The Water Report

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COORDINATING WATER RESOURCES MANAGEMENT IN THE TREASURE VALLEY, IDAHO

by Kendra E. Kaiser and Christa Howarth (University of Idaho), Faith Sternlieb (Lincoln Institute), Carli Beisel, Sophia Borgias, Lee Parton, and Ru Wood (Boise State University)

Introduction

Across the Western United States, water managers are facing the combined impacts of climate change and population growth, and expect to have less water available at the times of the year that are most important for agriculture, recreation, and ecosystems. In many places, this has pushed water managers into reactive management that can result in litigation and elevates underlying fears about how water management decisions impact livelihoods and local economies. A lack of baseline water literacy exacerbates these situations, exposing the limits of traditional water management approaches.

Another challenge is that water management spans multiple sectors, scales, and approaches, making coordination among diverse interests more difficult. In the Western US, water management occurs across scales; at the local level, city and county decisions are intertwined with irrigation and flood control districts, as well as state agencies that manage natural resources, environmental quality, and fish and game, with oversight and direct management from federal agencies on streamflow releases from dams and environmental protection regulations. Within one watershed, when including the private sector, there can easily be over 20 entities that have their hands in water management. Each of these organizations are often tasked with managing one narrow component of either the water cycle or the impacts of management of that system on people or the environment. While our professional training is often housed within a given discipline (e.g., hydrology, policy, engineering), most water managers quickly find themselves working with diverse groups of individuals tackling water challenges in their communities.

This can lead to a myriad of cascading dilemmas: ensuring all groups are equitably represented; bringing these groups together in settings where everyone feels comfortable sharing their perspectives; using a common language to foster constructive conversations about data and information for open and honest communication; engaging in deep listening to better understand interests and commonalities; and then identifying which solutions are relevant and actionable and will create positive change. Convergent research can support efforts to address these challenges.

This article describes the community efforts in Treasure Valley and the work of *Immerse*, an interdisciplinary research team that focuses on water data modernization, education/marketing, and policy analysis and formulation. Community driven activities to bring water managers and decision-makers together created the foundation for *Immerse*. A team of researchers from the University of Idaho, Boise State University, and the Internet of Water (IoW) obtained funding to support collaboration between hydrologists and social, data, and economic scientists and the Treasure Valley community to identify water management research needs. Working with local champions leading efforts to coordinate key stakeholders has proven essential for successful community-engaged research and academic partnerships.

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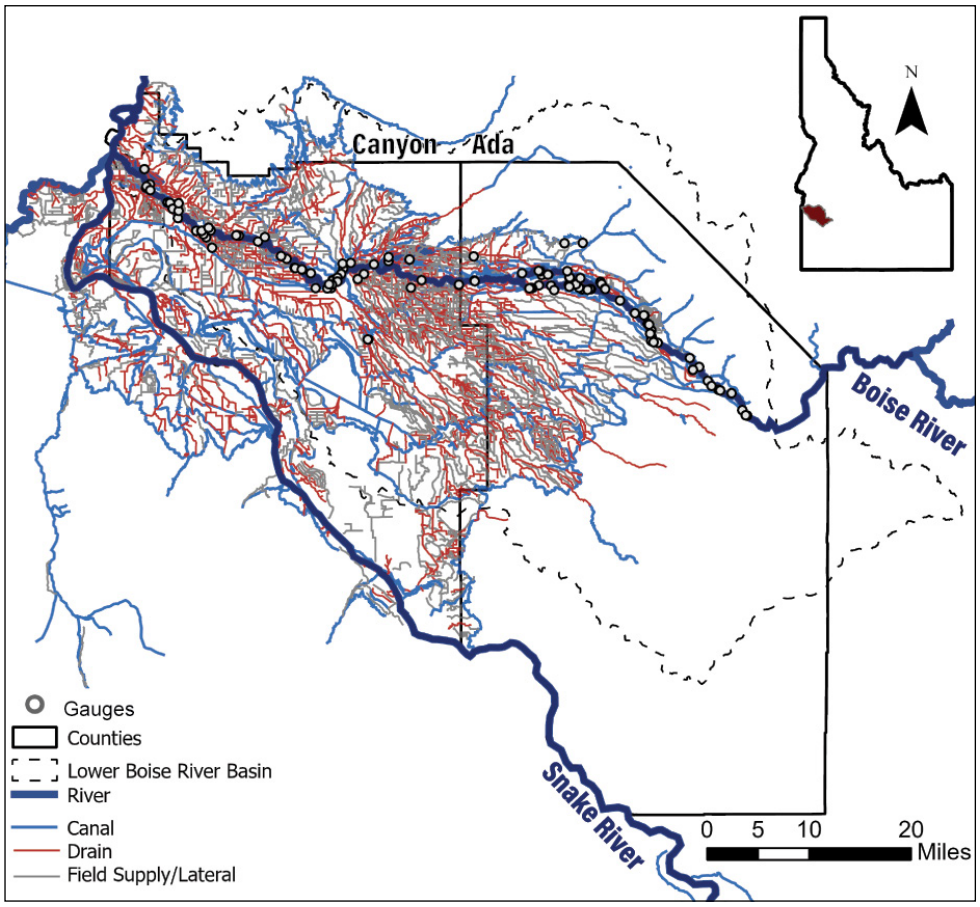

