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Committee on Energy and Natural Resources
Subcommittee on Water and Power

Oversight Hearing
"To examine the viability of incorporating natural infrastructure in western water management and policy to support economic development, protect watershed health, and build more resilient communities"

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Chairman Wyden, Ranking Member and members of the Subcommittee:

Thank you for the opportunity to submit testimony on incorporating natural infrastructure in western water management and policy. The Family Farm Alliance (Alliance) is a grassroots organization of family farmers, ranchers, irrigation districts, and allied industries in 16 Western states. We are committed to the fundamental proposition that Western irrigated agriculture must be preserved and protected for a host of economic, sociological, environmental and national security reasons – many of which are often overlooked in the context of other national policy decisions. The American food consumer nationwide has access to fruits, vegetables, nuts, grains and beef throughout the year largely because of Western irrigated agriculture and the projects that provide water to these farmers and ranchers.

THE ROLE OF NATURAL INFRASTRUCTURE IN WATER MANAGEMENT

Natural infrastructure has always been a central part of water management in the western United States. Mountain snowpack and groundwater aquifers are critical natural sources of water storage. Many Bureau of Reclamation (Reclamation) projects were designed, and are still operated, to conjunctively use these non-structural features along with human-built dams, canals and other facilities to provide reliable water supply.

Healthy National Forests are another component of natural infrastructure important to water management. These lands are overwhelmingly the largest, single source of water in the U.S. and, in most regions of the West, contribute nearly all the water that supplies our farms and cities. Healthy forests temporarily store winter snow and rain, slow down the pace of runoff to increase the effectiveness of existing water infrastructure, and naturally filter water resources. The long-known benefits of forested watersheds and the desire to protect water resources is a primary reason many forest lands have been federally reserved since the early 1900s through the National Forest System.

Unfortunately, we are now seeing firsthand that unhealthy forests and associated catastrophic wildfires have the opposite effect. The destructive Western wildfires we have seen in recent years can directly reduce the capacity of existing water supply reservoirs due to increased soil and debris runoff and related sedimentation. In some cases, expensive new water treatment is required to address increased toxins and contaminants. Wildfires also cause serious delayed impacts through post-fire flash flooding and debris flows which can severely damage or render useless our already fragile water infrastructure.

It is important to also highlight that the ability of natural infrastructure to increase water security and drought resilience depends upon adequate and well-functioning traditional infrastructure. In other words, nature-based features can be an important tool to boost the overall water supply reliability of Western water systems when developed the right way. However, natural infrastructure should not be seen as a replacement for significant investments in new and existing man-made infrastructure, including surface storage and conveyance facilities.

The Alliance continues to advocate for and believe that investments in water conservation, water recycling, watershed management, conveyance, desalination, water transfers, groundwater storage, and surface water storage are all needed for a diversified, resilient, and successful water management portfolio. This includes reinvesting in our existing aging water assets to ensure they are able to continue to operate in a safe, efficient and reliable manner.

IMPROVING AND EXPANDING USE OF NATURAL INFRASTRUCTURE

Forest Management and Watershed Health

The number of acres burned by wildfire in the U.S. last year broke a modern-day record, according to data published by the National Interagency Fire Center, as extreme heat and dryness fueled major conflagrations across many populated areas in the West. Wildfire burned over 10.3 million acres in 2020, breaking the calendar-year record of 10.1 million acres, set in 2015. More than 40% of the wildfires in 2020 burned in California. This marks the third year that wildfire has burned more than 10 million acres in the U.S., according to fire center records going back to 1983. All three of those years have been since 2015.

Increasingly fierce Western wildfire disasters are becoming an annual occurrence and underscore the importance of improving on-the-ground management actions that can lead to improved forest health. Improving the condition of our nation's forested lands is of primary importance to water providers. The Alliance believes a responsible level of continuous fuels reduction includes a combination of robust mechanical thinning and prescribed fire. These management tools can be employed to significantly reduce evapotranspiration, tree stress, disease, and pest infestation, preserve health forest conditions, and protect species and habitats. Failure to employ this approach will continue the accelerating, downward spiral in forest health due to fuel accumulation, drought,

disease, and invasive insects. This will lead, inevitably, to additional high-intensity fire events in the future.

