

# Oregon's Umatilla Basin Aquifer Recharge and Basalt bank

October 2016

Case Study

Final Report on  
Political Economy  
of Water Markets

# **Oregon's Umatilla Basin Aquifer Recharge and Basalt Bank**

## **A Case Study for the Political Economy of Water Markets Project**

**October 2016**

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## Preface

This paper is one output of a project entitled “The Political Economy of Water Markets.” The project was carried out by Ecosystem Economics LLC and AMP Insights LLC. The outputs of the project include a final report and a set of case studies.

The final report comes in three parts:

1. “Healthy” Water Markets: A Conceptual Framework by Bruce Aylward, David Pilz, Megan Dyson and Carl J. Bauer
2. Political Economy of Water Markets in the Western United States by Bruce Aylward, David Pilz and Leslie Sanchez
3. Comparative Analysis of Legal Regimes with Respect to Fostering “Healthy” Water Markets by David Pilz, Megan Dyson, Bruce Aylward, Carl J. Bauer and Amy Hardberger

The eight case studies consist of the following.

1. The Evolving Water Market in Chile’s Maipo River Basin by Carl J. Bauer
2. Addressing Overallocation and Water Trade in New South Wales, Australia: Namoi Basin Groundwater by Megan Dyson
3. Evolution of Australian Water Law and the National Water Initiative Framework by Megan Dyson
4. Opportunities for Surface Water Right Marketing in Idaho’s Rapidly Urbanizing Treasure Valley by Jeff Fereday
5. Texas Groundwater Markets and the Edwards Aquifer by Amy Hardberger
6. Oregon’s Umatilla Basin Aquifer Recharge and Basalt Bank by Martha Pagel
7. Truckee-Carson Surface Water Markets in Northern Nevada by Leslie Sanchez, Bruce Aylward and Don Springmeyer
8. Smart Markets for Groundwater Trading in Western Nebraska: The Twin Platte by Richael Young

The studies and reports can be downloaded from the AMP Insights website at <http://www.ampinsights.com/rock-report>.

For further information on this work please contact Bruce Aylward at [bruce@ampinsights.com](mailto:bruce@ampinsights.com).

## **Acknowledgements**

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## **Author**

Martha Pagel is a shareholder in the Salem office of Schwabe, Williamson & Wyatt. Her practice focuses on water and natural resources. Before entering private law practice in 2000, Martha served for eight years as Director of Oregon's Water Resources Department and spent a total of nearly 20 years in Oregon state government, holding various cabinet-level posts, including Director of the Department of State Lands and Senior Policy Advisor to the Governor for Natural Resources and the Environment. Just last year, Martha was honored by the Oregon State Bar's Environmental Law Section for her contributions to environmental and natural resources law in Oregon over the past 30 years. She is also a member of the prestigious American College of Environmental Lawyers – an invitational group of the nation's top environmental and natural resource lawyers.



## **I. Introduction**

Oregon's Umatilla Basin has the unfortunate distinction of being home to four of the state's six officially-designated "critical ground water areas" (see map on the next page). Parts of the basin have experienced ground water declines of more than 500 feet, and water rights authorizing irrigation of more than 120,000 acres from groundwater sources are curtailed each year under the critical ground water area restrictions. Surface waters in the basin are fully appropriated resulting in significantly diminished in-stream flows and increased temperatures that have contributed to a loss of habitat for fish and aquatic resources. At the same time, the Umatilla River and tributaries are the source of water for tribal reserved water right claims held by the Confederated Tribes of the Umatilla Reservation ("CTUIR" or "Umatilla Tribes") – claims that cannot be satisfied without a reduction in existing out-of-stream uses or other actions to increase water availability and restore instream habitat.

As a result of these conditions, and with broad-based stakeholder support, the basin was targeted as a pilot program for state funding to assist with the planning and developing new sources of water supply. The Umatilla Aquifer Restoration Project emerged as a proposal to provide replacement water for existing, curtailed groundwater rights by pumping from the Columbia River during the winter months and storing the water underground for withdrawal during the irrigation season. At full build-out, the project was intended to help restore groundwater levels, provide instream flow benefits through increased groundwater discharge to the Umatilla River, and make available about 100,000 acre-feet of water per year to offset existing curtailed groundwater uses through a water banking and marketing program. Implementation would require obtaining new water rights for the aquifer storage, coupled with other types of state water use authorizations to allow the stored water to be delivered and used as an alternative source of irrigation water at specific farm locations.