Figure 1. Irrigation Network

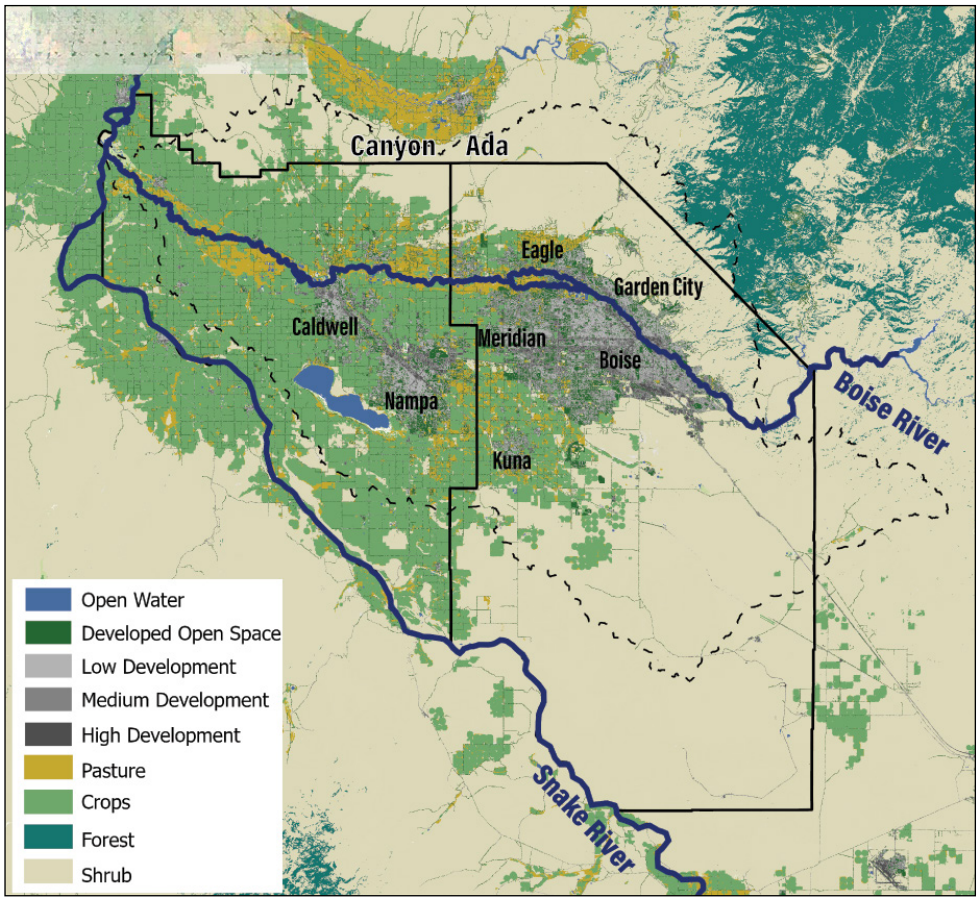

Figure 2. Land Use and Municipalities

Management

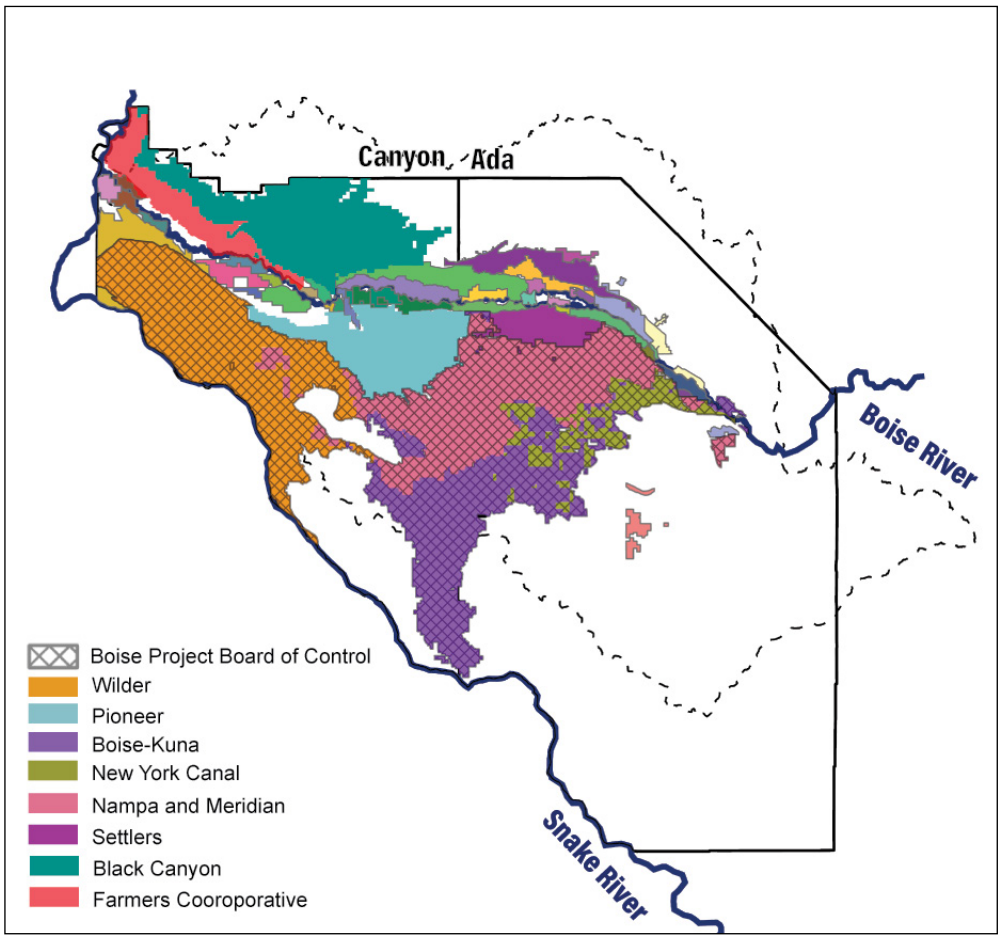

Figure 3. Irrigation Districts in the Treasure Valley

Background

Irrigation Water

The Treasure Valley (Valley) is home to the largest metropolitan area in the state of Idaho and some of the fastest growing cities in the US (e.g., Boise). The Valley—located in the Lower Boise River Basin—receives about 10 inches of rain every year. Additionally, about 31 inches that largely falls as snow in the Upper Boise River Basin is captured as runoff in a series of three reservoirs. Agricultural irrigation canals were built throughout the Valley beginning in the 1860s, and they have since been developed into a complex network that is now over 6,400 miles in total length (*see* Figure 1). This extensive system was so successful at delivering water for flood irrigation that in the early 1900s, drains were dug to remove excess water from the landscape and return it to the Boise River. As agriculture and water demand grew, downstream water users became reliant on these return flows for irrigation water. Water users downstream of Caldwell hold senior water rights to the return flows from the drains. In recent years, as urban and suburban areas have expanded into agricultural land, drain flows have declined—a harbinger for the hydrologic change that is occurring in the Valley (*see* Figure 2). In certain areas, shallow aquifer levels have also been declining due to hydrologic changes brought about by urbanization and changing agricultural practices. These emerging challenges, combined with those associated with climate change, have spurred efforts to bring stakeholders together to chart a pathway forward (*see* Figure 3).

Cross-Jurisdictional Communication and Coordination

Water Summits

In spring of 2022, the Ada County Commissioner established the first Treasure Valley Water Summit. A group of 47 water experts from across the valley came together to discuss water resource challenges and identify mechanisms for water resiliency. Regional interest in the Treasure Valley Water Summit was so high that by the second summit in the summer of 2022, there were 85 participants. These first two water summits focused on information exchange to both understand the roles of different entities in water management and help capture the status of water availability in regard to land use planning. The relationship building that was initiated in the first water summit has generated working relationships that continue to this day—an invaluable outcome of those early efforts.

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Recommendations

