



Guide to Watershed Investment Partnerships

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The USDA Forest Service's most recent Strategic Plan (FY2015-2020) lays out the provision of abundant and clean water to the American public as one of the agency's core strategic objectives, continuing a long-standing agency commitment to stewarding our nation's water resources for present and future generations.

In 2018, USDA Forest Service also articulated a vision for shared stewardship of our nation's forests that prioritizes close work with states, tribes, and local communities to identify management needs, undertake priority work in the right places, and use all authorities and tools available to do so. As USDA Forest Service staff at all levels know well, developing and implementing an effective water source protection strategy is easier said than done. This work, when done well, takes time, effort, staff and financial resources, and strong partnership across sectors. It requires creativity, commitment, and patience.

The USDA Forest Service National Partnership Office's (NPO) Conservation Finance Team, in collaboration with the Watershed, Fish, Wildlife, Air and Rare Plants (FWARP) staff,

developed this guide to provide USDA Forest Service staff and partners across organizational levels, landscapes, and disciplines with concrete recommendations for how to build locally-based partnerships focused on water source (i.e. watershed) protection. These efforts, which we call Watershed Investment Partnerships (WIPs), come in many shapes and sizes. Our guide recognizes this, and does not specify pre-set solutions. Instead, it recommends ways in which stakeholders can successfully evaluate their watershed's context and develop management solutions that are right for them. It does so by providing guidance around process, as well as a menu of financing options, authorities, and other tools that could prove useful for USDA Forest Service staff and partners considering, developing, and implementing WIPs. This document frames guidance to watershed investment partnerships using steps and terms frequently synonymous with NEPA planning. The terms are meant to help develop partnership opportunities but do not inform or replace NEPA planning efforts on a local unit. Involve local Forest Service NEPA planning staff early and often in the partnership process.

The WIP Guide is organized into five sequential phases of work that culminate in implementation of on-the-ground actions in watersheds: 1) Scoping Need and Opportunity, 2) Determining Land Management Activities, 3) Deciding Whether to Move Forward, 4) Establishing the Partnership, and 5) Implementing the Partnership. Each of these phases is further broken down into specific areas of work, with highlighted tips about how to successfully achieve results. Throughout the guide more conceptual content is grounded in specific examples of USDA Forest Service engagement in WIPs across the country.

In addition to the main body of the guide, this document includes a hefty Appendix of additional resources. First and foremost, it contains six in-depth case studies of WIPs that USDA Forest Service has been involved in developing and managing, including projects in Central New Mexico, Flagstaff Arizona, Colorado's Front Range, Northern Arizona, California's Sierra Nevada range, and Eugene Oregon. Content throughout the WIP guide, both conceptual and concrete, is based on lessons learned from these six cases. The Appendix also includes lists of USDA Forest Service agreement tools, funding programs, and authorities, as well as an inventory of private financing mechanisms, that may prove useful when developing a WIP.

The guide was developed as a tool for USDA Forest Service staff. We envision it proving especially useful for staff who work in Partnership, Grants & Agreements, and Cooperative Forestry roles. The range of partnerships this guide could inform is limitless, but would likely include work with water providers, water-dependent companies, adjacent state, tribal, and private land owners, and others with a stake in watershed health.

There is no right way to use this guide. It can be read cover to cover, or used as a reference document to answer targeted questions. We hope that it will prove useful in a variety of contexts, and we invite USDA Forest Service staff and partners to share widely as we work together to sustain the health, diversity, and productivity of watersheds nationwide.

EXECUTIVE SUMMARY



The USDA Forest Service’s Fiscal Year 2015-2020 Strategic Plan identifies stewardship of water resources as an important management focus. National Forest System lands (the National Forests and Grasslands) across the country provide clean and reliable water for human consumption, agriculture, and industry. In addition, healthy forested watersheds mitigate the risk of wildfire and post-fire flooding, reduce the cost of maintaining water infrastructure, and provide wildlife habitat, recreation opportunities, and rural jobs. And yet, forested landscapes nationwide are threatened by the effects of wildfire, drought, flooding, insect and disease disturbance, and development pressures.

The boundaries of our National Forests and Grasslands rarely align with watershed boundaries, which more frequently fall across varied land ownership. As such, USDA Forest Service must employ cross-boundary management strategies to address watershed-scale challenges. Watershed Investment Partnerships (WIP) – or collaborations focused on shared investment in watershed-scale protection or management – provide a means for diverse stakeholders to develop and support work that accomplishes joint goals at the watershed level. To advance USDA Forest Service’s work in this area, the National Partnership Office (NPO) Conservation Finance Program and Watershed, Fish, Wildlife, Air and Rare Plants (WFWARP) staff developed the following guidance to direct WIP development and implementation.

Phase 1: Scoping need and opportunity

- *Identify water-related challenges and drivers.* Reference existing research and planning materials developed before filling in gaps in understanding with new analysis. Assessment of challenges should also include analysis of the root causes/drivers (e.g. population growth, increased tourism).
- *Assess socio-political landscape.* Gauge the quantity and quality of pre-existing relationships between players in your watershed to better understand the context for WIP collaboration.
- *Conduct baseline ecological analysis.* Develop a baseline understanding of ecological health, the drivers of current conditions, and future risks to watershed health upfront.

- *Assess opportunities for funding.* Gauge the feasibility, scale, and duration of potential funding and financing opportunities, including opportunities to engage public, philanthropic, and private capital.
- *Cultivate relationships with potential partners.* Start forging relationships with potential partners early. Make sure to engage both upstream and downstream water users.

Phase 2: Determining land management activities

- *Determine geographic boundaries of activities.* Define clear geographic boundaries early to focus analysis of potential land management activities, funding/financing opportunities, etc.
- *Analyze activity options.* Pick around five activities that address watershed challenges in your chosen landscape and analyze the financial and human resources required to implement each.
- *Identify outcomes from activities.* Analyze the outcomes of possible activities to determine which will yield maximum benefit.
- *Identify financial flows.* Determine whether there are financial flows associated with proposed activities such as 1) avoided costs/reduced risk, 2) sale of environmental market credits, 3) increased revenues, and/or 4) enhanced benefits.
- *Develop the business case for project activities.* Create business cases for WIP involvement that target different stakeholders. These cases should be based on analysis showing that the financial flows associated with land management activities exceed the upfront costs of these activities.

Phase 3: Deciding whether to move forward

After completing work in Phase 1 and 2, the following checklist will help to gauge whether the appropriate conditions exist to launch a WIP in your landscape. If your case does not check all of the boxes below it may mean that a WIP is not the right tool to employ in your landscape at this time. Alternately, it may indicate a need to revisit work in Phase 1 and/or 2 before moving forward.

- Defined watershed management challenges exist (e.g. flooding risk, wildfire risk, threats to forest or range health, etc.)
- Demands on water-related services and benefits are increasing (e.g. increasing populations, expanding tourism or industry)
- Socio-political and ecological conditions provide a foundation for effective collaboration
- Funding to cover start-up and ongoing WIP costs exists and is realistically accessible

- Proven land management activities exist to address management challenges
- Capacity exists to implement land management activities
- Outcomes of land management activities deliver benefits to multiple stakeholders
- Long-term benefits of land management activities are measurable and quantifiable against baseline scenarios and exceed estimated treatment costs
- Stakeholders (utilities, municipalities, water-dependent companies, etc.) understand the business case for involvement and are willing and able to support partnership efforts

Phase 4: Establishing the partnership

- *Develop a plan for administration.* Determine what roles and responsibilities different partners should take on for WIP development and implementation, and how much staff time is required.
- *Staff the partnership.* Identify dedicated staff to oversee WIP development/implementation.
- *Evaluate funding and financing options.* Determine what public and philanthropic funding sources, and private financing tools, will provide start-up and ongoing funds for the WIP. See full report for a comprehensive list of funding and financing options.
- *Develop a watershed management plan.* Create a plan for implementation that lays out partners' vision/goals, a governance structure, schedule of activities, and communications plan. Wherever possible leverage existing planning efforts through the 2018 Farm Bill Section 8404, Watershed Condition Framework, Collaborative Forest Landscape Restoration, or Joint Chiefs.

Phase 5: Implementing the partnership

- *Implement watershed management plan.* Move forward with implementation. Regularly revisit your plan and adapt based on changing operating conditions, results, and lessons learned.
- *Monitor project outcomes and document success.* Define success, identify metrics by which to gauge progress, and adapt WIP management based on measured outcomes.

INTRODUCTION

The USDA Forest Service manages 193 million acres of National Forest System (NFS) land across the country to meet the needs of present and future generations.

The forests we steward serve as critical natural infrastructure, providing a range of public benefits such as:

- Clean water (filtration provided by forests and grasslands)
- Reliable drinking water for rural and urban residents
- Sustainable water for agriculture and industry
- Reduced wildfire risk and post-fire flood impacts
- Wildlife habitat and sustainable fisheries
- Recreation opportunities
- Rural jobs and economic development
- Reduced expense to maintain aging water infrastructure

And yet, forested watersheds across the country are threatened by the impacts of catastrophic wildfire, drought, flooding, insect and disease disturbance, and growing development pressures. Our nation's watersheds require protection and management to guarantee clean and plentiful drinking water and maintain the many other social and ecological benefits they convey.

To ensure the continued provision of these benefits, USDA Forest Service's 2015-2020 Strategic Plan identifies stewardship of water resources as an important management focus. The agency's priority aligns with the priorities of many key partners, including state and local governments, water utilities, water-dependent private companies, and a range of nonprofit organizations. Watershed Investment Partnerships (WIP), or collaborations focused on shared investment in watershed-scale protection or management, provide a means for diverse stakeholders to develop and support work that accomplishes joint goals at the watershed level. These partnerships focus on protecting water sources and ensuring watershed health through on-the-ground land management and restoration activities. The importance of these partnerships was emphasized by Congress through the inclusion of language in the 2018 Farm Bill directing USDA Forest Service to establish a Water Source Protection Program to carry out watershed protection and restoration projects on NFS lands through Water Source Investment Partnerships.

Many WIPs support cross-boundary efforts on both public and private lands through partnerships between USDA Forest Service, other federal agencies, states, municipalities, water utilities, water-dependent corporations, recreation groups, and other end-water-users. USDA Forest Service utilizes WIPs to achieve national, state, and local water quality and availability objectives through collaboration with local stakeholders, leveraged funds, and coordinated implementation at the watershed scale. Many are established and facilitated by non-profit partners (e.g. National Forest Foundation and The Nature Conservancy).

Goals of WIP Guide

The National Partnership Office (NPO) Conservation Finance Program and Watershed, Fish, Wildlife, Air and Rare Plants (WFWARP) staff developed the USDA Forest Service Guide to Watershed Investment Partnerships as a single, comprehensive source to assist staff across the agency in learning about the process of developing and implementing a WIP. In its current form the guide defines key terms, outlines elements common to WIPs, and shares USDA Forest Service and partner lessons learned. However, we view this document as a starting point that we hope to see evolve as USDA Forest Service's experience with WIPs increases.

Our immediate goals for this guide are to:

- Support USDA Forest Service staff's understanding of shared language and tools for WIPs;
- Highlight and synthesize USDA Forest Service and partner lessons learned through case studies;
- Help USDA Forest Service field leadership assess WIP potential and establish successful partnerships in their landscapes.

Over the long-term we hope that this guide will also facilitate progress to:

- Accelerate and increase the scalability of partnerships for watershed restoration;
- Improve understanding of criteria for partner (i.e. corporate, utility, municipal) investment;
- Identify target landscapes where cross-boundary land management can address downstream water quality, quantity, and vulnerability to disturbances;
- Apply lessons learned from existing case studies to future WIP pilot projects.

How to Use this Guide

This guide can be read from beginning to end, or referenced to answer specific questions. If the latter, we recommend using the Table of Contents to direct your exploration. The WIP Practical Guide is divided into five sections: 1) Scoping Need and Opportunity, 2) Determining Land Management Activities, 3) Deciding Whether to Move Forward, 4) Establishing the Partnership, and 5) Implementing the Partnership. Each section includes recommendations based on USDA Forest Service experiences, as well as best practices and lessons learned synthesized from partner publications. The Appendix includes six case studies on USDA Forest Service WIPs. It also lists potential financing mechanisms, and USDA Forest Service agreement tools, funding programs, and authorities that may prove useful when developing a WIP.

Phase 1: Scoping need and opportunity

The first step in developing a WIP is to identify key challenges and opportunities that exist in your landscape. Understanding the socio-economic and ecological dynamics that underlie barriers to maintaining a healthy watershed will help focus WIP activities. But diagnosing need is only one side of the equation, you must also determine whether opportunities exist to collaborate around watershed protection. The below activities will support USDA Forest Service and partners efforts to scope need and opportunity in your watershed.

- *Identify Water-related Challenges and Drivers.* In this early scoping phase you should first reference existing materials that shed light on challenges in your watershed and what is driving those challenges (e.g. population growth, increased tourism, disease, pests, etc.). Review existing formal/informal research, planning products, and national programs; and collaborate with academic, research, and conservation partners to identify existing available science. Existing USDA Forest Service planning work such as the following can be an excellent resource.
- *Land Management Plan Ecological Assessments* summarize ecological conditions and their relationship to ecosystem service delivery. They often summarize anticipated stressors on water supply related to climate change and/or anticipated increases in water demand due to population growth.
- *Watershed Condition Framework* includes assessments of watershed condition and provides a process for prioritization of watersheds for restoration and development of plans to complete the needed work.
- *Forests to Faucets* data indicate areas that are both important for surface drinking water and require active land management or protection.
- *Land Ownership Adjustment Strategies* inform priority areas for restoration on or off USDA Forest Service land, USDA Forest Service acquisition, private forest protection, and recreation and land management needs.
- *State Forest Action Plans, State Wildlife Action Plans,* and other documents from states agencies provide insight into priority areas for protection and restoration on private lands.
- *Resource management plans* from other land management agencies shed light on challenges, opportunities, and priorities.

If your evaluation of existing materials uncovers gaps in understanding you may have to conduct your own assessment to fill in those gaps. Assessments should draw on the knowledge and experience of partners and downstream users, and may provide an early opportunity to start building relationships with future partners. Questions to consider in an assessment include:

- What are the top three to five water-related challenges that could be addressed through this partnership?
- What are the conditions/trends/behaviors that cause or drive these challenges?
- How does watershed enhancement fit into other landscape priorities?
- *Assess Socio-political Landscape.* If you're unfamiliar with the socio-political context for collaboration in your watershed, take the time upfront to understand what stakeholders have worked together in the past and where there are strong or conflict-driven relationships. An informal network mapping exercise can help you to understand the quantity and quality of relationships that exist, and gauge how difficult it will be to sow the seeds of future collaboration.
- *Conduct Baseline Ecological Analysis.* Develop a baseline assessment of existing ecological conditions, drivers of these conditions, and risks to the future maintenance of conditions. Depending on key challenges in your watershed it can focus on water quality, supply, and/or flow.
Example: The Watershed Wildfire Protection Working Group in Colorado collaboratively developed a science-based strategy to protect important local watersheds from wildfires. The group prioritized treatments based on this strategy.
- *Assess Opportunities for Funding.* In-depth analysis of funding and financing opportunities will come later, but at this early phase you should inventory opportunities for one-time and on-going support. Roughly gauge the feasibility, scale, and duration of these opportunities. Your assessment should consider public funds from federal (including USDA Forest Service), state and local sources; philanthropic funds from NGOs, foundations, corporations, and individuals; and the potential for financing models that engage private capital in watershed restoration. Your analysis of opportunity should match the scale of financial need determined in Phase 2 to undertake proven land management activities.
- *Cultivate Relationships with Potential Partners.* Early on in the process it is critical to forge relationships with potential partners in order to explore shared interests, build capacity and expertise, and cultivate broad support. In particular, engage end water users around their perspectives on water-related challenges. This will help to focus and prioritize the work of the potential WIP. Engage land managers, land owners, policy makers, and any other entities that care about watershed health as potential partners in implementation and design. This could include local governments, NGOs, corporations, landowners, tribes, trusts, and academic organizations.

Tips for Phase 1: Scoping need and opportunity

- Gather and evaluate existing information and determine what gaps in understanding exist before launching any assessment efforts.
- Set a precedent for collaboration early by engaging a variety of stakeholders and building trust through a joint assessment of needs and opportunities.
- Identify and engage with water utility partner(s) and end users that have aligned values and are committed to a WIP; they are key partners.

Phase 2: Determining land management activities

The next phase of work is to determine which forest treatment, restoration, and/or protection activities will most effectively address the challenges identified in Phase 1. Focus should be on evaluating which activities will most effectively address watershed challenges, where activities are most needed, and what they might cost. Consider the below when determining land management activities.

- **Determine Geographic Boundaries of Activities.** Clear geographic boundaries facilitate the analysis of activity options, as well as the identification of key partners, beneficiaries of watershed protection, and potential funders. Geographic boundaries for a WIP can be political boundaries, watershed boundaries, boundaries of impact from a past water-related disaster, boundaries of high-risk or priority areas, or boundaries for a particular end user (source watershed, intake area, service area, etc.).

Example: In Eugene, OR, a Voluntary Incentive Program designated a clear program boundary based on where flooding posed the greatest risk to municipal water quality. Privately owned tax lots were subsequently prioritized for restoration and conservation activities.

- **Analyze Activity Options.** In collaboration with partners, identify the land management activities that will best address water-related challenges in the chosen landscape of focus. Determine where activities should take place to maximize benefit. Develop a cost estimate for implementation of activities in priority locations. Include planning, implementation, and monitoring costs in projections of funding needs. Estimate the human capacity required of both USDA Forest Service and partners to undertake on-the-ground work to implement activities.
- **Identify Outcomes from Activities.** Identify the water-related outcomes that different activities will deliver to the public and other stakeholders. If these outcomes are known but not

proven, that is fine; WIPs can help to advance the understanding of new methods for supporting habitat recovery, impact mitigation, and drinking-water protection. Coordinate with USDA Forest Service research station staff (locally-based or elsewhere), hydrologists, and others to explore potential approaches to projecting the delivery of outcomes from land management activities, tools to measure outcomes, and metrics that USDA Forest Service and other partners are comfortable delivering. Focus on what outcomes are most important to key stakeholders, including USDA Forest Service, partner organizations, and the public. Oftentimes outcomes are most important to stakeholders when there are financial flows associated.

