JOE S. WHITWORTH, PRESIDENT
THE FRESHWATER TRUST

Testimony of Joe S. Whitworth
Before the Senate Committee on Energy & Natural Resources
Subcommittee on Water and Power
July 22, 2020

Subcommittee Chairwoman McSally, Ranking Member Senator Cortez Masto, and Honorable Members of the Subcommittee:

Good afternoon. My name is Joe Whitworth, President of The Freshwater Trust. We are a "do-tank" nonprofit organization focused on leveraging technology and finance in new ways to solve legacy water problems. Working at the intersection of the economy and the environment, we have developed a "quantified conservation" approach to working collaboratively with landowners, agencies, utilities and other partners to get conservation actions done in the right places in the right amount on an expedited basis. This approach gives society the best chance to recover listed species, ensure clean water for all uses, and make local economies more resilient. This is the future we seek and on behalf of our Board of Directors, I appreciate the invitation to testify today.

Despite mounting complexity, Congress faces an historic opportunity for our nation's freshwater resources and rural economies. Technology is now available to identify and target restoration actions that restore freshwater ecosystems, invest taxpayer dollars efficiently, and get America on track toward providing fishable, swimmable, and drinkable water for *all* communities. Our use of technology creates durable jobs in America's rural economies and increase rural resiliency to climate change. Several of the bills before this committee include steps in the right direction toward data-informed investments, and additional work will put us on a faster track to meeting these needs.

This country has made significant progress on restoring water quality since the passage of the Clean Water Act. However, the scale of this nation's water problems remains daunting and progress has stalled. Simply put, the innovations of last century will not address the challenges of this one. After more than a generation of effort, more than half of America's stream miles do not meet water quality standards. Indeed, the fact that the majority of our river miles designated as Wild & Scenic fail to meet fishable-swimmable-drinkable requirements signals clearly that the environmental words we write on legal paper need to toggle to realities on the ground.

For the first time in human history, they can. But it does not include "more of the same".

Solving our water problems on a meaningful timeframe requires that we accelerate restoration funding and focus it on producing the best environmental outcomes, for the least cost, driven by coordinated technology analytics. Currently, funding drawn from federal restoration programs is disbursed through process-heavy, technical, and lengthy grant or loan programs. This is true

even of programs that were intended to break down silos, such as the USDA's Regional Conservation Partnership Program. Though its conservation aims are leading edge, the long and uncertain application cycles associated with these programs often deter landowners with key lands and smartest farm upgrades from participating, and leaves opportunities to improve the environment unseen and unleveraged. There is also little information to determine whether limited restoration dollars are funding the projects that will produce the necessary environmental outcomes. The intent of such programs must better toggle to their results on the ground.

Existing technology is available to change this pattern and enable federal programs to efficiently identify and fund projects that will provide the greatest benefits on taxpayers' investments. The Freshwater Trust knows this is possible because we use these technological tools every day in our work to restore watersheds and support the needs of our project partners, such as the U.S. Department of Agriculture, the Bureau of Reclamation, the Department of Energy's Bonneville Power Administration, Idaho Power Company, Sacramento's Regional Sanitation District and other public and private entities. Our decades of success inform our proposed "Rural Resiliency Jobs Initiative", which we have submitted into the record. We know it's possible to take a data-driven, basin-scale approach to secure long-term health for our nation's watersheds and rural economies – it's what we do. Technology and analytics are currently available to decisionmakers that could sort millions of acres in a basin to find the on-farm actions with the greatest environmental benefits for the least cost. These results are already leveraging existing federal funding to draw private investment in rural communities, bringing the best of the private sector to local economies that need it the most. The status quo funding model, however, slows this down.

For example, TFT analyzed a key subwatershed in the Columbia River Basin for agricultural runoff impacts that contribute to downstream water quality impacts. Using publicly available data, federally approved model formulas, and advanced technology tools, TFT determined that of the nearly 4,100 agricultural fields in the watershed, only 1,500—less than half —would generate any significant outcomes from restoration actions, no matter the investment. In this basin, the primary actions involve converting farm irrigation practices from flood to center pivot irrigation – a process that can improve farm profitability, and if targeted in the appropriate locations in a watershed, provide more in-stream conserved water for ecosystem and recreational benefit where those protection programs exist in the West.

Funding-wise, and problem-solving wise, here's the takeaway from this example: the total sum of all possible restoration and management actions in that basin had a price tag of $150,000,000. That's a dollar figure that partners could not muster, particularly when you consider that this subwatershed represents just 1.7% of the larger Columbia River Basin. However, the underlying data showed that implementing certain targeted actions on just 193 fields would remove 63% of the nitrogen runoff in the basin – and could be done for $24,000,000, or just 16% of the original basin estimate. Thus, the good news is, with advanced analytics to inform smart funding, we can get to a "fixed" basin, meaning it can meet the fishable-swimmable-drinkable standards of the Clean Water Act. This represents the difference between spending and solving. Of the billions of

dollars on the table today, we could all benefit from knowing what these will get us in terms of results.

Of the bills before you today, S. 4189 provides a good step forward on changing the funding status quo. This bill ensures that funding for multi-benefit watershed health projects goes to ones that are designed, implemented, and monitored to produce outcomes for watersheds. We believe this outcome-based funding approach will demonstrate that limited federal restoration dollars can be spent more effectively to produce greater results, and will serve as a model for other programs. Additionally, this approach will afford greater accountability and transparency in restoration funding. It will also drive further growth in the restoration technology field, as funding applicants compete in demonstrating that their proposed projects will produce the greatest benefits in order to obtain funding.

It is evident that Congress recognizes the critical and growing role that technology must serve in understanding our water supplies. For example, S. 4188 includes good starting points for incorporating information from emerging technologies to improve our understanding of climate change impacts on water. Leveraging additional technologies, such as machine-learning and advance restoration analytics, would further clarify climate impacts and how to best optimize federal effort in response. S. 4188 also includes important funding for watershed restoration. By incorporating actionable insights into funding decisions at a basin scale, we can understand actions, price tags, and outcomes in advance so that the most beneficial projects are funded on a coordinated and streamlined basis.

S.____ (Water-Energy Technology Demonstration and Deployment Act) also identifies the importance of data collection, modeling, and use of advanced data analytics for evaluating precipitation, runoff, and water resources at the regional level, as well as developing technology that improves management and infrastructure development. We believe this bill should be expanded to include development and technology to assist in watershed restoration and quantifying environmental metrics to more clearly understand the outcomes of these funding decisions.

S. 2718 includes important funding to support voluntary transactions to enhance stream flow for fish and wildlife, water quality, and freshwater ecosystems in western states. This funding is crucial to support species, watersheds, and even agriculture operations that are facing potential collapse under the weight of over-appropriated systems and climate change. We believe this funding could go even further and provide greater resiliency by incorporating technology-informed funding procedures to ensure that public dollars support projects that will provide the tangible, quantified outcomes that rural communities need.