A diverse set of concerns were highlighted, including drought, shallow groundwater declines leading to wells going dry, and the potential for future water quality concerns in the deeper layers of the aquifer (Ada County, 2022).

Recommendations for areas of focus stemming from the first water summit included:

- Incorporating assured water supply planning requirements into new developments.
- Understanding surface water and groundwater dynamics associated with changing from agriculture to urban land use.
- Bringing public attention to water rights and law.
- Promoting water conservation in the face of growth and development.
- Developing an All-Hazards Mitigation Plan.

The initial water summits that took place in 2022 highlighted a lack of alignment about whether the water supply was resilient or well understood. Many participants did not think that land use decisions were aligned with current science, and most agreed that the public's knowledge about water supply and conservation was low. Discussions across multiple water summits made it apparent that a Valley-wide governance structure was not a preferred outcome, and it was not clear which entity (e.g., county, state) should be the one to continue to lead the effort. While initial summits were interactive and facilitated by the county commissioner, later summits in 2023 were more focused on providing a series of presentations to provide updates about various projects and were generally focused on Ada County.

Facilitation

After two years of conversation, common messaging or understanding of the water supply issues was still lacking, in part because of the diverse foci of individual water managers. The Fall 2024 Water Summit was organized and facilitated with the goals of ensuring everyone had a common understanding of perspectives across stakeholder groups and identifying potential next steps in policy or research development. The participants largely agreed that continued relationship building, communication, and coordination would be important to identify the largest benefits from projects and planning. While the group has not formalized any agreements, the participants remain committed to participating in the water summits and are interested in finding opportunities that will meet the needs of many.

Funding

One of the most notable outcomes of the Treasure Valley Water Summits has been building partnerships that have led to the funding of various efforts, including research and increased monitoring efforts across the valley. This includes both hydrologic research and research to better understand community perspectives and preferences for the future. Below we outline the primary challenges identified by municipal water providers, agricultural water users, homeowners, and the associated developments, and summarize the potential opportunities identified in the Fall 2024 Water Summit.

