OWEB FOCUSED INVESTMENT PARTNERSHIP
PRIORITY RECOMMENDATION

Submitted by:
Farmers Conservation Alliance (FCA)
14 Oak Street, Hood River, OR 97031
(541) 716-6085
http://farmerscreen.org
info@fcasolutions.org

Introduction

OUR CHALLENGE: By the year 2040, the world's population is expected to exceed 9 billion people. The demand for fresh water will be, unquestionably, unsustainable. Regardless of the untenable magnitude of this demand, needs remain: people need water to drink; farmers need water to grow food; fish need water to live; and hundreds of other equally important needs exhaust available water resources. Add climate change to the discussion, where even the most conservative models show that with every degree of increase in our average global temperature, fresh water scarcity is accelerating.

Surveying this vast and grim picture, we search for the big opportunities – where are the fixable large problems that are needlessly making matters worse? At FCA, our eyes are falling on our nation's aging water system infrastructure. The systems that deliver our fresh water resources to their end use are falling apart, operating with enormous inefficiencies and wasting tremendous amounts of water.

Looking only at the food production system, which globally accounts for 80% of the world's fresh water consumption, we can begin to really understand the challenge facing us. Most irrigation water conveyance systems in the U.S. were built between the late 1800's and early 1940's. Now, a hundred years later, these failing systems have become operational nightmares. Yet, due to the significant expense of modernization, minimal funding programs, limited public awareness, and a lack of organizational entities to coordinate and develop infrastructure modernization projects, these crumbling systems continue to the be the standard.

However, within this desperation exists an enormous opportunity.

A SOLUTION: Updating agricultural water delivery systems can have a significant benefit: water is conserved (saving often 20-50% of current usage); agricultural production is improved; important fish and wildlife habitats are restored; dollars are invested in rural communities, strengthening regional economies; and in a number of cases, new renewable energy production is enabled.

Proposed Priority Description

FROM ASSESSMENT TO ACTIONABLE PLAN: FCA recommends that OWEB utilize a portion of the Focused Investment Partnership to foster a coordinated, Oregon-wide, partnership-driven effort to perform assessments of water utilities and irrigation districts throughout the state that result in district-specific modernization and efficiency plans, each including a prioritized action plan and a detailed list of opportunities for agricultural, environmental, and community benefits.

FUND INFRASTRUCTURE UPGRADES PRESCRIBED BY THE ASSESSMENTS: FCA recommends that OWEB also designate a significant portion of the Focused Investment Partnership fund to provide project funding for those on the ground, district-specific prescribed upgrades resulting from the assessment process.

This approach is entirely appropriate for the Focused Investment Partnership, as it will achieve clear and measurable ecological outcomes; uses integrated, results-oriented approaches; and is implemented by a high-performing partnership. To date, FCA has been working with Energy Trust of Oregon, Bonneville Environmental Foundation, Wallowa Resources, and Wild Salmon Center in addition to water utilities and irrigation districts throughout the state. In the coming years, we hope to dramatically expand this list.

Native fish or wildlife habitat to be conserved or other natural resource issue addressed:

In addition to the monumental water conservation benefits that would result from this work and the promise of new, renewable energy generation capability, this priority focus would benefit all aquatic species that are currently at risk of entrainment in outdated irrigation diversions or impacted by depleted summertime flows in-stream, including: Coho salmon, Chinook salmon, winter and summer steelhead, redband trout, bull trout, cutthroat trout, pacific lamprey, rainbow trout and many others. In-stream habitat as well as riparian areas would be conserved. This broad scale, Oregon-wide effort would benefit essentially all stream related habitat and ecosystem functions.