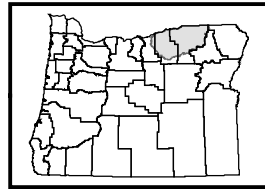
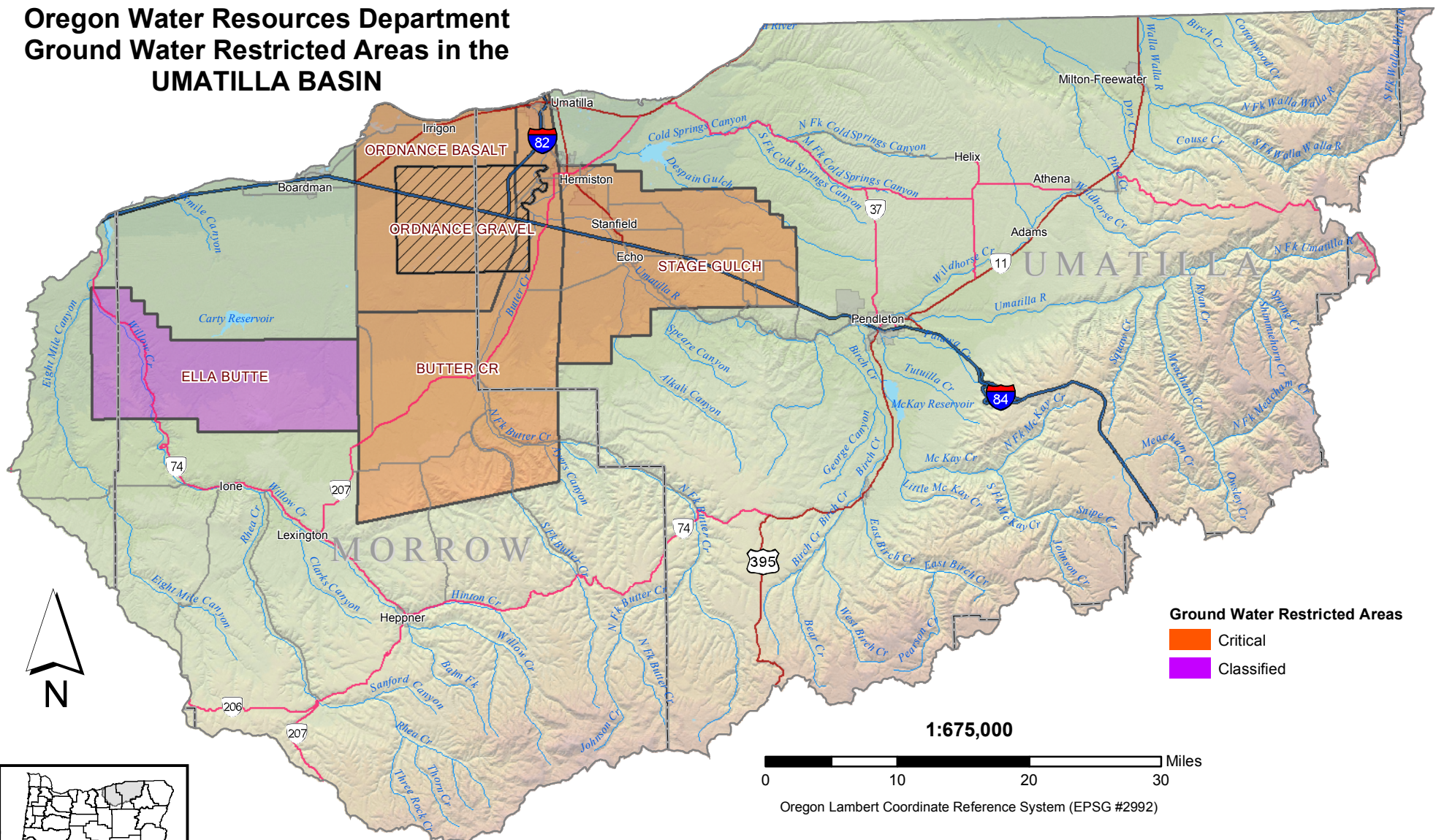
After a five-year trial, the pilot project proved to be less than successful: Initial recharge testing showed the aquifer was not capable of storing the amounts of water planned for the project and discharge benefits to the Umatilla River would be minimal; the cost of water made available by the project was too high; and the local commission established to manage the project lacked authority to effectuate a banking and marketing program. Despite the disappointment, important lessons were learned that may prove useful as a statewide model for promoting more effective water management through market devices. The Umatilla experience demonstrates the importance of a thorough feasibility analysis addressing project economics as well as engineering, advance attention to the governance structure and legal mechanisms for operating a water marketing program, and the need for significant law changes to allow for efficient water transactions.