Progress Through Research and Monitoring

LAND USE CHANGES IMPACT SURFACE-GROUNDWATER INTERACTIONS

Groundwater Decline

The shallow groundwater table—where the water table is less than 100 feet deep—has declined in some parts of the Treasure Valley due to both increased pumping from new developments and reduced recharge as a result of conversion of agriculture to urban land use. In southwest Ada County, some domestic wells have gone dry, generating significant attention to water supply in the Treasure Valley (Carmel, 2021). There are various contributing factors to this issue including aging well pumps, lack of information on domestic well maintenance, annual variability in shallow groundwater levels, development, and differences in well completion depths. For example, individual wells drilled in south central Ada County in the 1970s were completed from 75 to 100 feet, and while fewer wells were drilled in each decade from 1990 on, wells were generally completed at depths of more than 150 feet (Veatch & Thompson, 2024). A regional well study showed that in south central Ada County, water levels were decreasing by an average of 0.93 ft/year (Veatch & Thompson, 2024).

Domestic Use Exemption

One of the challenges in the more rural parts of the valley—where connecting to the municipal water supply is not an option—is the increasing prevalence of multiple domestic wells in a given subdivision. In Idaho, the domestic use exemption currently allows pumping of up to 13,000 gallons/day, including irrigation of up to half an acre without a water right permit (Idaho Code Title 42-111). This means it is easier to put many domestic wells in a new subdivision than obtaining the necessary permitting for a deeper community well. From 2004 to 2024, a total of 55,696 domestic use exempt wells were drilled in Idaho, with Canyon and Ada counties having the third- and fourth-highest numbers of wells drilled in that period, respectively (Canyon: 282, Ada: 232; P. Arrington, Personal Communication, 11/12/2024). The continued and significant increase in the number of domestic groundwater wells poses questions about how retaining the domestic use exemption in its current form will impact the shallow groundwater table in the Treasure Valley and other urbanizing areas across the state.

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Data & Monitoring

Urbanization Impacts

SURFACE WATER SAVINGS THROUGH INCREASED MONITORING

One of the primary challenges with regard to surface water supply is how to modify surface water management to adapt to an increasingly urban environment. In Idaho, each water district with adjudicated water rights has an appointed watermaster who is tasked with measuring and administering surface water rights. Water District (WD) 63 encompasses the Upper and Lower Boise Basin, covering the full span of the Boise River system. The mountainous Upper Boise Basin is upstream of the Treasure Valley which is primarily in the Lower Boise Basin. The watermasters in WD 63 obtained funding from the Idaho Water Board, US Bureau of Reclamation, Idaho Power, various counties, and the Treasure Valley Domestic Water Purveyors to implement several efforts to modernize the flow measurement system and develop strategies to address the water delivery challenges that come with a rapidly changing system.

Historically, watermasters measured flow in the Treasure Valley irrigation canals once a week and interpolated water use across the week between measurements. In 2023, WD 63 installed 88 real-time monitoring sites at the headgates that deliver water into the irrigation canals across the valley. This effort led to a savings of 15,000 acre-feet in the summer of 2023 due to the ability to manage the system more accurately and efficiently. In 2024, WD 63 installed another 38 real-time monitoring sites in the drain system. These sites report the spills into, diversions from, and flow in three major drains that are experiencing rapid urbanization. The data collected will help WD 63 understand the impacts urbanization is having on drain flow returns to the Boise River and will be used to project future conditions and inform management decisions. These gauges are also used by Pioneer Irrigation District to monitor operational spills and limit water loss.

APPLIED RESEARCH TO ADDRESS EMERGING CHALLENGES

Guided by questions about local hydrology raised at the water summits, faculties at local universities have obtained external funding to implement applied research projects. Graduate researchers have examined how declines in the shallow groundwater table have resulted in decreases in the drain flows which historically have supplied irrigation water to downstream water users on the Boise River below Caldwell. Of the 15 monitored drains in the valley, 40 percent have seen significantly decreased flows from 1987 to 2020 (Figure 2, Bittmann, 2023). Research has shown that urbanization has had the greatest impact on drain flow declines compared to canal inflows and all climate variables tested (Bittmann, 2023). Additional work is currently being conducted by a Boise State University (BSU) master's student and HDR Consulting to leverage the dense network of monitoring sites in Mason Creek to create a water budget and more closely examine how land use change is impacting water fluxes (*see* Figure 4).

