% of projects, we could remove 60% of the nitrogen runoff into this system, likely having positive impacts downstream.

“THIS IS THE POWER OF PRECISION ANALYTICS. WE CAN USE NEW TOOLS AND TECHNOLOGIES TO PHYSICALLY SEE HOW BEST TO GO ABOUT IMPROVING AN ENTIRE SYSTEM. THERE’S NO GUESSING. THAT’S HOW MONEY GETS SPENT WISELY AND IN THE RIGHT PLACES.”

– **MADDEE RUBENSON,**
ECOSYSTEM SERVICES ANALYST

The analytics used to assess the Crooked play a fundamental role in TFT’s approach. After mapping any basin and prioritizing the actions based on cost and impact, we then coordinate dispersed sources of funding to deploy fixes efficiently.

“We are much earlier in our work in the Crooked,” said Rubenson. “But our work in the Rogue also started similarly — with analytics at the heart of action, getting the ball rolling and telling us how best to spend dollars and where to act to see results.”

Next steps include fundraising and partnering with those already working in the basin to bring knowledge and investment to the table.

“ This analysis identifies the steps necessary to make a positive impact. Now it’s a matter of working with local stakeholders to implement the changes needed.”

– **MADDEE RUBENSON,**
ECOSYSTEM SERVICES ANALYST

Snake River Basin

The Snake River, the longest tributary of the mighty Columbia, is a critical stronghold for fall Chinook. Managing actions to protect and restore the river's health is no small undertaking. Add into the mix a series of dams along the Hells Canyon that generate clean hydropower but present obstacles to fish and water conditions.

"It's clear that to improve conditions downstream, we have to start improving conditions upstream," said David Primozych, vice president of water. "Stopping excess sediment and nutrients from getting into the river, and reducing high water temperatures, are key."

It's this long arc toward restoration that TFT is on. More than a decade ago, we began collaborating with Idaho Power Company to put in motion a comprehensive plan to recover water quality in this critical Pacific Northwest watershed. There were some large gears to move, including quantifying thermal benefits from recovering streamside shade and improving conditions in the main channel, while also securing agreement from multiple regulatory agencies on a new approach. We are extending the earlier momentum we created in Oregon around water quality trading into Idaho.

"CHANGE HAPPENS WHEN WE PARTNER WITH THE RIGHT PEOPLE IN THE RIGHT PLACE. WORKING TOGETHER, WE PULL THE LEVERS THAT SHIFT THE MOMENTUM OF RESTORATION."

- DAVID PRIMOZICH,
TFT VICE PRESIDENT OF WATER

In the decade of working with IPC, we've also collaborated with others along the Lower Boise River, a tributary of the Snake. Between 2013 and 2015, we completed field-level assessments for sediment reductions, jointly funded by four cities and two corporations. While this collaboration set the stage for a trading framework in Idaho, the regulatory permits have long timelines. But interest is growing. In fact, in 2021, the state of Idaho passed legislation that encourages water quality trading alternatives in municipal discharge permits.

USING DATA TO DRIVE NEW PROGRAMS

IPC's \$350 million Snake River Stewardship Program is a catalyzing force in the basin. While in its pilot phase, which began in 2016, the program has enhanced eight acres of floodplains, planted 37,000 native trees and shrubs, and prevented 1,900 tons (nearly 4 million pounds) of sediment and 2,950 pounds of phosphorus per year from washing off fields into the river. Further riparian restoration and instream work is slated to accelerate over the next few years as the program transitions from pilot phase to full implementation.

"Hundreds of riparian revegetation projects will be implemented as part of the SRSP," said Olivia Duren, environmental quality program manager. "Some of these projects will be intensively monitored. A vegetation monitoring selection tool we've developed provides a robust way to objectively select the right number and types of projects to monitor so that their results are representative and useful for assessing the program's success."

Building the management systems and tools for the SRSP has a broader effect. The tools are deployed and tested first in one project area, such as the Snake, and then ripple out to allow us to use the tools with partners in other basins. The impact of innovations driven by the SRSP is multiplied.

In 2020, TFT began collaborating with IPC on a second program along the mid-Snake to assess the potential to reduce phosphorus loads that cause algae blooms in reservoirs. Using TFT analytics, high-efficiency projects can be identified and grouped into cost-optimized portfolios that meet sediment and nutrient reduction targets. These nutrient loads exacerbate the methylation of mercury that can ultimately make fish unhealthy to eat. IPC will use this analysis to work with regulators and stakeholders to drive new data-driven programs for the watershed.

“Improving water quality in a system as big as the Snake River requires watershed-scale efforts across a broad range of stakeholders. The Snake River is the cornerstone of southern Idaho's culture, communities, and incredible natural resources. Working together with groups like TFT who share a common vision for sustainable, holistic solutions will ensure the Snake River remains a valuable resource for future generations to come.”