- **Identify Financial Flows.** Identify the key beneficiaries of the water-related activities proposed and consider whether there are financial flows associated with the outcomes to those beneficiaries. Financial flows can include: 1) avoided costs/reduced risk, 2) sale of environmental markets credits, 3) increased revenues, and 4) enhanced benefits or outcomes. Partners can assist with assessments that analyze and project financial flows. It may not be necessary to fully analyze these flows, but rather identify what they are, who they accrue to, and whether they are significant. Undertaking this step will help stakeholders to frame the WIP as an investment instead of a cost. For partnerships based on philanthropy or corporate sustainability, identifying financial flows may be less relevant.

Avoided Costs Example: The Nature Conservancy used data from adjacent communities to develop a full economic cost estimate for a wildfire in Santa Fe. Analysis estimated that a 10,000-acre wildfire could cost USDA Forest Service and the city \$22 million. This built the case for investments in treatments to avoid larger potential costs.

Environmental Markets Example: In Arizona, USDA Forest Service and the National Forest Foundation are collaborating with researchers on a voluntary carbon project methodology for improved forest management on public lands. This could allow partners, contractors, and USDA Forest Service to explore an additional source of funding from the purchase of third-party verified (then retired) offset credits.

Increased Revenues Example: A public opinion poll conducted by the Santa Fe Watershed Program in March 2011 illustrated that 82% of ratepayers were willing to pay an additional charge of \$0.65 per month for source water protection. Utilities often underestimate the willingness of ratepayers to contribute to watershed investment partnerships, an example of an increased revenue flow.

Enhanced Benefits Example: Many organizations and corporations have missions or core business functions that are directly dependent upon the benefits and outcomes delivered by healthy forests. USDA Forest Service' partnership with Coca-Cola presents a significant opportunity to tie watershed enhancement

projects directly to a major corporation's bottom line, showing that it makes economic sense for a corporation to dedicate funds to restoration of public lands. Coca-Cola's replenishment work makes financial sense and achieves its corporate sustainability goals.

- **Develop the Business Case for Activities.** Developing a clear business case is a key component of attracting partners and investors. The business case can be targeted towards mission-driven philanthropy, corporate sustainability goals, private investment, or something else. For philanthropy and corporate sustainability, a quantification of the ecological and social benefits of the work is typically sufficient. For investment, the business case needs to demonstrate that financial flows from the land management activities exceed the up-front costs of the activities. It may be useful to articulate the business case for diverse stakeholders differently. For a review of potential sources of funding and financing for WIPs see Appendices B and C. When assessing funding opportunities it may be helpful to talk with Grants & Agreements staff to determine which financing options are allowed under current USDA Forest Service authorities.

Example 1: *The Flagstaff Watershed Protection Program made the business case for its project by conducting a full-cost accounting of the negative impacts of the nearby Schultz Fire. Researchers are now determining how future costs might be avoided by reducing the risk of a similar fire.*

Example 2: *Costs of thinning for fuels reduction projects can be recouped if the byproducts can be funneled into markets. Understanding connections to forest products markets early can help partners understand the broader infrastructure needs for the watershed partnership's success.*

Tips for Phase 2: Determining appropriate forest management activities

- Emphasize the co-benefits of activities (habitat, recreation, health, economic development) to attract non-traditional partners and communicate with the public.
- Focus on community concerns like flooding, drought, or wildfire – and capitalize on windows of opportunity around high-visibility events – to build support for shared investment.
- Adjust and target the business case for water source protection to different audiences.

Phase 3: Deciding whether to move forward

After extensive scoping of challenges, opportunities, activities, and financing it can be difficult to make the final call about whether to move forward with implementation of a WIP. The checklist below provides a starting point for decision-making by gauging whether the appropriate conditions exist to launch a WIP.

It is important to note that the form the partnership takes may differ based on the management challenges being addressed, the stakeholders involved, and whether the benefits can be quantified and/or monetized. While those factors will ultimately inform what type of financial and partnership mechanisms it makes the most sense to employ, the list below provides a general gauge of readiness.

- Defined watershed management challenges exist (e.g. flooding risk, wildfire risk, threats to forest health, etc.)
- Demands on water-related services and benefits are increasing (ex: increasing populations, expanding tourism or industry)
- Socio-political and ecological conditions provide a foundation for effective collaboration
- Funding to cover start-up and ongoing WIP costs exists and is realistically accessible
- Proven land management activities exist to address management challenges
- Capacity exists to implement land management activities
- Outcomes of land management activities deliver benefits to multiple stakeholders
- Long-term benefits of land management activities are measurable and quantifiable against baseline scenarios and exceed estimated treatment costs
- Stakeholders (utilities, municipalities, water-dependent companies, etc.) understand the business case for involvement and are willing and able to support partnership efforts

Tips for Phase 3: Deciding whether to move forward

- Remain open to the possibility that, despite the time and effort put into consideration, it might not be the right time or place to establish a WIP.
- Consider, and remain open to, your WIP taking a variety of forms. Depending on the results of Phases I and II, a collaborative philanthropic campaign may be a better tool than a green bond or other financing tool.



Phase 4: Establishing the partnership

Once the decision is made to move forward with a WIP, the following steps should be taken to establish the partnership.

- *Develop a plan for administration.* Partners should first lay out an initial plan estimating how much staff time different entities will need to dedicate to WIP implementation. The roles and responsibilities for all organizations involved should be clearly defined upfront, as should check-in points to evaluate success and adapt thinking about timing and roles.
- *Staff the Partnership.* Based on the plan for administration, identify dedicated staff to champion and oversee the establishment and management of the WIP. In some cases, it will be necessary or beneficial to designate full-time or shared positions towards WIP implementation. The list below highlights some important staffing concerns to consider.

- *Institutionalizing USDA Forest Service Staffing.* Cultivating strong long-term relationships built on trust and mutual understanding of USDA Forest Service partners' values and priorities is key to success. Given that constantly changing staff (details, promotions, moves, etc.) can make USDA Forest Service engagement in WIPs inconsistent, it can be helpful to incorporate WIP involvement into a job description (e.g. Watershed Investment Partnership Coordinator) to reduce the impacts of turnover. The chosen role probably should report directly to a line officer. In addition, USDA Forest Service staff can, as much as possible, coordinate ways to be accessible or backed-up when leaving their WIP-related responsibilities for other assignments. USDA Forest Service can also work on building leadership support at local, regional, and national levels to better institutionalize partnerships within the agency.

Example 1: *The VIP project in Eugene built its foundation across three levels: (1) working with ranger districts on applying ecosystem services concepts into restoration planning for NEPA, (2) leveraging the support of the Forest Supervisor to engage in collaborative forest management and stewardship contracting, and (3) engaging the regional office in large-scale initiatives for watershed investment.*

Example 2: *In Flagstaff an important component of success was having a dedicated staff person on both USDA Forest Service and City of Flagstaff sides to handle on-the-ground implementation, especially during initial formation. USDA Forest Service now has a person dedicated to the project half-time.*

- *Working with Grants & Agreements Staff.* Cross-boundary work with cross-sector partners is hard. Shared investments in cross-boundary restoration take different forms in different landscapes, and none of these forms fit into a box. Given the complexity of this work, there are many ways to get to "no." Getting to "yes" requires staff commitment and availability, knowledge that cuts across deputy areas, and solutions-oriented mentalities, especially for G&A staff. It is important to integrate G&A staff in the process early and to identify creative, committed individuals to work with.

To manage cross-boundary resources such as fire and water, G&A staff must draw equally on expertise from NFS and S&PF authorities. The transition point from developing a shared vision to identifying an agreement/contract tool to structure implementation of that relationship is fragile. If not handled well, this is a juncture where carefully built momentum can be quickly lost. Integrating G&A at the relationship building/shared vision stage can create buy-in, initiate brainstorming, and make this step in the process a launching point rather than a lull.

Example: *In the Flagstaff Watershed Protection Project multiple sources cited the flexibility and knowledge of grants specialists as key to the partnership's success.*

- *Staffing Steering Committees/Advisory Boards.* If USDA Forest Service is invited to participate in a Steering Committee or Advisory Board, establish one point of contact (POC). Typically a subject matter expert makes the most sense, although the POC should regularly consult with other staff such as the local line officer, Partnership Coordinator, Planning Interdisciplinary Team Lead, Public Affairs Office, and S&PF Landowner Assistance and Grant & Agreements staff as needed.
- *Evaluate Funding and Financing Options.* A WIP requires start-up funds and ongoing funds. Funding for both typically comes from multiple sources, including public funds from federal, state and local sources; and philanthropic funds from NGOs, foundations, and individuals. In some cases financing models can also be set up to engage private capital in watershed enhancement. In many cases philanthropic funds provide seed capital to cover start-up costs. Annually-recurring public sources and private financing tools more frequently provide funding to cover ongoing costs.

The following list inventories public and philanthropic funding sources, as well as private financing tools, that could be useful when implementing a WIP.

Public Funding Sources (Federal):

- *Water Source Protection Program.* Currently under development, this program was established by Congress in the 2018 Farm Bill. It calls for USDA Forest Service to carry out watershed protection and restoration projects on NFS lands through water source investment partnership agreements with water users. Activities undertaken by partners are to be guided by Water Source Management Plans that are consistent with units' land management planning efforts. This program requires that non-federal partners provide matching contributions of funding or in-kind support.
- *Collaborative Forest Landscape Restoration (CFLR) Program.* The USDA Forest Service CFLR Program provides funds for collaborative, science-based restoration of priority forest landscapes. The program's collaborative requirement makes it perfect for WIPs. Projects must also encourage sustainability, reduce wildfire risk, demonstrate ecological restoration techniques, and promote utilization of forest restoration by-products. The program can fund up to 50% of the costs of implementing and monitoring restoration treatments—up to \$4 million annually per project.
- *Joint Chiefs' Restoration Initiative.* The USDA Forest Service and USDA's Natural Resources Conservation Service (NRCS) together administer this program, which focuses on improving the health of forests where public forests or grasslands abut private or tribal lands. These restoration activities

reduce wildfire threats and protect water quality. Each year, the partners select new three-year projects to fund.

- *Landscape Scale Restoration Program.* The FS's Landscape Scale Restoration Competitive Grant Program funds restoration activities on landscapes of national importance (determined through Forest Action Plans and national areas of focus).
- *WIFIA Program Loans.* The EPA's Water Infrastructure Finance and Innovation Act program's mission is to help fund water infrastructure through long-term, low-cost credit assistance (loans). Local, state, tribal, and federal governmental entities are eligible, as are corporations, partnerships, trusts, and state revolving fund programs. Funding can support watershed restoration as long as the total federal assistance does not exceed 80% of the project's costs. The program especially targets larger projects—over \$20 million—that usually cannot obtain financing through state revolving funds.
- *Other Grant Opportunities.* There are a number of Federal opportunities for grant funding, including: USDA offers financing through the Rural Development Water and Environmental Program as well as through the Conservation Innovation Grants and Water Quality Incentives programs. HUD funds local community development (including water projects) through its Community Development Block Grants. The Department of Commerce supports development (including water projects) through its Economic Development Administration.
- *In-kind Assistance: Research & Development.* USDA Forest Service can provide or receive research and assessment services to help land managers or utilities determine the best strategies and metrics for restoration. This helps accomplish governmental goals of effective, cost-efficient all-lands management. Search the USDA Forest Service Research Information Tracking System (RITS) to identify hydrologists, ecologists, soil scientists, social scientists and others who could provide support in these areas.

Public Funding Sources (State and Local):

- *Bonds.* Various entities can issue bonds to fund restoration work or hazardous fuels treatments to protect their water supplies. Cities, states, and their entities issue municipal bonds, while corporations issue investment-grade (companies with strong balance sheets) or high-yield (companies with weak balance sheets) bonds. Municipal bonds can be issued with voter approval (general obligation bonds that are backed by the credit/tax power of the issuing body) or without voter approval (revenue bonds that are repaid by specific revenue streams such as fees).

Example: The city of Flagstaff's voters approved a \$10 million municipal bond measure to fund hazardous fuels treatments

following the nearby Schultz fire. USDA Forest Service and 10 other entities were partners. USDA Forest Service was not a buyer of the bond and was not liable for guaranteeing interest-rate payments on funds received from bond revenues. The major USDA Forest Service contribution in exchange for funding for restoration was program development and forest treatment plans.

- **Municipal Taxes.** City taxes can be an effective funding mechanism for watershed restoration projects. Often, voters will approve small tax increases for such initiatives, especially if they have been educated about the benefits of natural infrastructure.

Example: In San Antonio voters approved several ballot initiatives to authorize new bonds to fund the Edwards Aquifer Protection Program. Bond investors make their return through a \$0.008 sales tax increase.

- **Water User Fees.** Utilities can charge short-term additional fees to users to help fund watershed restoration and protect drinking water sources.

Example: Central Arkansas Water implemented a “watershed protection fee” of \$0.45 per month per water meter, generating about \$1 million per year. By leveraging water user fees with other sources of federal, state, and philanthropic funds the utility acquired thousands of acres of conservation land and conservation easements in the watershed.

- **Development Impact Fees.** These fees are one-time charges for new development infrastructure or projects that are enacted by local, state or tribal governments. Impact fees typically go towards building facilities outside the new development that benefit it somehow (like roads, schools, and libraries), but these fees can also go toward conservation. Municipalities benefit from gaining new funding for conservation, and developers sometimes benefit from being able to emphasize the benefits of green space to potential buyers.

Example: In 2012, the state of Pennsylvania created such a fee on natural gas wells. It generated over \$100 million in its first year, from which about \$25 million was spent on conservation initiatives.

- **State Revolving Funds (SRFs).** EPA’s Clean Water State Revolving Funds (and Drinking Water State Revolving Funds) provide low-interest loans and leveraging opportunities for water quality protection projects in every state.

Example: In 2006, The Conservation Fund borrowed \$25 million from California’s CWSRF to finance the acquisition of thousands of acres of redwood forest in Mendocino.

- **Earmarked Proceeds.** Voters/legislators can set aside funding from various sources like conservation license plates, fees from hunting permits, donations on state income tax forms, etc. One vehicle through which voters can choose to do this is the ballot referendum.

Example: In Maine residents can pay extra for a conservation license plate. Proceeds go toward the Maine Department of Inland Fisheries and Wildlife, which protects riparian habitats and forests.

Philanthropic Funding Sources

- **Corporate Sponsorship/Corporate Social Responsibility.** If a local business or a local branch of a national business wants to generate positive press and associate its brand with conservation, it may be willing to provide upfront capital for conservation. Sometimes the opportunity for public image enhancement is sufficient to secure the business’s engagement; other times the business will request monitoring of specific success parameters.

Example: In Eugene Oregon the Water and Electric Board is exploring partnerships with local breweries to develop a “sustainable beer” label. Companies would pay a small portion of their revenues into the utility’s watershed protection fund, thus positioning themselves as responsible businesses. They would also benefit from the protection of the water that their products require.

- **Individual and Foundation Giving.** Foundation grant-making and individual donor giving can provide “seed” money or other funding to help support WIPs.

Example: The Rio Grande Water Fund, which was developed in response to severe wildfires and subsequent flooding in the region, received its first \$2 million for the partnership from private foundations; securing this funding was the most crucial element in the formation of the water fund.

- **Conservation Easements Agreements/Donations.** Landowners whose land has high conservation value can choose to donate a conservation easement to a land trust or public agency. The easement is legally binding and protects the conservation values of the land, usually by extinguishing or limiting future development activities. In exchange, the landowner receives a compensation for the fair market value of the development rights as well as significant tax deduction on federal, state, and sometimes property taxes. USDA’s Agricultural Conservation Easement Program provides funding to local governments and NGOs working to establish easements on agricultural lands and wetlands.

Example: In 2010, a private landowner in the Upper Fox watershed in Wisconsin entered into an easement agreement with the Natural Resources Conservation Service. The easement protects the environmental systems on the landowner’s 107 acres in perpetuity with resulting water quality, retention or habitat benefits, and the landowner is eligible for income tax deductions.

- **Voluntary Surcharges.** Businesses can add small, voluntary fees to their customers’ bills. These fees generate income as well as awareness for the issue and help businesses with their public images.

Example: The National Forest Foundation runs the Ski Conservation and Forest Stewardship Funds to support projects that improve forest health and recreational experiences on NFS lands. The funds come from guests' contributions at ski areas and lodges on or near National Forest lands.

Financing Mechanisms that Generate a Return

- **Auctions and Reverse Auctions.** Philanthropic organizations can stimulate private investment in efforts to reduce greenhouse gas emissions while maximizing the impact of their funds by setting up auctions or reverse auctions. In a reverse auction, the “seller” would offer put options (guarantees that the holder can sell emissions credits for a certain minimum price) through a bidding process in which a minimum price of credits is secured through decreasing bids by buyers. The eventual secured minimum price is high enough that private-sector investors have the security of being sure they will be paid back for investments they make to lower greenhouse gas emissions. In a forward auction, the seller sets the strike price (guaranteed price they will pay for credits), and buyers “bid up” for the premium they are willing to pay to secure the put options. (The strike price is set at a level that covers the actual costs of the abatement technologies in order to draw maximum participation in and ensure the efficiency of the auction process)

Example: The World Bank Pilot Auction Facility encourages private investment in projects that reduce greenhouse gas emissions while maximizing the impact of its funds through auctions and reverse auctions for methane credits. The Facility is backed by Germany, Sweden, Switzerland, and the United States. Its capitalization target is \$100 million. In its first phase, the facility supported projects to cut methane emissions at sites facing low carbon prices.

- **Environmental markets.** Selling third-party verified credits through voluntary or government-regulated environmental markets can be a source of revenue for watershed protection projects. Markets can include:
- **Nutrient trading** – buyers purchase nutrient reduction credits from sellers, who generate them by following best management practices to reduce nitrogen or phosphorous runoff.
- **Mitigation, forest, or wetland banking** – buyers purchase these credits (which are generated through land restoration activities) to offset degrading activities on nearby ecosystems.
- **Carbon trading** – buyers purchase carbon credits from entities that have reduced their carbon emissions in order to compensate for their own emissions.
- **Water rights trading** – buyers in need of additional water purchase the rights to additional water access/use from sellers who have surplus water.