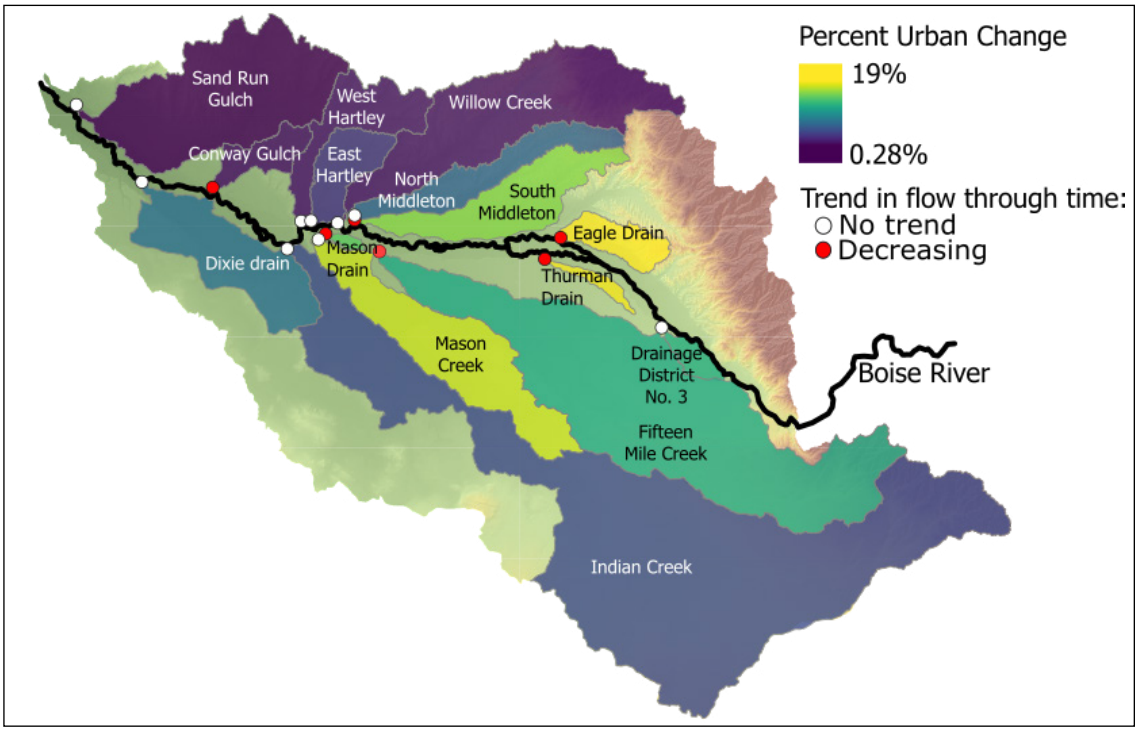

Figure 4. Percent urban change in sub-basins of the Lower Boise River Basin from 1987 to 2020, showing locations where there have been significant decreasing trends in drain flow (Figure from Bittman, 2023)

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Interdisciplinary Team

This research, coupled with the understanding of the complex governance and management of the system gained from the Treasure Valley Water Summits, led to the establishment of a large interdisciplinary project called *Immerse* (*see* Figure 5). Interdisciplinary researchers from the University of Idaho, Boise State University, and the IoW built this convergent research project to both better understand complex water resources challenges and build water literacy by communicating with diverse stakeholders. *Immerse* has created an approach that engages the community in every step of the solution-oriented process, starting with a community needs assessment. Valuable insights from qualitative social science research, data integration and visualization, economic and non-market valuation analyses, and education and science communication will generate a set of community-ready solutions that are tangible and actionable. This approach is being piloted in Treasure Vally with partners representing both the public and private sectors.

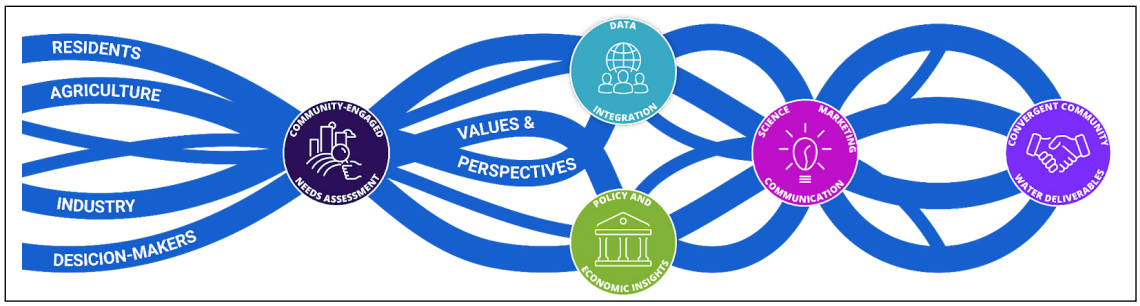

Figure 5. The interdisciplinary *Immerse* approach weaves community needs into all deliverables.

Values & Needs

In Spring 2024, the *Immerse* team convened 44 individual and small group meetings with key water stakeholders in the Treasure Valley and conducted formal interviews with 18 representatives of these diverse interests. The goal of these conversations was to gain a deeper understanding of community perspectives and needs regarding water in the Treasure Valley. While there were diverse perspectives on the current status and future outlook for water management, there was general agreement about the need to integrate existing water data, explore buy-in for various policy options, and better educate the general public about water management. These community-led priorities guided the design and development of various analysis, resources, initiatives as described in this article. Past water summits contributed to this iterative, community-engaged research, which in turn will inform ongoing water summits and collaborative efforts.

Opportunities for Collaborative Water Supply Management in the Treasure Valley

DATA MODERNIZATION

Water Savings

Summit participants and *Immerse* interviewees have discussed data gaps and expressed interest in implementing increased monitoring and data access to better understand how the whole system works. For example, quantifying and understanding consumptive use in urban environments—for example, differences across housing densities—would support higher certainty in future water use requirements. The watermasters' work to increase the frequency of monitoring of canal flow to daily readings has highlighted the power of data to substantially increase water savings. Various entities have suggested that the valley contains sufficient water resources to meet future water demand provided that water management is improved to address the challenges of urbanization, land use change, and climate change.