## **II. Legal Framework for Water Use**

### **A. Allocation of Water**

Oregon, like other Western states, relies on the doctrine of Prior Appropriation as the legal foundation for modern water allocation. The state's first comprehensive water code,

# Oregon Water Resources Department Ground Water Restricted Areas in the UMATILLA BASIN



regulating the use of surface waters, was enacted in 1909.<sup>1</sup> Water uses established prior to 1909 are recognized through an “adjudication” process resulting in issuance of a court decree (ORS 539.005 *et seq*). Allocation of groundwater followed a slightly different path. Before 1921, Oregon applied common-law principles authorizing landowners to make reasonable use of the resource lying beneath surface ownership.<sup>2</sup> In 1927, the legislature enacted a system of administrative permits for the geographic region East of the Cascade Mountains, and in 1955, the process was extended statewide.<sup>3</sup> Water is allocated by the Oregon Water Resources Department (“OWRD”) through the issuance of water rights (ORS 537.120; ORS 537.525(3); OAR 690-310-010(5)). Each water right includes a designated type of use and is limited to that purpose. General categories of beneficial use include, but are not limited to: irrigation, municipal, industrial, commercial and domestic. Since 1987, the law has specifically included instream flow protection as a beneficial use (ORS 537.334(1)). A water right holder is entitled to use as much water as is necessary, up to the maximum amount shown on the water right, to accomplish the stated beneficial use. In deciding whether to issue a new water right, the state must determine a proposed new use will not “impair or be detrimental to the public interest” (ORS 537.153(2)). A key factor in determining whether a use is consistent with the public interest standard is whether unallocated water is “available” from the proposed source (ORS 537.153(2)). Public interest considerations also include a determination as to whether the proposed use will adversely affect sensitive, threatened or endangered species protected under state or federal laws (OAR Chapter 690, Division 33).

Water rights may be designated for either “primary” or “supplemental” use (ORS 540.505(2)-(3)). A primary water right is the first source used in meeting the specified beneficial use. The supplemental water right is used as a back-up source of supply when the primary source is insufficient to fully satisfy the amount of water authorized. Typically, a more senior surface water right is held as the primary right for irrigation, with ground water providing the back-up, supplemental supply.

Water rights may be issued for instantaneous, live flow use, or for storage in surface reservoirs or underground, aquifer storage projects.<sup>4</sup> Aquifer storage can be accomplished through a shallow, natural seepage process known as “artificial recharge” or through an injection process known as “aquifer storage and recovery.”<sup>5</sup> In most parts of the state, water is generally available for new winter storage rights.

Once approved and fully developed, a water right becomes appurtenant to the land and remains valid in perpetuity, subject to forfeiture only if the water right is not used for a period of five or more consecutive years (ORS 540.610). Vested water rights are viewed as real property rights and are presumed to run with the land in any real property conveyance, unless expressly reserved and withheld by the seller.

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<sup>1</sup> 1909 Or. Laws ch. 216 and 221.

<sup>2</sup> J. Neuman, *Oregon Water Law: A Comprehensive Treatise on the Law of Water and Water Rights in Oregon*, 23 (2011).

<sup>3</sup> 1955 Or Laws, Chapter 708.

<sup>4</sup> See, ORS 537.531; 537.135.

<sup>5</sup> See, ORS 537.531; 537.135; OAR 690-350-0100(1) (artificial recharge), and (ORS 537.531; OAR 690-350-0010(1(a)) (aquifer storage and recovery).