In addition to environmental outcomes, tech-informed funding leads to increased jobs and agricultural profitability. Existing rural restoration projects have shown to generate up to 40 jobs per $1 million spent, with an additional local economic multiplier of 2.5x as the wages are spent in those communities. Projects that implement certain best management practices, such as

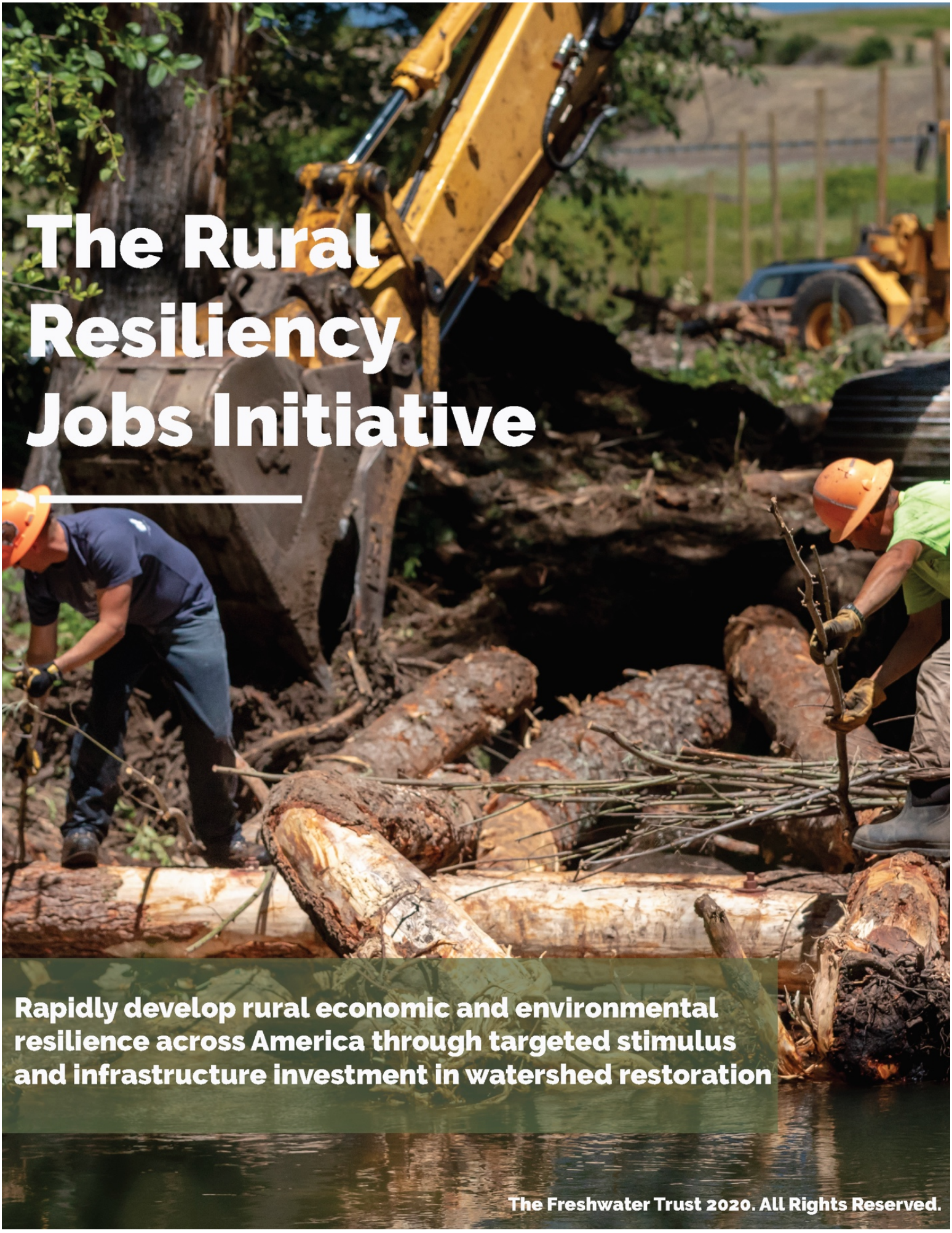
irrigation efficiency improvements, reduce soil loss and, in states with in-stream protection programs, increase farm profitability without expanding consumptive water use.

At this time, The Freshwater Trust believes S. 4188 and S. 4189 provide good steps forward towards advancing precision restoration work, and we would welcome the opportunity to work with the bill sponsors on further developing this legislation. We are all in this water crisis together, and we are willing to provide additional insight to committee members on these bills and serve as an additional resource to you based on our decades of experience. In the meantime, I have submitted a copy of our Rural Resiliency Jobs Initiative, which includes additional information about the opportunities that technology is providing now for watershed restoration, rural jobs, and pay for success mechanics.

Thank you for the opportunity to testify today. I am happy to answer any questions.

BIOGRAPHY: JOE S. WHITWORTH, PRESIDENT
THE FRESHWATER TRUST

Mr. Whitworth has been responsible for strategic direction of The Freshwater Trust since 2000, growing the organization tenfold during that time. He is focused on the next generation of conservation tools at the intersection of technology and finance to get results on the ground. In addition to formal advisory roles in B Corp, foundation and government settings, he is a patented inventor of "System, Method, and Apparatus for Collaborative Watershed Restoration Projects", author of the book "Quantified: Redefining Conservation for the Next Economy" published by Island Press and was founding board chair of the COUNCIL FOR RESPONSIBLE SPORT. Joe has also served as a guest lecturer at the Stanford Graduate School of Business and the Kellogg School of Management at Northwestern University. He holds a B.A. from Dartmouth College and a J.D. from Lewis & Clark College with an emphasis in natural resources and water law.



The Rural Resiliency Jobs Initiative

Rapidly develop rural economic and environmental resilience across America through targeted stimulus and infrastructure investment in watershed restoration

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THE RURAL RESILIENCY JOBS INITIATIVE
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OVERVIEW

Every day, the hardworking, "can do" spirit of America is on display in rural communities across America. Whether on farms, in small shops, in factories, in schools, or elsewhere, rural citizens are dedicated to providing for their families, their communities, and their nation. Rural America has always played a critical, yet often unseen, role in our everyday lives, whether we live in the country's heartland or on her coasts. America is often characterized by rural landscapes – farms, ranches, small towns, flowing rivers and open spaces. Most of the food supply for the entire country is grown here. Our most beautiful and critical natural resources, such as rivers and streams, run through it.

Among those that live here, there is a deep recognition of the importance of effective stewardship of rural lands and waters so that a cherished way of life can be preserved for generations. To that end, partnerships involving various levels of government – notably federal, state and local agencies along with private entities of all types and sizes – have worked together for many years to address the needs and opportunities associated with environmental conservation across the nation in general, and specifically in rural areas.

And there have been notable successes. However, with those successes, there has been a recognition that the process by which federal programs and funding focused on environmental improvements has often failed to achieve the intended goals. This can be attributed to the cumbersome and inefficient process associated with distributing the federal funding associated with natural resource conservation – from the application process, to lack of performance metrics, to a lack of coordination among agencies both at the career and political level. The result has yielded lost opportunities to fully achieve agency goals; hindered or failed to achieve "on the ground" results with private sector partners; and regrettably wasted large amounts of taxpayer dollars.

Rural America's economic fortune has often been directly dependent on fluctuating farm prices, local jobs, weather and international markets. As our cities and suburbs benefited from the last economic revival, some of our rural communities didn't fare so well.

Today, there is a pent-up desire among practitioners and policy makers to address environmental stewardship in rural America in a more innovative, timely, cost-effective, and outcome-based manner. This desire can fill a vital, current need that existed even before the onset of the pandemic: rapid job creation in rural areas. A better 21st century for rural communities will require a 21st century approach – and the need for improved employment and resiliency has never been greater. To address this need, The Freshwater Trust has

developed a **Rural Resiliency Jobs Initiative (RRJI)** that uses technology to remove barriers, leading to rapidly creating large economic and environmental improvements in rural communities. This memo outlines key technology components, opportunities for public-private funding, and a pathway to results.

EXECUTIVE SUMMARY

The Rural Resiliency Jobs Initiative brings the best of the private sector to rural communities and stretches federal funds further, with measurable results to accelerate jobs and add resilience to local economies.

Building on the proven elements of a decade of focused collaborative innovation, this Initiative seeks to integrate a data-driven, basin-scale approach to address excess nutrients and temperature and drought/flood resiliency in key tributaries to secure long-term health for the nation's watersheds and rural economies. Catalyzed by a group of dedicated and experienced problem-solvers, this effort will engage partners ranging from federal, state, and local levels as well as public and private funders seeking both environmental and economic gains. This effort will coordinate, prioritize, and quantify economic and environmental results. The undertaking will center on outcomes, not effort.