Example: In the Chesapeake Bay wastewater treatment plants can purchase nutrient credits from farmers who engage in sustainable land management practices to improve water quality. These transactions generate revenue for the landowners to implement conservation practices.

- **Loans for Conservation.** Conservation loans are provided by nonprofit groups and other entities to support conservation projects.

Example: The Denison Pequotsepos Nature Center in Mystic, Connecticut took out a loan from the nonprofit Conservation Fund to finance its purchase of Coogan Farm and turn it into a wildlife sanctuary that provides water quality, flood control, and recreational opportunities.

- **New Markets Tax Credits (NMTC).** The NMTC program provides tax incentives to private investors who fund projects in low-income communities. Watershed restoration projects often qualify.

Example: The Northern Forest Center facilitated a financing package using these credits to acquire the West Grand Lake Forest in Maine. The forestland was then conserved with easements, thus sustaining the future of the watershed and the area's outdoor recreation industry.

- **Pay for Success (PFS)/Environmental Impact Bonds (EIB).** PFS is an innovative approach to contracting that links a meaningful portion of payment for services to measurable outcomes. EIBs are one example of a way to finance a PFS deal. EIBs are a financial approach investors can use to provide upfront capital for service providers to implement projects that 1) deliver ecological uplift, and 2) provide a return on investment. Returns can be generated through cost savings, avoided capital outlays for built infrastructure, or revenues from restoration activities.

Example: DC Water issued the nation's first EIB, financed by Goldman Sachs and the Calvert Foundation, to fund construction of green infrastructure to manage storm water runoff and improve water quality in DC.

- **Payments for ecosystem/watershed services (PES or PWS).** Healthy landscapes deliver services like clean water, erosion control, fire management, wildlife habitat, flood control, etc. PES are financial or other incentives provided to land managers/owners in exchange for their use of management practices that support healthy landscapes and result in the provision of services.

Example: In São Paulo, where deforestation was impacting water quality and quantity in the Cantareira watershed, TNC helped set up a program where water users pay farmers and ranchers who restore riparian forests on their lands. Landowners now earn \$28 per acre per year for water filtration services.

Develop a Watershed Management Plan

After considering how best to staff and fund your WIP it is time to develop an implementation plan for your watershed. Plan components will include shared vision and goals, governance structure, and land management activities. We recommend that consideration be given to using existing USDA Forest Service watershed-related planning processes – and potentially existing plans developed under those processes – wherever possible. These include Watershed Management Plans developed under the 2018 Farm Bill (Section 8404), Watershed Restoration Action Plans developed for priority watersheds under the Watershed Condition Framework (2018 Farm Bill Section 8405), Collaborative Forest Landscape Restoration plans, and Joint Chiefs' Landscape Restoration Partnership plans.

- *Develop a clear vision statement and set of goals among all partners.* Develop a clearly stated 1-2 sentence vision statement that articulates big-picture ideas about what partnership activities hope to achieve. The geographic area should be clearly defined in the vision. In addition, create three to six high-level goals that support the vision statement – goals that partnership activities will be able to achieve. The vision and goals should be developed either before project activities begin or very early on, and be agreed upon by all partners involved. Use the process of developing these principles as an opportunity for dialogue with partners. This is a time to build trust and relationships between partners, and a shared understanding of values and purpose to move forward with.

Example: *The Rio Grande Water Fund created a vision statement among its partners. The statement articulated the partners' desire to "achieve the vision of healthy forests and watersheds that provide a reliable supply of high-quality Rio Grande water and other benefits...."*

- *Create a collaborative governance structure.* Jointly develop a governance structure that engages all partners in a manner that promotes dialogue and knowledge sharing, but also efficiency. Development of a governance structure sets the tone for ongoing partner engagement throughout the WIP, and is therefore a critical time to carefully consider the needs and desires of all partners. The following guidelines are important to keep in mind when developing a governance structure.
- *Build a broad platform for engagement.*

Example: *The Sierra Nevada Watershed Improvement Program was able to confront drought and wildfire issues by expanding the constituency of forest managers across all levels of government, academia, industry groups, and financiers affected by, benefitting from, or directly impacting water quality, quantity, and use. Rather than continuing to rely on disparate and insular decision-making, California Governor Jerry Brown and USDA Forest Service Regional Forester Randy Moore developed comprehensive strategies recognizing the interconnectedness of drought, wildfire, energy development, infrastructure, and*

water. These frameworks acted as a conduit for new sources of funding once priorities were identified.

- *Choose the convener carefully.* In some situations it is best to let partners play the role of convener, with USDA Forest Service acting as a participant or steering committee member. In other situations USDA Forest Service is the entity that the other partners have in common and is therefore the natural networker/convener.

Example: *The success of the Sierra Nevada Watershed Improvement Program is contingent upon a lead organization to own the process and keep stakeholders on task. The Sierra Nevada Conservancy has filled that role, coordinating between the management, science, and business communities. That role must be flexible enough to hear voices and accept dissenting opinion, but firm enough to draw the line when concrete decisions are needed.*

- *Keep the management structure simple.*

Example: *The City of Flagstaff created more working groups and teams than were necessary. The two indispensable working groups ended up being the Executive and Communication teams.*

- *Connect partners at the community and regional level to the same vision through a non-legally binding document.*

Example: *For the Rio Grande Water Fund the Nature Conservancy worked hard to get Regional Forester buy-in, and to build connections with local communities ready to take action through this charter. A non-legally binding charter helped bring together 58+ stakeholders.*

- *Multiple initiatives can serve one landscape; it is OK for initiatives to be intertwined.*

Example 1: *4FRI, Northern Arizona Forest Fund, and the Flagstaff Watershed Protection Project (a WIP that also works with 4FRI and the Coconino NF) each play a unique and valuable role in pursuing the greater objective of healthy watersheds in northern Arizona.*

- *Develop a schedule for partnership activities.* Lay out a list of WIP activities, along with proposed timelines for implementation, partner roles and responsibilities, associated costs, and possible financing scenarios. Much of this work has already been completed, it is just a matter of compiling your thinking in one place and ensuring that partners are in agreement as to a concrete path forward. During this stage it is critical to create space for collaboration, cultivate shared ownership, and build trust between partners. The following guidelines will help drive forward an effective planning process.
- *Identify and define priority landscapes* where forest and range management restoration, protection, and stewardship activities can achieve desired outcomes. Consult downstream water users, partners, and USDA Forest Service management



objectives. Collaborate to focus on key geographic areas and activities needed in those areas. Develop an opportunity map to identify where investment is needed, and to track restoration accomplishments as they are completed.

- *Lay out proposed activities.* This should include a discussion of associated costs and partner roles and responsibilities in implementing these activities.
- *Articulate funding scenarios.* Estimate the costs of the activities in priority landscapes. Determine the degree to which anticipated funding matches activity costs. Project and quantify potential financial flows from activities, and chart likely opportunities for public and philanthropic funding. Be careful not to count on partner funds to cover “core” agency operations.

Example 1: *The Northern Arizona Forest Fund asks for three-year partner commitments to support planning for future projects and reduce USDA Forest Service and NFF staff time required to renew partnership agreements annually. Long-term commitments lend future certainty to the planning process.*

Example 2: *Overall there is a trend of USDA Forest Service units relying on partner funding for employee salaries. Be certain the funding from partners is used as cost-share or cost recovery for work associated with the partnership. While it is important to incorporate multi-year partner efforts into USDA Forest Service budgeting and planning, even long-term partner funds should not be counted upon to support core operation.*

- *Develop a communication and engagement strategy.* Sustaining public engagement throughout the collaboration is an important component of success. Cultivating a successful partnership requires early and frequent engagement with

many entities at a variety of scales, as well as the general public. It can often be helpful to have one committed anchor partner that takes a leadership role in cultivating buy-in across stakeholders and leads by example. Partners should consider the role that each partner can play in communicating with different stakeholders and encouraging collaboration with new entities. Mapping out a communications and engagement strategy early on will help the WIP to capitalize on opportunities and be strategic about partners’ roles and responsibilities over time.

Example 1: *The Salt River Project (SRP), Northern Arizona Forest Fund’s anchor partner, cares a lot about healthy watersheds and has used its relationships with many Phoenix-area municipalities and businesses to help those entities understand the value of watershed health to their communities. In particular, the municipalities’ willing alignment with SRP, NFF, and USDA Forest Service and their buy-in as partners have been key to the success of the Northern Arizona Forest Fund.*

Example 2: *Bringing representatives from successful watershed investment partnerships to the table when setting up new ones can be very helpful in building public support and buy-in (representatives can explain avoided costs of fires/floods from their experience). Denver Water and USDA Forest Service Region 2 watershed partnership staff frequently engage in direct outreach and sharing with other USDA Forest Service units, programs, and utilities to reduce uncertainty and share the benefits of partnering.*

Example 3: *In Eugene, the local soil and water conservation district and watershed council helped connect private landowners to the program and assess restoration needs in the project area.*



- *Collaborate, plan, and the money will follow.* Once there are relationships and infrastructure for success in place, partners are more likely to pay. Focus on relationship-building and developing a strong WIP concept before exerting significant time and effort to secure funding.

Example: In the Santa Fe Municipal Watershed Project, once partners developed a plan for treatments and a total cost for treatments, the city jumped to cover those costs. When the city knew what they were committing to, for how long, and for what results, the decision to finance was easier.

- *Bring in champions to provide leadership and build support.* Engage the help of champions with decision-making ability (local government leaders, directors of utilities) to ensure approval of the project and advocates like leaders of NGOs and community groups to help build support and form alliances.

Example: Raleigh's mayor championed the Upper Neuse Watershed Investment Program, garnering support with the city council and urging it to approve a half-million dollar grant to fund the program.

- *Be ok with compromise and shared decision space.*

Example 1: In the Northern Arizona Forest Fund USDA Forest Service forwards potential projects to the advisory committee, which selects the final projects to receive funding. USDA Forest Service needs to be comfortable handing the selection reins to partners and stakeholders in order to see the greater endeavor accomplished.

- *Develop a shared understanding of each partner's operating space.* It's important to understand the requirements, limitations, authorities, and tools available to each partner. Partners can sometimes be helpful in finding flexibility in USDA Forest Service authorities if they possess a good understanding of our authorities. If partners can understand where decisions are made (i.e. at the district, forest, regional, or national level), it can

help them find the information they need and advocate for the partnership from within and outside the agency. USDA Forest Service has a culture that sometimes "hides the bureaucracy" from partners, which does not always serve joint interests.

Example: NEPA requirements and required archeological/threatened and endangered species surveys take a lot of time (at least two seasons) and money (\$150,000 for a cultural survey alone). There needs to be trust and patience from partners that USDA Forest Service will follow through. Setting expectations early and communicating clearly about the process helps.

Tips for Phase 4: Establishing the partnership

- Personal relationships are the backbone of successful partnerships. Take the time and effort required to build strong relationships with a broad base of supporters.
- Focus on meaningful stories that are relevant to local communities when building support.
- Take the time to explore a variety of financing options. Don't be scared off by an opportunity you've never heard of – learn more.
- Finance your WIP using a diversity of sources, including public, philanthropic, and private funds.
- Develop a WIP plan that is useful for you. It should be simple and accessible, but also exciting.

Phase 5: Implementing the partnership

After devoting time and energy to scoping local needs and opportunities, analyzing whether a WIP is a good fit in your landscape, and establishing the partnership, it is time to implement.

- Implement Watershed Management Plan. Your watershed management plan provides a ready guide for implementation. While this document should prove a useful guide throughout, stay open to the possibility that you will have to adapt to changing operating conditions.

- Focus on a proof of concept project before you go big. Starting small can lead to big change. One bilateral partnership and/or activities in one landscape establish a foundation for a broader shift at a later date.

Example: *The seeds of the Santa Fe Municipal Watershed Plan began in 1997, when the city and Santa Fe National Forests began a joint assessment of high-profile areas in the Santa Fe Watershed. USDA Forest Service initiated public scoping for an EIS to identify fuel-reduction treatments in the assessment area on the Espanola Ranger District. When the Cerro Grande fire hit in 2000, this existing relationship and analysis helped mobilize a broader coalition and larger geographic engagement.*

- Sharing implementation responsibilities sustains buy-in and accelerates outcomes.

Example: *In the Flagstaff Watershed Protection Project, USDA Forest Service prepared sales and then handed the oversight of the sale contracts to the City of Flagstaff.*

- Keep lines of communication open. As highlighted in prior sections, the foundation of success lies in the strength of partners' relationships. Check in regularly, celebrate victories, and engage in open conversations about challenges.
- Monitor project outcomes and document success. Success can be defined in a variety of ways – as acres treated or protected, the existence of self-sustaining financing for maintenance and restoration over a long time frame, or the achievement of specific environmental or social outcomes. Regardless of how success is defined, the key is to have a vision for what success means, and to identify intermediate indicators/metrics/proxies of progress that can be scientific, quantitative, qualitative, or process related. It is important to ensure that the chosen indicators of success can be measured and monitored, and that a direct linkage can be demonstrated between WIP activities and said measures. In addition, it is important to embed processes that allow the WIP to adapt management protocols based on monitoring results.
- Define shared metrics of success. Consider ecological as well as process-based metrics. Metrics can measure outputs (i.e. activities undertaken) or outcomes (i.e. changes resulting from activities).

Example 1: *There are challenges with defining “water replenishment” as a metric of success for Coca-Cola-funded projects in the context of USDA Forest Service nomenclature. Make sure metrics are shared.*

Example 2: *“Planning” is a success metric for the Rio Grande Water Fund. The Fund ensures that NEPA, surveys, and any other planning needs are met. The Fund learned that implementation funding is easier to raise; they have no problem spending already-raised money on planning.*

- Agree upon a monitoring strategy. Work to track project performance can be conducted by USDA Forest Service and/or partners, or it can be outsourced to a third-party monitoring service. Partners should agree upon metrics to monitor and whether proxies can be used to indicate success (e.g. acres of source watershed forest restored as an indicator of improved water quality).

Example: *The monitoring data provided by the Colorado Forest Restoration Institute at Colorado State University, which evaluates fire risk based on changes in forest health, has been instrumental to several Colorado programs. The data, from a third party, is objective and quantitative.*

- Monitoring costs money. Consider having stakeholders such as NGO and academic partners participate in developing monitoring standards, procedures, and methods. Depending on partner involvement, delegate roles in the collection, analysis and reporting of monitoring data.

Example: *For the Denver Water partnership, the utility is paying for third-party monitoring to be conducted by Colorado Forest Restoration Institute at Colorado State University. USDA Forest Service is also contributing through the Collaborative Forest Restoration program.*

- Science plays an important role. Scientific research can help to develop plans, monitor results, generate buy-in, and communicate results of activities before, during, and after implementation. It can also contribute to adaptive management.

Example: *Stakeholders like to see results. The Northern Arizona Forest Fund Annual Accomplishments Report has been a useful avenue for the National Forest Foundation to share tangible outcomes. Demonstration of metrics and met objectives strengthens partner relationships.*

Tips for Phase 5: Implementing the partnership

- Recognize that activities and timelines may not roll out in the manner planned. Be prepared to adapt.
- Use monitoring data to evaluate success and adapt management activities as need be.
- Recognize partner contributions to help sustain strong relationships and energy around the partnership.
- Use science to sustain excitement by demonstrating progress.



Central New Mexico Region

New Mexico's Rio Grande and its tributaries are a critical socioeconomic resource that supply water for wildlife and 1 million people, over half the state's population. Much of this water is stored and filtered by forests. USDA Forest Service stewards 9.4 million acres of mid and high elevation forests in New Mexico.

High stand densities, extended regional drought, insects and disease can make these forests vulnerable to high intensity wildfires. Frequent, high severity wildfires and post-fire flooding are causing soil erosion, sedimentation from runoff, diminished water storage, increased debris, and degradation that threatens water security for communities depending on the Rio Grande. In addition to impacts on natural and built infrastructure, fires also impact important values like private property, wildlife habitat, outdoor recreation, and water for indigenous communities. Forest treatments can help reduce the risk of catastrophic wildfire and avoid these impacts.

The Santa Fe Municipal Watershed Project

The Santa Fe River originates within the Santa Fe National Forests in the Sangre de Cristo range, flowing through downtown to the confluence with the Rio Grande. The River provides 40%

of the municipal water supply for Santa Fe's 80,000 residents, 30,000 households and businesses. The watershed's landscape, including the National Forest, is at a high risk for catastrophic wildfires. When the City of Santa Fe purchased the municipal drinking water system from a private provider, they took a closer interest in reducing this risk. The Santa Fe National Forest and the City of Santa Fe Water Division began collaborating in 1998 to protect watershed health, beginning with an assessment of the role of fire.

When the Cerro Grande fire (42,885 acres) destroyed 280 homes in Los Alamos and halted municipal water delivery in 2000, Santa Fe City leaders across the valley saw the potential impacts of fire in the watershed and the city's two reservoirs. It triggered the City of Santa Fe Water Division and the USDA Forest Service to accelerate their existing collaboration to establish a long-term, water-customer supported effort to restore and maintain forest health to avoid impacts from wildfire on water supplies:

- The Santa Fe Municipal Watershed Project: Reducing fuel loads in non-wilderness areas through forest treatment (2002-2009 [present]). The project included a working group with representatives from multiple organizations, working to write a watershed investment plan for the city. USDA Forest Service attended all the meetings and shared information about treatment costs.
- In 2003, an Environmental Impact Statement approved 4 years of thinning treatments on 7,000 acres of the lower watershed on NFS lands supplying Santa Fe's water.

