



Nature-based Solutions on Public Lands in the Colorado River Basin

Virtual Meeting Series Summary
March 4 - 15, 2024

Photo courtesy EcoMetrics

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Virtual Meeting Series Overview

Between March 4 – 15, 2024, Meridian Institute facilitated a series of virtual sessions focused on five key challenges and opportunities for supporting the implementation and scaling of nature-based solutions (NbS) on public lands in the Colorado River Basin. These topic areas were informed by a range of stakeholders involved in NbS work, such as federal and state agency staff, practitioners, scientists, non-profit organization members, and other restoration professionals. Topical areas included 1) Science, Design, and Durability, 2) Project Planning and Prioritization, 3) Permitting, 4) Funding, and 5) Capacity. These sessions sought to foster relationships among stakeholders across the Colorado River Basin and identify potential collaborations and actions to build on successes and address challenges.

This work is supported by Walton Family Foundation, and the ideas from this virtual meeting series will inform an upcoming strategy session aimed at furthering key solutions for supporting the implementation and scaling of NbS on public lands in the Colorado River Basin. This document summarizes key ideas shared during the five sessions, including panels, presentations, and small group discussion.

BACKGROUND AND INTRODUCTION TO THE SERIES

Peter Skidmore, Dipper Consulting

Background information about Walton Family Foundation's (WFF) involvement in advancing nature-based solutions (NbS) in the Colorado River Basin was shared at the beginning of the meeting series to offer additional context for this effort. The definition of NbS was also discussed and clarified to frame subsequent conversations.

- **WFF's NbS engagement.** WFF is interested in increasing the pace, scale, and effectiveness of riverscape restoration to improve water resources and climate resiliency. Nature-based solutions (NbS) have been a strategic focus in the Foundation's approach since 2021. To limit the scope of this work, public lands were selected as the area of focus, given that Forest Service (FS) and Bureau of Land Management (BLM) lands make up 44% of the Colorado River Basin and contribute a disproportionate amount of water. Thus, this series contributes to WFF's efforts to deploy NbS to reduce the impact of agriculture and climate change on water resources and ecosystems by supporting greater coordination between agencies and their partners.
- **Defining Nature-based Solutions.** The White House's adoption of the United Nations Environment Assembly's 2020 definition of NbS states that "these solutions are actions to protect, sustainably manage, or restore natural or modified ecosystems to address societal challenges, simultaneously providing benefits for people and the environment." There is a spectrum of approaches that are captured under this definition, ranging from interventions that require lower levels of design or management (e.g., protection, stewardship, rewilding ecosystems) to more intensive interventions (e.g., buffers, green infrastructure, treatment wetlands). The defining element of NbS is that they restore riverscape processes, including but not limited to dynamic physical processes, river flow, carbon and nutrient transport and storage, and plant succession. Under the umbrella of NbS, process-based restoration (PBR) includes approaches that re-establish physical, chemical, and biological processes that sustain river

and floodplain ecosystems. Low-tech process-based restoration (LTPBR) specify process-based approaches that require less resources to implement and ultimately allow the system to do the work. In response to increasing interest in and support for LTPBR, this meeting series was designed with these kinds of approaches in mind. Many of the topics explored through this series, however, are applicable to a wider range of restoration practices.

Science, Design, and Durability

The following meeting summary captures key ideas shared during the panel and group discussion from the Science, Design, and Durability Session which took place on March 4, 2024.

PANEL

Emily Fairfax, University of Minnesota

Joe Wheaton, Utah State University & Anabran Solutions

Jessica Doran, EcoMetrics Colorado

Karen Pope, U.S. Forest Service

Peter Skidmore, Dipper Consulting

Q: What do we know and not know about outcomes of NbS for riverscape restoration? What is being done to fill those gaps?

- **Restoring riverscapes to their original state.** It is often difficult to restore riverscapes to their original state, either because there is uncertainty about what they previously looked like or because the landscapes and systems have changed significantly. More data should be collected and analyzed to inform defining reference conditions.
- **Applying science and research.** A lot of scientific research is being conducted in this space and opportunity exists for research and projects to feed into each other and inform one another in a more meaningful way. This would help to utilize projects underway to answer interest-specific questions, better understand ecosystem outcomes, and test monitoring approaches. Greater connection also lends itself to more inclusive and coordinated learning among stakeholders.
- **Delays to research impact.** The robustness and quality of restoration efforts are critical; however, the science and impacts of some aspects are well understood and the long scientific process can impede on-the-ground restoration progress. Do avenues exist for the research community to share results without enduring the lag time of the peer review process? Can scientists become “more comfortable” with sharing recommendations? These challenges delay research impact.
- **Communicating the dynamism of riverscapes.** We often do not know how long it will take to see results from NbS restoration efforts due to the dynamic nature of riverscapes. Some results may be immediate while others may take up to a decade. Impacts also vary across landscapes. Rather, we need to do a better job of communicating and managing expectations around what

outcomes and impacts might look like. There is work to be done in terms of helping the public and decision makers understand the dynamic nature of riverscapes.

Q: What is being done to ensure the durability of benefits and stewardship?

- **Ensuring the longevity of processes.** Durability is a misleading term in relation to NbS for riverscape restoration. Structures are not always durable, and that is often by design. This is because natural systems are dynamic (e.g., beaver dams don't last forever and should not necessarily be designed to do so). Thus, durability of structures is not the most useful evaluation of success. Rather, the objective of this strategy is to ensure the durability or longevity of processes and support overall system resilience.
- **Building watershed stewardship.** Fostering an educated community of practice that nurtures riverscape functions is critical for ensuring stewardship and continued support for NbS for riverscape restoration. A key element of cultivating this community buy-in is producing projects that clearly demonstrate the positive impacts of this restoration approach.

Q: If you could wave a magic wand and commission any research study or demonstration project to help build the case for NbS, what would it be?

- **Demonstrating the benefits of beavers.** It would be useful to implement a watershed restoration effort that highlighted the skills we know are needed to mimic beavers, and how this approach can produce results for hydrologic resilience and fire protection.
- **Understanding fire resistance.** A project that illustrated how fires impact restored landscape would be helpful for understanding how we can use NbS to build fire-resistant landscapes and systems.
- **Building downstream support.** Greater understanding and quantification of downstream benefits is essential for building the case for NbS. In addition to fostering support from downstream water users, clearly demonstrating the monetary value of NbS helps to incentive investment for this restoration approach.
- **Integrating social science.** Community buy-in is a key component of implementing and scaling NbS. Social science research could help practitioners and decision makers understand when people change their mind about process-based restoration (e.g., is it when they see NbS benefits? Is it when it happens on their land? Is it when peer-reviewed research is published?). Understanding what influences public attitudes will help efforts to build support for NbS be more targeted, strategic, and effective.

BREAKOUT GROUP DISCUSSION SUMMARY

Prioritization is necessary to optimize resources and realize restoration impacts at scale. Currently, NbS projects are largely opportunistic and reactive to available funding, rather than being grounded in science-based decisions about where the greatest impact is possible. Funding should follow prioritization. Additionally, optimizing the impacts of NbS requires consideration of the larger-scale effects of restoration across priority landscapes. "Random acts of restoration" may limit the potential

impact of these approaches and it is also difficult to limit the scope of NbS impacts to just one area, especially when beavers are reintroduced.

Coordinated and standardized monitoring to support research and outreach. Longer-term, consistent pre- and post-monitoring protocols or other guidance could support greater standardization of NbS data and information for riverscape restoration. Monitoring should also be consistent with the project's questions, goals, and objectives. Utah State University is currently working to address this need through a Healthy Riverscapes Monitoring Framework they are developing with USGS, USFS, NOAA, BLM & NRCS. Specific outcomes that participants noted coordination and consistency of monitoring would be helpful for include:

- **Adaptive management.** Iteratively feeding data and results back into projects to improve their design and inform future efforts.
- **Scientific knowledge.** Building robust evidence of the impacts of NbS to support greater confidence in this riverscape restoration strategy.
- **Storytelling.** Clearly communicating and illustrating the impacts of NbS for local communities, key decision makers, and other stakeholders.
- **Funding.** Demonstrating the impacts of NbS with data to incentivize greater investment and sustained funding. Participants noted the importance of producing data and projects to support near-term and future funding for NbS (designing projects with this objective in mind can be useful).