Vested water rights may be changed under a process known as a “transfer.”<sup>6</sup> Related administrative rules are found in OAR 690, Division 380. The statutes allow changes in the type of use (e.g., from irrigation to instream), place of use, or point of diversion. The transfer process cannot be used to change the source of water specified in the water right. Temporary transfers (for a period of up to five years) are authorized under ORS 540.523. In reviewing an application for permanent or temporary transfer, OWRD must conclude that the change will not result in “injury” to other water rights or “enlargement” of the water right proposed for transfer. Injury means less water would be available to other authorized water users as a result of the proposed change (OAR 690-380-0010(3)). Enlargement means an expansion of the water right, including using a greater rate or volume of water than is allowed under the water right or increasing the number of acres authorized for irrigation (OAR 690-380-0010(2)).

Water rights may be temporarily “leased” or permanently transferred to instream flow use (ORS 537.348). In-stream leases may be issued for any specified period of time, but typically include a provision allowing the lease to be terminated by the water right holders with appropriate notice as required under the lease agreement.<sup>7</sup>

Water conservation and efficiency improvements are incentivized by the state’s Allocation of Conserved Water Program.<sup>8</sup> Under this program, a water right holder may retain up to 75% of the water “saved” as a result of conservation or efficiency actions. At least 25% of the saved water must be returned to the state for protection under an instream water right (ORS 537.470). The amount dedicated for instream flow is increased in proportion to the amount of public funding provided for the conservation project (ORS 537.470(3)). This statutory incentive represents a significant departure from traditional principles of prior appropriation under which the right to use water is limited by the amount that can be put to beneficial use. Thus, any water saved as a result of conservation or efficiency improvements would revert to the source and be available for use by other authorized appropriators in order of priority. Under the Oregon program, the saved water is assigned the same priority date as the original water right (or “one minute after” at the choice of the water right holder), and can be freely used or marketed by the water right holder (ORS 537.485, ORS 537.490).

Oregon law does not expressly recognize the concept of “marketing” water rights, but private transactions can and do occur using a variety of water law tools. The most straightforward method of changing ownership of a water right is by changing ownership of the land to which the water right is appurtenant. Vested water rights run with the land unless expressly reserved to the seller in the deed.<sup>9</sup> Absent a real property transaction, water rights may be separated from the land by using the transfer process to change the location of use. The same transfer application could be used to change the type of use and point of diversion. However, because of this regulatory overlay, the potential market area is limited and the otherwise private transaction is encumbered by the uncertainty of timing and outcome associated with the transfer

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<sup>6</sup> ORS 540.505-540.520; *See also*, OAR 690, Division 380 (administrative rules pertaining to transfers).

<sup>7</sup> *See*, OAR 690-077-0010(14) (definition of instream lease); OAR 690-077-0077(15)(application process and lease term).

<sup>8</sup> ORS 537.455 *et seq.*; OAR Chapter 690, Division 18.

<sup>9</sup> *Skinner v. Jordan Val. Irr. Dist.* 137 Or 480, 491 (1931), *Saylor v. Oregon Water Resources Dep’t*, 100 Or App 745, 746 (1990)

application process. Additionally, as noted above, a transfer may not be used to change the source of water, which necessarily limits the potential market area to those lands or uses that can gain access to the authorized water source. Timing and outcome become issues because the transfer review process includes public notice, comment and an opportunity for protests to be filed, thereby allowing the transaction to be further complicated by the injection of third party interests.

## **B. Regulation and Curtailment of Authorized Water Use**

After a water right has vested, the state has only limited authority to regulate or curtail the water use. Under traditional principles of prior appropriation, during times of shortage, OWRD may regulate and distribute water in priority date order among users holding water rights for the same source (ORS 540.045). The principle applies to both surface and groundwater rights but, obviously, is more readily and easily accomplished with respect to surface water uses. Groundwater may be regulated in favor of senior surface water rights when OWRD can demonstrate a clear hydraulic connection between the two sources (OAR 690-250-0120(2)). However, because of the difficulty of establishing the extent and timing of groundwater impacts to surface water, groundwater to surface water regulation occurs infrequently. Groundwater-to-groundwater regulation is similarly infrequent, but for different reasons. Oregon requires a groundwater user to fully penetrate the aquifer before the state will take action to curtail groundwater use by a junior user.<sup>10</sup> Thus, even when the pumping of a junior well is shown to interfere with pumping from a senior well, the senior user may be required to deepen the pump or reconstruct the well before OWRD will intervene to regulate.