KEY ELEMENTS INCLUDE:

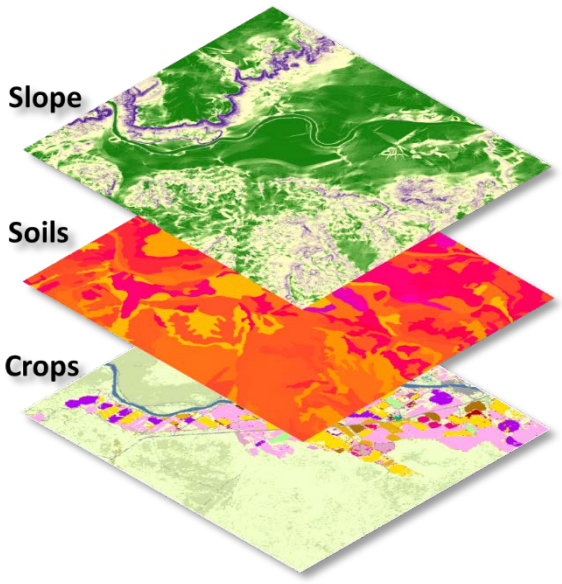
- **ADVANCE BASIN ASSESSMENTS + ACTIONABLE TOOLS:** Linking approved agency models, publicly available information, and machine learning, analytics can sort millions of acres in a basin to find the on-farm actions with greatest environmental benefit for the least cost. Local action flows from there.
- **FINANCING:** Funding is important, but the key to outcome-based success is deploying funding in a streamlined, timely way across programs to achieve more effective, measurable outcomes. This requires blending public dollars into a seamless, multifaceted funding stream that allows rural America to utilize dollars immediately in a way that undertakes quality on-farm projects with known environmental benefits that leverage existing supply chains and accelerate results. These projects should be tiered to Basin Assessments to ensure value and efficiency.
- **LEVERAGE FEDERAL BUYING POWER:** Utilizing available funding and significant credit standing, public agencies have the ability to play a partnership role in incentivizing private investment in rural communities nationwide and standardizing environmental markets. As an example, agencies could serve as a buyer of outcomes at a known price, or as a "guarantor," by signaling ability and intent to buy credits at a certain price if other buyers fail to materialize.

WHO WE ARE

The Freshwater Trust (TFT) builds tools that chop thorny legacy problems down to a solvable size. With 35+ years of technology-driven, watershed-scale restoration expertise, TFT has a proven track record of working collaboratively with rural landowners, regulated entities, governments, and businesses to build, measure, and track optimized solutions in pursuit of specific targets that "fix" rivers. TFT's growing portfolio of work currently spans Oregon, Idaho, California, Washington, Colorado and Iowa, and ranges from on-the-ground projects such as planting streamside vegetation to analytical work such as environmental market design. Further details about our organization and work can be found below in Appendix B.

PRECISION ANALYTICS TO PRIORITIZE BEST OUTCOMES

The RRJI will use analytical technology to identify projects that yield the most cost-effective environmental outcomes, and assist agencies in their effort to focus limited funds on prioritized projects in pursuit of achieving their statutory and programmatic mandates. TFT's current work has shown that this technology is critical in ensuring restoration funding is focused and dollars are used effectively. Specifically, TFT proposes a three-step prioritization approach in the RRJI, based on how we manage our current work:



1. Integrating established federal government models and data with satellite imagery, as well as machine-learning technology to remotely survey and assess a watershed and identify specific conservation practices that could be implemented at the field level.
2. From the group of feasible practices, identify optimal combinations of practices that would produce the best ecological and economic options on the ground, as well as measuring cost and desired outcomes (e.g., employment generation).
3. Run analytical scenarios to identify the most efficient combination of regional investments for achieving watershed-level objectives, such as achieving a nutrient reduction target.

With the RRJI, federal funding agencies would identify the highest priority projects with information compiled on an automated data platform that identifies priority projects and produces the best outcomes. When a qualified project is located, the funding should be allocated and disbursed appropriately to the project, all the while ensuring results.

A coordinated federal approach will assist in the recovery and expansion of local jobs and existing supply chains, such as irrigation equipment installers, plant nurseries, and general contractors. Through RRJI's outcomes-based approach, federal funding could be used to rapidly invest in the nation's rural and outdoor natural infrastructure restoration economy, while also improving rural water resiliency by decreasing risk of flood, drought, forest fires, and drinking water quality issues.

THE INVESTMENT

Based on our experience, rural job creation and needed conservation progress will be driven most effectively through targeted investments and modifications to existing federal programs.

In particular, the Administration and Congress have an opportunity to make a significant investment in the future of our nation's rural communities and watersheds. This investment would yield a broad array of benefits, both immediate and long-term. Existing projects have been shown to generate up to 40 jobs per $1 million spent, with up to a 2.5x local economic multiplier. The vast majority of those jobs take place in outdoor settings and are at low risk of airborne virus transmission. The RRJI would benefit most directly from federal investments that catalyze and coordinate private monies to fund prioritized restoration projects throughout rural America. TFT envisions distribution of this funding through existing federal programs, but with vastly streamlined disbursement mechanisms. Rural communities can no longer endure the long, technical, uncertain funding application cycles associated with current programs. Instead, the RRJI proposes funds be deployed quickly, with a simplified programmatic structure meant to encourage local private sector entities to see the value in the work, hire staff, and achieve the needed environmental outcomes. This is the standard by which our nation can rapidly recover its rural economic vitality, in the places that need it most and are long overdue for investment.

The RRJI envisions investments and modifications to existing federal programs to fund rural job creation through needed conservation and watershed restoration projects. Given the RRJI's dual benefits to both unemployment and water system resiliency, it may be possible and appropriate to include these investments in upcoming stimulus or infrastructure spending bills – but even within existing agency funds and authorities there is strong potential for impactful regional pilot programs. Funding combined with this modified approach would be distributed across the appropriate "Water Subcabinet" agency programs. To catalyze investment at the scale needed to address unemployment and nonpoint source pollution effectively in tandem, it's vital that agencies streamline, prioritize, leverage, and coordinate funding in ways that improve upon existing programs.[1] Traditionally, these funds are disbursed through a process-

[1] Per the Government Accountability Office, "using data—such as information collected by performance measures and findings from program evaluations and research studies—to drive decision making can help federal agencies improve program implementation, identify and correct

heavy, technical, competitive, and lengthy grant or loan programs that often do not prioritize funding based on cost effectiveness or the maximization of environmental benefits.

Key programs for RRJI deployment may include the **Regional Conservation Partnership Program** (RCPP); the **Clean Water State Revolving Fund** (CWSRF); the **Water Infrastructure Finance and Innovation Act** (WIFIA); **WaterSMART** and other programs as deemed appropriate. Program investments should utilize best available data and technology to identify the specific projects that will deliver the highest measurable improvements to water quality and quantity for the least cost.[2] With all implicated agencies using platform-based, real-time watershed analytics to identify projects that generate needed resiliency outcomes, rapid increases in employment and environmental resiliency are attainable.

Streamlining Deployment of Federal Program Investments

The ongoing COVID-19 crisis brings urgency to the need to amplify the way funding moves to rural communities and projects. Critical to the success of the RRJI is the distribution of federal dollars in a manner that improves operability and execution of programs through enhanced delivery channels, processes, timelines, and clear outcome-based guidelines so as to catalyze coordinated private sector action in response. The US Government Accounting Office (GAO) key issues summary for Data-Driven Decision Making explicitly supports this intent, noting that federal agencies can and should consider using evidence-based tools to improve program effectiveness and foster innovation.

Today's programs involve multi-year application cycles, and the bureaucracy associated with each one makes it nearly impossible to utilize these funding sources together in a leveraged way that can quickly create jobs and impact rural economies. In short, **the timing, prioritization, and certainty mismatches make it nearly impossible to leverage America's largest environmental spending sources in a meaningful way.**

For example, the USDA spends $6.4 billion per year through Natural Resources Conservation Service (NRCS) and Farm Service Agency (FSA) conservation programs.[3] However, recent analysis found that only 36% of NRCS EQIP program applications were funded.[4] Like USDA, the EPA currently has $2.82 billion per year in available CWSRF and Drinking Water State Revolving Fund funds available nationwide,[5] but there are a billion-plus dollars of appropriated SRF funds

problems, and make other management decisions." U.S. Gov't Accountability Office, Data Driven Decision Making, https://www.gao.gov/key_issues/data-driven_decision_making/issue_summary#t=0 (last visited May 22, 2020).