Information gaps to address. Participants flagged areas where research and our understanding of NbS could be strengthened to support this riverscape restoration approach going forward. Topics and questions flagged during group discussions include:

- **Quantifying project effects.** What are the impacts of projects on groundwater and aquifer recharge, seasonal flow change, and sediment capture? (Participants noted that both water quantity and water quality benefits need to be better understood.)
- **Carbon storage.** What is the carbon sequestration and storage potential of NbS?
- **Vegetation.** How do native and non-native species respond to restoration work?
- **Restoration timeline.** How long does it take for various riverscape restoration elements (e.g. beavers, fish, vegetation) to respond?
- **Wildfire impacts.** What are the impacts of wildfire in landscapes that have undergone restoration?
- **Scaling up restoration effects.** What is the impact of scaling different restoration methods?
- **Limits of PBR and NbS.** Where can PBR and NbS be successful? What environments and circumstances are not suitable for this type of restoration design?
- **Longer funding and research timelines.** There is a need for research efforts to include pre- and post-project monitoring, acknowledging the post-project phase may be multiple years.

Knowledge exchange and collective learning opportunities. Participants shared opportunities for coordinated learning to inform NbS. Key points from discussions include:

- **Research and resource clearinghouse.** An open-access online platform could facilitate sharing NbS information for riverscape restoration across the Colorado River Basin, including current research, priority landscapes for restoration, project designs, and monitoring protocols.

- **Common definitions.** Standardized understanding of terms and definitions associated with NbS for riverscape restoration could support greater consistency across the field.
- **Mentorship.** Establishing mentorship programs and peer learning networks could be a way to build the knowledge base of current practitioners and address the bottleneck of qualified practitioners.

Building support for dynamism in restoration. In the past, the standard for river restoration was stability. Building understanding of the dynamic nature of riverscapes and how NbS and PBR facilitate that dynamism is important for cultivating support among the public and agency-level decisionmakers. Additionally, it is important to manage expectations of what riverscapes will look like in the context of disturbance, land use, and climatic conditions. Historical references are not always a helpful starting point for setting outcome goals and expectations. Participants noted that social science studies could play a role in bridging this gap in understanding and reframing uncertainties associated with NbS.

BREAKOUT ROOM SHARED RESOURCES

Participants were asked to share information on existing initiatives that support NbS on public lands in the Colorado River Basin. The tables below summarize the existing networks and coalitions, specific tools, and research and publications.

NETWORKS AND COALITIONS

RESOURCE	AFFILIATION	WHY IT IS USEFUL?
Riverscape Restoration Network	American Rivers	A network across the Western states for anyone interested in learning about and sharing information on process-based restoration. Convenes quarterly meetings with presentations from scientists, practitioners, and policy experts.
Healthy Headwaters Alliance		An alliance of key watershed stakeholders, such as US Forest Service (USFS), Bureau of Land Management (BLM), large water managers and public utilities, tribes, and nonprofits. It is focused on watershed restoration and might be a good source of information on quantifying the benefits.

TOOLS

RESOURCE	AFFILIATION	WHY IT IS USEFUL?
Colorado River Basin LTPBR Site Identification Tool	Colorado River Restoration Initiative , National Forest Foundation	Users can explore the potential for implementing PBR techniques on public and private riverscapes throughout the upper and lower Colorado River Basin. The platform was created in close coordination with the Forest Service, and is based upon the Beaver Restoration Analysis Tool (BRAT) .
Colorado River Basin Dynamic Wetland Mapper	Colorado Natural Heritage Program	A machine learning map of beaver-made dams and ponds over time in the CRB. Part of the Watershed Planning Toolbox .
Colorado Watershed Resilience Tool	Colorado Natural Heritage Program and American Rivers	A planning platform that provides mapping data to identify opportunities for improving watershed resilience through restoration and protection at the watershed scale. Groups data into four major themes: biodiversity hotspots; water security and infrastructure; watershed resilience challenges (wildfire, disease, development, etc.); and river protection and restoration opportunities.
Riverscape Studio	Utah State University	An open-source GIS software plugin for digitizing riverscape data.
Phlux	Utah State University	A repeat photo monitoring app.
Riverscapes Data Exchange	Utah State University	A warehouse to store, discover, and share data from riverscapes analysis and modeling.
Healthy Riverscapes Monitoring Framework	Utah State University	(in progress; being developed in partnership with US Geological Survey, US Forest Service, Bureau of Land Management, National Oceanic and Atmospheric Administration, and Natural Resources Conservation Service)

RESEARCH AND PUBLICATIONS

RESOURCE	AFFILIATION	WHY IT IS USEFUL?
<u>Low-tech Process Based Restoration of Riverscapes Design Manual</u>	Utah State University	A manual to provide restoration practitioners with guidelines for implementing a subset of low-tech tools—namely post-assisted log structures (PALS) and beaver dam analogues (BDAs)—for initiating process-based restoration in structurally-starved riverscapes.
<u>Restoring Western Headwater Streams with Low-Tech Process-Based Methods: A Review of the Science and Case Study Results, Challenges and Opportunity</u>	For American Rivers by Jacquelyn Corday	This paper summarizes the restoration science and research in a way that is accessible to non-technical audiences (e.g., policymakers, watershed managers, funders, etc.).
<u>Geomorphic context in process-based river restoration</u>	Ellen Wohl, Colorado State University	Discusses how an understanding of geomorphic context can be used to select a restoration approach and provides examples of how restoration can fail to achieve desired outcomes when geomorphic context is not considered.
Study to quantify benefits, including a cost benefit analysis of NbS and riverscape restoration	National Wildlife Federation and World Resources Institute	(in progress)
Study on volumetric water quantification pre- and post-project to test the accuracy of current models	National Forest Foundation	(in progress)

RESOURCE	AFFILIATION	WHY IT IS USEFUL?
<p>Study on high- and low-tech restoration opportunities across Colorado to help state identify where to invest</p>	<p>River Network</p>	<p>(in progress)</p>
<p>Studies including: pre- and post-project drone monitoring effectiveness; long-term impacts on seasonal flow and sediment capture; BLM’s restoration leasing rule</p>	<p>Walton Family Foundation grantees</p>	<p>(in progress)</p>

Project Planning and Prioritization

The following meeting summary captures key ideas shared during the panel and group discussion from the Project Planning and Prioritization Session which took place on March 8, 2024.

PRESENTATIONS

BUREAU OF LAND MANAGEMENT RIVERSCAPE RESTORATION PROJECT PRIORITIZATION AND PLANNING

Scott Miller, Aquatic Resources Program Lead, and Alden Shallcross, Aquatic Restoration Lead, Bureau of Land Management

- **BLM restoration priority landscapes.** With the \$161 million allocated from the Inflation Reduction Act, the BLM identified 21 landscapes for strategic investments to demonstrate what is possible for restoration at scale. BLM is currently in the process of planning and implementing a coordinated series of restoration actions across these landscapes.
 - **Riverscape restoration potential.** Across the 21 priority landscapes, only ~25% of BLM-managed floodplain acres are connected to streams. This represents over 238,500 acres of floodplain restoration potential. The importance of prioritization is clear, given that restoration needs far outstrip the resources available.
 - **Prioritization approach.** To inform this multiscale project planning and prioritization process, BLM is considering multiple factors, including riverscape health and design principles, network-scale models, and open access data and technology such as what is available on the [Riverscapes Data Exchange](#). Key questions for evaluating opportunities between priority landscapes include: where is there high potential for reconnection? Which sites require more resources for restoration? Where can we demonstrate impact and tell a story? Ultimately, BLM characterized streams according to their opportunity for impact and ability to demonstrate results. Categories include: “low-hanging fruit,” “straight forward,” “quick return,” and “strategic long-term investment.”
- **Project planning and design.** After the prioritization process, a survey of existing conditions is conducted to better understand the landscape and how much of the area is recoverable. Data collection and high-resolution imagery are critical for defining the riverscape and then measuring restoration impacts over time. BLM uses tools developed by the [Riverscape Consortium](#) to analyze data on key indicators that reflect riverscape health. Currently, BLM is supporting trainings across the West on how to use the Riverscape Consortium tools to build knowledge and expertise for project planning, design, and monitoring and streamline approaches to this process.