- BRETT DUMAS,
IDAHO POWER'S ENVIRONMENTAL
AFFAIRS DIRECTOR

MISSION OF THE BASIN:

Restore the health of the watershed and improve aquatic habitat

RESTORATION ACTIONS:

Riparian revegetation | Sediment runoff reduction through irrigation upgrades

TOTAL PROJECTS IN BASIN:

5

SOLAR LOAD BLOCKED:

305,147,379 KCALS/DAY

PARTNERS:

Idaho Power Company | Multiple landowners | Adams County Soil and Water Conservation District | Armitage Contracting LLC | Baker County Soil and Water Conservation District | Boise National Forest Lucky Peak Nursery | Dapper Stats | Goodfellow Bros. | Intermountain Aquatics | Plantworks LLC | PNDLM | River Design Group | Washington County Cooperative Weed Management Area | WildLands Inc.

SPECIES BENEFITED:

Mountain Whitefish | White Sturgeon | Rainbow Trout | Bull Trout

AREAS WORKED:

Marsing Reach of the Snake River | Powder River | Little Weiser River | Weiser River



MCKENZIE RIVER

The McKenzie has a reputation to uphold. The 90-mile tributary of the Willamette is known for spring Chinook, native bull trout, and providing some of the highest quality drinking water in the state. In effort to protect all it offers, The Freshwater Trust (TFT) has worked with small businesses, watershed councils, and the Metropolitan Wastewater Management Commission (MWMC) to restore streambanks with native vegetation.

Efforts began eight years ago with a restoration pilot program, spurred by the MWMC. The wastewater commission responsible for the cities of Eugene and Springfield needed to weigh options to offset a potential temperature exceedance from discharging warm, treated wastewater into the already warming river.

“This is also what prompted our work with the cities of Medford and Ashland,” said Olivia Duren, environmental quality program manager. “To stay in compliance with the Clean Water Act, these cities must come up with an option that is defensible, lasting, and affordable for their ratepayers. Restoration offers all of that. Plus, replanted forests provide benefits like filtering runoff and creating wildlife habitat that a mechanical solution would not.”

BUILDING A HEALTHY FOREST

Beginning in 2013, TFT worked with the MWMC and the McKenzie Watershed Council to plant pilot projects identified through prioritization analysis as areas where improvements would have the most impact. By late 2021, five sites spanning 10 acres featured new, young black cottonwood, alder, dogwood, western red cedar and more. Additional projects are planned for 2022, including restoration of streamside forests burned by the 2020 Holiday Farm Fire.

Summers are spent focusing on maintenance at the existing projects. Weeds are removed to help the native plants thrive, and plants are protected from local wildlife. At the end of each growing season, projects are monitored to measure performance against rigorous standards.

“When plants go in the ground, they’re only six inches tall,” said Duren. “This year, many trees at our older projects were 25 feet and taller — and the seed they have produced is contributing to additional trees growing in and around the project area, too.”

“BRINGING RESILIENCY BACK TO THE WATERSHED GIVES ME A LOT OF JOY.”

– **OLIVIA DUREN, ENVIRONMENTAL QUALITY PROGRAM MANAGER**

The pilot projects are the foundation for what will soon become a long-term and extensive water quality trading program with the MWMC. If momentum continues and the program is approved by early 2022, it will direct millions of dollars in additional funding to restoration and local jobs.

ESSENTIAL COLLABORATION

Rather than serve as the implementers of the projects, TFT will facilitate the program using its models to assess best project areas, track the credits that are generated from the program to keep the MWMC in compliance, and manage finances. Local groups, such as the McKenzie Watershed Council, will reach out to landowners and oversee the projects on the ground.

“This is similar to how we see the future of many of our programs — where we can play some of the roles, but not all the roles,” said Duren. “Collaboration will be essential to making our rivers resilient to the challenges ahead.”



Planted trees and shrubs along the McKenzie River will aid in the recovery of the forest that was damaged in the 2020 Holiday Farm Fire.



Photo on the left was taken in 2013, pre-restoration. Photo on the right was taken in 2021.

MEET THE ANALYSTS

Before a plant is planted, a log is dropped into a stream, a salmon uses improved habitat, or a farmer upgrades irrigation equipment, analytics are at play. They are the blueprint for every action we take. Meet the analysts who are charged with developing the innovative, analytical tools that differentiate The Freshwater Trust's approach.



"I am developing the next generation of software to tackle current and future issues in water conservation and river restoration."

- DYLAN HARP, SENIOR DATA SCIENTIST



"I develop tools that help identify low-cost, high-impact conservation projects."