In addition to its authority to regulate and distribute based on priority dates, OWRD holds substantial regulatory authority to address or prevent excessive groundwater declines by establishing a “Critical Groundwater Area” (ORS 537.730-537.742). The process requires findings to document excessive declines in groundwater quantity or quality, or to prevent over-appropriation of the groundwater source (ORS 537.730(1)). The determination is made through formal rulemaking procedures that include public notice and opportunities for comment by affected groundwater users and the general public (ORS 537.730(2)). The rules may include various types of corrective actions including closure of the area to new groundwater appropriation and limitations on the total quantity of groundwater that may be withdrawn per year, regardless of priority date (ORS 537.735(3)). Thus, even senior wells can be curtailed under rules implementing the Critical Groundwater Area determination.

## **III. Water Use and Development in the Umatilla Basin**

### **A. Background/History of Water Development**

Historically, the Umatilla River Basin was home to the indigenous people of the Umatilla, Walla Walla, and Cayuse bands who relied on salmon runs in the Umatilla and Columbia River systems for sustenance and ceremonial purposes. In 1855, the three bands were

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<sup>10</sup> R. Bastasch, *The Oregon Water Handbook: A Guide to Water and Water Management*, 118-119 (1998).

joined together under a treaty with the United States, establishing the Confederated Tribes of the Umatilla Reservation (“CTUIR” or “Tribes.”)

Out-of-stream diversions for flood irrigation use began in the mid-to-late 1800s. By the time the first comprehensive state Water Code was enacted in 1909, the summertime natural flow of the Umatilla River was already fully appropriated, primarily for irrigation use, and Congress had authorized construction of the Umatilla Basin Project. The project, managed by the U.S. Bureau of Reclamation, provided additional irrigation water through a series of storage and diversion dams and distribution canals. The Cold Springs Dam and McKay Reservoir store winter flows from the Umatilla River to serve more than 34,000 acres of land but with the inevitable result of blocking fish passage and eventually eliminating salmon runs.<sup>11</sup>

Further irrigation and agricultural development during the 1950s and 60s was fueled by the use of groundwater. Although the basin is situated in close proximity to the Columbia River, a potentially vast source of surface water, groundwater was a more cost-effective option because of the substantial cost of pumping and delivering Columbia River water. However, as a result of the increased use, groundwater levels began to decline almost immediately, and during the period from 1976 to 1991, OWRD designated four separate critical groundwater areas in the Umatilla River Basin encompassing more than 600 square miles, and including approximately 63,000 acres of farmland with existing water rights: The Ordnance Basalt and Ordnance Gravel CGWAs.<sup>12</sup> As a result of the critical groundwater designations, new groundwater development was halted and existing groundwater uses became subject to curtailment.<sup>13</sup>

Under the critical area restrictions, OWRD determines the “sustainable annual yield” (“SAY”) of the groundwater source, meaning the volume of water that can be pumped on an annual basis while maintaining reasonably stable water levels, and to limit annual groundwater withdrawals accordingly. Water right holders submit a request for water by a specified date each year. OWRD then considers a number of factors, including priority dates, in allocating the sustainable annual yield among the existing water rights.<sup>14</sup> As a result of continued declines, use has been limited in recent years to only about 30 percent of the total amount of groundwater authorized under the existing rights; more than 127,000 acre-feet of existing irrigation rights are being curtailed each year.

Adding to the complexity of water issues, beginning in the 1980s, the Umatilla Tribes became more vocal in asserting the need for restoration of surface water flows in the Umatilla River to address long-term impacts of the Umatilla Project and on-going irrigation withdrawals, and to satisfy treaty rights for fishing and reservation uses. Working together with local irrigators and Oregon’s Congressional delegation, the CTUIR participated in an effort to secure federal funding for two water “exchanges.” The trade program allowed irrigation districts to pump water from the Columbia River into their existing distribution systems in exchange for leaving an equal amount of water in the Umatilla River that the districts otherwise would have

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<sup>11</sup> [http://www.usbr.gov/projects/Project.jsp?proj\\_Name=Umatilla+Basin+Project](http://www.usbr.gov/projects/Project.jsp?proj_Name=Umatilla+Basin+Project).