- The Santa Fe Municipal Watershed Project incorporated long-term monitoring conducted by the Santa Fe Watershed Association. One of the requirements of SFWA's monitoring was to host one public meeting a year to share with interested communities results from implementation. Laura McCarthy from TNC attended one of these meetings and spoke about the importance of ecosystem services. This conversation initiated a broader collaboration.
- The Collaborative Forest Landscape Restoration Program: The City, Santa Fe Watershed Association, and TNC were awarded an USDA Forest Service grant to develop a 20-year watershed plan (2007-2009) for fuels and vegetation management. The partners established a Technical Advisory Group (TAG) which included a planning team, implementation team, and monitoring team. The TAG was supported through grant funding from the USDA Forest Service Rocky Mountain Research Station.
- The Municipal Watershed Plan (2009): A framework for vegetation treatment/fire management, public awareness and outreach, water management, and financial management. The plan was established in 2010 and updated in 2013; it outlines shared objectives for enhancing forest and watershed health through 2029. It became a springboard for expanding stakeholder engagement.
- This plan introduced the concept of "ecosystem services" into local vernacular by framing the public as paying beneficiaries of clean and abundant water from healthy forests. The plan established the "Water Source Protection Fund" which provides financial resources for the Municipal Watershed Investment Program. The plan outlined costs of treatments, goal outcomes, and cost-sharing agreements between the City and USDA Forest Service.
- The fund was capitalized from a \$7 million congressional earmark, a \$1.3 million grant from the NM Water Trust Board, and \$220,000 a year from a water rate increase. The program is now funded through a city revenue bond, the water rate increase, and USDA Forest Service cost-sharing and grant awards. Watershed treatment costs are matched 1:1 with agency funds and city funds.

The Municipal Watershed Investment Program supports projects in the 17,200 acre watershed to reduce the risk of high intensity crown fire. Partners focus on small diameter thinning, slash pile burning, and controlled burning in mid-elevation, ponderosa/ mixed conifer, non-wilderness forests in the municipal watershed.

Results:

- By 2009: 5,500 acres of mechanical thinning restoration completed with \$8 million in state/federal funds
 - Since 2009: 6,000 acres treated, primarily with prescribed fire and pile burning, with small areas of mechanical thinning by chain saw, in collaboration with the City of Santa Fe Water Division
 - Forest density reduced from several hundred to an average of 100 or fewer trees per acre
 - Monitoring acres treated and restored, water quality changes, and number of fire breaks
 - NEPA planning for 2,900 acres of mixed conifer within the Pecos wilderness area, which requires controlled burns to restore mosaic patterns in forest structure (Hurlocker 2014).
- The success of this effort to create conditions which support fire's role as a safe agent of restoration in the Santa Fe watershed may soon be put to the test as major fires continue to burn closer to the watershed and city reservoirs. Ellis Margolis, a research fellow at the University of Arizona's Laboratory of Tree-Ring Research, wrote in a 2009 report published in *Forest Ecology and Management* that the watershed remains "at high risk of the type of event that could destroy the water supply infrastructure and flood the historic heart of the city." The city's long range water plan warns:
- Future water demand may outstrip supply by 2021. By 2045, "the city projects its water deficit will rise to 2,700 acre feet a year, the amount needed by 10,000 families."
 - Santa Fe could lose up to 60% of its reservoir capacity in year one after a major wildfire
 - It could take more than 10 years and cost up to \$240 million to rehabilitate the watershed and the reservoirs from a catastrophic wildfire. These costs include suppression, rehabilitation, and sediment disposal. They exclude water treatment, utility operating costs, and economic impacts from lost tourism. The cost to treat and maintain forests within the Municipal Watershed is expected to be \$5.1 million over 20 years, an average of \$258,000 per year.
 - The Rio Grande Water Fund ("We are working together so nature can keep working for us")
- After the Las Conchas fire in 2011 burned 156,593 acres, "post-fire thunderstorms brought rain to the burned areas and created massive ash and debris flows in surrounding canyons. The Rio Grande turned black with sediment and water managers halted withdrawals in Albuquerque and Santa Fe, determining the ash-laden water as not worth treating. Tons of debris was deposited into Cochiti Lake, closing the area to recreation and dumping excessive sediment in the reservoir." (TNC) Fire-related damages were estimated at \$246 million.
- In 2012, Lowe's Charitable and Educational Foundation funded TNC to scope the potential of a water fund for the Rio Grande valley and Albuquerque's water supply. The Santa Fe Municipal Watershed Project served as a proof of concept, and had by 2012 generated major tangible evidence of the link between forest conditions and water supply. TNC combined

available plans, scientific data, and stakeholder input to complete a feasibility analysis. TNC presented the concept to the water and energy subcommittee of the Greater Albuquerque Chamber of Commerce, New Mexico Association of Commerce, and the New Mexico Water Business Task Force with high levels of support. The Rio Grande Water Fund launched in 2013 to scale up ongoing efforts in the landscape.

The Water Fund's goal is to "protect storage, delivery, and quality of Rio Grande water through landscape-scale forest restoration treatments in tributary forested watersheds." (RGWF 2014) The Water Fund brings together diverse partners and water users to leverage funding, conduct research to support science-based prioritization and monitoring, and apply innovative tools to achieve healthy forests and watersheds. Work and monitoring completed through the Santa Fe Municipal Watershed Project reinforced that collaborative approaches to funding and implementing restoration can accelerate outcomes for healthier watersheds.

Overview:

- The Rio Grande Water Fund convened an advisory board of now 53 watershed stakeholders to serve as charter signatories, with TNC as the convener and its first meeting in April 2013
- The charter operates like a 4-page common vision among all partners; there are no binding legal agreements, simply a shared intent to collaborate to the extent practicable
- TNC and the advisory board collaborated on a 'Comprehensive Plan for Wildfire and Water Source Protection' published in August 2014. The plan prioritizes 4 focus areas of the Rio Grande Watershed and sets project funding criteria. The plan is based on scientific analysis of watersheds most vulnerable to fire, impact of forest treatments on water yield, costs of the Las Conchas fire, and surveys of municipal water users on 'willingness to pay'
- USDA Forest Service expertise and participation contributed to setting priority areas, structuring site selection, fund management for cross-boundary implementation
- The Water Fund aggregates individual, corporate, foundation, and government donations and directs funds to projects that reduce fire risks across public, private, tribal and historic land-grant lands through successful proposals.
- Applications for funding are evaluated by an advisory board subcommittee that ranks projects based on where risk is greatest, implementation success is viable, and potential impact is highest
- Activities funded include: research, planning, and on-the-ground forest treatments (thinning, prescribed fire, stream restoration, flood mitigation, post-fire rehabilitation)
- USDA Forest Service, City of Santa Fe Water Division, and Santa Fe Watershed Association have applied for funding from the Rio Grande Water Fund to support activities of the Santa Fe Watershed Program that occur in the Water Fund's

priority areas. The fund supported projects on the Cibola, Santa Fe, Carson, and San Juan National Forests. This work is conducted through a participating agreement, using the Wyden authority to satisfy cross-boundary connections.

- The Fund seeks to disperse \$21 million per year for 20 years through a competitive grant process
- The four focus areas of the Rio Grande and Rio Chama watersheds include 1.7 million acres, the water fund is targeting 600,000 acres treated over the next 20 years, with 30,000 acres per year. At \$500 per acre, it will require from \$7 to \$15 million annually.
- In 2016, RGWF stakeholders completed a collaborative strategy in one of the four focus areas of the watershed and started two others.
- In 2017 the fund brought in \$3.6M; including a 5 year annual pledge from New Mexico's largest water utility, Albuquerque Bernalillo County Water Utility Authority. The utility will be investing in lands that it does not own at \$1M a year.

By 2015 the Rio Grande Water Fund generated \$10 million and after a proposal submission period, began investing in projects. The water fund is measuring success through acres treated for fire risk, acres rehabilitated from fire, acres of restored streams, and acres planned. The fund tracks impacts of funded projects on local jobs, community access to firewood, student engagement, tourism, and forest products market development. The fund is also defining success through the number of signatories on the charter, and qualitative indications of collaboration success (fewer NEPA objections). At 12,000 total acres treated through the Water Fund so far, the annual average of acres restored in the watershed tripled from 2013-2016. The fund supported 2,414 acres of archeological surveys for NEPA planning since its inception. TNC estimates 300-600 forestry jobs will be available each year the fund is in operation.

The shared goal for the Rio Grande Water Fund is for the fund to be self-sustaining. Next steps for the fund's trajectory include:

- Bring in additional funds and partners for restoration work
- Expand administrative functions to accommodate increases in funds and acres planned/treated
- Cultivate a work force that is available, trained, qualified with access to the right equipment
- Support capacity for smaller communities to engage in the fund's activities
- Adaptively plan as landscape conditions shift in response to changing climates
- Connect the Rio Grande Water Fund's work to other ongoing initiatives for an all-lands approach with increasing integration and scale. One of these such initiatives is the Santa Fe Fire Shed Coalition.

The Greater Santa Fe Fire Shed Coalition

In 2004, the USDA Forest Service Pacific Southwest Research Station described a fireshed as large landscapes, delineated based on fire regime, condition class, fire history, fire hazard and risk, and potential wildland fire behavior.”

The Greater Santa Fe Fire Shed Coalition (Coalition) uses a collaborative approach to improve the health and long-term resilience of forested watersheds and communities by addressing wildfire. The Coalition operates informally to support partners in identifying and implementing high priority projects that restore resilient landscapes in the southern Sangre de Cristo Mountains. This range is the backdrop for Santa Fe tourist destinations and a focal point of the traditions, culture, and arts of the area.

The Coalition was initiated in December 2015 by NM State Forester Tony Delfin and the City of Santa Fe Fire Chief Erik Litzenberg. They convened multiple stakeholders to discuss risks for high-severity wildfire in Santa Fe; in January 2016, the Santa Fe City Council adopted the Greater Santa Fe Fireshed Resolution. The Coalition formed to implement the resolution, and established communications, implementation and planning groups led by partners:

- Example partners: Santa Fe County, the Pueblo of Tesuque, New Mexico State Forestry, the Santa Fe Watershed Association, the City of Santa Fe Fire Departments and Water Division, Santa Fe National Forest, The Nature Conservancy, Forest Stewards Guild, Natural Resource Conservation Service
- The City of Santa Fe and USDA Forest Service entered into a cost-share agreement to help fund City staff’s work on the Fire Shed.
- The Nature Conservancy, USDA Forest Service, Forest Stewards Guild, and agencies of the Department of Interior received a Watershed Research and Training Center grant to develop a website to share information about the Coalition
- TNC is working on an analysis to prioritize treatments to address fire and flood risks based on the methodology outlined in GTR 315.
- The Forest Stewards Guild recently received \$1M in USDA Forest Service Supplemental/Hazardous Fuels funding for planning in priority areas for treatment in the GSFFSC
- The Pueblo of Tesuque, north of Santa Fe and adjacent to the National Forest, received a Department of Interior/ Bureau of Indian Affairs grant to complete analysis and planning for restoration on federal lands and to coordinate to complete fire risk reduction treatments

The work of the Coalition is connected to the 2014 National Cohesive Wildland Strategy, which was developed by federal, state, tribal and local government representatives to support collaborative, science based, cross-boundary approaches to wildfire response, restoration, and fire-adaptation. The Coalition

implements the tenets of the strategy to address fire risks in the southern Sangre de Cristo Mountains. Some of this work is conducted with state funding, by city/county fire crews, on federal land. New Mexico State officials, USDA Forest Service officials, tribal officials, county officials, local NGOs, and homeowners alike are dedicated to the success of the Coalition.

Focus of the Greater Santa Fe Fireshed Coalition:

- Mitigate risk in the wildland urban interface to support fire-adapted communities through fuel treatments, evaluation planning, awareness, and education
- Develop a collaborative landscape strategy and conduct project planning in high priority areas
- Implement a suite of land management tools, including wood utilization and fire

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Flagstaff Watershed Protection Project

Overview

While the Flagstaff Watershed Protection Project has its roots in a multi-decadal effort in the City of Flagstaff to increase public understanding and decrease wildfire risk, the 2010 Schultz Fire served as a catalyst for its creation. The Schultz Fire caused severe flooding and tens of millions of dollars of damage to infrastructure and private property in unincorporated neighborhoods just outside the Flagstaff city limits. While the Schultz Fire caused serious damage, the Hardy Fire that was ignited just one day before in the same area intersected with treated areas, dropped to the ground and was more readily contained. These two fires provided a stark contrast and made an excellent case for the value of forest restoration efforts. They also created a sense of urgency to address natural catastrophes proactively.

The Dry Lake Hills - sitting above downtown Flagstaff and Mormon Mountain, which feeds Lake Mary Reservoir - is the primary water supply for Flagstaff and is equally vulnerable to fire and flooding impacts. Fire and subsequent flooding in these areas could cause financial damages between \$573 million and \$1.2 billion, rendering 50% of the City’s water supply unsuitable (Fox 2014). The geographic location of Flagstaff and its contributing watersheds are strategically important, not just for the city but for the state. The primary source of water for Arizona is the Colorado River, which flows from the north and must pass through the Coconino National Forest. If water quality and quantity continue to be impacted by high severity wildfires, there are serious implications for water recipients throughout the state.

Additionally, outdoor recreation is a substantial economic catalyst for the nearby Coconino National Forest. There are



an estimated 4.39 million annual trips to the National Forest (NVUM, 2016), about 37% of which are non-local. This generates approximately \$610.4 million in expenditures each year, which provides recreation-based jobs, labor income and induces secondary spending to support other local businesses.

The size of the city also enables partners to willingly bring resources to bear to address these challenges. Flagstaff itself is large enough to have ample resources, but small enough that the relationships among key decision-makers are personal.

To fund restoration efforts in these areas the City proposed a \$10 million municipal bond in 2012. The Flagstaff Watershed Protection Project bond was approved by 73% of voters and will be used to treat upwards of 10,500 acres of NFS, State and City lands within the roughly 15,000 acre project footprint. The project is unique, as of 2016 it is the only known instance of using a municipal bond to fund forest health efforts. The goal of Flagstaff Watershed Protection Project is to accelerate the pace of restoration in the Dry Lake Hills and Lake Mary Reservoir areas in order to reduce wildfire threat and subsequent post-fire flooding, thereby protecting the community and the municipal water supply. Areas within the project had not been previously treated due to the rocky slopes (>40% grade), presence of the threatened Mexican spotted owl, and timber whose value was much lower than the cost of removal (Mottek Lucas 2015). Project implementation began almost immediately in 2013 on State and City lands, with NFS implementation commencing in 2016. Work is expected to span 10 years, until 2023.

Players

Leaders of the effort include the USDA Forest Service Coconino National Forest, City of Flagstaff, particularly the Flagstaff Fire Department Wildland Fire Management program, and the

Greater Flagstaff Forests Partnership. Supported by research from the Ecological Restoration Institute and School of Forestry at Northern Arizona University, these groups had been working together for almost two decades prior to the Schultz Fire and subsequent bond. This longstanding interaction laid a groundwork for mutual understanding of issues and solutions, well-established relationships, high levels of organizational commitment, and a unified multi-party approach (Mottek Lucas 2015).

The primary players in the project are the Coconino National Forest and the City of Flagstaff. For planning and work on federal lands, the City holds the authority to make fiscal decisions regarding use of bond funds and the USDA Forest Service holds the authority for the environmental planning process and management decisions on the forest. Current work associated with the Flagstaff Watershed Protection Project occurs through four work teams: executive, IDT, communication, and, unique to the City, a monitoring group. While the City and Forest are the primary project implementers, because the project includes state lands the executive team for the project includes the District Forester from the Arizona Department of Forestry and Fire Management and County officials in addition to leadership from the Coconino NF and the City.

The Forest created a project manager position as a not to exceed 4-year detail at the district level who serves as the lead for the IDT, communication, and implementation teams. A similar position of project manager was created at the City. The City also entered into a contract with the Greater Flagstaff Forests Partnership community group to assist in public meetings. The City and Forest has agreed to jointly conduct meetings with the public and address any issues as a unified front. (Mottek Lucas 2015)

The City made the conscious decision to use a bond election instead of a utility user fee or sales tax expressly because it would require a vote by the public and would raise public awareness of the issue. A case study of the first two years of the effort quotes Paul Summerfelt, Wildland Fire Management Officer and City Project Manager saying that voter approval “provides a big social license and provides political cover.”(Mottek Lucas 2015, pg 10)

A series of eight workshops over the course of a year were used to develop questions to be answered through the City’s Monitoring Plan, which was designed to focus on answering voters’ questions and not tied to monitoring related to National Environmental Policy Act analysis. Biannual (2x per year) reports indicate ongoing outreach on the project via local events like the Festival of Science in 2015 and the Harvesting Methods and Firewise Preparedness Open House in 2016 as well as “face-to-face, meetings, field tours, direct mailings, and various forms of electronic communication.” (FWPP 2016)

Partnership activities

Soon after the passage of the bond, the Forest and the City created a communication plan that outlined the role of all partners, communication goals, key messages, and an action plan. A stand-alone project website separate from any of the lead partners (FS or City) was also created and is managed collectively by the group. At the same time as the communication plan, the USDA Forest Service with input from the City developed an implementation plan specific to USDA Forest Service lands with the goal of providing assurances to internal (FS) and external entities on the project’s intent and components, e.g., background, objectives, estimated costs etc. Notably, this document was not a standard nor required agency document and proceeded other formal USDA Forest Service planning documents. It was used to provide Region 3 (Arizona and New Mexico) and Washington Office assurance that the project was thoroughly considered and planning was underway. In 2012 the USDA Forest Service began developing an Environmental Impact Statement for the project, however, they declined to provide a preferred alternative because public input on this novel approach would be important for making an informed decision. A concerted effort was made to expedite the environmental analysis and incorporate public comments into the Draft Environmental Impact Statement because many people would be personally affected by the decision.

Notably, the USDA Forest Service also analyzed comments to determine what ecosystem services best represented the community. Details on the process and agreements can be found in the Mottek Lucas 2015 document.

Implementation of thinning projects on federal lands began with lands already assessed through environmental analysis and included 1,200 acres. A final Record of Decision was signed in 2015 for the remaining areas. Since that time and until December 2017, 4,184 acres have been thinned, 1,485 of slash has been chipped and removed, 1,688 acres of slash has been piled and

burned, and 999 acres have been broadcast burned project-wide. Thinning activities include a combination of mechanical and hand treatments.

Restoration activities to date have been funded through the bond as well as an additional \$4.9 million by the USDA Forest Service and partners. The bond is funded via a secondary property tax. Property taxes did not increase as a result of the bond measure however because several existing bonds were expiring and the Flagstaff Watershed Protection Project bond replaced them. Treatments were prioritized in areas that contain the highest risk for uncharacteristic wildfire.