SETTING TREATMENT PRIORITIES

Jen Croft, Applied Fire Ecologist, U.S. Forest Service

- **Forest Service strategy.** The [FS Wildfire Crisis Strategy](#) (released in January, 2022) guides the agency's approach to prioritizing restoration investment and is focused on protecting communities and ecosystems against wildfires. The objectives and desired outcomes of FS's restoration work are to improve watershed function, reduce wildfire risk, and support more resilient ecosystems. NbS are incorporated broadly where fire-related impacts align with other biological impacts.
 - **Priority investments.** BIL, IJJA, and IRA surge funds were used to identify a total of 250 fireheds across the West, representing about 62,500,000 million acres where ignition could spread and expose communities to wildfires. This strategy was unique in its focus on building workforce capacity in Federal and State agencies as well as in local communities, Tribes, and NGOs to coordinate and accomplish the restoration goals. Additionally, broad public and community support for scaling restoration work is recognized in the [Wildfire Crisis Strategy](#).
 - **Maintenance investments.** In addition to priority investments that focus on surge funds, base allocations are utilized to ensure continued investment in community and wildfire resilience. Together, these priority and maintenance treatments support risk reduction at needed scales.
- **Restoration strategies on priority landscapes.** Practitioners are working to pair strategic fuel breaks, meadow restorations, aspen corridors, riparian habitats, and species compositions with their treatment strategies. Cross-boundary collaborations are being engaged to support this work, and new and existing partnerships will be critical to adding needed capacity and cultivating fire-resistant systems going forward.

COORDINATION FOR PRIORITIZING AND PLANNING NBS PROJECTS

Joe Lavorini, Rocky Mountain Region Program Director, National Forest Foundation

- **LTPBR Site Identification Tool.** National Forest Foundation (NFF) is incorporating NbS in its work across the country, and the process-based restoration approach has been key to its work in the Colorado River Basin. In setting up its portfolio of watershed restoration projects, NFF created a geospatial tool based on the Beaver Restoration Analysis Tool (BRAT) to identify and rank streams that are suitable for beaver restoration across the upper and lower Colorado River Basins. Different layers can be applied within the tool depending on the goals and priorities of restoration, and NFF is looking to expand the use of it across the basin.
- **Readiness framework.** NFF created a readiness framework for considering major variables or obstacles leading up to project implementation. The framework includes numerous components related to the biophysical characteristics of a site, NFF's internal capacity and requirements, and Forest Service capacity. For example, community buy-in is essential for building support in the early stages of a project, and proactive communication with downstream users helps to navigate potential barriers that may arise. Capacity and resources for project management needs (such as fundraising, grant support, etc.), are also critical during the initial stages of a project and help to establish a strong foundation for work. Technical skills for navigating environmental compliance and the permitting process are an additional key element of capacity, and often involve an internal champion who can move those requirements forward.

- **Effective partnerships.** NFF continues to work with FS to figure out how to maximize their partnership. Additionally, NFF is developing an external strategy for how it can engage with and support other agencies in implementing and scaling NbS.

BREAKOUT GROUP DISCUSSION SUMMARY

Information sharing and coordination for planning and prioritization. Participants noted that greater standardization of data collection would enable agencies to better leverage data across multiple priorities. Additionally, we heard that standardization of planning tools and the layers within them could support the identification of overlapping priorities on public lands. Currently, multiple geo-spatial tools exist for prioritization and there are mixed opinions on the utility of these different tools.

- **Pathways for standardization.** There is desire for more discussion and feedback on how existing tools are used, which are most effective, and how to improve existing tools. The [Riverscapes Toolbox](#) provides an example of a tool that is used more broadly and offers a cohesive approach to planning. Currently, there is an effort to encourage all BLM districts across the West to use the Riverscape Toolbox and learn from each other.
- **Public support.** Storytelling is an important component of communicating the benefits of restoration to the public and building momentum for additional restoration work. To persuasively tell restoration success stories, data that is collected specifically for that purpose (e.g., photos) is needed. This type of data collection can also have benefits for research or adaptive management.
- **Common principles for restoration.** Although agencies have different filters with which they approach restoration, participants noted that it could be helpful to establish common principles that align different restoration efforts and priorities across the Colorado River Basin. Building a shared vision could also help to communicate the objectives and impacts of NbS more effectively with partners.

Engaging new and existing partnerships to support project capacity. Participants highlighted the importance of partnerships in addressing capacity gaps. Cooperative Agreements between NGOs and BLM or USFS have been an effective tool for improving capacity; however, this model is challenging to implement if priorities are not aligned.

- **Engaging new partners.** Many of the same organizations get tapped repeatedly, and the list of potential partners for NbS should be expanded to support capacity. Tribes and other groups are less frequently engaged and are often equally ready and able to implement projects. Finding ways to highlight organizations that are ready to implement NbS could support capacity for implementing and scaling these solutions.
- **Local community engagement.** Intentionally incorporating local voices at the outset of a project (e.g., asking community members to inform site selection by identifying areas with restoration potential) supports local buy-in. FS participants highlighted their work on breaking down the stigma that agencies don't respect or value community perspectives. Intentional engagement can help practitioners better understand local "water cultures" within the landscape, mitigate the rise of potential "us vs them" attitudes, and help identify complementary goals and mutual outcomes.
- **Mapping NbS engagement and abilities.** One group shared that mapping the strengths and capacity or skill gaps of different groups engaged in NbS work could help identify priority areas

for coordination between partners. Such a mapping effort could effectively match skills and needs of projects and stakeholders.

- **Watershed groups.** Participants noted that the 2022 wildfires spurred an increase in partnerships through watershed groups. These groups potentially offer a helpful platform for engaging across stakeholders and identifying shared interests. Chagrin River Watershed Partners ([CRWP](#)), for example, was established in response to the uptick in wildfires and demonstrates the importance of facilitating engagement across stakeholder groups to perform restoration.
- **USGS Climate Adaptation Centers.** [USGS climate adaptation centers](#) were also flagged as a potential platform for supporting coordination across partners involved in NbS work. We also heard that these centers could offer an avenue for community input when funding for projects is being allocated.

Minimizing costs and funding effective restoration. Part of the appeal of LTPBR is that this approach offers a low-cost solution for high-impact restoration. Participants noted that the development of expertise needs to be improved and restoration should be targeted in areas with high restoration potential to fully realize the low-cost, high-impact benefits of LTPBR.

- **Building cost-effective expertise.** To ensure that projects remain low-cost, an efficient, open-access training tool is needed to mitigate the high, upfront costs of restoration skills transfer. Bringing in experts to complete one-off projects is expensive and unnecessary when these skills can be taught virtually or for a lower cost.
- **Funding projects that are ecologically necessary.** Project needs should be identified before funding is allocated to ensure that restoration work is ecologically sufficient. Using the current abundance of funding to do work that is not ecologically necessary does not advance restoration efforts or support the case for future restoration.
- **Maximizing resources.** The BLM approach for prioritizing NbS efforts focuses on the ‘low-hanging fruit’ restoration opportunities. These areas are defined by a high potential for floodplain reconnection and opportunity for improving riverscape health in a way that shows impact and lends itself to storytelling.