[2] These technologies should also improve efficiency for your agencies by reducing grant application paperwork, streamlining the funding approval process, and systematizing project tracking and reporting.

[3] In FY 2019, NRCS had $4.37 billion available for conservation programs. In FY 2019, FSA had $2.09 billion available for conservation programs. U.S. DEP'T OF AGRIC., FY 2019 BUDGET SUMMARY (2019), *available at* www.usda.gov/sites/default/files/documents/usda-fy19-budget-summary.pdf.

[4] UNION OF CONCERNED SCIENTISTS, SUBSIDIZING WASTE: HOW INEFFICIENT U.S. FARM POLICY COSTS TAXPAYERS, BUSINESSES, AND FARMERS BILLIONS 8 (Aug. 4, 2016), *available at* www.ucsusa.org/resources/subsidizing-waste#ucs-report-downloads.

[5] U.S. ENVTL. PROT. AGENCY, FY 2019 CWSRF FINAL ALLOTMENTS (Apr. 2019), *available at* www.epa.gov/cwsrf/clean-water-state-revolving-fund-cwsrf-allotments-federal-funds-states. Memorandum from Anita M. Thompkins, Director Envtl. Prot. Agency, Office of Groundwater & Drinking Water,

that remain unspent, each year.[6] Meanwhile, approximately $20B is spent each year on Clean Water Act compliance by government and industry.[7] This is a lot of money, but most of the programs can't coordinate with each other, resulting in substantial funding, leverage and outcomes left on the table each year.

To improve the efficiency of federal funding, TFT sees a scenario where, much like the Payroll Protection Program forgivable loans established by the CARES Act—which vastly simplified an existing program, removed most eligibility barriers, and relied on private banks to move funds on the basis of a federal guarantee—the RRJI would require similar deployment innovation. So long as projects fit the general program constraints, and produce high priority environmental outcomes that can be measured or calculated in uniform ways, funds should be able to flow in the form of forgivable loans, direct subsidies to supply chain providers, and other similarly streamlined mechanics.

In the case of EPA, under a RRJI model, SRF programs could be restructured to offer forgivable loans for capital-intensive natural infrastructure projects, such as irrigation upgrades and wetland restoration, so they are available to the borrowers whose activity is needed to catalyze rural economic recovery – but who are not typically eligible borrowers for such loans. For example, while SRF funds are intended to support nonpoint source projects, and EPA has written extensively on how to move funds to non-traditional borrowers, in practice most funds still flow to a limited to a narrow band of municipal borrowers.[8]

With respect to EQIP, instead of requiring 2/3 of applicants to pour time and energy into a long, laborious, and potentially unsuccessful process that also requires them to obtain match funding, TFT envisions a scenario with twice as much funding for these programs, paired with disbursement mechanisms to reduce burdens on applicants by providing upfront funding for all eligible prioritized revegetation projects. Farm Bill legislation also funds the Regional Conservation Partnership Program (RCPP) at $300 million/year.[9] This program explicitly calls out the need to make watershed-scale investments and leverage federal investments with private financial mechanisms, including via performance-based payments to producers.[10] RCPP

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to DWSRF Branch Chiefs & Reg'l Coordinators, FY 2019 DWSRF Allotment Availability (Apr. 22, 2019), www.epa.gov/sites/production/files/2019-04/documents/fy_2019_dwsrf_allotment_availability.pdf.

[6] U.S. GOV'T ACCOUNTABILITY OFFICE, STATE REVOLVING FUNDS: IMPROVED FINANCIAL INDICATORS COULD STRENGTHEN EPA OVERSIGHT, GAO-15-567, 27 (Aug. 2015), www.gao.gov/assets/680/671855.pdf ($1.1B of SRF funds remained idle in 2015). Updated data on idle SRF funds could not be located.

[7] David Keiser & Joseph Shapiro, *Consequences of the Clean Water Act and the Demand for Water Quality*, 134 Q.J. Econ. 349–396 (Feb. 2019), https://academic.oup.com/qje/article/134/1/349/5092609.

[8] EPA has noted that the SRF "program's flexibility and broad range of funding authorities enable states to target CWSRF funds to their specific water quality priorities[, but d]espite this flexibility, the majority of CWSRF funding is used for traditional wastewater infrastructure projects, while funding for nontraditional projects is an area that is still being developed and explored." U.S. ENVTL. PROT. AGENCY, FINANCING OPTIONS FOR NONTRADITIONAL ELIGIBILITIES IN THE CLEAN WATER STATE REVOLVING FUND PROGRAMS, 830B17003, 1 (2017), www.epa.gov/sites/production/files/2017-05/documents/financing_options_for_nontraditional_eligibilities_final.pdf.

[9] 16 U.S.C. § 3871d (2018) (as modified by Section 2705 of the 2018 Farm Bill).

[10] Statutory amendments from the 2018 Farm Bill now allow USDA to "achieve conservation benefits on a regional or watershed scale, such as—(i) infrastructure investments relating to agricultural or nonindustrial private forest production that would (I) benefit multiple producers; and (II) address natural resource concerns such as drought, wildfire, or water quality impairment on the land covered by the project; (ii) projects addressing natural resources concerns in coordination with producers, including the development and implementation of watershed, habitat, or

funds could therefore be used to subsidize irrigation conversations at the watershed scale, and integrate more easily to complement large-scale watershed compliance programs.

The WIFIA program is likewise well-positioned to provide low-interest, long-term, and (potentially) forgivable debt to local water agency infrastructure partnerships—which could help cash-strapped local governments pay for needed wastewater and drinking water investments throughout watersheds, without further taxing their economically compromised ratepayers.

The Bureau of Reclamation's WaterSMART programs also serve as a model with cost-share grants for irrigation upgrades that can be matched with other non-federal programs and funding, particularly if match requirements can be reduced in response to dwindling public funds. Larger grants and more flexibility regarding partnerships with conservation groups and others in the private sector could provide additional funding opportunities for natural infrastructure restoration projects that can provide benefits to both irrigation and the environment. WaterSMART grants could also provide funding toward the development and ongoing operations of a national system of analytics, funds tracking, project management tools, and mobile applications necessary to ensure that all local actors who engage in these programs generate the intended rural water resiliency benefits.

IMPLEMENTATION: SPEND SMARTLY & CATALYZE THE PRIVATE SECTOR

The use of technology is key to ensuring that the highest impact projects are prioritized and targeted. It can also assist in ensuring that finite funds are not unnecessarily spent. For example, TFT analyzed a key river in central Oregon and determined that, of the 4,070 agricultural fields assessed, only 1,500 were identified through the use of analytics technology as having a feasible conservation action, the majority being conversion from flood to center pivot irrigation.

However, of the $106M in possible irrigation upgrade projects, projects representing **35% of that overall price tag** could produce **75% of the overall potential sediment and phosphorus loading reductions**. If the right projects in that river are not prioritized based on their relative reduction-per-dollar efficiency, it would be possible to waste up to $70M **without achieving any additionally meaningful pollutant reductions**. It should be noted this is a relatively small watershed. Such wasteful spending, if extrapolated to watersheds across the U.S., would result in hundreds of billions of dollars wasted.

other area restoration plans; (iii) projects that use innovative approaches to leveraging the Federal investment in conservation with private financial mechanisms, in conjunction with agricultural production or forest resource management, such as (I) the provision of performance-based payments to producers; and (II) support for an environmental market...." 16 U.S.C. § 3871c(d)(3)(A).

If properly supported by the Water Subcabinet agencies, the profit efficiencies highlighted by this example should galvanize the speed and scale of private investment. Using a "Pay-for-Success" framing, built from robust analytics, federal funders could knowledgeably set a price that they will pay for an environmental benefit – signaling to local, regional and national groups that top-priority projects will generate returns on investment and stimulating the deployment of private labor and capital in a cohesive and impactful manner. The various modifications to existing funding programs discussed in the Investment section of this document are all operational methods to create "Pay for Success"[11] mechanisms.