City monitoring is broken into four areas and based on questions identified by stakeholders through workshops conducted in 2013. The four monitoring frameworks include: fire behavior, hydrologic response, socioeconomic concerns, and other ongoing or potential monitoring projects. The monitoring plan addresses each of these frameworks and identifies studies that are underway or complete, needed studies, and potential/future studies and funding opportunities. Much of the monitoring work for the project is already underway by others and does not require funding from Flagstaff Watershed Protection Project. The monitoring is extensive and uses both models for fire behavior and impact of the project on flooding and sediment transport post-fire as well as on-the-ground monitoring via precipitation/streamflow gauges and “flowtopgraphy” . (FWPP 2014)

Results

Based on interviews with key players, success was defined as treating identified acres and doing so prior to another large fire. Ultimate success, however, will come when those treated acres are tested by a fire and there is ongoing funding available to maintain the areas that have been treated. Key elements that have put the project on the path to success based on Mottek Lucas case study and interviews include:

- Sense of urgency created by natural disaster – 2010 Schultz Fire
- Available science – Northern Arizona University has been at the forefront of forest restoration science for decades and could provide evidence of effectiveness of treatments in ponderosa pine forests in restoring the ecosystem and reducing fire risk to communities.
- Existing public awareness of issues – a community wildfire protection plan was created in 2005 and a code on wildland interface passed in 2008. These issues were not new to the community when the time came to pass the bond to fund the Flagstaff Watershed Protection Project.
- Coordinated communication among partners – the communications committee for the project, which has representatives from the FS, City of Flagstaff, State of Arizona and other partners continues to meet monthly to coordinate outreach and messaging.

- Keeping the management structure simple. The two indispensable teams have become the Executive and Communication working groups.
- Efficient use of a multi-party approach
- Outreach prior to vote was coordinated by a political committee and subsequent public interaction is coordinated with a local community group.
- Government entities are not bearing the full load of implementing the project and outreach/education/monitoring – for example monitoring for the spotted owl is conducted jointly by Northern Arizona University and by the US Fish and Wildlife Service
- Monitoring for endangered species (spotted owl) is conducted by NAU and U.S. Fish & Wildlife Service – that will also provide analysis and feedback, which makes the data collection and distribution more transparent than if done by the USDA Forest Service.
- Among government entities shared responsibility also helps implementation – for example, in a small thinning area the USDA Forest Service prepared the project and then handed oversight of the contract for the thinning to the City of Flagstaff.
- In selected areas, the USDA Forest Service prepared the sale and then handed the oversight of the contract for implementation of the sale to the City of Flagstaff. Doing so not only freed the USDA Forest Service to move on and prepare the next area but also for the City to apply for additional funding for implementation through the National Forest Fund.
- City and State do not have the same NEPA requirements as USDA Forest Service for their lands, therefore, they were able to start treating their lands more quickly and show early success for the overall project.
- Small, but not too small, community – Flagstaff is large enough to have ample resources but small enough that relationships among players are personal.
- Being realistic about how much the treatments will cost – it will likely be more expensive than you originally anticipate, especially when the terrain is steep or otherwise unique.
- Coconino National Forest willing to innovate and move quickly
- Coconino NF has been able to quickly conduct environmental planning, maintain a positive public engagement approach, collaborate with partners, leverage funds, and show early success (1,000 acres in first two years).
- During the NEPA scoping process the Forest did not present a preferred alternative, allowing the stakeholders to take ownership of the process. During this process the USDA Forest Service also worked very closely with the U.S. Fish & Wildlife Service on endangered species issues, which served to ease tensions with the environmental community that could have otherwise litigated.
- The Forest, to the extent practical, always anticipates the next step in the process. For example, as the NEPA Record of Decision was being completed, seasonal fire staff were kept on in order to collect pre-cruise data across the site that would be treated, so when the document was signed they were ready to start work.
- Using existing mechanisms of working with partners in new ways, the assistance of Grants & Agreements staff was key in making this happen.
- Although the project has made great progress, there are additional innovations on USDA Forest Service lands/processes that could help the project even further; such as policies that limit the number of days woody material is allowed to be left that can make it more expensive to operate and may not benefit the resource overall and new technologies to more quickly mark timber for sale.

Lessons learned from the Mottek Lucas case study include:

- Manage expectations regarding NEPA requirements and timelines
- Be prepared to show immediate on-the-ground progress
- Ensure open and quality internal communications within the USDA Forest Service – this was noted by the Forest as one of their greatest challenges, review times at the higher levels of the agency delayed on-the-ground action
- Convey project as an investment, not as a cost

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Colorado Front Range Region

Overview

The Front Range area of Colorado contains seven major water providers that together deliver drinking water to more than two-thirds of the state's population. Because of a long-standing fire-suppression policy, the Front Range experienced several debilitating wildfires beginning in 1996; these fires damaged private property as well as water infrastructure and filled critical water reservoirs with sediment. (Subsequent pine beetle infestations also damaged the forests.)

In 2007, Colorado's Forest Service and the U.S. Forest Service (USDA Forest Service) convened a meeting with Front Range water providers to discuss strategies for protecting regional watersheds. The group set up an umbrella partnership called the Front Range Watershed Wildfire Protection Working Group, committed to developing and implementing a strategy to protect area watersheds from severe wildfires and to educating the public about the connections between forest health, wildfires, and water infrastructure. The group developed a methodology to conduct fire assessments (paid for by utilities) to determine where forest treatments should be prioritized to reduce wildfire risk near important source watersheds. Many sub-partnerships have since been established in various regions of the Front Range; each uses the methodology and resources developed by the Working Group. As time goes by, recurring forest fires continue to galvanize public support for the Working Group as well as its sub-partnerships.



Players

Several entities are members of the Working Group. These include federal agencies like the USDA Forest Service, Bureau of Land Management, Natural Resources Conservation Service, and U.S. Geological Survey; state agencies like the Colorado Division of Emergency Management, Division of Public Health and Environment, and USDA Forest Service; nonprofit organizations like The Nature Conservancy, American Water Works Association, and The Wilderness Society; water consultancies; and regional water providers. At the local/regional level, sub-partnerships normally include individual National Forests, utilities, and divisions of the Colorado Forest Service.

Partnership Activities and Results

The Front Range partnerships are achieving multiple benefits for the public through their integrated, watershed-scale approach to land management. Collaborative funding structures used by many sub-partnerships help connect water providers (public and private forest landowners) with the downstream beneficiaries (utilities and municipalities) of the invaluable ecosystem service of water. In many partnerships, beneficiaries generate fees from water users, and multiple stakeholders engage in shared planning to direct these funds to high-priority areas for forest treatment. Partners structure direct relationships for implementation through site-specific partnership agreements and action plans that identify mutual goals, priority areas, and treatment types. This suite of partnerships incited by the Working Group is driving new awareness and dialogue around the importance of healthy forests for securing water supplies.

- Public outreach is a major activity of the Working Group and its regional water providers, city councils, and agency stakeholders. As a result, the public maintains a high level of knowledge about the connection between forest health, wildfire risk, and drinking water, as well as a high level of support for watershed restoration partnerships.
- Through initiatives connected to the Front Range water partnerships, USDA Forest Service contributed about \$39 million and partners more than \$29 million to forest restoration. This brings the total investment from 2009 to 2017 to over \$65 million.
- Accomplishments to date include 57,000 acres of hazardous fuels treatments, 36,000 acres of noxious weed management, 1.3 million trees planted, 355 acres of wetlands and riparian areas restored, and 80 miles of recreation trails and roads restored, constructed, or decommissioned with the help of over 2,700 volunteers.

Three diverse examples of these partnership: Fort Collins (North)

In the Fort Collins region, years of devastating wildfires led to the formation of the Colorado-Big Thompson (CBT) Headwaters Partnership by Northern Water (a public agency), the U.S. Bureau of Reclamation, the Colorado State Forest Service, and the Arapaho and Roosevelt National Forests. The partnership's goal is to work proactively to restore the watershed's health and to plan for future wildfire responses that will protect water infrastructure.

Partners signed an MOU in 2012 and are currently working to add the Rocky Mountain National Park and the Western Area Power Authority as signatories and to develop a five-year plan. The Bureau of Reclamation and Northern Water store and deliver water from the CBT watersheds to nearly a million people and more than 640,000 acres of agricultural land within eight counties. Through cost-sharing among partners, the CBT Partnership has completed over 400 acres of fuel reduction treatments on public and private lands. Funding to date from partners totals \$530,000.

Colorado Springs (South)

Colorado Springs Utilities provides water to 450,000 customers in Colorado Springs. Through a five-year MOU signed in 2013, the USDA Forest Service and Colorado Springs Utilities planned to implement hazardous fuel and forest health treatments, watershed restoration, wildland fire pre-suppression planning, invasive aquatic species mitigation, and other projects of mutual interest on the Pike-San Isabel and White River National Forests. Colorado Springs Utilities has established an annual budget of \$1.7 million to support partnership activities.

Within the greater Colorado Springs watershed are several sub-watersheds, including Pikes Peak, Arkansas Headwaters,

Upper Arkansas, and South Platte Headwaters. The partnership developed a five-year plan outlining priority actions for treating forests throughout these areas and completed watershed assessments and prioritizations for many of these sub-watersheds, following the framework and process laid out by the Front Range Watershed Wildfire Protection Working Group.

Accomplishments thus far include 4,480 acres of hazardous fuel treatments near Crystal Creek Reservoir in the Pikes Peak watershed and 67,000 acres of environmental analyses. Current work focuses on mechanical hazardous fuel treatments, prescribed burns, reviews of road hazards, stakeholder collaboration, and environmental analyses and wildlife surveys in key watersheds. Colorado Springs Utilities has expressed interest in renewing the MOU for another five-year term.

Denver (Central)

The Denver Water partnership is unique within the Front Range due to both its size and the participation of a regional office of the USDA Forest Service (rather than individual forests). Denver Water is the largest water provider in the state, serving 1.4 million people in the Denver metropolitan area (a quarter of the state's population). Most of Denver's water supply originates as snowpack and rainfall in the mountains of northern and central Colorado in three National Forests—the Arapaho-Roosevelt, Pike-San Isabel, and White River National Forests. These forests also serve as popular recreation areas. Like the other Front Range partnerships, the development of the Denver Water partnership was spurred by a series of damaging wildfires that required expensive suppression, clean-up, and rehabilitation (\$27 million spent by Denver Water on water quality treatment and operational challenges, \$37 million spent by USDA Forest Service on restoration, and \$42 million spent by state and federal agencies on fire suppression). These fires were a wake-up call to the utility that it needed to shift its focus toward being proactive rather than reactive. The utility partnered with the USDA Forest Service to proactively address forest health challenges and to help reduce the probability of damaging fire and flood events near its infrastructure in critical watersheds on these three National Forests. They formed the “From Forests to Faucets” partnership in 2010 and signed an MOU that same year. From 2010 to 2016, the USDA Forest Service contributed over \$21 million from regular appropriations, and Denver water contributed \$16.5 million through standard water rate structure increases to municipal users. USDA Forest Service paid for its portion of the work through annual collection agreements with Denver Water. The average Denver Water residential customer paid just \$27 to support this program from 2010 to 2016. The cost was included in the standard rate structure for water customers and was not shown as a separate line item on customer bills, though the utility did notify customers of the new program through public outreach.

From 2011 to 2016, partners directed funds for hazardous fuels reduction, prescribed burning, road and trail improvements,

invasive species treatments, and reforestation treatments in “Zones of Concern” (identified through a GIS assessment process and stakeholder input). Results included 49,400 acres treated for hazardous fuels including prescribed burning; 8,800 acres of reforestation in burned areas; 1.3 million trees planted, and 36,000 acres of noxious weed management. An economic analysis of post-treatment fire severity in the Upper South Platte River watershed southwest of Denver found that when fire mitigation treatments were placed in priority areas, a positive return on investment was found after treating 50-80% of the forested area, with benefits generated from the avoided cost of dredging the Strontia Springs reservoir for sediment. Throughout the partnership, one of the challenges has been finding contractors who could do the work, particularly in remote, hard-to-access places. Lining up all of the necessary contractors and implementers took a great deal of time.

In 2017, Denver Water and the USDA Forest Service renewed their joint commitment through 2021 and expanded the program to include private lands by welcoming two new partners into the fold: the Colorado State Forest Service and the Natural Resource Conservation Service. These partners will support forest treatments and watershed protection activities across 40,000 acres of public and private forests in order to lower the risk of high-intensity crown fire, rehabilitate burned areas, and minimize erosion and sedimentation to restore critical watersheds. Denver Water will invest a further \$16.5 million in forest and watershed health projects within critical watersheds (bringing their total investment in the program to \$33 million). The USDA Forest Service, CSFS, and NRCS will contribute a further \$16.5 million, bringing the total ten year collective investment in the project to over \$70 million.

Another exciting component of the renewed partnership is the new monitoring program that has been initiated. Colorado State University is working with Denver Water to assess the utility's return on investment from its restoration work as compared to the costs of reacting to damaging wildfires.

Lessons Learned

Structuring partnerships

- The collaborative umbrella group (the Watershed Wildfire Protection Group) was integral in bringing together municipal water providers and state and federal agencies to build relationships, a common understanding of the issues surrounding Colorado's watersheds, and a standardized approach to setting up and prioritizing on-the-ground projects.
- Bringing representatives from successful watershed investment partnerships to the table when setting up new ones can be very helpful in building public support and buy-in (representatives can explain avoided costs of fires/floods from their experience). It is also important to quantify the return on investment from the restoration work.

- Signing Memoranda of Understanding (MOUs) and formalizing partnerships helped lay the groundwork for long-term collaboration and investment. Flexibility should be built into partnership agreements to allow for shifts and changes in priorities. Additionally, partners should consider the long-term staff capacity required to maintain the relationship.
- Working with nonprofit organizations like the National Forest Foundation and TNC helped bring in corporate funding and opened up another avenue for engagement with utilities. When connecting with utilities initially, it is often best to work through these nonprofit partners.
- Community and industry leaders can serve as excellent anchor partners and catalysts for broader network engagement.
- Relationships should be built with diverse types of partners, as well as with partners at all levels of their organizations (within FS, this would include the leadership, regional, and forest levels) to integrate and institutionalize the collaboration. Additionally, by periodically recognizing partners publicly, USDA Forest Service can help strengthen their commitments to the projects.
- Wildfire risks are affected by multiple dimensions of ecological and social trends. Wildfire impacts are distributed across multiple industries, communities, and stakeholders. Therefore, water can bring diverse stakeholders to the table and serve as a launching point for future collaboration.
- Conducting large, landscape-scale assessments helps bring in a variety of stakeholders and communities. This will help to “capture” small communities and utilities that don’t necessarily have the resources (time, staff, money, or attention) to join WIPs on their own.
- Leaders should consider bundling together multiple partners from watersheds that serve more than one community; this will increase efficiency and bring in additional resources.
- Developing multi-year project plans and priorities and reevaluating them each year for each partnership - in person - have been extremely useful in helping partners plan for their investments.

Project Management

- Partners should be invited to help pay for NEPA and cultural/environmental surveys in order to accelerate shared objectives for forest treatments.
- Focusing on an all-lands approach has been extremely successful. However, accessibility and ownership issues can affect treatment options in priority areas (slopes, roads, etc.).
- Leaders should consider integrating community and watershed protection by supporting collaborative strategy approaches that restore forests, protect communities from the impacts of fire, and develop coordinated wildfire responses.

- The USDA Forest Service needs to spend sufficient time planning with its WIP partners developing projects of mutual interest, rather than focusing on moving forward with its own projects (which may or may not be priorities for utilities and other partners).
- The USDA Forest Service needs to work on maintaining its WIP engagement despite constantly changing staff (details, promotions, moves, etc.). Engaging in the WIP should be a specific part of someone’s job (and that person should report to the Forest or District level leadership). Also, WIP engagement should be an agency-wide priority – and that direction should go out to the field.

Finance and Budgets

- The USDA Forest Service should continue its focus on expanding markets for small-diameter wood. Because these markets are undeveloped in many places, it is difficult to do anything with the products of thinning beyond destroying them. Much of the costs of thinning could be recouped if the byproducts could be funneled into various innovative wood markets or biomass products.
- USDA Forest Service reimbursable collection agreements are an uncertain financing tool due to their unpredictable timing. Additionally, agency billings are confusing, and the agency cannot always ensure annual appropriations will be available. The USDA Forest Service should set up multi-year partnership match goals/targets but work with partners to manage expectations re out-year match commitments.
- USDA Forest Service needs to examine and rework its budgeting systems. Partner dollars currently go into a separate system from appropriated funds, with fewer checks and less reporting. Additionally, there is a high risk for USDA Forest Service units to begin to rely on partner funding to achieve their “core” work and pay their employees’ salaries. USDA Forest Service could move toward a multiple-funding-source model (much like nonprofit organizations); this would help with budgetary management. It is important to ensure core tasks are being accomplished with appropriated dollars and “extra” work is being done with partner dollars. It is also important to ensure that official targets are not set based on partner funding, since that funding could dry up at any time.

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Northern Arizona Forest Fund

Overview

The National Forests in Arizona provide most of the water to the Salt and Verde Rivers, one of the key water sources for residents and businesses in the greater Phoenix area. Past events in Colorado and other Arizona watersheds have shown the detrimental impacts of large-scale fire to water quality, availability, and to delivery infrastructure.

Wildfire increases erosion and sediment delivery to streams, rivers, and reservoirs. Historic forest management practices in the Salt and Verde watersheds have resulted in forests that are now overly-dense and experiencing catastrophic wildfires that are impacting these vital water supplies. Local stakeholders have pursued proactive investment in green infrastructure to restore forest health and protect watersheds to reduce impacts to water

quality and supply. This also provides other benefits such as improving wildlife habitat and recreational areas.

The Northern Arizona Forest Fund applies funds to projects selected in collaboration with USDA Forest Service, National Forest Foundation (NFF) and funding partners for shared benefits such as clean water and reduced fire risk. Established by the NFF and Salt River Project, the Northern Arizona Forest Fund expedites watershed restoration in the Salt and Verde Watersheds through collection and distribution of funding for shovel-ready watershed improvement projects in the Kaibab, Coconino, Apache-Sitgreaves, Tonto, and Prescott National Forests in northern Arizona.