PLANNING FRAMEWORK RESOURCES AND OPPORTUNITIES

There are several tools to support prioritization based on different overarching goals and strategies (BRAT, Riverscape Studio, WRAPs, BAER, BAR, etc.). Greater coordination between these approaches could streamline the variety of restoration efforts across the Colorado River Basin. This could include improving understanding of the different tools at play, consolidating tools, building out a riverscapes toolkit, or aligning around shared principles of restoration.

During breakout group conversations, participants highlighted the following resources and potential opportunities:

PRIORITIZATION PLANS AND STRATEGIES

- **Watershed Condition Framework ([WCF](#))**. USFS uses WCFs to identify priority restoration landscapes and actions by watershed. USFS is updating the WCF beginning this fiscal year, and it is anticipated to be implemented over the next 2-3 years.
- **Watershed Restoration Action Plan ([WRAP](#))**. USFS and NFF use WRAPS to support restoration prioritization at the forest level. WRAPS take time develop and require trust among partners. Currently, there are very few WRAPS per forest; however, they are a useful prioritization tool where they do exist.
- **[Partners for Fish and Wildlife](#)**. USFWS creates strategic plans for their Partners for Fish and Wildlife program in various regions. These plans identify focal watersheds and priorities in each region. Additionally, they can be a useful collaboration tool for understanding where agencies and organizations have geographically overlapping priorities. Examples of strategic plans from the USFWS Partners for Fish and Wildlife program can be found [here](#).
- **Other opportunities**. Additional resources and opportunities related to planning and prioritization that participants flagged include:
 - **Game agencies and offices**. Many state game agencies have strategic plans. Local game offices have strategies that overlap with these state-wide priorities. Any tools from supporting organizations need to support these existing priorities.
 - **BLM public land planning rule**. The BLM public land planning rule is still in development. It offers an opportunity to define priorities and opportunities, and to attract funding to specific projects. There will be a focus on restoration leasing and mitigation leasing opportunities, and ranchers who hold grazing permits will be important partners for projects.

WILDFIRE RELATED PRIORITIES AND PLANNING

- **BAER and BAR**. These wildfire crisis programs can allocate funding for riverscapes and NbS. Wildfires are a central element of the Forest Service's strategy and thus, these emergency programs are particularly salient in terms of how they impact prioritization, planning, and funding for restoration.
- **[Wildfire Ready Watersheds](#)**. In Colorado, there is a state-level wildfire ready watersheds program. The Colorado Water Conservation Board is supporting communities and watersheds in planning, compliance, and design.

WORKING ACROSS LANDOWNERSHIP BOUNDARIES

- **Federal hesitancy**. Federal agencies can be reluctant to administer projects that cross boundaries. Match resources are often required to fill the gaps.
- **Cooperative agreements**. Cooperative agreements often involve a cross-boundary approach.
- **Watershed-level coordination**. Watershed-based stakeholder groups support local capacity building to ensure cross-boundary coordination and planning within their landscapes.

Permitting

The following meeting summary captures key ideas shared during the panel and group discussion from the Permitting Session which took place on March 11, 2024.

PRESENTATIONS

NAVIGATING NEPA

Sharmila Jepsen, Lead Fisheries Biologist and Aquatic Invasive Species Coordinator, Bureau of Land Management

Programmatic Environmental Assessments (EAs), agency-specific Categorical Exclusions (CEs), and adopting other agency CEs are the three NEPA strategies being utilized by the BLM to implement Nbs for aquatic restoration in the Colorado River Basin.

- **Programmatic EAs.** Examples of Programmatic EAs that are complete or in effect in the Colorado River Basin include:
 - [Colorado BLM Programmatic EA for Low-Tech, Process-Based Lotic and Lentic Restoration.](#) This EA was developed by the Colorado State BLM and completed in December 2023. Actions analyzed under the EA include: BDAs, PALS, fencing to protect aquatic resources, riparian vegetation, and head-cut control.
 - [Wyoming Programmatic Aquatic Restoration EA.](#) This EA is in the process of being finalized (the comment period closed on Feb 18, 2024). It analyzes the same actions as the Colorado EA.
- **Agency-specific CE.** This CE has been in the works for 5 years, and can be used nationally by the BLM. It is currently undergoing OEPC review and is close to initial CEQ review. It supports the implementation of aquatic restoration actions that mimic or promote natural processes that improve water quality, habitat, and ecosystem function by enhancing structural complexity and removing barriers to connectivity to benefit native species. Some examples of activities covered by this categorical exclusion include: building BDAs and PALS; actions to improve both longitudinal and lateral floodplain connectivity; protecting aquatic resources with fencing; and restoring riparian vegetation.
- **Adopting other agency CEs.** BLM is working with FS to adopt two of their CEs. The first one supports the implementation of BDAs and PALS; the second one is being adopted to improve aquatic connectivity both longitudinally and laterally.

NATIONWIDE PERMIT 27 FOR LTPBR ON PUBLIC LANDS

Laura Ziemer, Western Water Law & Policy Attorney, Culp & Kelly

A Nationwide Permit 27 (NWP27) is required to conduct voluntary aquatic restoration. The current requirements for documentation to include in a NWP27 application, the overly-broad prohibition on "habitat conversion" in NWP27, and the lack of consistency in post-project monitoring requirements impose a barrier to scaling the implementation of NBS on public lands in a few key ways. This permitting process increases project costs (it can double the per-mile cost of projects) and delays the timing of projects. Additionally, these NWP27 elements do not contribute to the design or meaningful monitoring of restoration outcomes. US Army Corps of Engineers, Culp & Kelly, and others are developing five updates that would streamline the NWP27 application process:

- **Add the 5th NEPA addition to the 4 existing NEPA Preconstruction Notice (PCN) Exemptions under NWP27.** This would allow an exception for voluntary stream or wetland restoration activities that have complied with NEPA or state-law equivalents and found "no significant adverse environmental effects resulting from the proposed activities."
- **Change for voluntary restoration NWP27 applications.** This would allow for alternative documentation in place of wetland delineation for voluntary restoration.
- **Strike prohibition on habitat type change.** Updating this language to be more accepting of habitat type changes (which often result as a product of aquatic improvements associated with restoration) supports increased ecological services from projects.
- **Allow BLM and third parties to hold "binding stream agreement" under existing PCN exception.** This update would add BLM to the list of agencies that are already able to do this.
- **Harmonize directions to District Engineers with the above changes.** This would support more consistent and streamlined application of the changes to NWP27, prevent the imposition of "mitigation" requirements on restoration projects, and align post-project monitoring with anticipated ecosystem benefits and conservation outcomes.

If incorporated by the US Army Corps of Engineers, the added NEPA exception would apply to all voluntary aquatic restoration projects except projects on private lands with no public funding or state/federal agency partnerships. Additionally, these updates support a faster, cheaper "green" permit pathway under NWP27 for voluntary aquatic restoration. [A letter of support](#) was recently circulated for organizational and agency signatures, and sent to the Corps. If approved, these updates to NWP27 could be incorporated by Spring 2026.