Specific expected ecological outcomes to be achieved once this priority is addressed:

Through the assessment process, the development of an action plan, the funding of upgrades prescribed in the plan, and post-project evaluation, this priority would achieve measurable environmental impacts in the following categories:
Total volume of water conserved through system efficiency upgrades
Stream miles opened to safe fish passage through installation of appropriate fish screens at water diversions and removal of other passage barriers, eliminating entrainment at these diversions.
Increased in-stream flows (including summertime flows) resulting from conservation efforts, system efficiency upgrades, and other means
Increased native populations of aquatic organisms
Total farming acres served by maximally upgraded water systems
Total MW of green, fish-friendly, in-conduit hydropower generation capacity enabled

Defined geographic location within which this proposal priority can be successfully addressed:

This priority encompasses the entire state of Oregon. Priority project coordination work will occur throughout the state, in both rural and urban centers. Infrastructure modernization project work will occur anywhere water system efficiencies can be realized, in any system that has water diversions.

Significance to the State

This proposed priority is of utmost ecological significance to the state by its very nature as a core, foundational problem on which all other environmental conservation, community health, and economic stability issues will ultimately depend: water is the bottom line. Throughout Oregon, water system infrastructure is long past due for these assessments and, where found to be most critically needed, immediate upgrades. Water conveyance systems, especially agricultural systems, are the single greatest opportunity for water conservation in the State of Oregon.

On-the-ground impacts of the work performed for this priority will:
Provide ecological benefit through increased in-stream flows, improved fish passage, increased native fish populations, and increased fish-friendly hydropower generation
Provide social benefit via a win-win solution for agriculture and the environment through a replicable model that will increase agricultural efficiencies while improving ecological processes and function. This helps to keep Oregon agriculture competitive, resilient, and realizes the opportunities present, as agriculture holds the greatest potential for improving in-stream flows.
Provide a clear assessment of local water system infrastructure efficiency upgrade needs, and actionable plan and timeline to address those needs, and funding to get the job done.

Limiting Factors

As this priority represents essentially a macro-level social and political endeavor to achieve technical solutions to a collective problem via cumulative benefit of upgrades to local systems, we must first speak to the human limiting factors:

- Cultivating a willingness to participate among established water districts requires clear, credible information delivered in a way that best illustrates the benefit to the local system, its users, its dependent constituency, and the local watershed habitat
- Permitting process to ensure appropriate protection of resident aquatic species during construction or as a result of the project can be complex, and often requires long timelines
- Fostering trust among all interested parties (many with essentially competing interests) in any process is one that also can involve long timelines, requiring

continuous and coordinated communication best handled by a project coordinating entity with a relatively neutral position.
- State level funding support and assistance will be a critical element, as will be the coordination of sometimes competing state funding proposals along a macro-level timeline

For the ecological limiting factors of the resulting technical work, throughout FCA's work in the field (since 2006) we have learned that every water diversion site – every water system, whether man-made or natural -- is a universe unto itself, with its own unique array of ecological limiting factors that all directly impact potential success or failure of any infrastructure upgrade. With at least 55,000 – 70,000 water diversions in Oregon alone, we are endeavoring to take on a virtually infinite list of limiting factors. There are, however, some commonalities for all in-the-ground project work for this priority. Speaking generally to the ecological limiting factors listed in the FIP call for recommendations, those are:

- Population abundance: eliminating entrainment and improving in-stream flows both have a positive impact on population size.
- Habitat connectivity: Providing proper fish screening and passage facilities as well as improving in-stream flows creates habitat connectivity.
- Water quality: creating more efficient water infrastructure leads to more water in-stream, which can create lower stream temperatures.
- Water quantity: system efficiency projects offer the greatest opportunity to improve in-stream flows.
- Productivity: improving flows at critical life stages as well as providing greater connectivity and decreasing entrainment all improve productivity.
- Spatial structure: improving connectivity provides access to more habitat and the structure within that habitat. Increasing in-stream flows increases the wetted perimeter of the stream and therefore increases access to structure.
- Diversity: increasing connectivity and increasing in-stream flows both improve access to more diverse habitat.

Existing frameworks that support this priority include the Oregon Plan for Salmon, all ESA plans for fish species, and essentially every habitat conservation or watershed restoration plan currently actionable in Oregon.