Players

NFF oversees, manages and administers the Northern Arizona Forest Fund and has the necessary mechanisms established and an intimate relationship with USDA Forest Service to help move funds from the WIP to strategic restoration projects. NFF is a congressionally established non-profit partner of USDA Forest Service that is authorized to collect private funds to improve National Forest System lands, helping to build public-private partnerships. It collaborates closely with USDA Forest Service to collect and channel partner funding to National Forest System

priorities. NFF is experienced in engaging volunteers, facilitating collaboration, and contracting forest treatments. For the Northern Arizona Forest Fund, NFF promotes the program with potential partners, negotiates partner agreements, solicits bids from contractors for project work, and is the contract client for on-the-ground work.

Salt River Project is the NFF's anchor partner to the Northern Arizona Forest Fund, helping build partnerships and acting as an advisor in the selection of projects. This makes the Northern Arizona Forest Fund distinct from watershed investment partnerships (WIP) that involve several water delivery or utility partners concerned with different watersheds. Salt River Project is the oldest multipurpose federal reclamation project in the United States, serving central Arizona since 1903. It provides power to about one million customers, and delivers about 800,000 acre-feet of water annually, a majority of which originates from the snowfall and runoff of the Salt and Verde watersheds. Because of its water delivery obligations and a concern of high-intensity fire and flooding impacts, Salt River Project closely monitors the 13,000 square miles of watershed; 59% of those are within National Forests. Salt River Project understands that investment in forest restoration projects will protect Salt River Project reservoirs storage capacity and longevity from major inflows of sedimentation following a catastrophic wildfire. It will mitigate municipality water quality treatment costs and reservoir storage impacts related to catastrophic fire and post-fire flooding by avoiding fire through forest restoration and watershed improvement projects. Salt River Project's strong relationships with local cities and businesses strengthen the greater WIP by lending NFF credibility and providing access to potential major funding partners.

As of 2017, 21 strategic partners have joined the Northern Arizona Forest Fund. These partners include local businesses, large corporations, non-governmental organizations, and municipalities. Each municipal partner contributes funding and public education of the importance of watershed health. NFF encourages partners to make three year commitments to the fund to ensure a long-term funding supply for further investment in strategic watershed improvement projects.

As part of the Northern Arizona Forest Fund, USDA Forest Service identifies strategic restoration projects on National Forest System land using a landscape-scale perspective and provides an on-the-ground presence to help potential partners understand the value of the work and to watch over project implementation. Through another restoration effort, USDA Forest Service Collaborative Forest Landscape Restoration Program funds the Four Forest Restoration Initiative, a collaboration between stakeholders and USDA Forest Service to carry out landscape-scale forest restoration across the Kaibab, Coconino, Apache-Sitgreaves, and Tonto National Forests in northern Arizona. About 2.4 million acres have been identified for assessment to improve forest health and sustainability. The goals of the Four Forest Restoration Initiative are to provide for

fuels reduction, wildlife and plant diversity, and community fire protection and preparedness, and to enhance local economies through the use of excess trees. The Four Forest Restoration Initiative is an ongoing intensive effort that crosses multiple forests and requires extensive environmental analysis to approve a variety of restoration work. During the earlier phase of the process leading to the establishment of the Northern Arizona Forest Fund, NFF and Salt River Project were working on creative ways to accelerate watershed restoration while decision-making for the Four Forest Restoration Initiative was still underway. Now that the first large area of the Four Forest Restoration Initiative has a Record of Decision, the Northern Arizona Forest Fund is able to fund watershed projects that are within the Salt and Verde watersheds and the Four Forest Restoration Initiative's footprint, and would not otherwise be implemented due to lack of federal appropriations. However, not every Northern Arizona Forest Fund project on National Forest System land is within the Four Forest Restoration Initiative footprint, and not every Four Forest Restoration Initiative watershed project is funded by the Northern Arizona Forest Fund.

How it Works

NFF is responsible for collection of funds into the Northern Arizona Forest Fund and dispersal of funds to the parties implementing on-the-ground projects. NFF prefers multi-year agreements with partners; however the lengths of commitments vary and each partnership agreement is unique. Among the agreements funding the Northern Arizona Forest Fund are several memoranda of understanding with local municipalities that pledge total funds to be dispersed over the term of the agreement: \$75,000 from the City of Glendale, \$90,000 from the City of Mesa, \$75,000 from the City of Peoria, \$600,000 from the City of Phoenix, and \$120,000 from the City of Scottsdale. Additionally, the Arizona Department of Environmental Quality provided a \$50,000 grant to the Northern Arizona Forest Fund. Specific information on private donor agreements was not readily accessible.

On an annual basis, priority restoration projects are identified by USDA Forest Service and provided to NFF for consideration. NFF, Salt River Project, and an advisory committee composed of representatives from public, private, and non-profit organizations then oversee the selection of projects from the recommended list. Projects should be shovel-ready for implementation, meaning that all environmental permitting (e.g., National Environmental Policy Act, NEPA) and pre-work analyses are in place for work to begin. The organizations that implement the projects include non-governmental organizations, private contractors, and USDA Forest Service units. Projects involve:

- Forest Thinning and Prescribed Burning – Restore natural fire to the forest ecosystem, mechanically thin small-diameter trees to reduce fuel loading, minimize bark beetle impact, and improve understory and soil condition

- Stream and Wetland Restoration – Restore and stabilize stream banks, reconstruct and enhance wetlands, and install fencing to protect sensitive habitats
- Sediment and Erosion Management – Improve runoff and drainage conditions, and reduce sediment loading into springs, streams and wet meadows
- Habitat Improvement and Re-vegetation Projects – Improve and restore aspen forests, grasslands, wet meadows and other important forest and woodland habitats

Results

NFF and Salt River Project conceived the idea of the Northern Arizona Forest Fund in the spring of 2014, and launched it in the subsequent fall. Projects are accomplished within each calendar year, showing funders tangible results in a relatively short term. In 2015, its inaugural year, the Northern Arizona Forest Fund provided funding for two projects on the Coconino National Forest.

The Upper Beaver Creek Forest Health Project restored 3,740 acres of forest via prescribed fire treatments and forest thinning in ponderosa pine forests to allow fire to move through the forest without climbing into the crown and becoming unnaturally severe. The Northern Arizona Forest Fund worked with Conservation Science Partners to monitor forest characteristics before and after treatment, demonstrating that prescribed burn reduced high severity fire risk in this area by reducing canopy cover by 15%, and fuel loading by 27%. The positive influence of this project has already been seen: following the completion of this project, a lightning strike lit a wildfire nearby that burned around the forest health project's prescribed burn area. USDA Forest Service staff believe the prescribed thinning and burning helped keep a powerline from being decommissioned.

The Oak Creek Erosion Control Project included 31 miles of road drainage improvements and the rehabilitation of damaged ecosystems along nearly 20 miles of forest roads to improve water quality by decreasing sediment delivery to streams. Photo point monitoring and a Water Erosion Prediction Project model are being explored as monitoring approaches for assessing effectiveness of erosion control work for this and similar projects.

Both 2015 projects were completed on time and within the same calendar year of selection at a total cost of \$230,000. In 2016 the Northern Arizona Forest Fund invested \$490,000 to accomplish six on-the-ground projects across five forests that included forest thinning and prescribed burns, erosion control, and stream and meadow restoration. Seven projects are now being implemented in 2017, with another six projects identified for 2018.

Lessons Learned

Having a willing anchor partner and many municipalities committed to the partnership are big wins.

Salt River Project cares a lot about healthy watersheds, and has leveraged its relationships with many Phoenix-area



municipalities and businesses to connect them to the value of protecting forests and restoring watersheds and to the resiliency of their local communities. The municipalities' willing alignment with Salt River Project, NFF, and FS, and support as partners has been especially key to the success of the Northern Arizona Forest Fund.

- Multi-year commitments from funding partners allow a WIP to line up projects into the future. Because the Northern Arizona Forest Fund asks for three-year partner commitments, it is able to plan for future projects without needing to renew all partnership agreements annually. Long term commitments lend some future certainty to the planning process.
- Accomplishing valuable projects is challenging, but a big win. It is not easy to know exactly which project will yield the highest ecological and watershed protection benefits, but when valuable projects are accomplished, the partnership garners credibility.
- Annual accomplishments reporting is important. Stakeholders like to see immediate results. The Northern Arizona Forest Fund Annual Accomplishments Report has been a useful tool for NFF to share tangible outcomes. Demonstration of metrics and met objectives strengthens partner relationships.

- Actively communicate with investors throughout the year regarding project progress. Investments made in forest health projects are typically expensed over several years. It is important that the NFF and USDA Forest Service communicate with funding partners throughout the year regarding progress on projects and resources spent. This ensures that the Northern Arizona Forest Fund remains top of mind, funding partners are able to provide periodic updates to their organization's leadership on project status, and NFF and USDA Forest Service stay in contact with partners to answer questions and display appreciation for the investment.
- Multiple initiatives can serve one landscape. The Four Forest Restoration Initiative, the Northern Arizona Forest Fund, and the Flagstaff Watershed Protection Project, a WIP that also works with the Four Forest Restoration Initiative and the Coconino NF, each play a unique and valuable role in pursuing the greater achievement of healthy forests and watersheds in northern Arizona.
- Committed, available USDA Forest Service staff are essential for smooth project execution and partnership strengthening. NFF staff specifically shared that it is helpful when USDA Forest Service provides an experienced grants and agreements manager and on-the-ground liaisons. An experienced grants specialist can help expedite a forest's cost-share agreement with NFF, the first step required before NFF can solicit bids and establish contracts for on-the-ground work. Once a project is underway, a USDA Forest Service liaison should be available for site visits and modification advice. Northern Arizona Forest Fund projects have been smooth when these two key roles are filled by attentive USDA Forest Service staff, typically from a district office. Projects and partnership relationships can suffer from lack of staff continuity due to details and fire assignments. USDA Forest Service staff can, as much as possible coordinate ways to be accessible or backed-up when leaving their WIP-related responsibilities for other assignments.
- Be ok with compromise. In the Northern Arizona Forest Fund process, the advisory committee provides input to and voices approval of the final projects to receive funding. USDA Forest Service participates in the advisory committee meetings to help answer questions about the projects, including technical and logistic details. While USDA Forest Service identifies priority projects to the committee, there is a secondary role for partners and stakeholders to weigh in on projects, in large part considering the value to the watershed and the 'fundability' of projects. This collaborative, partner-led process is valuable, but steps beyond the normal FS-led process for project implementation. In this new public-private partnership approach for investing in watershed restoration,

all parties must come to the table and find compromise with a new way of doing business. In this way, a greater endeavor is accomplished.

- Explore ways to streamline budgeting, project planning, and implementation processes. Suggestions that can be considered for improving the processes involved in a WIP:
- Have a long-term plan for each area so to help accomplish pre-work, resulting in shovel-ready projects. Watershed Restoration Action Plans and other larger-reaching NEPA decisions will be useful planning tools to work from to identify priority projects and to focus efforts on larger landscape results.
- Incorporate a holistic survey approach and assess survey needs in advance so that all surveys for one footprint can be conducted together.
- The streamlining process may vary by unit; one successful district convenes all their resource specialists at once to discuss and plan projects.
- Focus on improving timing and coordination. It can be a struggle for NFF and USDA Forest Service to work together to complete project write ups and cost estimates in a manner that is both timely and well-timed with project and funding availability. Sometimes projects have already been completed via other means by the time the Northern Arizona Forest Fund is able to provide funds.
- Create a statewide restoration database that tracks restoration projects and activities to identify needs and demonstrate progress.
- Integrate established, multi-year partner efforts into USDA Forest Service budgeting and planning.

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Sierra Nevada Region

Overview

The Sierra Nevada mountain range provides more than 60% of California's water, consumptive use for 23 million people. The ten national forests (Tahoe, Eldorado, Stanislaus, Plumas, Sierra, Inyo, Sequoia, Lassen, Modoc, and Lake Tahoe Basin Management Unit) in the range have developed cross-landscape, co-funded watershed partnerships to enhance forest health.

Overly dense vegetation and drought have resulted in insect & disease and wildfire susceptibility, and subsequent tree mortality. More than 102 million trees have died since 2014 as a result of bark beetle infestation, and 30 million more trees destroyed by wildfire in the past three years. In addition to fire suppression and property damage costs, mercury, sediment and other pollutants are released by rainfall after large wildfires, impacting water quality. Water supply to the Sacramento-San Joaquin Delta, the San Francisco Bay Area, and southern California is also impacted by reduced storage capacity due to post-fire sedimentation and

damage to meadows and rivers. With the help of a consultant, the Sierra Nevada Conservancy developed a report estimating that \$68 million in fuel treatments invested in the Mokelumne watershed could generate between \$126-224 million in benefits stemming from the avoided costs of wildfire damage to property, merchantable timber, transmission lines saved, avoided water quality treatment costs, and carbon sequestration.

Two high-profile wildfires in the early 2000s resulted in states of emergency for urban communities. These inspired a series of comprehensive plans and partnerships among federal, state and local agencies and nonprofits between 2008 and 2015 to:

- Extend water storage capacity and improve groundwater management;
- Increase flood protection near important reservoirs;
- Provide safe drinking water for communities;
- Identify sustainable financing opportunities for environmental outcomes;
- Protect people, communities and property from large damaging fire;
- Enhance carbon storage in healthy forests (as well as reduced GHG and particulate matter emissions from wildfire);
- Protect important habitat;
- Protect recreational opportunities;
- Increase awareness among policy-makers, downstream beneficiaries and other stakeholders about the urgent need for and benefits of forest restoration

As these frameworks and associated collaborative groups materialized (along with federal, state and local funding), the Sierra Nevada Forest & Community Initiative (SNFCI 2014) emerged as a critical coordinating body. In 2015, the Sierra Nevada Conservancy, in partnership with Region 5 USDA Forest Service, launched the Sierra Nevada Watershed Improvement Program (WIP), a coordinated, integrated, collaborative program to restore the health of California's primary watershed through increased investment and needed policy changes.

Associated partnerships typically occur at the watershed scale (e.g., three CFLR-SCALE programs have treated on average 100,000 acres per project per year). In most partnerships, the USDA Forest Service manages at least half of the land in the proposed treatment zones, with additional ownership by private individuals and companies, Department of Interior, and state/local governments. The geographic extent of project (treatment) areas can range from 60,000 to 500,000 acres. For reference, the USDA Forest Service estimates between nine million acres of National Forest System land in California is in need of restoration to restore forests to their natural, resilient and functioning state.

Players

The WIP itself is comprised of many state agencies, including but not limited to the California Department of Forestry & Fire Protection (CALFIRE), the Department of Fish & Wildlife, and the Department of Water Resources, as well as federal land management agencies (primarily USDA Forest Service, the National Park Service, Natural Resources Conservation Service, and U.S. Fish & Wildlife Service). These agencies help integrate water and habitat management objectives across plans, identify synergies and connect projects with available funding. CALFIRE is also critical in helping to quantify the risks (avoided costs) and true costs of forest restoration. The Program is spearheaded by the Sierra Nevada Conservancy (SNC), a state agency focused on the Sierra Nevada region that provides strategic direction for natural resource management in a way that improves environmental, economic and social well-being. The Conservancy was essential in increasing and directing investment across restoration partnerships, while identifying the policy issues impeding meaningful work. USDA Forest Service is a significant partner, completing watershed assessments on all National Forests in California as part of the WIP. Other stakeholders include environmental advocacy groups, business councils, and forestry associations. For more details on organizational structure and full partner list, please refer to the Conservancy website.

Activities and Implementation

The WIP focuses on increasing the pace and scale of watershed restoration by:

- **Increasing Investment:** The current level of state, federal, local, and private investment in our forested watersheds is inadequate to meet the need. The consequences of over-

grown, unhealthy forests result in far greater costs than the restoration work needed;

- **Addressing Policy-Related Barriers:** A number of policy-related barriers need to be addressed in order to restore our forests and watersheds to a healthier state;
- **Supporting existing and promoting development of new wood and biomass process infrastructure in the Sierra Nevada:** The lack of wood and biomass processing infrastructure in the Sierra Nevada is a significant impediment to forest restoration efforts;
- **Implementing new or underutilized approaches to restoration:** By working with partners to test innovations that may offer more effective approaches to planning, funding, and implementation of watershed restoration, the WIP can identify opportunities to improve and replicate them in order to increase the pace and scale of restoration.

The WIP builds on existing state carbon, bioenergy and water action plans, and the USDA Forest Service Regional Leadership Intent for Ecological Restoration. The WIP uses GIS analyses and national, regional, and local databases to assess baseline conditions and identify watershed restoration needs.

Landscape-scale restoration projects over a ten-year period are anticipated to cost \$12-\$38 million (based on the three regional CFLRs) leveraged with at least 50% partner funds, although other landscape-scale restoration projects outside of CFLR vary widely. Most common mechanisms for project completion with CFLR landscapes include timber sales and stewardship contracting (retained receipts), as well as use of Memorandums of Agreement and Master Stewardship Agreements. Vegetation removal (either sawlog timber value or biomass utilization) was identified as primary means of subsidizing many of the restoration treatment activities. Many of the projects proposed diversified timber and non-timber utilization strategies to complement neighboring-county processing facilities and co-generation plants while working with economic development agencies to provide specialized training in biomass removal. Additional activities included invasive species management and noxious weed removal, gully stabilization and road realignment to encourage natural hydrologic functioning in meadows, and other projects promoting heterogeneity in existing forest structure to improve wildlife habitat.

Certain groups were targeted to attract very specific funding streams outside of CFLR areas when there is a mutual interest in project outcomes. Examples of external funding channels include:

- The National Fish & Wildlife Foundation's Sierra Meadows Restoration Program helped leverage \$366,400 in total funding with the help of Coca-Cola on the Eldorado National Forest's Indian Valley to elevate the water table by 0.98 feet and replenish 305 million liters of water, much of it supplying 1.3 million people in the San Francisco Bay Area;



- A commitment from Pacific Gas & Electric as part of its Federal Energy Regulatory Commission (FERC) relicensing and settlement to encumber a 236-acre conservation easement along the Fall River to be managed in perpetuity by Wetlands Trust America Inc;
- A recent commitment from Coca Cola, Nestle, PepsiCo and Miller Coors to leverage \$600,000 in California water safe drinking water and infrastructure grants towards the French Meadows Reservoir Project on the Tahoe National Forest, with most of the funding geared towards forest management activities that ensures water supply at the American River headwaters.