WATER RIGHTS IMPLICATIONS FOR STREAM AND WETLAND RESTORATION

Patrick Byorth, Montana Water Director, Trout Unlimited

There is a gap in our regulatory system between historic policies for water law and the current reality of water availability. These new realities include the impacts of climate change, the complexity of geo-hydrology, and the restoration potential. Restoration efforts can be impeded by outdated water laws and rights. The following section outlines definitions and guidance for what types of water rights may be necessary for various restoration activities:

- **General use.** The application of water within the natural water cycle is considered a general use. Such use is not exclusive or defensible against other water rights. It applies to an indefinite quantity of water and is not compatible with uses that result in permanent or artificial diversions.
- **Appropriative use.** The use of water outside of the natural water cycle is water appropriation. This use is exclusive, applies to a defined quantity of water within a certain location and period, and has a specific beneficial purpose. It is defensible against other water users in priority.
- **Beneficial use.** All appropriations require a beneficial use, or a use that is beneficial to the appropriator. The quantity of water is determined by the amount of water necessary to achieve that specific benefit, as opposed to a general use which applies to an unlimited amount of water.
- **Applying these definitions to the NbS context.** Restoring riverscapes within the historic footprint is a general use, while creating new wetlands or streams outside of the historic footprint is considered an appropriative use. Restoration that enhances conditions and extends wetlands or streams beyond the historic footprint is more challenging to definitively categorize as general or appropriative use.
- **No injury rule.** Restoring streams or wetlands to their natural state is usually within the realm of general use; however, any impacts to the reasonable exercise of water rights must be considered. Additionally, water users are entitled to the conditions that existed when they first started using a water source. Wetland delineation helps to answer these questions and determine whether an increased consumptive burden in the affected area is warranted.

Although NbS practices are designed to repair lost function to the water cycle, they can collide with appropriative water rights. Depending on the type of restoration project, a water right for an appropriative use may be necessary. Even if a water right is not necessary, acquiring a water right may be advisable.

BREAKOUT GROUP DISCUSSION SUMMARY

NEPA

Expanding use of Categorical Exclusions (CEs). The Fiscal Responsibility Act allows added flexibility for agencies to adopt CEs originating in other departments. The CEQ is looking into how to use this Act to allow more agencies to use existing CEs. Currently, the CEQ is writing guidance for the adoption of CEs that focuses on two Forest Service CEs. Additional insights related to the adoption of CEs include:

- **Examples of NbS under other agency CEs.** As agencies explore using other agency CEs, it is helpful to have successful examples as guidance. Because NbS is a newer restoration strategy, it is specifically helpful to have examples of agencies implementing NbS restoration using other agency CEs.
- **Defining NbS in CEs.** Currently, NbS are defined broadly in CEs to allow agencies maximum flexibility in using them to implement NbS, and there is no existing NbS language to draw on from other CEs. A participant recommended referencing the recent White House guidance published on NbS. Participants also recommended addressing the use of machinery for NbS, and accommodating needs for machinery to implement NbS at a meaningful scale.

CEs vs. Programmatic Environmental Assessment (EA). The NEPA breakout group explored the situations where CEs or Programmatic EAs may be more effective for supporting NbS for riverscape restoration. Questions that came up in conversation and the panelist helped to address include:

- **Why might an agency rely on a CE rather than a Programmatic EA to clear work?** Programmatic EAs are currently the gold standard given their specificity to the region’s needs and ability to group several management actions together for simultaneous clearance. However, some states have less capacity (due to staff, funding, etc.) to complete a programmatic EA. In those cases, CEs are helpful even though they can take a long time to be approved. Recognizing that context differs, the CEQ is focusing on increasing the available tools for implementing work on the ground.
- **Why are certain agencies or geographies quicker than others to adopt Programmatic EAs or CEs for NbS?** A participant noted great variability in agencies’ ability to navigate these strategies, and suggested devoting additional attention to the topic. Key factors that the group speculated may support quicker adoption of Programmatic EAs or CEs for NbS include:
 - **Agency-level awareness and understanding.** Momentum to uncover legal solutions for NbS may be greater in areas where restoration needs are more salient. Additionally, when other priorities are more pressing, there may be less understanding of how NbS could help address restoration priorities.
 - **Interagency partnerships.** Partnerships and alignment between agencies is stronger in some regions than in others. Long-standing partnerships (which are often influenced by leadership personalities) can support novel or more efficient shared solutions.
 - **Social and political influence.** Agency leadership is responsive to the public’s concerns, especially during the NEPA process. NGOs hold a special ability to facilitate social license and regulatory agency support in using programmatic approaches. This success has come mainly through collaborative efforts with agencies and legislative bodies, rather than litigation.
- **Why is a Programmatic EA only applicable to a certain region?** Jurisdictions have different directors and for Programmatic EAs to be applied, the Programmatic EA must be approved by all directors in the region. Additionally, Programmatic EAs must look at all resources across a region. While a national document would be convenient, it is not realistic or effective. Instead, coordinating across regions and jurisdictions to expand the application of Programmatic EAs is more feasible.

WATER RIGHTS

Determining the historical footprint. In some states, if a restoration project is anticipated to restore the water level beyond the historical footprint, a water right may be needed. Determining the historic footprint can be done by analyzing historic photographs, mapping hydric soils, and understanding basin hydrology. Practitioners can estimate how long it will take “the sponge to fill” based on these parameters. While a full groundwater modeling study may or may not be needed, it is recommended to anticipate potential legal arguments and conduct potentially needed studies. Participants also spoke to how the definition of historical footprint may change based on new science related to beaver habitat and in response to discussion of what is considered “historical.”

Impacts on downstream water rights. In anticipation of potential impacts to downstream water rights holders, participants discussed having conversations with those individuals early and often. Participants noted the benefit of identifying water rights holders up to two miles downstream. Some recommended familiarizing these individuals with the projects by constructing a few small structures and inviting people to view them. In some cases, water right holders were willing to take a “wait and see” approach. Participants also shared an example in New Mexico where the downstream irrigation season was extended after a series of BDAs were installed. More study is needed to better understand how reconnecting incised headwater streams with their floodplains impacts flow magnitude and associated downstream water rights.

CLEAN WATER ACT AND NATIONWIDE 27 PERMIT

Reviewing the Nationwide Permit 27 (NWP27) process. As part of the 5-year cycle associated with all nationwide permits, a group of non-government partners and professionals in the field signed a letter indicating their review and support of NWP27. Additionally, this focused group of researchers, practitioners, and NGOs shared recommendations to improve the permitting process with the goal of informing the US Army Corps of Engineers’ review process.

Regional general permits and programmatic general permits. Participants discussed how regional general permits (RGPs) and programmatic general permits (PGPs) have been used to harmonize permitting within regions. A participant shared an example of a PGP that was issued in Utah to allow for greater flexibility. However, there are restrictions and challenges associated with these tools such as restrictions on the type of permit, the frequency of beaver dam analogues (BDAs) per section of 300 linear feet, and impacts to wetlands or pool complexes. However, participants also flagged concerns about the use of PGPs to fast-track weak projects. For example, it was mentioned that sometimes projects are labeled as BDAs in hopes of quickly getting through the permitting process even if they don’t reflect that restoration strategy. There is a need for clearer definitions of different restoration approaches to combat this concern.

Voluntary action pathway. The group discussed how many riverscape restoration projects are voluntary or completed with intended positive improvements, rather than as an offset or for compensation. Some participants felt that the permitting requirements don’t need to be as stringent in this voluntary context. However, on specific issues such as the Endangered Species Act (ESA) it is important to still have full compliance due to litigation risks, legal obligations, and potential unintended harm to the landscape. Some states include ESA consultations in the permitting process (e.g., Montana), while other states do not (e.g., Wyoming and Colorado). Not consulting might be initially more efficient, but may require more staff time in the long run. More guidance for agency staff navigating the consultation process would be beneficial, as would additional staff capacity.

Balancing active learning for improved restoration with streamlining the permitting process. The NbS field is still relatively new and practitioners have more to learn, including which strategies are most appropriate in which circumstances. There is a risk that streamlining the permitting process oversimplifies restoration strategies. For example, if such streamlining results in the assumption that BDAs are good everywhere, BDAs will likely be implemented in places that are not well suited for them. Participants noted that there needs to be a careful balance between supporting the learning that is currently taking place with the desire for an expanded scope and scale for NbS projects.

Consistency across US Army Corps of Engineers districts. There is currently some variability in how NWP27 is applied by the US Army Corps of Engineers across districts and associated Regulatory Offices (e.g., Omaha District's Denver Regulatory Office). Some flexibility for professional judgment can be helpful for considering local contexts; however, some also noted that greater consistency between districts could improve the permitting process.