<sup>12</sup> OWRD Special Volume 27, Page 40 (1976); Butter Creek CGWA, OWRD Special Volume 40, Page 1 (1976); Stage Gulch CGWA, Special Volume 45, Page 278 (1991).

<sup>13</sup> OWRD Umatilla Basin Program, OAR 690, Division 507.

<sup>14</sup> See, e.g. OAR 690-507-0780 and 690-507-0810.



the right to divert for irrigation. The water exchanges and related watershed improvement efforts have greatly benefited instream flows and have contributed to the restoration of a productive salmon fishery in the Umatilla, while also allowing established irrigation to continue. However, the exchange program did nothing to address the on-going need for increased water supplies in the basin to meet existing and growing demands for irrigation.

That need remains essentially unmet today. The nearby Columbia River, with average flows of 190,000 cubic feet per second (“cfs”) at the Dalles, Oregon (downstream of the Umatilla Basin) would seem to be the obvious source of supply. But the River is essentially off limits to new irrigation diversions or other consumptive uses because of regulatory restrictions protecting 13 different species of salmon and steelhead listed as threatened or endangered under the federal Endangered Species Act. Soon after the first ESA listings in the early 1990s, OWRD adopted administrative rules specifically addressing protection of sensitive, threatened or endangered fish.<sup>15</sup> The “Division 33 Rules” impose strict conditions for any new water rights: new uses are not allowed from April 15 to September 30 of each year unless mitigated to provide a “net benefit” for fish (OAR 190-033-0120; 690-033-0140). Although the OWRD rules do not specify the particular form or quantity of mitigation required to meet the “net benefit” standard, OWRD’s current practice is to require an equal amount of replacement water that can be legally protected as instream flow delivered at or above the location of the new withdrawal. This type of “bucket-for-bucket” replacement water would, in theory, be provided by acquiring and cancelling another existing water right or purchasing stored water to be released as offset. However, because of the relatively few sources of mitigation water available, the bucket-for-bucket mitigation requirement has resulted in a *de facto* moratorium on issuance of new water rights. Additionally, with up to 1000 feet of head gain from the river to potential on-farm use within the designated Critical Groundwater Areas, the cost of pumping and transporting Columbia River has been another limiting factor for new development.

## **B. Aquifer Restoration and Storage Project**

With no legal or practical means of getting access to Columbia River water for direct irrigation use, local interests turned their attention to water storage. Specifically, the state and local stakeholders explored the option of an aquifer recharge project to be accomplished by diverting winter flow from the Columbia for underground storage and withdrawal during the irrigation season. An initial feasibility assessment of options for aquifer restoration was conducted in 2008 under supervision of the OWRD.<sup>16</sup>

Conceptually, recharge would occur by delivering river water during winter months, through existing irrigation pumps and pipes, to a surface collection area. From there, the river water would naturally infiltrate through the soil to a shallow aquifer for short-term storage. Because the shallow aquifer was not expected to hold the entire volume of water needed to replace curtailed groundwater uses, the plan provided that the recharge water would later be

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<sup>15</sup> See OAR Chapter 690, Division 33 (establishing additional public interest standards for new appropriations).

<sup>16</sup> GSI Water Solutions Inc., *ASR Feasibility, Umatilla Basin Regional Aquifer Recovery Assessment*, February 2009. See also, S. Amali, *Aquifer Recharge and Recovery, Assessing Potential in the Umatilla Basin*” The Water Report #60, February 15, 2009.

pumped out and injected into deeper, larger basalt aquifers for long-term storage and subsequent irrigation use.

The recharge project was also intended to contribute to instream flow restoration in the Umatilla River through increased groundwater discharge to the river. Benefits were expected to include additional flows as well as decreased river temperatures as colder groundwater enters the river. Based on preliminary modeling results, the GSI feasibility assessment projected some level of instream flow benefits could be realized, but cautioned additional data would be needed to predict the amount and location of increased stream flows.