Generally, around 90% of project funding is used to implement project activities and bring on needed capacity, with 10% accounting for monitoring.

Metrics and Indicators

To evaluate the effectiveness of the Sierra Nevada Conservancy over time, 23 Indicators were approved through public outreach process and finalized by the organization's governing board in 2011. The result was a series of six reports which serve as the baseline (2011-2012) for additional analysis over time, with periodic updating to observe whether activities are meeting

intended outcomes. Programmatic indicators were characterized into six categories: Demographics & Economy; Land Conservation & Wildlife Habitat; Water & Air Quality, Temperature, Precipitation, Snowpack; Forest Health & Carbon Storage; Fire Threat; and Agricultural Lands & Ranches.

These indicator reports served as a baseline assessment for current conditions in the Sierra Nevada region with which to compare landscape outcomes over time. In addition to providing information relevant to the administration of the Conservancy's programs throughout the Sierra Nevada Region, it was also designed to be useful to others located in, or working in, the Region as they develop and implement their own projects and programs.

Multi-party monitoring strategies were tiered from the System Indicators, identifying non-federal partners to assist in development of ecological and socioeconomic monitoring to verify whether activities are meeting landscape objectives over time.

Results

A great success achieved by the WIP was the acceptance of shared responsibility for pressing natural resource challenges across all levels of government, conservation organizations, scientists, industry groups, and private financiers. These groups have reached consensus on common objectives and leveraged federal, state, and private capital to deploy coordinated strategies that deliver meaningful impact if successfully implemented and monitored. Partnership successes relied on a shared strategic vision (i.e. Pacific Southwest Regional Forester's Ecological Restoration Leadership Intent and Governor's State Water Action Plan), regional-scale environmental assessments quantifying biological and social baselines, and a commitment to supporting communities through diversified forest products, recreational industries and support to local public services. This commitment has manifested itself into a number of tiered strategies, including the USDA Forest Service-California Natural Resources Agency Good Neighbor Authority Master Agreement, the Sierra Meadows Strategy, and the Tahoe Central Sierra Initiative & MOU.

Regional partnerships are a result of years of relationship building paired with a champion or flagship organization able to motivate interest groups and promote a shared vision. Here, the SNC was the convener, using SNFCI and establishing the WIP as an overarching frame for more localized collaborative partnerships.

Funding has followed WIP's established intent. In addition to annual appropriations allocated as part of the President's USDA Resilient Lands & Waters initiative, (\$130 million during 2015-17 to the California Headwaters Partnership) the state's Greenhouse Gas Reduction Fund recently authorized \$25 million through CALFIRE's Forest Health Program - \$10 million of which will support restoration on the Tahoe, Eldorado, Lake Tahoe Basin Management Unit, and Sierra National Forests.

Additionally, the California Water Action Plan (2016 update) provides \$81 million for five years specifically focused on ecosystem restoration to ensure integrated water management systems, manage and prepare for dry periods, expand water storage capacity and improve groundwater management, increase flood protection, provide safe drinking water, and increase operational and regulatory efficiency. The Plan also establishes the need to develop a statewide water financing strategy utilizing cap-and-trade auction revenue, water user fees, energy efficiency funding and polluter fees, and financial returns on investment as motivating factors for private investment in conservation outcomes. Also, CA Proposition 1 (2014) was approved as a municipal bond authorizing \$7.5 billion in general obligations for state water supply infrastructure projects; ecosystem restoration is to receive 20% of the funds.

The recognition of strengths and roles at the onset of engagement also contributed to the success of the WIP. The SNC valued upfront conversations and worked hard to build inclusive relationships and ensure that entities that could take ownership in decisions. Implementation success relied on shared accountability and partners working on portions of projects where USDA Forest Service was constrained (e.g., the Conservancy convened a series of workshops designed to engage diverse stakeholders to discuss a controversial salvage harvest EIS). For the FS, partners recommended transparency, a willingness to set aside traditional beliefs when new ideas were introduced, and quantifying future risks while acknowledging that opportunity costs are involved for every decision. This involves thinking about longstanding models in a more holistic way, recalibrating conditions to an uncertain future, and framing decisions in terms of protecting public health.

Many efforts were also unique in their deliberate public engagement through trainings, both to solicit feedback and build trust, but also to increase local capacity for projects. Not only have these programs created local learning exchanges, but are also actively working with tribal crews to restore meadows and monitor the hydrological and cultural integrity of various sites.

Ongoing Challenges

Wildfire suppression funding and subsequent borrowing from other programs continues to be a significant issue contributing to resource constraints, which will continue to exacerbate as wildfire severity worsens.

Parties do not always converge on which activities will generate outcomes the most effectively. For example, there still remain vigorous debates over the use of logging and mechanical treatments, and passive management of wildfire, as courses of action for increasing forest resiliency over time.

Additionally, the lengthy and complex planning processes required by state and agency statute were also identified as an impediment to accelerating the pace and scale of restoration quickly enough to reduce the risk of natural catastrophe. This problem is frequently compounded when transition occurs and USDA Forest Service personnel switch to new positions.

In terms of gauging effectiveness of restoration projects for meeting socioeconomic outcomes, many indicators are limited in terms of their practicality. Restoration activities may only represent a sliver of direct and indirect economic contribution to local communities, or there may be limited domestic demand or capacity for converting woody biomass. These types of context-driven issues may be difficult to capture given current metrics, and the linkage between partnership investments and on-the-ground outcomes may take years to develop.

The definition of “local” required more deliberate planning and development of criteria to ensure that best value factors for stewardship contract bids were weighed along with benefit to local enterprises.

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Coca-Cola Watershed Replenishment Partnership

Overview

Corporate sustainability and socially responsible investing are growing trends across private industries. Businesses may be willing to spend on ensuring water sustainability to mitigate potential supply chain risks and drive down long-term operational costs, and/or potentially align with shareholder values.

In a 2011 survey with 272 companies each generating at least \$1 billion in revenue across 24 industrial sectors, 76% of respondents anticipated that natural resource shortages will affect their core business objectives over the next 3-5 years. 65% of respondents stated that their Chief Financial Officers are personally committed to and involved in internal sustainability efforts (EY 2011). In total, there are approximately 83 active watershed investment programs across the country, with at least \$400 million in private or municipal funding committed in investments from 2014-2020 protecting 21.5 million NFS acres (WRI, 2015).

The partnership between Coca-Cola, the National Forest Foundation, and USDA Forest Service recognizes that National Forest System lands play a unique role in contributing to the sustainability of the water supply for the American people. The company pledged to restore and protect impaired watersheds on national forests in order to 1 billion liters of water (with a renewed commitment to double that outcome in 2018). In 2012, high-level leaders at USDA Forest Service and Coca-Cola established the partnership. The two parties formally signed an MOU in September 2013, committing to work together to seek opportunities nationwide.

The partnership has focused on enhancing USDA Forest Service's efforts to maintain and restore the health of America's watersheds, supported by Coca-Cola's corporate sustainability goal to replenish 1 billion liters of water in key watersheds. Additional goals include working with local communities to educate citizens about where their water comes from and to implement water efficiency projects.

This partnership with Coca-Cola has resulted in measurably improved water quality and wildlife habitat on thousands of acres, restored high-value watersheds across the National Forest System, and replenishment of more than 1 billion liters of water to date. From Coca-Cola's perspective, the partnership is helping both to secure the water supply the company needs to produce its beverages and to achieve its corporate sustainability goals. The broader impact of this innovative partnership is global: The collaborative efforts of Coca-Cola and USDA Forest Service are

a model for successful watershed restoration projects around the world.

Increasingly, Coca-Cola is interested in providing and reporting on the ancillary socioeconomic co-benefits generated from restoration investments. This could include anything from training opportunities for local contractors, to educational opportunities for local schools.

Players

Restoration beneficiaries from these projects are wide-ranging. Coca-Cola immediately stands to gain, both tangibly through measured water replenishments to ensure that it has viable sources for its operations, and intangibly through increased social capital with investors and shareholders (i.e. sustainability “branding”). The USDA Forest Service is a beneficiary in that it can share the cost of doing necessary restoration work on impaired watersheds. Aquatic organisms benefit from having cooler water with ample in-stream flow and unobstructed habitat. Local communities which rely on regular timing and quality of water are also beneficiaries, as they do not have to dredge as frequently or transport water from further away. There is also the socioeconomic impact of putting local people to work in counties with high unemployment or under-employment rates.

Watershed enhancement projects with Coca-Cola have taken place on multiple National Forests, including the Angeles NF, Carson NF, Midewin National Tallgrass Prairie, Eldorado NF, and Huron-Manistee NF. Different partners were involved with each location. Implementation partner organizations include but are not limited to: American Rivers, California Conservation Corps, Coalition for the Upper South Platte, Los Angeles Conservation Corps, Methow Salmon Recovery Fund, National Fish and Wildlife Foundation, National Forest Foundation, New Mexico Trout Unlimited, Oceana County Road Commission, Rancho Santa Ana Botanical Garden, Recon Environmental, San Gabriel Valley Conservation Corps, The Wetlands Initiative, Watershed Artisans.

Partnership Activities and Implementation

Watershed enhancement projects are focused where there are bottling plants. Initially, USDA Forest Service identified 8-10 different sites where project-ready work needed implementation dollars. Over time, the partnership evolved to bring strategic investments to the same watersheds over time, targeting enhancement of ecosystem function that ultimately ensures water supply where potential value for that water is high. The National Forest Foundation (NFF) manages the contract and works with local implementation partners and USDA Forest Service units to do the restoration work, with a national MOU in place formalizing the arrangement with USDA Forest Service. There is no formal agreement between NFF and Coca-Cola in place aside from the invoices received once work is completed.

Activities are funded by leveraging Coca-Cola dollars with other partner funds. For instance, the Carson National Forest

projects utilized funding from the National Forest Foundation and Trout Unlimited in addition to the Coca-Cola contribution.

Nationally, Coca-Cola has invested in 10 restoration projects on NFS land across the country. Project objectives include sediment capture and wetland expansion, invasive species removal, road-stream crossing and in-stream structural upgrades, bridge replacements, and vegetation establishment to slow erosion, increase water retention times, and minimize water uptake by invasive plants. Specific activities range from riparian vegetation planting to beaver reestablishment.

Coca-Cola validates its water replenishment data with third-party verification and auditing by LimnoTech and Deloitte (via challenge cost-share agreement), in association with The Nature Conservancy. The company established its own replenishment metric rather than using USDA Forest Service’s hydrologic metrics system.

Results

This partnership has benefited from heavy leadership involvement, including quarterly meetings between Coca-Cola executives and the Associate Chief or NFS Deputy Chief. Coca-Cola was also a recipient of a 2016 Secretary of Agriculture award. The successes of the partnership as well as its support from USDA Forest Service leadership have helped to educate USDA Forest Service employees that it is acceptable (and sometimes very beneficial) to partner with a corporation.

Early collaborative successes helped lay the foundation for the partnership’s future work. Some project-specific accomplishments:

- In 2012, Coca-Cola and the National Fish and Wildlife Foundation jointly contributed \$366,400 to the Indian Valley Restoration Project in California’s Sierra Nevada Mountains. This project focused on the Mokelumne Watershed, which holds high value for habitat restoration and accounts for 94 percent of the East Bay Utility District’s water supply in the San Francisco Bay area.
- Coca-Cola also invested an additional \$150,000 and worked with the National Forest Foundation and USDA Forest Service to improve the environment and water quality along Colorado’s South Platte River. Parts of that region were devastated in 2002 by the Hayman Fire, which had significant impacts on the municipal drinking water source area for the city of Denver as well as on the overall health of the watershed.
- On the Midewin National Tallgrass Prairie, 16,925 feet of drain tile were removed, 226 acres were treated for invasives, and 79 acres were planted with native species. The replenishment value to Coca-Cola was 292 million liters of water per year.
- On the Carson National Forest, 191 acres of wetlands and four stream miles were restored. 1,200 native shrubs were planted, and four road drainage structures were installed. These projects replenished 133 million liters of water (not including project work from 2016)

Challenges to the partnership have included identifying a pipeline of “shovel-ready” projects on National Forest units of interest to Coca-Cola. Additionally, there have been internal challenges with defining “replenishment,” since USDA Forest Service has its own nomenclature; this has meant USDA Forest Service’s metrics do not always sync with Coca-Cola’s. While the company has been fairly hands off in deferring to the expertise of land managers and local partners to get the work done, corporate partnerships will likely need more formalized agreements over time to ensure accountability.

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World Resource Institute (WRI), 2015. “Protecting Drinking Water at the Source: Lessons From US Watershed Investment Programs.” Gartner, T., DiFrancesco, K., Ozment, S., Huber-Stearns, H., Lichten, N., and Sylvia Tognetti

Eugene, OR Water and Electric Board Voluntary Incentive Program

Overview

Eugene Water and Electric Board (EWEB) is a public utility that provides drinking water and power to about 200,000 people in the city of Eugene, Oregon. The Willamette National Forest, EWEB and other partners are working together as the McKenzie Collaborative to develop an innovative watershed investment program that protects and restores Eugene’s drinking water supply.

In an effort to maintain Eugene’s watershed quality, EWEB staff reached out to landowners with an opportunity for protecting riparian habitat through voluntary incentives. The Voluntary Incentives Program (VIP) formed out of this collaborative interest to protect existing high quality riparian habitat and prevent it from degradation by rewarding landowners who establish positive stewardship practices.

The VIP pilot project established a geographic boundary area based on a 50-year floodplain along the McKenzie River and tributaries (16,559 acres). This included all private land except private timber lands. The Willamette National Forest manages approximately 68% of the total land area in the uplands

of the McKenzie River Watershed. The primary objective of the program is to reduce future operations and maintenance costs for the water treatment facilities.

Ultimately project funders and stakeholders sought to minimize sedimentation and nutrient runoff from upslope contributing areas, and maximize riparian buffer efficiency in filtering out nitrogen and sediment before reaching major tributaries. An important ancillary co-benefit is maintaining cool water temperature that makes the river habitable for aquatic species and those drawn to the watershed to fish.

VIP is within the class of payment for ecosystem services (PES) programs that are based on the premise that the benefits from ecosystems have a “natural capital” or associated economic value – in this case, the value is captured through anticipated avoided cost resulting from water filtration by the utility in the future. This economic value can be leveraged and insured through investment in the ecosystem. Landowners essentially receive a “dividend” for the preservation of riparian vegetation that provides the desired water quality benefits.

Players

The McKenzie Watershed Council, Upper Willamette Soil and Water Conservation District, Lane Council of Governments, The Freshwater Trust, and Cascade Pacific Resource Conservation & Development were major players in the VIP pilot and were able to expand their capacity and develop relationships with landowners.

To initiate the VIP pilot, the University of Oregon conducted a polling of rate payers to determine their willingness to pay for watershed protection. Survey respondents were overwhelmingly in favor, with 80% either “supportive” or “very supportive” of programs to maintain water quality in the watershed. Ten landowners took part in the pilot, with a goal to expand to the whole watershed in 2016. Many programs such as NRCS’s Environmental Quality Incentives Program tend to invest in degraded sites, but this VIP pilot identified healthy riparian areas and developed the program around maintaining and protect those corridors. In addition, some corporate sponsorship is being pursued, and EWEB is working with USDA Forest Service and others to fund restoration of degraded sites to enhance function across the watershed. The Oregon Watershed Enhancement Board also invested in VIP based off its high probability of success, deemed one of the most promising in the State of Oregon.

Most directly, EWEB is the key beneficiary from the incentives program. The water utility stands to benefit from reduced costs of water quality nitrogen treatment and potential dredging. Recreational fishing enthusiasts also stand to benefit, as aquatic habitat is enhanced by avoiding eutrophication from nonpoint source pollution as well as maintaining favorable temperatures for native fish species.



Partnership Activities and Implementation

To fund the pilot, EWEB received a \$150,000 grant (grant #214-8007-11050) from the Oregon Watershed Enhancement Board (OWEB) in July 2014 that EWEB matched with \$124,000 in EWEB funds/in-kind contribution. The funding model for VIP includes EWEB funds, grants, mitigation payments and in-kind private sector contributions. The Willamette National Forest contributes retained receipts from stewardship contracts in the McKenzie headwaters as well, utilizing the Wyden Authority, which permits USDA Forest Service to engage in cooperative agreements that benefit resources on private lands in the same watershed.

VIP functions by paying landowners “dividends” for implementing water quality enhancing projects on their land. The VIP payment dividends need to be large enough to attract interest from the landowner, but not prohibitively large that the incentive program would not function – and cannot exceed the market value of the land.

To join the program, interested landowners request a riparian assessment. Based on the assessment, the VIP program works with the landowners to establish access to their property via a cooperative agreement, and provide guidance on how to develop the riparian report and long-term agreement. Throughout the McKenzie Collaborative, USDA Forest Service personnel worked closely with the EWEB and others to establish a protocol for evaluating the private land riparian areas, as well as restoration needs and stewardship contracting opportunities on National Forest lands. USDA Forest Service personnel helped to edit and vet the evaluation protocol as part of EWEB’s effective collaborative effort. This collaboration increased local partnerships, delivered on-the-ground work, designed a system for tracking data, attracted funding, and implemented a cutting edge approach to watershed restoration.

The VIP pilot project collected site level metrics via the riparian health assessments at 14 reference sites and 15 landowner sites. Monitoring occurs via a watershed-level assessment and site-specific monitoring of restoration and protection with the

McKenzie Watershed Council, per each landowner agreement. The major approaches to data collection include (1) LiDAR flights every 4-5 years to measure change in canopy cover or change in structures and infrastructure; (2) water quality monitoring to detect algal blooms and changes in water quality trends; (3) a technique of mapping one-km slices of the floodplain along a central axis.