Watershed health and catastrophic wildfires must be addressed in order to restore the ability of forests to function as natural infrastructure and protect existing traditional water supply infrastructure. This can only improve the reliability, volume, and quality of water for tens of millions of Americans, along with the wildlife, recreational, and multi-purpose values of these lands.

Aquifer Recharge

Aquifers have long been a proven and important type of natural water storage reservoirs. Water managers across the West are advancing groundwater storage projects to enhance needed storage at a large scale. While aquifer recharge uses natural processes to infiltrate and store water supply, expanding the use of groundwater storage often requires significant investments in features like conveyance and spreading basins. Federal investment and streamlining of approvals would aid in increasing the use of these natural and cost-effective projects.

Floodplain Reintegration

In many areas, floodplains have historically supported robust fish and wildlife populations. Now, towns, cities and productive agricultural lands occupy many of these areas, and levees and dams have been built, in part, to protect these areas and residents from catastrophic floods. Floodplains that support productive agriculture also often have characteristics favorable to aquifer recharge. Using modern scientific knowledge of how rivers work, natural infrastructure projects are currently being pursued that reactivate traditional floodplains. These projects can successfully improve water supply and flood control management that benefits fish, birds, wildlife, farms, and cities. This type of managed floodplain reintegration essentially spreads out flood flows, slowing down the flow of water across the landscape to mimic natural flows. Multiple benefits are being realized by these projects, including groundwater recharge, fish and wildlife habitat creation and restoration, and agricultural production.

Northern California Water Association Case Study

In October 2019, the Alliance prepared extensive written testimony for this Subcommittee's oversight hearing on Western water innovation and technology. That document described multiple real-life examples of multi-benefit projects aimed at resolving some of the water conflicts of the West. One example cited in our testimony focused on the efforts of the Northern California Water Association (NCWA) in the Sacramento Valley. NCWA is part of a diverse coalition of conservation organizations, farmers, local governments, water suppliers and academic institutions that have come together to advance a new model for water management, fish and wildlife habitat restoration and land use that seeks to reactivate historic floodplains in the Central Valley. This

innovative, sweeping program is intended to upgrade California's aging water and flood infrastructure while simultaneously enhancing the function of river ecosystems for the benefit of fish and wildlife populations. This innovative strategy implements and improves dynamic conservation strategies designed to create, retain and enhance habitat in temporary and adaptable ways. This project could ultimately reinforce the value of floodplains and help struggling fish and wildlife species thrive in a changing world. Developing and deploying dynamic conservation strategies is especially important for migratory species– both birds and salmon - and will also become increasingly important for biodiversity conservation.

Technology Integration

In much of the West, farms and cities rely on water that is stored for much of the year as snowpack. But patterns of snow accumulation and melt are changing; temperatures are higher in the "shoulder season," more precipitation is falling as rain instead of snow, and our snowpack storage is diminishing. Throughout the Western U.S., water users are working to adapt to these changing conditions while maintaining secure, reliable supplies of water. While adapting to the loss of snowpack will ultimately require new storage, integrating technology can lead to operational improvements to better utilize existing water storage facilities.

One technology that improves the ability coordinate water stored as snowpack and existing water management infrastructure is Airborne Snow Observatory (ASO). It uses plane-mounted cameras and laser technology to measure snow depth and reflectivity on multiple points in every square meter of a watershed multiple times during months of snow accumulation and melt. The measurements and aerial imagery that are collected can be used to estimate the amount of water supply stored in the snowpack and assess flood risk and other on-the-ground conditions, such as forest health. This data is also used to generate predictions of runoff into rivers, streams, lakes, and reservoirs that have shown to be 96%-98% accurate, far better than more traditional forecasting techniques.

Forecast Informed Reservoir Operations (FIRO) is another emerging technology that uses more accurate weather forecasting to manage releases from reservoirs in real time to maximize their water storage and flood control values.

California Central Valley Example

Since 2013, water districts in California, including those in one of our member districts, the Friant Division of the Central Valley Project (CVP), have worked together with NASA, the California Department of Water Resources, Reclamation, the USDA's Agricultural Research Service (USDA-ARS) and NRCS National Weather and Climate Center to operate the ASO program. ASO operators conduct the flights and collect measurements; the USDA-ARS produces runoff forecasts; and local, state, and federal agencies use the information to manage water for multiple uses, including irrigation, flood protection, and groundwater recharge.