The initial assessment report recommended three “Supply, Storage, Recovery, and Distribution (SSRD)” systems to serve different portions of the basin subject to the CGWA curtailment. The first phase, SSRD 1, was projected to supply approximately 100,000 acre-feet of water at full build-out to the Ordnance Gravel and Butter Creek Critical Groundwater Areas. The new storage would provide an estimated 69,000 acre-feet for irrigation and 24,000 acre-feet for Umatilla River instream flow benefits. The first stage of SSRD 1 development targeted storage of 25,000 acre-feet; after further evaluation, the storage could then be increased to 55,000 acre-feet; and finally to full capacity. The feasibility report indicated that it would take a total diversion rate of approximately 560 cubic feet per second from the Columbia River over a 90-day period to attain the proposed annual volume of 100,000 acre-feet, and that the amount of water available in the Columbia River during authorized periods is more than sufficient to meet this goal. The assessment report estimated a capital construction cost of about \$1000 per acre foot of water pumped from the Columbia, with annual operation and maintenance costs of about \$80-\$100 per acre-foot.

As a next step, in 2009, the Oregon Legislative Assembly approved HB 3369 (2009 Or Laws Ch 907), which authorized a new grant program to fund a “critical ground water storage project” in the Umatilla Basin. Funding was to occur in two stages: The Stage One grant provided \$2.5 million to implement a pilot project to test the recharge and to develop a more detailed plan for completion of construction and long-term management of the project. Stage Two would provide up to \$25 million for construction and implementation of the ASR project, with a requirement that at least 25 percent of the new stored water be dedicated to “net environmental benefits.”

The Umatilla Basin Water Commission was formed in late 2009 to provide the governance structure for receiving state grant funds to test the aquifer recharge plans and develop recommendations for long-term operations and water marketing. The parties to this unique intergovernmental entity included Umatilla and Morrow counties, Westland Irrigation District and the Umatilla Tribes.<sup>17</sup> The Commission was the first – and to date only – example in Oregon of an entity comprised of local and tribal governments for the development of a joint water project.

Under its initial grant agreement with the state, the Commission had two key objectives: to conduct a test of the aquifer recharge system to confirm its feasibility as a source of new

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<sup>17</sup> See, The Water Report #87, May 15, 2011, New Model for Water Management, The Umatilla Basin Water Commission

water supply for the basin, and to develop a Project Management Plan to refine the scope and future stages of aquifer restoration project and provide detailed recommendations for long-term operations of the project. OWRD Grant Agreement with Umatilla Basin Water Commission, p. 1 (2010). As the grant term was coming to an end, however, the Commission prepared what it called an “Interim” rather than a final Project Management Plan and acknowledged the need for further investigation of additional strategies for water management and marketing in the basin to fully realize the benefits envisioned by the Aquifer Restoration Project and to provide an adequate source of supply for the project basin needs. The Commission – and stakeholders in the process – came to the realization that the relatively simple approach of managing and trading water through an aquifer restoration project would not work. Instead, the Commission identified a need for a more comprehensive banking and marketing program that includes “deposits” to the bank from multiple sources – not just the aquifer storage component – and a different set of water management tools than were available under current law.

The change in vision was driven by several findings:

First, a realization that critical predictions in the Project’s original feasibility assessment did not reflect actual recharge and discharge characteristics of the target aquifer. Instead of a capacity to store up to 100,000 acre-feet per year at full build-out of SSRD1, the pilot program revealed the recharge project would more likely provide for only about 25,000 acre-feet, and instead of discharging an estimated 26,000 acre-feet of recharged water to the base flow of the Umatilla River, most of the available discharge from the recharge site was modeled to return to the Columbia River.

Second, a determination that the aquifer restoration project alone was not economically feasible. Even if more water could be made available through the restoration plan, the cost of pumping from the Columbia, storing underground, and then re-diverting and delivering water for on-farm use would be prohibitive – especially when coupled with the need to reserve at least 25% of the aquifer storage water for “environmental benefits.”

Third, an understanding that the governance structure of the UBWC was not workable. Although supported by a stakeholder advisory group, the commission itself did not include broad enough representation of water users and affected interests. Additionally, the consensus-based structure of the Commission became dysfunctional in the face of natural and unavoidable conflicts between the Tribes and private water users.

Finally, a recognition that significant changes in state law and agency rules would be needed to implement the concept of a large-scale banking and marketing program.

In 2013 the Commission dissolved, handing the reins of further water management planning – including refinement of a marketing program – to a new private non-profit, the Northeast Oregon Water Association (NOWA). The new entity is working on a water supply and marketing program that banks water from multiple sources: existing senior water rights, SAY allocations within Critical Groundwater Areas, new storage – either surface or underground, and new water rights offset with mitigation. Under this approach, if implemented, the cost of water from multiple sources can be blended to result in a more affordable rate per



acre-foot, and the cost of new infrastructure development for distribution lines would be offset by state grants and loans.