Threats and Benefits

As we are seeing this year in areas of Oregon and throughout neighboring California, drought cycles exacerbate the impacts of water diversions on aquatic species and agriculture. Global climate change has the potential to greatly alter precipitation patterns and timing, in addition to raising average temperatures. This too will exacerbate the negative ecological impacts of water diversions as well as increase the evapotranspiration rate associated with crops – thereby increasing the demand for water during the hottest times of the year. Creating more efficient water infrastructure will directly address in-stream flow issues now and in the future. If these threats are not addressed, conflicts

between the needs of aquatic species and the need of the agricultural community will worsen and become more frequent.

In terms of the social, political, and economic threats to this priority, one must acknowledge the sheer scale of the scope of work to be done. This statewide effort requires a massive amount of deft coordination across stakeholders with vastly different interests and backgrounds, but all invested in the resulting common good. This project truly will provide a win-win solution to Oregon's farmers and fish, but the detailed work of keeping dialog from becoming polarizing will be challenging. As noted in the section above, project permitting also provides a significant challenge to project coordination. And finally, funding for not only the assessment and planning work, but also for the projects themselves is a critical need that must be met. Thus, our recommendations contained herein.

The benefits of this work, however, will far outweigh the threats. Agriculture is the primary economic driver in many parts of Oregon. Improving the efficiency of agricultural water delivery systems improves the economics of agriculture and insulates it against the impacts of drought and climate change. Through increased in-stream flows and resulting increased abundance and health of fish species, recreational and commercial fishing (including marine fisheries) can experience growth. Resource-based tourism, as well, will be able to flourish. Agriculture and fishing are important iconic and cultural facets of both pre and post settlement cultures in Oregon, and tribal communities will be highly impacted by improved habitat for native fish species.

Many water systems in Oregon have not been updated in the past 50-100 years, squandering a huge opportunity to increase in-stream flows. Systems that have undergone recent upgrades provide a template to follow within this holistic systems approach, and have proven the potential positive impact of this work through measurable ecological impacts. System-wide assessments with ecological and economic prioritization, however, are very rare, leaving a large number of systems without the means to plan properly.

What is your best estimate of cost to address the priority, and as a result, how economically feasible do you believe it is to address this priority over time?

The cost per assessment would be approximately $40,000 - $60,000 per water district, which FCA sees as economically feasible. The costs to bring any water district infrastructure to a maximally modernized state could easily exceed 10 million dollars, and therefore, could be seen as less economically feasible. Hence the importance of the assessment and prioritization process to choose the best candidates for agricultural efficiencies and greatest impact on the ground.

Opportunities

In many ways, the success of this Focused Investment Partnership priority and the projects resulting from it will depend upon the very measurement of its own success.

Being able to show interested parties a reliable list of expected measurable results, married to project costs and timelines, is a key step in cultivating participation across the board.

Therefore, open collaboration with those environmental organizations and scientific entities working in ecology and agriculture that are already quantifying the impacts of these types of projects -- both in the river and on the farm -- is essential from the beginning. Local economists, universities and extension stations will be able to provide insight into the expected watershed-level economic return on these investments. Partners at every level will be recruited to ensure that the assessment process is based in science and that the resulting actionable list and timeline for each district truly make sense, are economically feasible, and have a clear path to funding and permitting.

These types of partnerships do already exist to a certain degree, but they are typically tied to very specific aspects of the water system. There is no coordinating entity that looks at an entire system holistically. Oregon has momentum towards this priority, and there is much interest, but what is needed is a high level coordination.

For all submissions: assess the proposed priority by locating it in one of the quadrants below. Describe why the proposed priority falls within this quadrant. There is no wrong answer to this question and there may be multiple answers.

Due to the complex, overarching nature of this priority recommendation, FCA would place it in the upper left quadrant, as it is both “Complex” and “Well Understood.”

Conclusion

We have a tremendous opportunity to create positive change that will impact Oregon for decades to come and put the state in a position of national and international leadership. Just as the last great investment in infrastructure fueled nearly four decades of growth and prosperity, a new investment in the infrastructure that delivers our most precious resource can and will drive Oregon forward into a healthy and resilient future.