The ASO program began with the 460 square-mile upper Tuolumne River basin and by 2019 USDA-ARS had produced runoff forecasts for almost all the southern Sierra Nevada (nearly 21,000 square miles) representing approximately one-third of California's agricultural water supply. In 2018, Turlock Irrigation District used ASO-derived information to save more than 150,000 acre-feet of water at Don Pedro Reservoir that would otherwise have been released by flood managers to make flood space available. As this example proves, ASO-derived data and runoff forecasts can allow for increased water supply storage in existing reservoirs without the need for new permits or construction. The Friant Water Authority estimates that, once fully implemented, the ASO program could improve deliveries by as much as 100,000 acre-feet in a given year through more effectively managed runoff using existing infrastructure. Additionally, Reclamation has used ASO-informed runoff forecasts to help refine CVP water supply estimates and improve operations for the restoration of salmon below Friant Dam.

IMPORTANCE OF TRADITIONAL INFRASTRUCTURE

As referenced earlier, the "viability of incorporating natural infrastructure in Western water management" is directly linked to having adequate traditional infrastructure, and it is critical that our country invest in new Western water supply infrastructure, along with rehabilitating and modernizing our aging existing facilities, to meet current and future demands for water.

As hydrological conditions in the West continue to change and populations expand, failure to address water security has become increasingly critical. Ignoring the need to improve our aging water infrastructure and develop new sources of usable water supply will inevitably result in additional conflict as pressure grows to 'solve' urban and environmental water shortages. Moving water away from Western irrigated agriculture to meet these other growing needs will surely contribute to the decline of rural communities dependent on farming, as well as negatively impact our Nation's food security.

Earlier this year, the Alliance and a national coalition of over 200 agricultural organizations and urban and rural water districts, collectively representing $120 billion in agricultural production and tens of millions of urban and rural water users, urged then President-elect Joe Biden and congressional leadership to address new and aging Western water infrastructure in any potential infrastructure or economic recovery package. The coalition encouraged the federal government to invest in a diversified water management portfolio, including funding and support for water conservation, water recycling, reuse, and desalination projects, new surface and groundwater storage, watershed management, fish passage and recovery, and habitat restoration, among other things. Beyond financial support, the coalition also called on the federal government to ensure the timely construction of water projects by improving the efficiency and timeliness of federal regulation and permitting processes.

Incorporating natural infrastructure and building more resilient communities also requires supporting the dams, canals and other facilities that serve as the backbone of our existing water

system, and it is important that investments in this traditional infrastructure are included in this conversation.

PARTNERSHIP AND COLLABORATION

The Alliance is seen by many water resource stakeholders across the West and in Washington, D.C. as an important player in the context of Western water resource management and how this important function is impacted by implementation of federal laws and regulations.

The Alliance has worked diligently in the creation of the Western Agriculture and Conservation Coalition (WACC), a collaborative effort to improve the environment, protect Western irrigated agriculture, and keep farmers and ranchers in business. Members of the WACC include Trout Unlimited, Audubon, The Nature Conservancy, California Farm Bureau, Environmental Defense Fund, Public Lands Council, Western Growers Association, Wyoming Stockgrowers, and the California Agricultural Irrigation Association, to name a representative few. We actively seek opportunities to partner with these collaborative, solution-oriented organizations, and shun those organizations that use dueling science, litigation, and negative press to assign blame to family farmers for various regional and global environmental impacts.

Both the threats and the solutions to a viable and sustainable rural West are numerous, complex, and varied. The Alliance and the farmers and organizations we work with are dedicated to the pragmatic implementation of actions that sustainably balance environmental protection and economic prosperity.

This type of collaboration and stakeholder involvement is especially important when developing natural infrastructure projects that will complement and operate in conjunction with existing water systems. When developed in close partnership with water managers, non-structural nature-based water infrastructure components can contribute meaningfully to a portfolio approach of increasing water supply that benefits the system as a whole. However, projects that are considered in isolation without input from local stakeholders and analysis of impacts to existing water management can have unintended consequences that reduce the effectiveness of and even cause harm to existing systems.