EWEB then worked with the University of Oregon School of Business to conduct a cost avoidance study to demonstrate how degraded water quality impacts the cost of chemical treatment. There is a near doubling of costs above certain turbidity levels, and additional research indicates many other avoided costs such as additional physical treatment infrastructure, regulatory triggers, additional restoration costs, and reduced revenue from the public losing trust in the drinking water quality. EWEB also partnered with Earth Economics and Ecotrust to assess the ecosystem service-based value of riparian forest cover in the McKenzie watershed as well as return on investment of conservation and restoration. In the underlying literature review used to derive monetary values, the potential economic cost of sedimentation is estimated at \$9.09/ton, while the economic cost of nitrogen runoff is estimated at \$39.89/kg of nitrogen emitted (Schmidt et al. 2017).

The McKenzie Watershed Council and Upper Willamette Soil and Water Conservation District administer assessments and perform on-site monitoring using a field tool developed by The Freshwater Trust based on metrics used in ecosystem services markets for habitat and water quality.

Results

This project created an MOU between the partners (EWEB, Metropolitan Wastewater Management Commission (MWWC), Oregon Watershed Enhancement Board (OWEB), and the Willamette NF), but they also developed a business sponsorship program for attracting private investment. The business program helped align multiple funding sources, and it implemented a central fiscal management accounting software that was able to provide consistent audits and metrics to investors, which helped investors feel comfortable with the project. This in turn led to further investment.

Lessons Learned

- In general, it is challenging to find a stable funding source. A common problem with VIP programs is that there is not high enough participation to accomplish the goals, or only minimal gain is accomplished. This VIP pilot engaged landowners early, conducted multiple surveys, and developed a range of options for landowners to adopt.
- The VIP project lined out a clear program boundary, including privately-owned tax lots. This enabled the watershed assessments to tie to priorities by each parcel and establish a well-defined rationale for investment.

- The project advanced our understanding of a new method for funding the protection of drinking water, salmon recovery, and mitigation. Unlike many WIPs that are driven by fire risk, this program highlighted the importance of conservation and restoration in the context of land use change and development.
- The VIP pilot project built a strong base of local partners who can now continue to expand their capacity, engage landowners, and leverage dollars.
- The partners learned that the business community should be engaged more often as they are a potential source of funds, volunteers, and publicity.
- This project built its foundation across three levels: (1) applications of ecosystem services to forest management at the district level, (2) working with the regional office on national and regional initiatives related to WIPs and ecosystem services, (3) leveraging the vision of a Forest Supervisor who supports collaborative forest management and stewardship contracting.
- The forest had a strong individual on-staff who was committed to collaboration and had a vision of how to sustain the watershed.
- USDA Forest Service was successful in that it played a support role in a collaborative group convened by the utility.
- It was helpful to have a watershed council and local soil and water conservation district at the table, as they enhanced communication and program delivery with private landowners.
- Especially in the Pacific NW with its rich history in timber production, we learned that people respond better when we tell the story of their forest or their resources in increasingly relevant and interdisciplinary ways. Tell meaningful stories.
- Individual leaders at the community, utility and agency levels can be instrumental in initiating pilots. It may also be helpful to have someone other than USDA Forest Service convene those initial conversations, with the agency playing a strong role in supporting that convener.
- Frame ecosystem service as a tool to highlight proactive interdisciplinary management.
- Note there are some sensitivities: Is ecosystem services just jargon to spin timber harvest? It is important to clearly articulate the rationale behind applying ecosystem services to forest management – i.e. to inform participatory, integrated decision-making that reflects public expectations as well as ecological sustainability.

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The Freshwater Trust, 2015. Uplift Report. https://www.thefreshwatertrust.org/wp-content/uploads/2016/03/2015_Uplift-Report_FINAL-for-Web.pdf
 Schmidt, R., Tutak, J., Casey, P., Armistead, C., Cousins, K., Mertens, M., Flores, L., Diaz, D. 2017. Economic Analysis of the Pure Waters Program. Prepared for the Eugene Water & Electric Board. Earth Economics, Tacoma, WA & Ecotrust, Portland, OR.
 Smith, Nikola. Ecologist at US Forest Service Region 6. Personal communication, June 2017.

Mechanism

FS Roles

Corporate Social Responsibility	<ul style="list-style-type: none"> • Receive donations
Public Private Partnerships	<ul style="list-style-type: none"> • Collect funds from a non-federal or federal partner
Pay for Success and Environmental Impact Bonds	<ul style="list-style-type: none"> • Identify target areas for cross-boundary implementation – convening landscapes
Voter-Approved Ballot Referenda	<ul style="list-style-type: none"> • Identify priorities and implement activities funded by USDA Forest Service or partners that deliver multiple benefits • Develop and execute projects in partnership, cost-sharing implementation with partners • Monitor/evaluate outcomes from all-lands restoration • Connect and network with partners • Outreach to partners/investors for shared investments
Cross-Boundary Restoration of Working Landscapes for Multiple Benefits	<ul style="list-style-type: none"> • Restore public or private lands adjacent to NFS lands with FS-appropriated funds for watershed benefits
Conservation Easements	<ul style="list-style-type: none"> • Restore lands (activities must be authorized on NFS lands) on or near NFS lands with partner funds to deliver public benefit
Grants	<ul style="list-style-type: none"> • Fund states to complete watershed/land management activities on NFS lands
Payments for Ecosystem Services	<ul style="list-style-type: none"> • Provide technical, educational, and related assistance to state and private stakeholders for urban and rural forestland management to ensure “multiple values and uses” • Collect and retain contributions toward cooperative work on NFS • Support market development through innovations in wood products • Offer private landowners financial incentives for voluntary stewardship actions that deliver public benefits
Natural Resource Damage Assessments	<ul style="list-style-type: none"> • Evaluate impacts to property or resources on NFS lands resulting from natural or human-caused disasters and unlawful activity • Account for impacts on ecosystem services delivered from USDA Forest Service land to public beneficiaries beyond timber value • Include the costs of restoring the resource, compensating for interim losses, and funding damages themselves
Land Protection	<ul style="list-style-type: none"> • Fund state forest action plans that identify areas for forest protection • Complete Land Ownership Adjustment Strategies that identify areas for forest protection (public and private) • Provide (through states) funding for easements (with local match) • Acquire and exchange land • Accept donated land/gifts of real property • Convey land at market value

Enabling Authorities

Considerations

Cooperative Funds and Deposits Act of 1914, 1975

Interior and Related Appropriations Act of 1992

Economy Act of 1992

Granger-Thye Act of 1950

Cooperative Funds Act of 1914

Farm Bill, Water Source Protection Program, 2018

FS cannot:

Be directly liable or guarantee certain outcomes to partners

Obligate funds that are not yet appropriated

Fundraise for donations

Accept “directed funds”

Provide endorsements

Accept services as payment

Wyden Amendment

Granger-Thye Act of 1950

Good Neighbor Authority

Cooperative Forestry Assistance Act of 1978 (16 USC 2013)

Cooperative Funds Act of 1914

Multiple Use Sustained Yield Act

FS can accept advanced deposits and do reimbursable billing, which includes indirect costs

Conservation easements (usually held by the state agency) account for 65% of all Forest Legacy Program projects, in which properties remain in private ownership

Comprehensive Environmental Response,
Compensation and Liability Act (CERCLA)

Oil Pollution Act (OPA)

National Marine Sanctuaries

Check out the Union Pacific Railroad Co case

Cooperative Forestry Assistance Act of 1978 (16 USC 2013)

Weeks Act

National Forest Management Act (NFMA) of 1976

Independent Offices of Appropriations Act of 1952

Office of Procurement and Property Management
Gift Acceptance Policy (2003)

The gifts of real property must meet USDA Forest Service manual requirements, and titles must be clear

Mechanism

FS Roles

Compensation

- FS can compensate for impacts from land-disturbing activities with restoration on or off NFS lands
- FS can grant, issue, or renew rights-of-way over, upon, or through NFS land
- FS implements NEPA through permit review/approval processes
- Monitor to ensure compensation measures are implemented
- Compensate for losses of aquatic (stream and wetland) and T&E species habitat

Loans (WIFIA, SRFs)

Tax Incentives (NMTCs and conservation easements)

- FS landowner assistance programs can be matched using loan funds and can serve as matches for certain loan programs, including state revolving loan funds for clean water through natural infrastructure
- FS landowner assistance programs can be matched or layered with tax incentives from conservation easements and/or new market tax credits
- NFF's authorizing legislation gives power to: borrow money, issue bonds, issue debentures, and use other debt instruments
- USDA Rural Economic Development loan and grant program gives loans to utilities for rural infrastructure

Environmental Markets (nutrient trading, carbon, etc.)

- Identify, quantify, and model benefits from healthy forests
- Design science-based methods to measure, report, and maintain ecosystem services from land management
- Demonstrate proof of concept of market methodologies
- "Prescribe regulations establishing the charge for services of things of value they provide." User charges based on market prices
- Layer environmental market credits with USDA Forest Service landowner assistance program funding where appropriate
- FS can consult with CEQ and OMB and receive documented approval to generate GHG emissions reductions credits (consulting with agency authorities on whether it is possible to purchase offsets)
- Define metrics and outline market crediting methodologies

Interagency Cooperation

- Place orders on goods and services with each other, co-locate staff and offices, conduct activities jointly or on behalf of one another, share authorities
- "Promulgate special rules as needed to test feasibility of issuing unified permits, applications and leases."

Enabling Authorities

Considerations

Organic Act

Multiple Use and Sustained Yield Act

Weeks Act

National Forest Management Act (NFMA) of 1976

National Environmental Policy Act of 1969

ACOE Regulation 33 CFR 332.8 and FWS
Endangered Species Act

Special uses must align with management plans, go through NEPA review, comply with federal and state laws, and minimize damages to scenic, aesthetic, habitat, and watershed values

EPA SRFs for clean water have state-level regulations that dictate eligible matches

Rural Electrification Act of 1936

Forestry Title 401 P.L. 101-593

FS cannot provide loans to partners

FS cannot directly accept loans

FS is not tax eligible, so cannot receive NMTCs

Food, Conservation, and Energy Act of 2008, H.R. 2419, Section 2709

Independent Offices of Appropriations Act of 1952

CEQ's Federal Greenhouse Gas Accounting and Reporting Guidance

Updated FLP guidance

Under USDA Forest Service handbook guidance, Carbon Capital Fund projects do not generate credits, and USDA Forest Service does not make guarantees of the permanence of carbon sequestered. USDA Forest Service does provide for long-term management of reforested/ afforested lands—it is specific to each agreement with NFF

FSH 1509.11, Ch. 90, section H.12

Service First Authority

Economy Act

Only applies to USDA and DOI (so FWS, NPS, BIA, BLM, FS, and NRCS)

USDA FOREST SERVICE FUNDING PROGRAMS

Programs

- **Water Source Protection Program.** Currently under development, this program was established by Congress in the 2018 Farm Bill. It calls for USDA Forest Service to carry out watershed protection and restoration projects on NFS lands through water source investment partnership agreements with water users. Activities undertaken by partners are to be guided by Water Source Management Plans that are consistent with units' land management planning efforts. This program requires that non-federal partners provide matching contributions of funding or in-kind support.
- **Collaborative Forest Landscape Restoration Program (CFLRP):** Promote forest health and resiliency, reduce the risk of catastrophic wildfire, and support economic wellbeing in local communities through collaborative, science-based restoration efforts. There are a total of 23 CFLRP projects, which will be funded annually through 2019 (subject to Congressional appropriations). Projects range from 50,000 to 2.1 million acres, and many have significant tribal, state, or private lands within their boundaries. Congress appropriates up to \$40 million in annual funding for CFLRP.
- **Joint Chief's Landscape Restoration Partnerships:** Support all-lands projects that reduce wildfire threats to communities and landowners, protect water quality and supply, and/or improve habitat for at-risk species across public and private lands. Encourages and facilitates coordination between the agencies. Created in 2014 by NRCS and USDA Forest Service leadership—not the result of congressional action. Resources are awarded through existing programs and budget line items.
- **Landscape Scale Restoration Program:** USDA Forest Service's Landscape Scale Restoration Competitive Grant Program funds restoration activities on landscapes of national importance (determined through Forest Action Plans and national areas of focus).
- **LWCF Program:** The Land and Water Conservation Fund was established by Congress in 1964 to fulfill a bipartisan commitment to safeguard our natural areas, water resources, and cultural heritage, and to provide recreation opportunities to all Americans. Using zero taxpayer dollars, the fund invests earnings from offshore oil and gas leasing to help strengthen communities, preserve our history, and protect our national endowment of lands and waters. The LWCF is a funding source for private and public land protection that USDA Forest Service applies to annually.

USDA Forest Service Agreement Tools

- **Participating agreements:** Support shared costs and benefits for everything from pollution abatement to forest protection to watershed enhancement
- **Challenge cost- share agreements:** USDA Forest Service and cooperator agree to develop and execute a project with shared costs/benefits that enhances existing USDA Forest Service activities
- **Collection agreements:** USDA Forest Service performs a service or provides a good for a cooperator that is not a federal agency; USDA Forest Service accepts money from a non-federal party to carry out an authorized purpose
- **Interagency agreements:** USDA Forest Service performs a service or provides a good for a federal agency partner, clarifying the expenditures/services exchanged
- **Stewardship agreements/contracts:** Include forest product removal and service work items. Work is awarded on a best-value basis, and excess funds remain on the forest as retained receipts. Agreements include mutual interest/benefit.

Additional Resources on Financing Opportunities

The links below provide more information on funding programs and financing mechanisms that could help you to fund your WIP.

Federal programs

- **EPA Water Infrastructure and Resiliency Funding Programs (2017):** 1) <https://www.epa.gov/waterfinancecenter/effective-funding-frameworks-water-infrastructure>; 2) <https://www.epa.gov/waterfinancecenter/leading-edge-financing-water-infrastructure>
- **Joint Chiefs' Landscape Restoration Partnership (NRCS, 2017):** <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/newsroom/features/?cid=stelprdb1244394>
- **Landscape Scale Restoration competitive grant program (Western Forestry Leadership Coalition):** <https://www.thewflc.org/landscape-scale-restoration-competitive-grant-program>
- **Overview of Federal Funding Opportunities (Rural Voices for Conservation Coalition, 2016):** <http://nrfirescience.org/sites/default/files/GuideToFundingAndAuthoritiesForCollabForestry.pdf>

External mechanisms and incentives

- Drinking Water Providers Partnership (funding opportunities in Pacific Northwest) (Geos Institute, 2017): <http://www.workingwatersgeos.org/drinking-water-providers-partnership>
- Income tax incentives for land conservation (Land Trust Alliance, 2017): <https://www.landtrustalliance.org/topics/taxes/income-tax-incentives-land-conservation>
- New Markets Tax Credit fact sheet (2017): <http://nmtcoalition.org/fact-sheet/>
- Pay for Success and social impact bonds – an overview (Nonprofit Finance Fund, 2017): <http://www.payforsuccess.org/learn/basics#what-is-pay-for-success>
- Ski Conservation Fund and Forest Stewardship Fund (National Forest Foundation, 2016): <https://www.nationalforests.org/grant-programs/stewardship-funds>
- Tax credit financing opportunities (Northern Forest Center, 2017); <https://northernforest.org/programs/tax-credit-financing/overview>
- The work of the Conservation Fund (2017): <http://www.conservationfund.org/what-we-do/land-conservation-loans>

Other reports, publications and case studies

- Assessing the opportunity of water markets at a national and international scale (The Nature Conservancy, 2016): <https://thought-leadership-production.s3.amazonaws.com/2016/08/16/13/41/58/5e9b26b2-5c77-40f6-81fd-03e0c3de78a9/WaterShareReport.pdf>
- Creating an investment blueprint for investing in the Colorado River Basin (Encourage Capital, 2017): <http://encouragecapital.com/wp-content/uploads/2015/09/Liquid-Assets-Full-Report-Web1.pdf>
- Dinkey Landscape Restoration Project, Project Update (USDA Forest Service, 2016): <https://www.fs.fed.us/restoration/documents/cflrp/2015AnnualReports/Dinkey.pdf>
- Drinking water partnerships – a collaborative toolkit (Source Water Collaborative, 2017): <https://sourcewatercollaborative.org/how-to-collaborate-toolkit/>
- Framework for sustainable infrastructure financing (Environmental Defense Fund, 2017): http://business.edf.org/sustainable-infrastructure-report/?_ga=2.58479274.1274051990.1512402416-2118100163.1508851501
- Global water fund overview (The Nature Conservancy, 2016): <https://www.nature.org/ourinitiatives/regions/latinamerica/water-funds-of-south-america.xml>
- Gulf of Mexico regional financing initiative to revive the dead zone (Conservation Fund, 2017): <https://www.conservationfund.org/projects/reviving-a-dead-zone-in-the-gulf-of-mexico>



- Introduction to Market Pricing – an online primer (University of Minnesota, 2016): <https://open.lib.umn.edu/principleseconomics/chapter/4-2-government-intervention-in-market-prices-price-floors-and-price-ceilings/>
- Lessons learned from U.S. watershed investment programs (World Resources Institute, 2016): <http://www.wri.org/publication/protecting-drinking-water-source>
- Making the economic justification for source water protection: an analysis from 4,000 global cities (The Nature Conservancy, 2016): <https://global.nature.org/content/beyond-the-source?src=r.global.beyondthesource>
- The One Water Roadmap – a strategy for responsible management (U.S. Water Alliance, 2016): <http://uswateralliance.org/sites/uswateralliance.org/files/publications/Roadmap%20FINAL.pdf>
- Pilot Auction Facility for climate change finance – an overview (The World Bank Group, 2016): 1) <http://www.pilotauctionfacility.org/content/paf-fact-sheet-1-overview> 2) <http://www.pilotauctionfacility.org/content/paf-q>
- Public lands and shared Financing – an overview (Center for American Progress, 2017): <https://www.americanprogress.org/issues/green/reports/2017/03/23/429031/americas-forgotten-forests/>
- Unlocking public and private capital for sustainable water infrastructure (Water Research Foundation, 2016): <http://www.waterrf.org/PublicReportLibrary/4617.pdf>



Guide to Watershed Investment Partnerships