An example of aligned funding towards a holistic watershed "fix" is shown in Figure 1 below, as a demonstration of how different types of funds can be coordinated and stacked towards effective goal achievement and leverage[12].

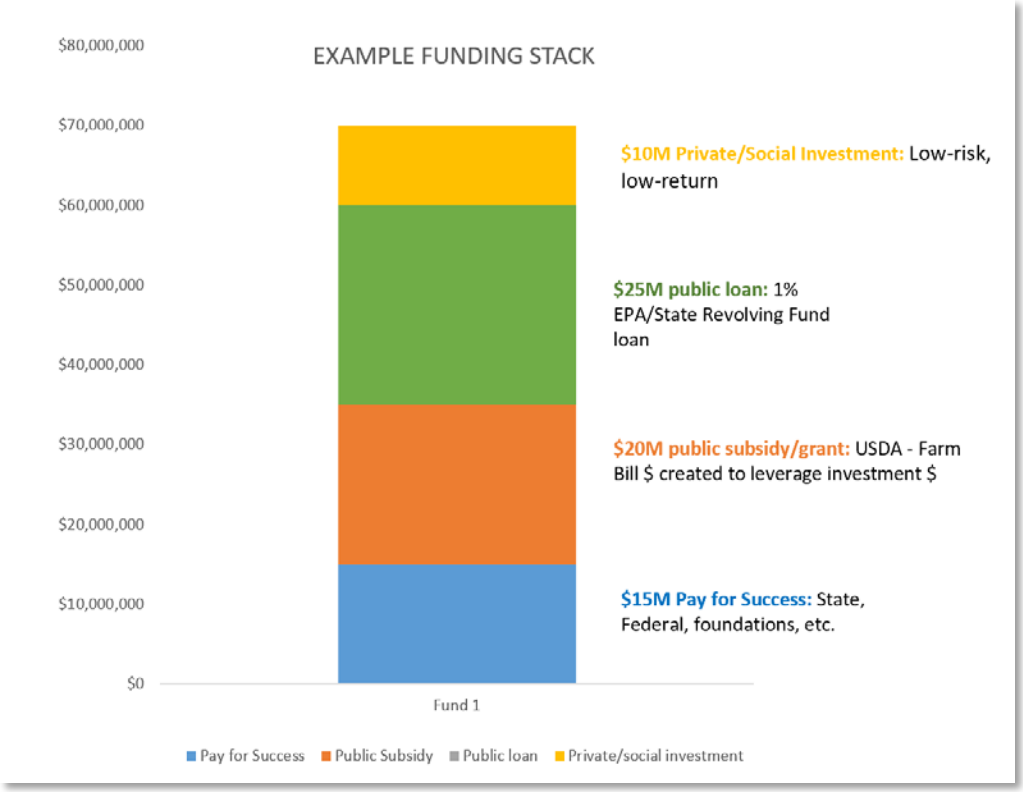

Figure 1 Example Funding Stack

Something like this pricing structure exists in some areas, via Water Quality Trading programs where entities regulated by the Clean Water Act (such as wastewater treatment plants) are allowed to purchase credits in their watershed to offset the impacts of their discharge. These

[11] Per the Government Accountability Office, "Pay for Success (PFS) … is a new contracting mechanism to fund prevention programs, where investors provide capital to implement a social service." U.S. GOV'T ACCOUNTABILITY OFFICE, PAY FOR SUCCESS: COLLABORATION AMONG FEDERAL AGENCIES WOULD BE HELPFUL AS GOVERNMENTS EXPLORE NEW FINANCING MECHANISMS, GAO-15-646 (Sept. 2015), www.gao.gov/assets/680/672363.pdf.

[12] The Freshwater Trust (TFT) is the developer and owner of a project management and funds tracking platform named StreamBank®, which is a patent-protected invention (U.S. Patent No. 8,036,909). StreamBank® is also a registered TFT trademark.

compliance “buyers” must maximize pollutant reductions in a watershed for the least cost on a specific timeline. However, outside of the compliance context, most programs are still farmer support-driven, rather than runoff-reduction-driven, and it often takes a long period of time to select projects for funding. The majority of the work and the additional burden of uncertainty is placed on the farmers willing and able to pursue the funds.

To increase speed of project implementation, as seen in the recent disbursement of the Paycheck Protection Program (PPP) through a variety of private-sector lenders (as noted above), agencies could also catalyze the existing agricultural supply chain to manage “deal flow” (or funding disbursement) of projects by offering local companies and coordinators standardized financing and incentives for securing those prioritized projects.[13]

Figure 2 below demonstrates how analytical and project management tools, investors, implementation companies and private landowners would be engaged by coordinated federal investments (for simplicity named here the “Rural Water Resilience Fund,” but in practice, likely a blend of existing funding programs with modified disbursement mechanisms), which in turn builds more data to drive towards better outcomes. The benefits of each project would be move through a ‘quantified clearinghouse’ – ie a place or platform where the outcomes of a project are assessed and then sold to (or funded by) a federal agency, and then the data from each project as it’s implemented and maintained flows back into improving the analytics and project management tools. In sum: projects are prioritized by the analytics, coordinated/contracted/implemented by a blend of large and small firms, quantified benefits are then generated and funded via the clearinghouse, and data flows back into improving future implementation.

[13] The PPP has been criticized for resulting in loans flowing to those entities with the strongest existing financial relationships with banks. In contrast, because RRJI funds would be based on reduction potential, there would be no such potential inequity baked into catalyzing the private sector to help move funds to the ground.

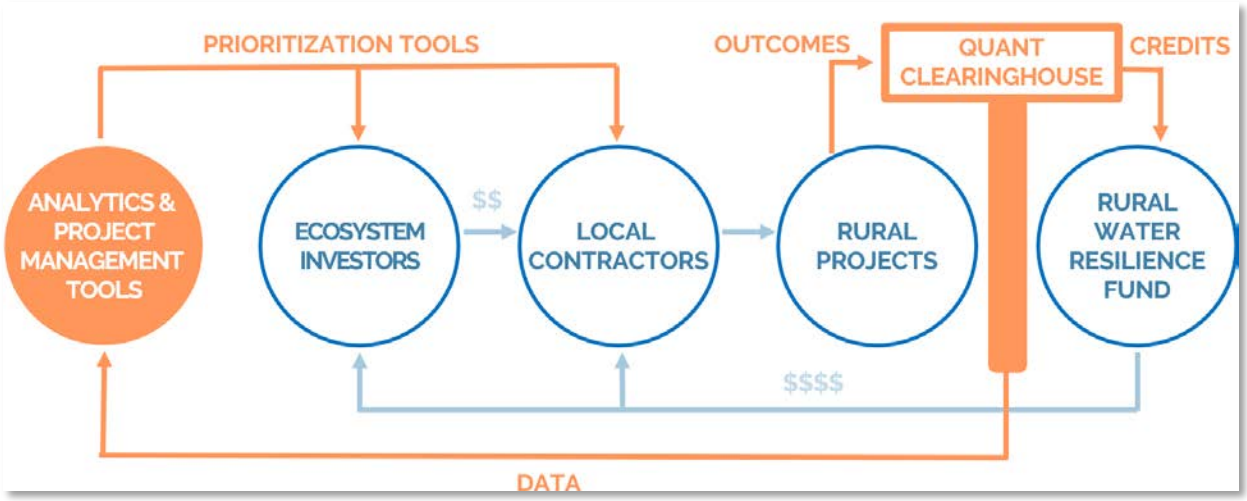

Figure 2: Coordinated Implementation Diagram

MONITORING: TRACK IT ALL ON A SINGLE DASHBOARD

The RRJI envisions that investments be prioritized based on uniform environmental impact metrics. With a single web interface used across all of the agencies, it will be possible to track project implementation and environmental benefits against watershed targets on a single dashboard. This tool could help immensely in implementing the paradigm shift from the traditional government funding programs to outcome-prioritized programs across the rural landscape, and can be both adaptable and extremely detailed as seen in Figure 3 below.