- TONY ORLANDO, AGRICULTURAL ECONOMIST



"I work on hydrology and water quality models at basin scale to link field actions to the whole basin impact."

- ADITYA SOOD, SENIOR HYDROLOGIST & WATERSHED MODELER



"I groundtruth our models in California through research and outreach. Most recently, I've been interviewing growers and local partners about the potential of a marketplace to better use and understand groundwater resources."

- STEPHANIE TATGE, RESEARCH & OUTREACH SPECIALIST



"I come up with creative and simple ways to collect field data, aiming to create a better experience for our partners while using our set of tools to collect restoration data."

- SHARON GORDON, PRODUCT MANAGER



"I'm building tools that empower decision makers by giving them better visibility into the environmental and economic costs and benefits of both action and inaction."

- ELLIOT HOHN, SENIOR ANALYST



"I'm helping The Freshwater Trust innovate and carry out its mission by clearing the way for Science and Analytics team members to be creative and successful every single day."

- THERESA BURCSU, SCIENCE AND ANALYTICS DIRECTOR



"I am building web applications that allow stakeholders to interact with modeled data and identify low-cost, high-impact environmental benefit solutions."

- MADDEE RUBENSON, ECOSYSTEM SERVICES ANALYST



"In conjunction with my colleagues, I work on database design, process automation, and general troubleshooting for our modeling."

- DAVE ATCHISON, SENIOR DATA ANALYST



"I am developing automated geospatial processes to more efficiently analyze opportunities for water quality and water quantity improvement."

- TOMMY FRANZEN, GIS ANALYST

THE SANDBOS' STORY

Scott and Betsy Sandbo have never followed traditional paths.

Living in downtown Chicago and working in the fashion and finance industries, they decided rather than follow the traditional big city, big firm approach, they would move to Portland, Oregon, to try something more adventurous.

“Discovering new approaches and outside-the-box thinking is a fairly consistent theme for us,” said Scott. “It’s in both of our DNA.”

It’s what drew the Sandbos to Portland and ultimately what’s kept them as long-time supporters of The Freshwater Trust (TFT).

The Sandbos have been actively involved with TFT for more than two decades. Scott has served as a longtime board member and co-chair for the last nine years. Betsy has been involved in numerous fundraising and TFT events.

“Quite frankly, every time I thought of stepping away, the progress at and the promise of TFT pulled me back in,” said Scott. “What keeps me going is the knowledge that we are right on the cusp of establishing a fundamentally new approach to water conservation and restoration that’s driven by analytics. What TFT has been working on is now coming together.”

Despite both being long-time fly fishers and lovers of water, TFT illuminated for Scott and Betsy some of the more intimate and nuanced ways that water quality and quantity is currently affected and can be improved.

“I found it fascinating to learn that it’s not just about the type of visible pollution we all think about,” said Betsy. “In many cases it’s about finding a balance between agriculture and the environment. TFT does a great job of bridging them.”

As the former chairman and CEO of Pacific Crest Securities, a leading technology-focused investment bank, Scott has seen dozens of examples of new technologies and analytics transforming industries.

“There is a massive amount of money that is already being spent on water in this country,” said Scott. “We don’t need more money; we need to spend it in a much more thoughtful manner. TFT now has the proven tools and capabilities to get exponentially better outcomes from the dollars being spent — not 20% better results, we can get 500% better results.”

To date, the Sandbos’ support has been core to TFT’s ability to innovate, including the building and deployment of its BasinScout® Platform, which identifies and prioritizes the most impactful and cost-effective places to do restoration. With their continued support, vision and leadership, TFT will have the opportunity to apply its technology and approach to more basins, demonstrating a better, faster and more effective approach to achieving watershed resiliency.

“We know that the impact of our gifts to TFT will be significant,” said Betsy.



Betsy and Scott Sandbo

“Ten years ago, the thought of applying analytics to the environment wasn’t realistic. TFT’s innovation with analytics, when implemented on a wide scale, is going to be a gamechanger.”

– SCOTT SANDBO

BOARD OF DIRECTORS AND ADVISORS

We're fortunate to have an impressive Board of Directors overseeing the activities of The Freshwater Trust. The following individuals provide strategic leadership and oversight to the organization.