Centralized Hub

A centralized data hub that is easy for managers and users to navigate, with custom tools to meet their needs, has been promoted as a critical tool for continued management of the rapidly changing system. Modernized water data infrastructure systems are expanding across US federal government agencies with states investing resources and even passing water data legislation. For example, the New Mexico Water Data Act (NMSA 1978, § 72-4B) was the result of a partnership between the IoW and the New Mexico Bureau of Geology. IoW was created to facilitate the design and implementation of a geospatial index (a distributed linked data system) "to allow for any human user to retrieve water data by a plain-language internet search on a geographic name, such as a river, lake, aquifer, dam, or public water systems" (Colohan, 2023 in *TWR #231*). IoW works closely with US Geological Survey and other local, state, federal and global agencies and organizations to ensure Findable, Accessible, Interoperable, and Reusable (FAIR) standards are applied to water data systems for public use or authorized users.

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COMMUNICATION AND EDUCATION

Educational Needs

Attendees at the water summit and individuals interviewed by *Immerse* expressed a strong interest in improving and expanding educational efforts for the general public. The University of Idaho (UI) Extension Water Outreach generated a local water education needs assessment informed by water summit participants, *Immerse* interviews, and additional meetings and involvement in other collaborative groups across the valley. The educational needs assessment was a valuable mechanism to identify the individuals, organizations, and partnerships facilitating water education—from nonprofit- and school district–specific programming to broad informational content distributed by counties and cities. Water education has focused more on water quality and pollution prevention topics than on water supply topics due, in varying measures, to the relationship between clean water and public health, the historic abundance of water in the valley, and the complexity of water management systems. The Treasure Valley Water Atlas (Atlas), created through a previous Idaho Established Program to Stimulate Competitive Research (EPSCoR) project, is an ArcGIS story map that functions as an educational reference for water resource and water management topics. UI Extension Water Outreach is collaborating with a BSU master's student to incorporate updated research, new groundwater educational content, and the collection of ideas suggested at the water summit into the revised Atlas.

Conservation Outreach

Critical education outcomes highlighted at the most recent water summit include creating common messaging about the valley's water supply and the role of conservation to support community resiliency into the future. Other ideas included documenting best practices in landscaping that could be implemented across scales, whether at that of a single residence, a subdivision, or city-wide. For example, as the Treasure Valley has urbanized, irrigation canals that previously delivered water to irrigated agriculture have been retrofitted with pumps to deliver pressurized irrigation water to homes. While the total amount of water necessary to irrigate the landscape has not increased, the timing of when the water is needed has changed. Many homeowners' water their lawns at the same time, early in the morning, which creates a high demand all at once—similar to energy demand peaking. This requires irrigation districts to provide enough water in the canal to meet the peak demand and can result in excess water in the system during lower-demand periods. To counteract the diurnal changes in water demand that strain management of the irrigation system, some existing developments have storage ponds, which adds aesthetic value and communal recreation areas. Encouraging the construction of storage ponds in new developments that will tap into the irrigation system could mitigate this issue.

Common Messaging

Common messaging would support valley-wide education around these conservation actions, as well as drought planning coordination. By working with a filmmaker who has expertise in marketing and science communication, *Immerse's* research team can amplify the impact of this content by matching educational material to the right audience via the media they are most likely to consume. This includes developing targeted messaging for different audiences (e.g., legislatures, HOAs, homeowners, youth). Water outreach by UI Extension has generated support among school districts and community partners to expand *The Confluence Project* (TCP), a high school watershed education program hosted by UI's Idaho Water Resources Research Institute (IWRRI), into the Treasure Valley. TCP connects high school students with scientists and relevant water topics over three field experiences throughout the school year. Students learn how to collect water data during water quality, groundwater, and snow science field trips, and then analyze it in the classroom to discuss its implications for management. TCP culminates in a regional Youth Water Summit, where over 300 students present on inquiry projects they have developed over the course of the school year.

INTEGRATED LAND USE AND WATER MANAGEMENT PRACTICES AND POLICIES

Examples

Drought Planning

The Fall 2024 Water Summit generated many ideas for mechanisms that would help the community at large navigate the pressures of urban growth and future climate conditions. One opportunity would be to create a Treasure Valley Drought Plan (*sensu* Petrich, 2022). The City of Nampa has a drought task force dedicated to community education and irrigation water optimization. One outcome of the task force was to develop water-wise landscaping guidelines (City of Nampa, 2023). The City of Meridian has a Water Conservation Plan (City of Meridian, 2023), and other cities may also have analogous plans in place. A coordinated effort would ensure that regulatory and management entities have clear thresholds at which various actions are taken and that messaging to the public is consistent. Various local and regional resources could be leveraged to implement this planning effort, including the National Integrated Drought Information System (NIDIS) and the IWRRI.