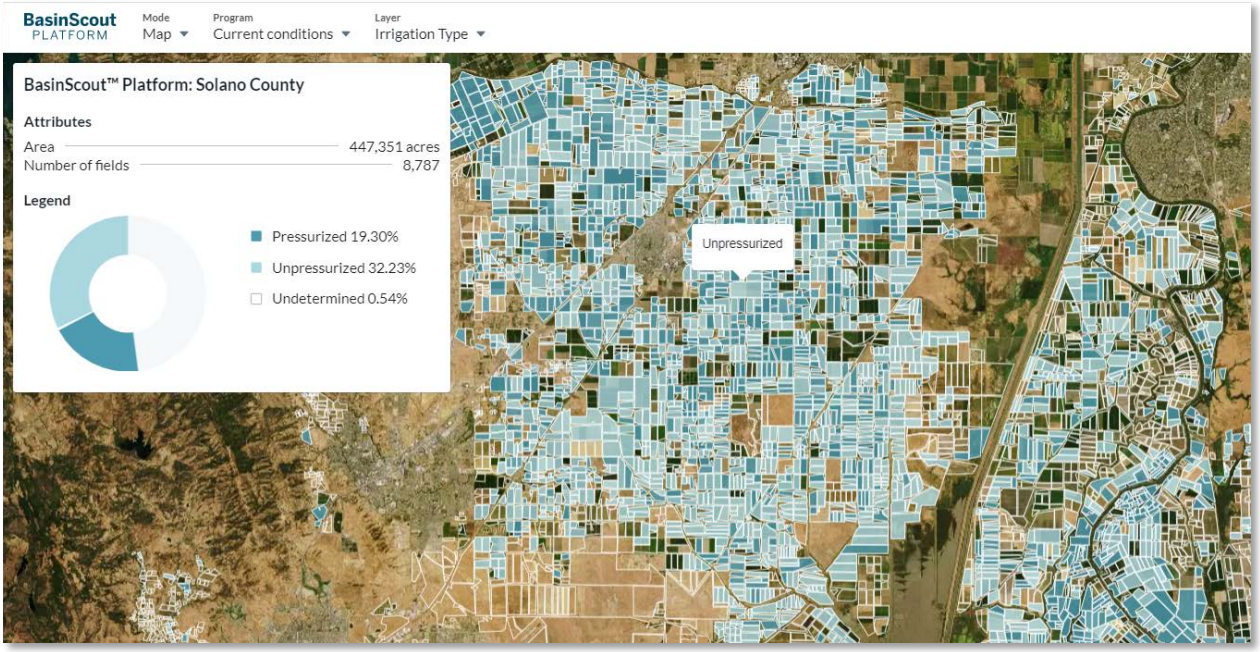

Figure 3: Dashboard Example – The BasinsScout Platform view of irrigated agriculture in Solano County, CA

CONCLUSION & POTENTIAL ACTION OPTIONS

With focused federal investment, the RRJI can create strong incentives for creation of local jobs, improve farm profitability, and move environmental markets toward scale. These new mechanics fit into ongoing direct and indirect efforts by policy makers to positively respond to the fallout from the COVID-19 pandemic and lay the groundwork for rural resiliency. This proposal will ensure rural economies are not left out of the recovery and that agencies can invest in meaningful, rapid, and collaborative results. **We appreciate your consideration.**

Potential Next Steps:

- Test individual RRJI elements/mechanics in a needed programmatic area of work. Use of robust basin analytics could help move to a Pay for Success approach most rapidly and apply most broadly across programs.
- As a pilot project, integrate RRJI elements in a targeted set of watersheds (see Appendix A for regions that could serve as appropriate demonstrations) on an expedited basis to drive jobs and local economic benefit.
    a. Advance watershed assessments: Dedicate a portion of watershed scale analytics to understand benefits and costs of precise actions at a watershed scale to focus federal funds on projects with significant measurable results.
    b. Tightly coordinate known funding/financing already slated for spending, using some combinations of mechanisms described above.
    c. Pay for Success in practice: Use existing authorities to utilize as a funding source or sources to serve as a 'Backup Buyer' or 'Guarantor' of outcomes, to demonstrate how private sector responds.

APPENDIX A: CASE STUDIES

REDUCING SEDIMENT AND NUTRIENT LOADING IN THE SNAKE RIVER BASIN, IDAHO

According to the EPA, excess nutrient and sediment loss from irrigated agricultural lands is a major impact on groundwater quality, and the leading source of water quality impacts to surface water nationally. This runoff leads to high nitrate levels that affect rural drinking water supplies, significantly increased wastewater treatment costs, methylmercury production in downstream reservoirs, and other impacts on human health and ecosystems.

Excess nutrient and sediment load from irrigated agriculture is the leading source of water quality impairments in Idaho's Snake River Basin. Drinking water wells in small rural communities are contaminated with nitrates;[14] methylmercury production in downstream reservoirs has resulted in widespread fish consumption advisories; treatment costs for CWA compliance is becoming unbearable for cities and industry—creating tension with agriculture; and as conditions worsen, advocates are suing and the threat of new regulation is growing. In Idaho, these excess loads flow downstream into Idaho Power Company's (IPC) reservoirs. IPC has already begun implementing its $350M Snake River Stewardship Plan (SRSP) required by Clean Water Act, and will be developing a mercury mitigation plan.

With coordinated funding, six practices could be applied in row crop and dairy-intensive areas in the mid-Snake River Basin in eastern Oregon and western Idaho to solve these water quality problems, including:

1. Converting flood irrigation to sprinkler or drip irrigation;
2. Installing end-of-drain passive wetlands with activated substrate to filter dissolved phosphorus and other pollutants;
3. Using treatment technology from point sources to avoid discharge hot spots;
4. Installing edge-of-field and return drain sediment detention basins;
5. Reducing tillage, performing cover cropping, or both practices; and
6. Operating manure management systems.

The scale and cost of addressing these issues is so large that any realistic solution will require pooling multiple sources of funding, focused funding on actions with the highest reduction/cost efficiency that make financial sense for producers, and making adoption easy for producers. With a RRJI-driven dynamic, watershed-level plan based on advanced analytics, it will be

[14] See ID. DEP'T OF ENVTL. QUALITY, NITRATE IN GROUND WATER (2019), www.deq.idaho.gov/water-quality/ground-water/nitrate/. Idaho has assembled a statewide list of areas with degraded groundwater quality and ranked them based on severity of degradation. In 2014, 28 of the 34 hot spots identified by the state were communities of less than 10,000. ID. DEP'T OF ENVTL. QUALITY, WATER QUALITY DIV., 2014 NITRATE PRIORITY AREA DELINEATION & RANKING PROCESS (2014), www.deq.idaho.gov/media/1117845/nitrate-priority-area-delineation-ranking-2014.pdf.

possible to identify the right mix of these projects to invest in and track overall progress. For example, the basin's 4.7 million irrigable acres comprise a large pool of potential on-farm projects that would reduce runoff – a "supply" of benefits that require coordination, labor and capital to generate. Initially, the RRJI could focus on irrigation improvements because it is one of the few conservation practices that both increases productivity and value for producers and also efficiently reduces nutrient loss and sediment loads. This practice is supported by an existing profit-motivated supply chain already aimed at securing these conversions, so it could be easily catalyzed by the streamlined deployment mechanisms described above.

If properly coordinated, RRJI projects could also leverage the enormous amount of CWA compliance spending in the region. In partnership with TFT, Idaho Power Company (IPC) recently developed the $350 million SRSP, which was approved by Oregon and Idaho regulators in 2019. The SRSP is a Clean Water Act watershed compliance program that will pay for: (1) replanting key upstream tributaries; (2) deepening the main river channel and enhancing natural floodplains to improve water quality, velocity and fish habitat; and (3) converting land from flood to overhead irrigation in order to reduce sediment loading in the Grand View area of the Snake River. Through the third aspect of the SRSP, IPC has already successfully converted more than 1,700 private acres from gravity irrigation to overhead sprinklers. The company is poised to convert roughly 8,000 more acres to achieve its water quality objectives. IPC's work in the basin already supports an existing supply chain of materials, with experienced conservation and agricultural professionals that can quickly train new workers. Over the next 40 years, the program is projected to create 14,000 new jobs. In addition, a cluster of Boise-area municipalities hold nutrient National Pollutant Discharge Elimination System (NPDES) permit obligations that will be very expensive to meet on a dollar-per-reduction basis. One city recently had to approve a $165M wastewater bond to pay for nutrient treatment.