In some instances, there has been a recent tendency to favor projects using non-structural approaches over other alternatives. Policy and practices that give preference to nature-based solutions, intentional or not, can limit the full consideration of a suite of alternatives and lead to decision making based on an incomplete analysis of a watershed or the preclusion of other possible infrastructure solutions that are both realistic and cost-effective.

Given the water security challenges we face in the West, we must quickly advance infrastructure projects, natural or otherwise, that can increase water supply and add resilience to Western basins.

This can only be accomplished through collaboration, and we look forward to working with this Subcommittee and our partners in the West to advance these on-the-ground solutions.

POLICY RECOMMENDATIONS

The Western water provisions included in the 2021 Omnibus Appropriations bill enacted in the 116th Congress takes the type of comprehensive approach needed to address our current water challenges. It addressed traditional infrastructure by establishing an aging infrastructure account in Treasury to fund and finance extraordinary maintenance projects to improve our aging federally owned water infrastructure; and also addressed natural infrastructure through the Aquifer Recharge Flexibility Act that will allow greater use of Reclamation facilities for aquifer recharge. It also advanced the use of ASO programs to provide more accurate data about predicted snowmelt runoff and improve water system operations, and it reauthorized the Cooperative Watershed Management Program to promote healthy headwaters.

These were important steps in the right direction, but more is needed to increase the water security and drought resilience our Western irrigated farms and communities need. The Alliance urges Congress to further support both traditional and natural infrastructure solutions to increase water security by:

- Protecting Irrigated Agriculture – Competition for water supplies, among other things, could drive more Western farmers off the land at a time when American food production in general should be increased. This rapid fragmentation of agricultural wildlife habitat, as well as crop conversions and changing irrigation practices, have implications that reverberate beyond agriculture and begin to impact local water availability for people and wildlife. Integrating agriculture, science, technology, and ecology can lead to improved understanding of key linkages related to the importance of agricultural irrigation and the need to invest in modernizing irrigation infrastructure. Such investments also have collateral benefits for landscape resiliency including groundwater recharge, habitat enhancement, and conservation of fish and wildlife.
- Investing in New Infrastructure – The Alliance supports reauthorization and funding of programs that allow federal partnership in new federal and non-federal storage and groundwater recharge projects, including extending provisions in the WIIN Act of 2016 – P.L. 114-322.
- Accelerating the Pace and Scale of Forest Restoration - It appears that there is growing recognition that improved funding and agency cooperation are needed to tackle the critical problem of unhealthy forest conditions and the resulting wildfires. However, this policy recognition is not necessarily translating to action in Western forests. Bold legislative and administrative action is needed to fund and accelerate proposed and pending projects. This type of active forest management will increase water yield, improve water quality, provide for jobs, and reduce the cost of firefighting, while increasing and protecting forest health and resiliency.

- Funding the Bureau of Reclamation Aging Infrastructure Account created last Congress to fund and finance the rebuilding of our aging federally owned water management infrastructure.
- Support Improved Environmental Regulations - We are hearing calls from some to modify or revoke some of the federal environmental rulemaking actions taken by the previous Administration. In our view, many of the changes made to decades-old federal environmental laws, including the Endangered Species Act (ESA), the National Environmental Policy Act (NEPA) and the Clean Water Act, helped bring them into the modern era. They did so by focusing on important process improvements that allows for more efficient, informed, and transparent regulatory and infrastructure permitting decisions without impacting the effectiveness of environmental or species protection measures.

CONCLUSIONS

The Family Farm Alliance' long-term goal is to find lasting solutions to Western water conflicts that can protect our farms and ranches and the rural communities they help support, our Nation's ability to feed ourselves and export food to others and continue to lead the world in agricultural production. At the same time, we must find ways to accommodate the water supply needs of growing urban areas, energy development, recreation, and environmental preservation. Fair, balanced, and long-lasting solutions will not come easily – they never have. Such solutions require visionary leadership and a firm commitment to sensible, workable policies. They will also certainly require both natural and traditional infrastructure and avoiding the tendency, at both the federal and local watershed levels, to favor one type of solution over another without considering all factors and conditions in a watershed.

The Alliance looks forward to working with your Subcommittee to address these critical infrastructure issues. We will continue our efforts to ensure irrigated agriculture is able to successfully continue to play a vital role in feeding our Nation while keeping our rural communities and our environment healthy.