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AWS Requirements

Assured Water Supply

Awareness about the value of integrating land use and water management is increasing across the Western US (Endter-Wada et al., 2022). In response to rapid land use change and development pressures, often discussed at the water summits, the City of Boise adopted Assured Water Supply (AWS) requirements in their Zoning Ordinance in July 2024. AWS standards ensure that water supply needs are met for long-term growth and land development. These requirements apply to any proposed development on previously undeveloped lands, or proposed redevelopment that includes five or more dwelling units or is in a Groundwater Management District, Critical Groundwater Area, Groundwater Management Area (GWMA) or Aquifer Recharge District (B.M.C. § 11-04-010), which are effectively different tiers of management concern. The Idaho Department of Water Resources (IDWR) declares a GWMA when a basin is approaching the conditions of a Critical Groundwater Area, where a basin lacks sufficient water supply for irrigation or other uses. IDWR has declared two GWMA in the Treasure Valley, the Boise Front in 1987 and Southeast Boise in 1994 (*see* Figure 6). In a GWMA, new water rights are approved only after it has been determined that there is sufficient water available for the new groundwater withdrawals and that they will not impact existing water rights (IDWR, n.d.).

Communication

Multiple scales of governance, or types of management activities, may be suitable for addressing shallow groundwater concerns in the Treasure Valley. While the AWS standards may not be a perfect fit for counties, the framework could be adjusted to more adequately address the various types and sizes of water systems in counties. Data integration efforts would make the process of evaluating applications more efficient and facilitate coordination with the county or other municipalities if implemented more broadly. To quantify the broader community's preferences and support for expanding the AWS standards, *Immerse* has designed a non-market valuation survey. Working with the *Immerse* filmmaker and communications expert, we have identified ways to incorporate compelling science communication into the survey to test the efficacy of alternative communication strategies to increase the community's comprehension of complex water issues and better measure residents' willingness to pay for alternative water policy options.

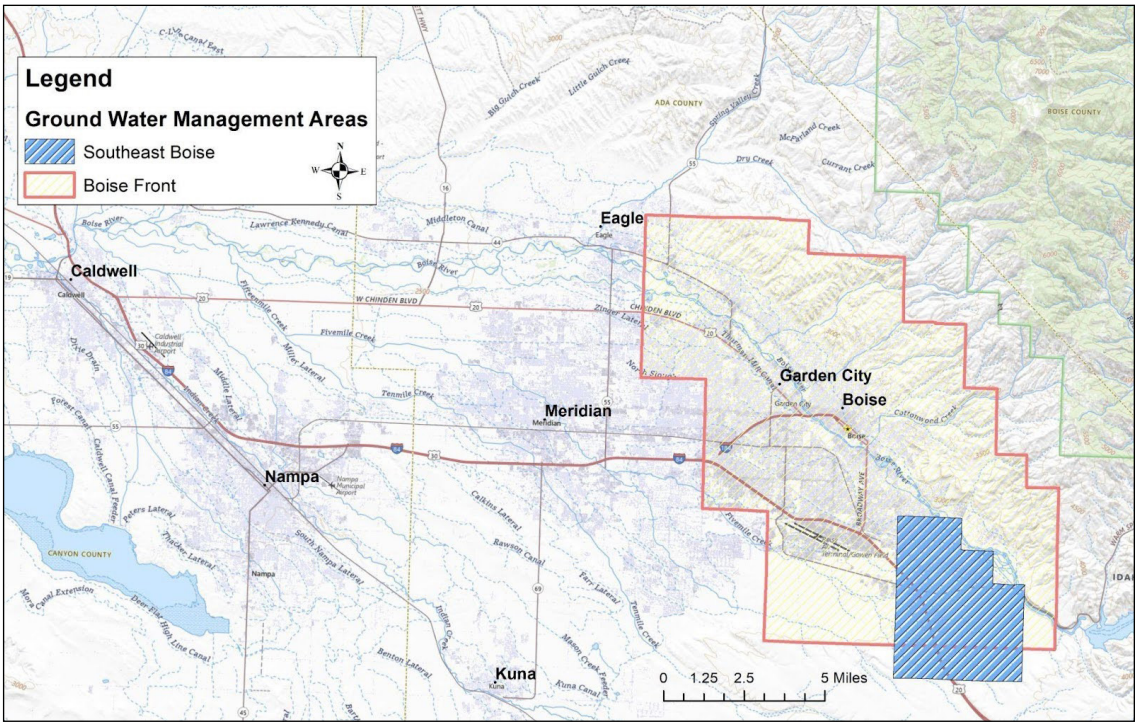

Figure 6. Boise Front & Southeast Boise IDWR Groundwater Management Areas (Image: Dennis, Owsley, IDWR).

Incentivized MAR

Managed Aquifer Recharge

Managed Aquifer Recharge (MAR) is increasing across southern Idaho, and there is substantial interest in understanding the locations where MAR can occur and quantifying the spatial impacts to the aquifer. A study was funded by the Idaho Water Resources Board to do that (Brown & Caldwell, 2024), and additional research has been conducted by a consulting firm to evaluate the possibility of using the Hubbard Reservoir for MAR. Continued incidental recharge through existing infrastructure such as unlined canals and ponds is also of interest, yet incentives to do so are not currently sufficient to increase MAR through that mechanism. Creation of Incentivized MAR opportunities have been explored through

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various collaborative efforts, highlighting the need for additional research to make that information more accessible for decision-making purposes (Tuthill & Carlson 2023 in *TWR #231*).