With RRJI deployment, municipalities could fund treatment technology in combination with less-costly, end-of-drain activated wetlands that remove dissolved phosphorus from the system and remaining sediment and phosphorus farm runoff. Agencies could fund more of the on-farm practices needed to reduce sediment and nutrient loading, as well as manure management. Using BasinScout technology, agencies would be able to identify the optimum mix of projects within that 4.7-million-acre geography to achieve overall environmental objectives. Agencies would avoid spending taxpayer dollars on projects that would not contribute to meeting those objectives, or that could be spent more cost effectively on a different project type. RCPP and SRF funding methods could be refined to provide up-front financial support for high-impact projects, and potentially forgivable loans for the most critical and capital-intensive. With clear funding direction and coordination from funding agencies, private entities would speedily invest in these projects. Together, private and public funding would further the impact of federal government investment, and the quantified benefit framework would connect it to other funding sources in the watershed to enable projects to occur more quickly. Like the TMDL

program originally envisioned, such coordinated project selection and spending could result in watershed-wide progress toward achieving water quality standards.

RUNOFF REDUCTIONS AND WATER CONSERVATION IN THE CROOKED RIVER, OREGON

In recent years, temperature and algae issues in the Lower Deschutes River have fueled concerns from recreational users, regulators, and community members alike. The water quality impacts are attributed in part to a mixing tower and fish passage facility on Lake Billy Chinook (the Lake) operated by Portland General Electric (PGE) that was installed as part of the relicensing process for the Pelton-Round Butte hydroelectric project. Under the CWA, the outfall from dams is expected to as closely as possible mimic the flow volume and water quality of the river prior to the installation of the dam. The tower at the Lake was designed to adjust the mix of water to meet the modeled temperature conditions. However, since the mixing tower began operating in 2010, the colder, cleaner and heavier water from the bottom of the Lake that historically fed the Lower Deschutes is now mixed with water from the Lake's surface. In addition to being warmer, the surface water contains excess nitrogen, phosphorus and other chemicals carried to the Lake from farms and livestock grazing in the upstream Crooked, Metolius, and Upper Deschutes Rivers. Scientists and local stakeholders agree that the Crooked River is contributing the highest nutrient load to the Lake, and is a primary driver of the water quality issues being experienced in the Lower Deschutes. This issue is consistent with national trends. Without immediate and targeted action, water quality in the Lower Deschutes will continue to decline, threatening one of the most important fisheries in Oregon and imperiling one of Oregon's most iconic rivers. Improving land and water management practices on properties in the Crooked River basin could significantly reduce these impacts.

In 2019, TFT used its BasinScout Analytics platform to assess cropping, irrigation, and runoff in the Crooked River Basin in central Oregon. Of the 4,070 fields TFT analyzed, roughly 1,500 were identified as having a feasible conservation action, with the most impactful activity on almost all fields being a conversion from flood to center pivot irrigation. Other modeled activities included livestock exclusion fencing, riparian buffer implementation, and addition of drip irrigation. Digging deeper into the outputs of TFT's analysis, TFT found that out of the $106M in feasible irrigation upgrade projects, projects representing 35% of that overall price tag could produce 75% of the potential sediment and phosphorus loading reductions present in the watershed. See TFT's Crooked River Basin Explorer webtool here for more insight. This means that unless irrigation upgrades in the Crooked River are prioritized based on their cost-per-reduction efficiency, it would be possible to over-spend by up to $70M without achieving any additionally meaningful pollutant reductions in the basin. By prioritizing projects, money could be repurposed to other large capital projects—namely, end of drain activated wetlands that would filter out excess sediments and break down excess nutrients—and water delivery system modernizations such as those already occurring in the basin.[15]

[15] The Deschutes River Conservancy (DRC), Farmers Conservation Alliance, USDA Natural Resources Conservation Service, and the Bureau of Reclamation are working with Ochoco Irrigation District to implement an irrigation modernization project that directly benefits the basin as a

TFT sees clear potential to deploy a $50-$70M funding stack of public and private capital to implement prioritized actions such as pressurized irrigation and end-of-drain activated wetlands, and adaptively manage towards achieving water quality targets by 2029. Without the development of an integrated, right-sized, coordinated funding stack across all of these project types, existing conditions that keep the Crooked and Deschutes Rivers degraded are expected to continue. Individual landowners will continue to have difficulty accessing grants and loans even when an upgrade makes fiscal sense, government will be unable to solve complex basin-scale environmental problems, and the poor track record of uncoordinated conservation efforts to fix systemic issues will continue.

TRUCKEE RIVER IRRIGATION MODERNIZATION AND IMPROVEMENT, CALIFORNIA

Modernizing irrigation district water delivery systems can create significant benefits for agriculture, the community and the environment. 80% of the water in the Western United States moves through mainstem and on-farm irrigation infrastructure that was constructed over 100 years ago. Modernizing these systems is one of the best ways we can increase food and job security, and the resilience of our Western communities.

In recent years, the Farmers Conservation Alliance (FCA) has developed the Irrigation Modernization Program (IMP). Through the IMP, FCA partners with irrigation districts to develop a comprehensive system improvement plan and modernization strategy to determine the highest and best use of investment to strengthen agricultural and environmental resilience. This program identifies key public-private funding opportunities to implement projects.

Though FCA has been successful in leveraging federal and state programs and private investment to support modernization, there are a number of federal barriers that slow down the pace at which projects can be installed. For example, a "Bridging the Headgates" memorandum of understanding allowed for streamlined engineering projects, but multiple agencies still need to review projects before initiation. Streamlining federal programs will be essential to increasing the pace and scale at which irrigation infrastructure can be modernized throughout the Western United States, and by using watershed analytics across regions that streamlining can focus investments to where the greatest environmental and economic outcomes are possible.

The Bureau of Reclamation (the Bureau) has been investing in irrigation modernization projects that increase agricultural resiliency and habitat connectivity along the Truckee River in Nevada. The Bureau currently is working with FCA to construct an innovative downstream fish screen at Derby Dam that will restore watershed connectivity and support fish movement along the

whole. The project will upgrade infrastructure for the district, reducing operations and maintenance costs and restoring natural flow to McKay Creek to support a habitat for a robust population of redband trout and a critical tributary for the reintroduction of summer steelhead above the Pelton Round Butte Dam. Mainline piping of regional irrigation systems will decrease overall costs of on-farm upgrades by increasing water pressure and improving delivered water quality.

Truckee River. This project will promote both the recovery of the federally threatened Lahontan Cutthroat Trout (LCT) as well as fishing and recreation opportunities in Nevada. In addition, Granite Construction estimates that this project alone has created approximately 130 direct jobs.

The Bureau also has hired FCA to collaborate with the Truckee Carson Irrigation District to develop a comprehensive system improvement plan. This system improvement plan will identify the highest and best use of investment in irrigation modernization projects to reduce operations and maintenance costs, and increase agricultural resilience, water quantity and water quality.

Opportunities also exist outside of mainline piping in the Truckee. The Truckee River Operating Agreement enables interested entities in the watershed to establish a 'California Environmental Credit Water' program whereby conserved water can be stored without charge for later release to maintain or enhance instream water quality and habitat. This can serve as the foundation for on-farm irrigation efficiencies as well as water rights transfers, especially if analytical tools are used to understand where the most effective actions exist. A holistic effort focused on all possible irrigation upgrades in the Truckee, as determined by robust analytics, would be timely and highly effective in creating more local jobs, agricultural productivity, regional resiliency and environmental strength. Many watersheds in California and Nevada are facing similar instream water quantity issues, so scaling and proving out effectiveness of these coordinated and prioritized activities in the Truckee would be highly transferrable.