Funding

The following meeting summary captures key ideas shared during the panel and group discussion from the Funding Session which took place on March 13, 2024.

PRESENTATIONS

OVERVIEW OF FEDERAL FUNDING FOR NBS FOR RIVERSCAPE RESTORATION

Christian Fauser, Western Water Policy Associate, Theodore Roosevelt Conservation Partnership

BIL and IRA provide historic funding to support ecosystem restoration, \$50 million of which has been secured for drought resilience on BLM lands. Getting that funding to partners on the ground and demonstrating the impact of these federal investments is crucial. Key considerations for achieving those outcomes and improving structures for accessing and allocating funds going forward include:

- **Accessing BIL and IRA funds.** Major challenges associated with getting funding to the ground for NbS for riverscape restoration include competing management and agency priorities, and a lack of support for early stage project development (e.g., planning studies, assessments, etc.).
- **Maximizing federal funds and communicating the impacts.** Agencies need support in linking different issues (e.g., understanding and acting on the connection between supporting resilience against wildfires and NbS for riverscape restoration). Building these connections can help to unlock funding and support for NbS.
- **Building capacity.** Federal, partner, and practitioner capacity is critical for getting federal funding to the ground and scaling NbS projects. The White House is developing the American Climate Corps, a capacity building program that has huge potential to support the riverscape restoration workforce.

Funding is essential for implementing and scaling NbS for riverscape restoration. Further investment from federal (and other) sources is necessary to support these projects at scale. Cross-agency collaboration and funding can help to identify priority restoration targets and advance NbS as a restoration strategy.

ACCESSING AND LEVERAGING PRIVATE FUNDING

Marcus Selig, Chief Conservation Officer, National Forest Foundation

The National Forest Foundation helps secure private funding to support restoration projects on national forest lands. Three mechanisms they utilize to do this include:

- **Payment for watershed services.** Corporate funding is increasingly motivated by sustainability targets. Food and beverage companies are seeking opportunities to offset water use and achieve water neutrality. LTPBR projects are a popular restoration approach

for corporations to fund because they offer the best return on “dollars to drops.” However, these opportunities also generally have heightened requirements to ensure the robustness of projects, and they must occur in the impacted watershed. Administrative burdens include long-term monitoring with third party verifiers to ensure measurable benefits on the ground, and significant requirements for reporting back to funders.

- **Watershed investment funds.** These aggregated funds are pooled together from beneficiaries that are dependent on the watershed, such as downstream users, utilities, corporations, and state and local governments. NFF has watershed investment funds for forest health and for sediment benefits associated with LTPBR projects. These funds are a helpful model for flexible funding and building support at the watershed scale.
- **In lieu fees (ILF) and compensatory wetland mitigation.** NFF and the US Army Corps of Engineers are developing an ILF project that sells credits to parties that are impacting the watershed. Traditionally, ILF efforts lend themselves to more heavily engineered projects. A current Corps and NFF effort in Summit County, CO demonstrates how ILF can be used for LTPBR, and potentially offers a template that future projects can follow.

STATE FUNDING OPPORTUNITIES

Chris Sturm, Watershed Program Director, Colorado Water Conservation Board

The Colorado Water Conservation Board’s (CWCB) watershed health program protects and restores the ecological processes that connect land and water while also protecting life and property from flood hazards. To achieve this outcome, the CWCB identifies opportunities for stakeholders to come together and collaborate to understand and improve riverscapes. The agency supports stakeholders in watershed planning so that they can get projects on the ground.

The CWCB supports and matches funding for a mosaic of project types that complement one another. These efforts include riverscape protection and restoration implemented to complement fuelscape treatments funded by other entities.

Available funding opportunities are listed on [the CWCB website](#).

BAER AND BAR FUNDING

Andrea Rogers, Acting Deputy Director of Renewable Resources, Rocky Mountain Regional Office; Eric Schroder, BAER/BAR Program Coordinator, Rocky Mountain Regional Office; and Sarah Beck, Fire Recovery Coordinator, Arapaho and Roosevelt National Forests, U.S. Forest Service

There is renewed interest in NbS as a restoration strategy, due to their cost effectiveness and the multi-benefit outcomes of these projects. Most work comes to the Forest Service through federal funding streams, such as watershed and vegetation management budget line items. The large infusions of funding from BIL and IRA (which are separate from regular federal appropriations) have altered the funds available for this work. Burned Area Emergency Response (BAER) is a long-standing program through which emergency funds can be requested to implement emergency response actions to address threats caused by flooding and debris flows within a year following the fire. Burned Area Rehabilitation (BAR) is a relatively new program through which funds can be requested to repair or replace minor

infrastructure and/or restore lands unlikely to recover naturally. BAR is currently BIL funded and is designed to bridge the gap between BAER and long-term recovery efforts.

- **BAER** is a rapid assessment process which starts with review of burned watershed conditions and increased risk for erosion, flooding, and debris flow. BAER teams inventory critical values on USFS lands, conduct risk assessments and prescribe emergency post wildfire treatments or response actions to address post fire threats on USFS lands. BAER teams coordinate and share information about burned watershed conditions in real time to support partners' efforts to address post-wildfire threats downstream from USFS lands. There is not currently a strong overlap between PBR and typical BAER emergency treatments, but it could be a potential funding mechanism for this type of work in some burned landscapes.
- **BAR** funds can be used for near-term work within three years following a wildfire. They are used to repair minor infrastructure damages and to restore lands unlikely to naturally improve. BAR is currently funded through BIL and funds are competitive and time limited. Regular appropriated funds will be needed to retain the BAR program in the future. Funding for NBS/PBS riverscape restoration projects can be requested through the BAR program.

Case study. The Cameron Peak fire was the largest fire in Colorado state history, with 36% of the area burning at a moderate to high rate, and the fire increasing erosion and flood flow potential in the burn scar. In the post-fire period, there was a robust recovery effort that included BAER and BAR responses. It also included a huge amount of community and partner support to collect and compile data to develop a post-fire composite ranking.

- **NbS implementation in the first recovery strategy.** Restoring water quality and protecting downstream infrastructure were central objectives of this recovery effort. The landscape had previously been a beaver meadow, so NbS were implemented to restore the area to its previous state and to restore the riparian areas. These NbS projects were paired with traditional infrastructure projects where needed.
- **How wildfire funding was accessed for riverscape NbS projects.** The Cameron Peak fire provides an example federal post-fire funds along with funds from other sources being used for NbS in an extreme fire recovery situation. The scale of this effort was made possible by the access to those federal funds, along with the robust community and partner buy-in and support in implementing these projects on the ground.

BREAKOUT GROUP DISCUSSION SUMMARY

Attracting private sector funding is key to scaling NbS. Participants highlighted the importance of attracting private finance to support and scale NbS for riverscape restoration. We heard that securing payment for watershed services is an effective approach, although there is work to be done in terms of fully engaging that market. Furthermore, securing credits so that landowners can be paid for restoration is critical for incentivizing such efforts. Additional points that participants made in relation to attracting private finance and communicating with funders include:

- **Measuring and tracking outcomes.** A key challenge associated with funding is tracking the benefits that each partner gains. This is especially important when there are corporate partners involved who are trying to meet ESG goals with specific environmental outcome requirements.

- **Managing expectations.** Participants cautioned against overselling the benefits of process-based restoration. It is important to communicate to funders that some projects will fail, and that doesn't reflect poorly on the approach. Because projects mimic natural processes, a higher tolerance for learning, experimenting, and fixing things over time is necessary.
- **Story mapping.** Participants noted that ArcGIS StoryMaps are being used to share information about projects and demonstrate their impact. We heard that utilizing this platform or a similar resource for NbS for riverscape restoration storytelling could be helpful for visualizing the demand and supply for these types of projects. Story maps could be a useful resource for not only funders, but other stakeholders engaged in this work as well.