Solutions

Additional options that could be implemented on a local level to better manage the shifting surface water demands include encouraging the construction of storage ponds in developments, the creation of re-regulation ponds to manage drain flows before returning to the river, and implementing alternative water scheduling in urban environments. These options would all mitigate the peak demand problem that affects how water returns to the Boise River from drains. Residents' landscaping decisions are often determined by the requirements of homeowner associations; thus, providing examples of good/better/best water preserving landscaping options for HOAs to implement may increase the adoption of water-wise landscaping choices. For example, the City of Nampa has created resources to inform homeowners on low–water demand grasses and landscaping to decrease outdoor water use demand (City of Nampa, 2023). While some municipalities are already implementing some of these requirements and distributing associated educational resources, it was highlighted that these expectations should be supported across the valley to increase buy-in.

POLICY & LEGISLATION OPTIONS

Supporting Land Use Change

Various policy or legislative actions could be implemented to mitigate the water challenges associated with rapid urbanization. The following ideas would need to be further explored with all relevant stakeholders to collaboratively determine the details. There is a suite of options that could facilitate transferring water from agricultural water use to urban water use to meet evolving water management needs and also support the remaining agricultural water users in the system. For example, when a development is being planned, developers could agree to retain a percentage of water in the irrigation system for water delivery purposes. Additional funding support could ensure that irrigation districts have the resources to implement planning studies to evaluate how irrigation delivery will change as the system becomes more urban. Tiered water-use pricing has been a successful mechanism to manage water use above domestic needs in other western states, and that mechanism was brought up as a potential solution at the Water Summit.

Modifying Policies

Standards and requirements could be modified or implemented to protect both the shallow groundwater levels as well as water quality for domestic water users that have groundwater wells. The Idaho Water Users Association (IWUA) is known for its success in bringing diverse stakeholders to the table to discuss and modify potential legislation about water topics. The IWUA legislative committee formed a Domestic Use Exemption working group in 2022 to engage stakeholders in discussing potential changes to the treatment of domestic uses. Alternative proposed options to modify the Domestic Use Exemption (I.S.C. 42-111) include allowing multiple water rights for domestic uses to be diverted from the same well to supply residential, in-home use. This would make it easier for developers to put community wells in small developments (less than the 10-home threshold at which point DEQ permitting is required) rather than individual groundwater wells. For subdivisions within one mile of a city or municipal provider, the system would be designed to meet the requirements of that municipal provider and be able to be integrated with that provider in the case that the area of impact expands. Work is ongoing to determine options that will have sufficient support to bring to the legislature (P. Arrington, Personal Communication, 11/12/2024).

Addressing Unsealed Wells

Treasure Valley cities, like most Idaho cities, rely primarily on deep aquifer groundwater to provide clean, safe drinking water to residents and businesses. The quality of the Treasure Valley groundwater supply is threatened by the continued construction of unsealed wells. Wells with unsealed casings allow waters of different pressure, temperature, and chemistry (including natural and human-introduced contaminants) to move within the aquifer system. Sealing between aquifer layers of different chemistry or pressure is required by Idaho well construction rules; however, there is not always enough data/information available to IDWR to enforce this requirement. Mud-rotary drilling allows for proper placement of a functional well seal over the entire length of the well casing. However, wells constructed using mud-rotary drilling are roughly 1.5 to 2 times the cost of those employing the cheapest drilling methods. The benefits to the well owner, such as avoidance of surface contaminants, longer life, and better water quality, can outweigh the additional upfront cost. IDWR has expressed interest in working with municipal water purveyors to create an Area of Drilling Concern based on additional hydrogeologic data; however, it is unclear if sufficient data currently exists today. Revising and implementing well drilling and decommissioning standards remains a significant opportunity to protect groundwater quality. Along with these standards, refined data collection and reporting expectations would improve data integration efforts and our understanding of the subsurface.

Updating Standards

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Water Literacy

Communities Drive Actionable Water Solutions

Meeting diverse water demands amid rapid changes in land use and climate is a "wicked problem" that requires many perspectives and collaborative processes to generate creative and actionable solutions (Megdal, 2021; Beutler, 2021). Convergence of diverse disciplinary perspectives from hydrology, social sciences, policy, economics, education, and communications generates many pathways for individuals to become engaged—based on their priorities and interests. It has become clear that community education with targeted messaging (e.g., youth, homeowners, policymakers) will be a cornerstone of generating buy-in to proposed solutions. Social science ensures that we capture the nuanced perspectives of diverse stakeholders and provides a window into the values informing individual decisions. While we continue to explore potential solutions to mitigate the challenges associated with land use change, we can leverage evidence-based practices from economic analysis to evaluate potential impacts of alternative policies and decision-making.

The challenge is that there is no "one-size-fits-all" approach to sustainable water resources management. Progress requires community-driven solutions, which demand expertise that no single entity can currently provide. Through the convergence of science, art, and the humanities, we are making it more efficient for partners to identify, develop and implement achievable water management goals. Data-driven tools and policy insights are critical to enable transparent and community-driven decision-making that optimizes water management strategies while ensuring access and equity for marginalized communities. Increasing water literacy and providing powerful storytelling through film and other media humanizes water challenges and can galvanize public support for sustainable management of our most critical natural resource.

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