RACCOON RIVER NUTRIENT REDUCTIONS, IOWA

The 'North Raccoon Partnership for Soil and Water Outcomes' was funded by RCPP in 2020 and is led by the Iowa Soybean Association (ISA). Together with 11 other partner organizations, ISA was awarded a 5-year USDA-NRCS RCPP grant to increase conservation adoption in North Raccoon River watershed.

Key project activities include 1) support for a network of conservation agronomists working in cooperation with crop input suppliers in the watershed, 2) enrollment of eligible farmers and landowners in conservation practice implementation agreements with NRCS, 3) quantification of the water quality outcomes resulting from conservation practice implementation.

Key outcomes of the project include streamlined technical assistance by connecting retail crop input suppliers with an embedded conservation agronomist. These agronomists will assist customers and staff to successfully implement in-field conservation projects. New practice implementation will result in an estimated 781,000 pounds of nitrogen loss reductions in water and 33,600 tons of reduced sediment loss. This work will also focus on the development of tools and technology to evaluate and monitor the outcomes of conservation practice implementation.

An adjacent Soil and Water Outcomes Fund project was funded by the Walton Foundation and seeks to expand the implementation of conservation practices on farms by offering performance-based payments tied to water quality and carbon sequestration outcomes. Funding from the RCPP grant will then be used to "purchase" these environmental outcomes from on-farm conservation practices. RCPP funding assistance for the purchase of outcomes is being combined with partner contributions from state government and two municipalities to create a pool of funds to fund verified nitrogen and phosphorus water quality improvements. Cargill, also a partner, will participate to purchase verified CO2e reductions resulting from the same conservation practices. This unique approach to stacking and monetizing the value of the multiple environmental outcomes produced from the same conservation practices results in cost-competitive pricing for funding partners, and attractive payments for participating farmers.

The goal of this project is to highlight the advantages of stacking environmental outcomes in a pay-for-performance, outcome-based transaction model in scaling the implementation of conservation adoption. In such transactions, the beneficiaries of the outcomes of conservation practices pay for the outcomes only after they have been achieved, rather than paying for the upfront cost of practice implementation. Pay-for-performance payments are only triggered once the water quality and CO2e outcomes have been verified by a third-party.

The objectives of the project are to complete pay-for-performance transactions on 100,000 acres in Iowa in 2021 and 2020. Additionally, the project will pilot 5,000 acres in two additional states. Enrolled farms will be implementing new conservation practices that are a higher standard of conservation than the current baseline of implementation.

These activities are highly aligned with the tenets of the RRJI, but further investment to analyze and understand where the most cost-effective actions are located would advance coordination of these and other agricultural incentive programs in the North Raccoon watershed. The ecology of this region of Iowa makes these initiatives highly transferrable to many other tile drainage-dominated farm regions in the Midwest.

CECIL COUNTY PAY FOR SUCCESS STREAM RESTORATION, MARYLAND

The Chesapeake Bay (the Bay) is home to one of the largest ongoing watershed restoration efforts in the world, with stream restoration and protection projects occurring across the 64,000 square mile watershed. Nitrogen, phosphorous, and sediment deposits into the Chesapeake Bay's rivers and streams are the leading cause of poor water quality and habitat health in the Bay. In 2010, the EPA led efforts to set limits on the amount of nitrogen, phosphorus, and sediment that can enter the Bay and its tidal rivers to meet water quality goals. While significant improvements have been made in wastewater treatment facilities, a point-source of nitrogen pollution in the Bay, nonetheless agriculture remains a top source of

nutrient pollution. In the Chesapeake watershed, agricultural practice improvements are generally a more cost-effective tool to reduce nutrient runoff than the practices used to address stormwater pollution in urban areas.

Public funding supporting the Chesapeake Bay and watershed restoration, including federal, state, and local funding, has amounted to tens of billions of dollars over forty years. However, public funding alone will not be sufficient to solving the Bay's challenges. Private capital deployed through ecosystem market opportunities has proven to be a potential game changer for the future health of the Chesapeake Bay and the health of local economies. Recent projects in the restoration sector have proven that the traditional approach to paying for restoration work can be dramatically enhanced by leveraging private capital, by using better data, and by switching an effort-based approach to a performance-based approach.

After several years of project overruns and underperforming projects, the Maryland Department of Natural Resources (DNR) and subsequently Maryland Department of Transportation's State Highway Authority turned to 'Pay for Success' contracting as a means of limiting risk and achieving success.

A private company named Ecosystem Investment Partners (EIP) was the first to pioneer a Pay for Success contract approach in Maryland by working with a local land trust to win an initial restoration grant from the State's DNR to restore approximately 1.8 mile of degraded streams. Rather than being paid up front, EIP agreed to provide all of the capital needed to fully construct the stream restoration, and is being compensated over a 5-year period following completion subject to successful monitoring of the sites. This demonstration of a performance-based contracting structure to meet the State's environmental goals subsequently led to EIP securing three similar additional Pay for Success contracts with the State of Maryland.

For each project, EIP contractually assumed 100% of the financial risk and liability, including site identification, design, permitting, construction, maintenance, monitoring and final regulatory release. The contracts include payments at various milestones throughout project development, with substantial portions received only after project success is achieved, monitored, and verified. By aggregating several large projects together, EIP can take advantage of economies of scale and offer a highly competitive price compared to other stream restoration projects. EIP's up-front financing and performance-based contracting also greatly reduce the state's risk, helping to ensure that the project will perform as expected and that the restored streams will achieve the required pollution reductions.

This project has also benefited from high-resolution, highly accurate and precise data provided by a non-profit partner Chesapeake Conservancy in order to help EIP identify parcels that would achieve the greatest possible level of cost-effective nutrient reduction. This advanced data and analysis is allowing ecosystem service markets to work more efficiently and achieve better environmental outcomes.

To date, EIP has restored or is in the process of restoring approximately 18 miles of stream for the State of Maryland. Financed and managed by EIP, these projects are being completed by a private restoration firm and also involve guidance and data analysis from non-profit conservation organizations.

Through this approach, the State of Maryland has acquired successful projects faster and at a lesser cost than initial efforts procured through traditional contracting means. This successful restoration strategy in Maryland (and in many other states) demonstrates the power of a market-based approach that takes advantage of precision analytics to optimize outcomes. A very similar approach could be applied to addressing regional and national water quality issues throughout the nation, from the Florida Everglades to the Great Lakes.

APPENDIX B: THE FRESHWATER TRUST OVERVIEW

With more than 37 years of on-the-ground experience, The Freshwater Trust is the largest restoration-focused organization in the Pacific Northwest. We have a unique mix of in-house staff expertise, ranging from fish biologists and hydrologists to GIS experts, business and conservation systems leads, attorneys and ecosystem services analysts. TFT employs 50 staff across five offices in Oregon, Idaho and California and implements groundbreaking on-the-ground and analytical-based projects each year with a roughly $12M budget.

Quantified Conservation: Moving beyond a procedure-based past to an outcome-based future is an approach we call 'Quantified Conservation'. It's about ensuring every action translates to a positive outcome for the environment. It's about leveraging the best practices used by businesses and social sector organizations to restore the state of our natural resources. We put quantified conservation to work and offer services that accelerate the pace and scale of restoration.

Quantifying the outcomes of conservation also allows us to integrate the economy with the environment. It turns conservation into a sound investment opportunity, allowing investors to target river projects with the greatest impact and grant funders to purchase actual outcomes. We don't buy into the notion that more is better. For us, better is better, and we track how every action we take is making a difference for our freshwater resources, our economy and our rural communities.

Ensuring a future with clean, healthy rivers requires understanding the outcomes of our actions and staying adamant about achieving results. Our most recent 2018 Uplift Report demonstrates the environmental outcomes that can be generated through our powerful analytic tools and in-house monitoring applications. Through our work, TFT believes that restoration objectives are entirely achievable if we commit to using evidence-based tools, clear outcome-based guidelines, and streamlining funding to enable this work on a timeline that matters.