Funding requirements and needs. There are often limits or requirements associated with funding for NbS. Key points related to those requirements, as well as ideas about funding needs, that participants highlighted include:

- **Planning, implementation, and stewardship funding needs.** Funding sources often have different requirements for how they can be allocated. For example, there is significantly more funding for the implementation of "shovel-ready" projects, while fewer resources are available for project planning or stewardship. Funding requirements can range from mandating the use of certain planning frameworks to specifying which watersheds or areas funds can be allocated towards.
- **Low-tech versus high-tech restoration.** A participant noted that most funding sources do not distinguish between low-tech and high-tech process-based restoration when determining funding eligibility. The focus seems to be on the restoration goal, and less on the specific restoration actions for reaching that goal.
- **Beyond IRA and BIL.** The funding surges from BIL and IRA have been useful for LTPBR and NbS more broadly, offering cost-effective, near-term solutions. There has been less focus on long-term costs (e.g., staff, project maintenance, etc.) and agencies noted that uncertainty around these shorter-term funding opportunities is a point of concern in their work. Funding that is more consistent and durable is essential for adequately funding NbS work and supporting long-term capacity needs going forward.

Emerging funding opportunities. Participants pointed to several funding opportunities that could further support the implementation and scale of NbS. There was interest in both identifying areas where NbS currently fits within funding opportunities, as well as expanding funding guidelines to accommodate NbS for riverscape restoration going forward,

- **Opportunities to integrate NbS.** BAER, BAR, the Watershed Condition Framework (WCF), and Forest Planning all have opportunities to integrate NbS solutions. BAR and WCF compatibility with NbS is currently being streamlined.
- **Wildfire Crisis Strategy (WCS).** A challenge with WCS funding is that the IRA and BIL funds allocated to it were specific and there is not much opportunity to expand that funding for NbS. WCS funds also operate on a quick timeline that is incompatible with many NbS projects. An agency participant mentioned that non-profit partners have successfully accessed some of this funding, as they do not face the same restrictions as agencies.
- **Regional Conservation Partnership Program (RCPP).** We heard that [RCPP](#) funding has been used for NbS projects in a few cases (e.g., beaver restoration for wildfire clearing in Arizona) and potentially offers an opportunity for funding NbS work for riverscape restoration going forward.

- **FEMA Building Resilient Infrastructure and Communities (BRIC).** One participant noted that [FEMA BRIC](#) dollars have been used to support restoration work on Tribal lands in New Mexico.
- **Nature-based Solutions Funding Database.** The National Wildlife Federation created [a searchable database](#) that compiles federal funding and technical assistance resources.

Partnerships, coordination, and collaboration to support capacity and scale restoration. As the scale of projects expands to address the magnitude of degradation, coordination between federal agencies becomes increasingly important. To make the most of current funding available, agencies can work together to collectively identify “low hanging fruit” ripe for investment, support projects in target areas, align riverscape restoration with other agency priorities, and leverage available funding. Templates or examples of agency and partner coordination that participants pointed to include:

- **Joint ventures.** Federal agency capacity is oftentimes the biggest bottleneck to getting restoration work (and specifically PBR) going. Staff capacity is a key element of this issue as well as continuity, given that much of this work requires relationships and long-term coordination. Participants shared the example of sponsoring joint ventures (i.e., cooperative agreements) between Trout Unlimited (TU) and the BLM to support agency capacity gaps.
- **Interagency Fish Passage Task Force.** Participants discussed the [Interagency Fish Passage Task Force](#) as an existing model for effective agency coordination that could be adapted to low-tech riverscape restoration. The Task Force membership includes agencies that do not traditionally consider aquatic species passage, yet are nonetheless allies in delivering solutions. It provides a forum to discuss and optimize each agency’s strengths, leverage funding opportunities, address duplicity in efforts, and effectively advance solutions on the ground. The Task Force also established a [website portal](#) that lists all funding opportunities. Participants flagged that this format could be expanded to apply to the riverscape restoration context and include additional resources for monitoring and permitting, such as Categorical Exclusions for LTPBR and NbS that could be adopted by other agencies.
- **Other models for agency collaboration.** Additional models that participants noted could provide inspiration or potentially incorporate riverscape restoration include Wildfire Task Forces and the Federal Green Infrastructure Collaborative. Concerns about sustaining these types of collaborative efforts for riverscape restoration across administrations were also flagged during discussion.
- **Leveraging community-based organizations.** A lesson learned through the recent infusion of federal funding included the role community-based non-profit organizations could serve to effectively channel funding to the ground. These organizations that have established capacity and partnerships are also helping ensure projects are aligned with greater community needs.

Capacity

The following meeting summary captures key ideas shared during the panel and group discussion from the Capacity Session, which took place March 15, 2024.

PRESENTATIONS

SCALING LOCAL CAPACITY FOR MULTI-BENEFIT PROJECTS

Chelsea Silva, Healthy Rivers Program Manager, River Network

River Network conducted a two-year pilot project to advance the conditions and frameworks for successful multi-benefit project implementation in Colorado. With CWCB grant funding and organizational match funds, they funded agriculture coordinator positions in organizations to support technical assistance and coordination with stakeholders on the ground. Participant organizations included the Community Agriculture Alliance (Yampa River) and the Mancos Conservation District (Mancos River). River Network's white paper titled "Scaling Up Local Capacity for Multi-Benefit Projects Throughout Colorado" captures key lessons from this pilot project as well as recommendations for funders and statewide NGOs:

- **Investing in local capacity.** Funding is generally allocated for certain projects or project phases while funding for overall capacity is limited and competitive; however, this effort highlights that investing in local capacity can be impactful. CWCB Local Capacity Grants are one of the few funding mechanisms that support this.
- **Stable, reliable funding for capacity.** Sustainable and reliable funding for capacity is important to the success of multi-benefit projects, particularly in terms of maintaining momentum in the early phases of work.
- **Community support.** Support from local communities advances capacity for multi-benefit projects. Partners can play a significant role filling in capacity gaps and, in some cases, providing match funding.
- **Working as a team.** The process of planning, designing, coordinating, and implementing multi-benefit projects relies on multiple people and cannot rely on one individual. Statewide NGOs can fill in local capacity gaps and play a supportive role (e.g., provide grant writing).

Recommendations from the River Network white paper include:

1. Be strategic to identify statewide needs and capacity building approaches;
2. Coordinate metrics and evaluation to tell a statewide story of success;
3. Be intentional with outcomes and meet organizations where they are;
4. Support access to consistent and durable funding; and
5. Convene peer learning opportunities and provide training and mentorship.

COOPERATIVE AGREEMENTS TO BUILD CAPACITY

Matt Cahill, Sagebrush Sea Program Director, and Austin Rempel, Riparian Restoration Program Manager, The Nature Conservancy

Cooperative Agreements are a tool for supporting agency-level capacity. Currently, BLM has an agreement with TNC that uses BIL and IRA funds to catalyze the scale of riparian restoration across the western US. TNC utilizes the agreement to do this in the following ways:

- **BLM/TNC Cooperative Agreement placements.** BLM and TNC are co-funding coordinator positions across the Colorado River Basin and the west. These placements serve as 'labs' for building local capacity by providing organizational support and technical assistance.
- **Developing a community of practice.** Through these placements, a community of practice is being convened at TNC. This network engages with local partners and existing communities of practice within the regions and landscapes that it touches.
- **Building a self-sustaining restoration economy.** Through these cooperative agreements, BLM and TNC aim to create momentum that goes beyond the temporary influxes of federal investment via the BIL and IRA. They are engaging other funding streams, training workforces, streamlining policy, and building local support through outreach, education, and storytelling to foster this long-term engagement.