Pat Reiten, Co-Chair	David Laurance	Joe Whitworth, Ex-Officio
Scott Sandbo, Co-Chair	Kim Malek	Tim Boyle, Emeritus
Peter Doubleday, Treasurer	Molly McCabe	Randy Labbe, Emeritus
Gary Fish, Secretary	Marty Myers, In Memoriam	ADVISORS
Marcelino Alvarez	William Neuhauser	Chad Brown
Hank Ashforth	Mike Pohl	Arthine Cossey van Duyne
David Chen	Brad Preble	David Howitt
Margaret Donovan Cormier	Gia Schneider	Taylor Keen
Scott Demorest	Dr. Sara Spangelo	Marian Singer
Paul Fortino	Anthony Trunzo	Liz Spence
Deb Hatcher	Margaret Tuchmann	

HEADWATERS COUNCIL

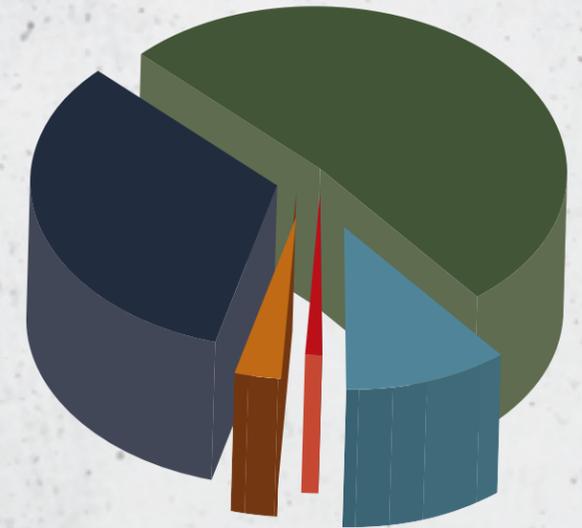
The Headwaters Council is an advisory group comprised of emerging business leaders, disrupters, decision makers and influencers who will help us drive the next generation of creative and networked conservation and philanthropy.

Jacob Bieze	Sam Houser	Jonathan Ortiz-Myers
Stasia Brownell	Jesse Lange	Nick Parish
Akbar Chisti	Lars Lider	Julia Person
Belton Copp	Michelle Mark	Michael Richardson
Patrick Goodman	Matt Milletto	Kristin Russell
Iván Resendiz Gutierrez	Mary Moerlins	Shea Washington
Adam Hooper	Ryland Moore	

FINANCIAL SNAPSHOT

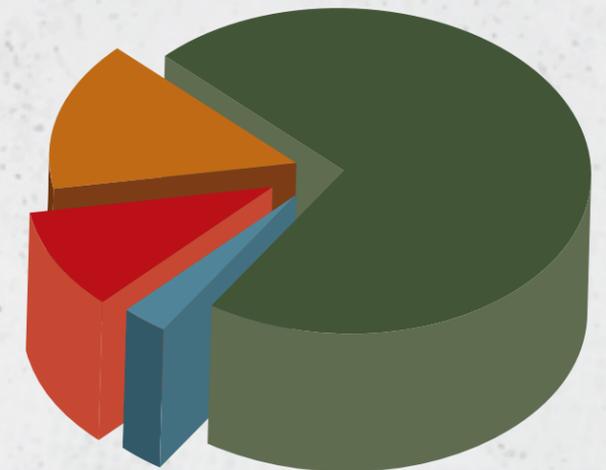
REVENUES

Grants & Contributions	\$5,369,134	52%
Individual Giving	\$1,089,674	11%
Special Events Income	\$147,759	1%
In-kind Donations	\$266,958	3%
Earned Revenue	\$3,378,980	33%
Total Revenues	\$10,252,505	



EXPENSES

Conservation Programs	\$6,992,949	72%
Outreach	\$275,075	3%
Development	\$939,441	10%
Operations	\$1,503,765	15%
Total Expenses	\$9,711,230	





**THE
FRESHWATER
TRUST™**

THEFRESHWATERTRUST.ORG

700 SW Taylor St. • Suite 200 • Portland, OR 97205

ENVIROCALCULATOR

ENVIRONMENTAL IMPACT AUDIT REPORT

THE FRESHWATER TRUST SAVED THE FOLLOWING RESOURCES BY SELECTING MEENAH CONSERVATION PC 100 PAPER WITH 100% POST-CONSUMER CONTENT. QUANTITY: 1136 LBS.

TREES

2.27 tons of fresh (green) wood, which is equivalent to 13.6 trees

WATER

1100.0 gallons, which is enough water for 0.78 clothes washers operated/year

ENERGY

5.74 million BTUs, which is enough energy to power 6.8 residential refrigerators/year

SOLID WASTE

47.0 pounds of solid waste, which would fill 0.0017 garbage trucks

GREENHOUSE GAS

5880.0 pounds of CO₂, which is equivalent to 0.534 cars/year

ENVIRONMENTAL IMPACT ESTIMATES WERE MADE USING THE ENVIRONMENTAL PAPER NETWORK PAPER CALCULATOR VERSION 4.0. WWW.PAPERCALCULATOR.ORG.