PROTECTING, RESTORING, AND SUSTAINING HEALTHY RIVERSCAPES: INCREASING AGENCY AND PARTNER CAPACITY

Amy McNamara, Freshwater Ecosystems Strategist, Natural Resources Defense Council

Workforce development. Key focus areas and associated BLM initiatives related to workforce development include:

- **Training.** BLM and NRCS have developed a riverscapes health training program that staff and partners can either take online or at their own pace. This effort is intended to cultivate the skills needed for riverscape restoration, build capacity, and begin to develop an industry standard of practice.
- **Technical skills, decision support tools, and implementation support.** BLM has developed a riverscape health decision-support toolkit and has been providing in-person, day long trainings as well as a help desk. In addition to developing technical skills and knowledge of tools and resources, BLM has increased its implementation capacity via investments in PBR strike teams, Tribal work crews, and initiatives to engage young adults in restoration work.
- **Capacity and coordination.** Cooperative agreements have been used by BLM and other agencies to increase their ability to develop partner and field staff capacity and complete on-the-ground restoration projects. BLM is also in the process of developing a riverscape service center.

Aligning priorities. Interagency coordination around key priorities is essential for scaling and implementing NbS. Efforts to highlight include the Sagebrush Keystone Initiative which has prioritized the use of NbS on DOI lands. Given that healthy riverscapes provide natural fire breaks and aid in post-

fire recovery, efforts should be made to align priorities and investments across agencies' aquatics and fire programs to increase efficiencies and impacts.

Interagency partnerships and task forces. Agency-level partnerships can create space for agencies that are interested and motivated to align efforts and work together. A task force could standardize best practices, align prioritization approaches, coordinate restoration across land ownerships, conduct effectiveness monitoring at scale, and reduce the burden on local partners. The Interagency Fish Passage Task Force offers a model for supporting NbS through interagency coordination at scale.

Q&A

Q: What would a Riverscape Health Task Force look like?

- **Drawing on previous successes.** The Interagency Fish Passage Task Force offers a helpful template for what interagency coordination on riverscape health could look like. Moreover, formalizing agency coordination helps to build confidence and encourage investment in this work.
- **Building support and demonstrating impacts.** A task force could help to build the local-level support and community buy-in that is key to successful implementation and scaling of NbS. This could include demonstrating the human and ecological benefits that these projects provide.

Q: How are NGOs working on cooperative agreements and meeting match needs for personnel?

- **Match funding and supplemental funding.** Cooperative agreements do not require match funding. TNC and TU are putting considerable resources towards extending these agreements and incorporating additional expertise. Additionally, foundations and corporations are excited to support this work, especially when public dollars are also supporting NbS initiatives. Sustaining those multiple sources of funding is key for sustainable capacity.

BREAKOUT GROUP DISCUSSION SUMMARY

Look to existing successful interagency collaboratives. Models of ongoing agency collaboratives exist that can offer inspiration for agencies and their partners looking to formalize their efforts to work together to advance process-based restoration. These forums aligned members around a core vision or set of principles, helped consolidate efforts to avoid duplication, and also allowed agencies to better understand and leverage one another's strengths. Examples mentioned include the Interagency Fish Passage Task Force, the Green Infrastructure Federal Collaborative, and Wildfire Task Forces. Participants also asked how to ensure federal initiatives like this could be sustained through administration changes.

Building partnerships to support capacity. Participants repeatedly noted that partnerships are a critical aspect of capacity and essential for implementing and scaling NbS. Partnerships can take different forms based on the strengths and needs of the involved partners. Key points and pathways for partnerships that participants flagged include:

- **Leverage different skillsets.** Over the project life cycle, various stages require different skillsets (grant writing, communications, project implementation, etc.). Establishing partnerships between agencies, local NGOs, and state-level NGOs provides opportunities to leverage different skillsets.
- **Standardization.** We heard that a shared platform could allow agencies and organizations to multiply their effect by building partnerships and implementing projects in a standardized way. This could also support a broader desire for better access to shared information to increase overall understanding of how geographic areas will respond to LTPBR.
- **Proactive coordination.** Partnerships require proactive coordination to ensure that the goals, vision, and strategy of the involved parties are aligned. Different partners can bring a different focus or emphasis to restoration, so coordinating across interests during the early stages of a project is important for supporting the success of that collaboration.
- **Leveraging local capacity.** Agencies are struggling to get the unprecedented level of funding to the ground given current staffing constraints. One approach for addressing this capacity gap is partnering with community-based organizations to leverage existing collaboratives. Additionally, this approach offers opportunities to draw on local expertise and help the work to stay grounded in the needs of the community.
- **Watershed planning.** Local watershed planning can be a precursor for project development. It can support coordination of funding sources (including state and other non-federal sources), provide strategic planning, and facilitate outreach and education to support smooth project implementation.
- **Create an online resource center.** An online portal could compile existing opportunities and resources to share among agencies. It could include funding sources, design resources, monitoring protocols, and permit resources (e.g., Categorical Exclusions for process-based restoration that could be adopted by other agencies). The Riverscapes Consortium may be trying to address this opportunity.

Developing the NbS workforce. Participants noted that developing the NbS workforce is critical for implementing and scaling these restoration projects. Various skills are needed for multiple stages of project development, including but not limited to technical design, project management, construction, and communications. Key points related to developing the NbS workforce include:

- **Engaging existing programs to support project implementation.** Participants noted the need to strategize about how to engage different workforce areas through existing opportunities, such as Climate Corps, Riverscape Conservation Corps, State Youth Conservation Corps, seasonal workforces, local community colleges, and youth field education programs. Additionally, there are opportunities to engage adult volunteers, including Earth Day, corporate volunteer days, construction and trades sectors, etc.
- **Creating scalable, robust training.** Some training needs are already accessible and ready for roll out. On other topics, a standard of practice and work still needs to be established to ensure that the right tools are applied in appropriate places. It is important that new training programs are scaling the best practices and latest information. The proliferation of Rosgen and Natural Channel Design exemplifies how a certification program can quickly become the industry norm when it is easy to use. The challenge for NbS to create a similar scalable training program in tandem with the development of standards of practice.

- **Developing technical skills.** Although partnerships have been effective for bridging capacity gaps, agencies still need enough technical staff to provide input on design, check on projects, and make adjustments. This requires consistency and professional maturity. Participants noted that training is a long-term objective, and that it will take time to develop the skillsets necessary for building capacity for implementing and scaling NbS.
- **USU/BLM/NRCS Training Series.** In partnership with BLM and NRCS, Utah State University developed a [Training Series](#) for federal agencies that standardizes approaches to design, planning, implementation, monitoring, and adaptive management. The ability to access this training virtually is already leading to an expansion in the geographic scope of LTPBR implementation.

Supporting community buy-in through public outreach. Participants noted that outreach is critical for building broader support for NbS. Targeted outreach to local governments can increase the geographic scope of this work. We heard that clear communication is essential for outreach to communities, governments, and other stakeholders. Standardizing language and definitions related to NbS is a key piece of establishing this clear communication that is needed for bolstering public support and building capacity to support NbS.

List of Acronyms

BAR – Burned Area Rehabilitation
BAER – Burned Area Emergency Response
BDAs – Beaver Dam Analogues
BIL – Bipartisan Infrastructure Law
BRAT – Beaver Restoration Assessment Tool
CE – Categorical exclusion
CEQ – Council on Environmental Quality
IIJA – Infrastructure Investment and Jobs Act
IRA – Inflation Reduction Act
LTPBR – Low-tech process-based restoration
NbS – Nature-based Solutions
NEPA – National Environmental Policy Act
NWP27 – Nationwide Permit 27
OEPC – Office of Environmental Policy and Compliance
PAL – Post-assisted log structures
PBR – Process-based restoration
PCN – Preconstruction Notice
PGP – Programmatic general permit
Programmatic EA – Programmatic Environmental Assessment
RGP – Regional general permit
WCF – Watershed Condition Framework
WRAP – Watershed Restoration Action Plan