#### **IV. Lessons Learned – Practical, Political, and Legal Implications**

One of the most important lessons learned in connection with the Umatilla Aquifer Restoration Project is the need for more a more detailed and complete feasibility analysis. Early evaluation should address physical design and implementation, cost, and legal authority to implement the plan. In this case, the \$800,000 spent on a feasibility “assessment” did not include a sufficiently detailed evaluation of aquifer conditions to accurately predict either the amount of water that could be stored, or the potential for achieving one of the key project objectives – to increase groundwater discharges to the Umatilla River. Similarly, project economics were not adequately evaluated. Even with a start-up grant of \$2.5 million for initial project testing and long-term planning, and the promise of additional state loans or grants for full-scale implementation, the Umatilla Aquifer Restoration Project did not pencil out. One of the primary impediments to economic feasibility was the flat requirement under the enabling legislation that 25% of the new stored water be dedicated and protected as instream flow. This was a political concession that was necessary to secure approval of HB 3369. Environmental advocacy groups and the Tribes lobbied to ensure any state funding for new water supply projects would include a dedication of some water to environmental purposes. But the effect of the funding condition was tantamount to a 25% interest rate on the storage project costs. Further, based on information gathered through the pilot project, it became apparent that it would not be possible to physically deliver 25% of the stored water for instream purposes short of pumping the stored water out of the ground and delivering it as surface flow augmentation; the aquifer storage simply did not work as planned.

More pertinent to issue of water marketing, the Umatilla experience underscored the reality that the Commission – and even OWRD – lacked legal authority to implement the type of market-based banking and reallocation program that was envisioned for the Aquifer Restoration Project. The feasibility assessment undertaken by OWRD identified water rights and permitting requirements for construction of the aquifer recharge project, but did not address legal requirements – and potential impediments – for making the project water available to individual irrigators. The assessment correctly concluded that obtaining water rights for the storage project would be fairly straightforward; the most significant question raised in that regard was the need to identify who or what type of entity would hold the water right for aquifer storage. The more critical, and difficult questions relating how the stored water would be made available for irrigation use were not addressed in early project planning. Instead, that level of analysis was scheduled to be undertaken by the Commission during the initial stage of the pilot project. In hindsight, it is clear that even if the project were physically capable of providing the desired amount of new stored water, there would be no effective means to authorize the banking of SAY allocations by the seniors uses in trade for the use of new stored water or other sources of supply available through the bank, or the acquisition and use of banked groundwater allocations by junior water right holders. To do so would require significant changes in existing law, administrative rules and agency practices.

As noted, a primary goal of the Commission was to establish a long term plan for water management using new stored water from the Aquifer Restoration Project in tandem with other

water sources available to meet the areas' collective water supply demand. In practical terms, this would require developing a water management plan that would identify total demand in the basin and provide a mechanism to match demand with available supply in the most cost effective and efficient manner. To accomplish this objective, the Commission envisioned establishing a "Basalt Bank Program." Under this concept, the Commission would serve as the administrative body to connect water users with available supply. The program was also expected, over time, to provide for gradual recovery of static water levels in the basalt aquifers, and enhanced instream flows in the Umatilla River.<sup>18</sup>

The source water, or "deposits", for the bank would come from holders of senior basalt ground water rights entitled to annual allocations under the SAY but who were also able to gain practicable access to alternative water supplies. Such alternative supplies would include stored groundwater under the Aquifer Restoration Project, other existing surface water storage, or new Columbia River water rights that potentially could be acquired for direct irrigation with appropriate mitigation. In its simplest form, senior groundwater users would bank their annual groundwater allocation and replace the groundwater with water from the new sources of supply. Junior groundwater users who typically do not receive an SAY allocation would be able to purchase and use SAY allocation credits from the bank. Curtailed groundwater users would also have access to the new stored water or other sources available through the bank, when economically feasible. The cost of developing alternative supply sources would be offset by payments to the bank, in conjunction with grants and loans made available through the state water development funding program. The Basalt Bank would serve as a broker and provide administrative support for the program.

Despite its obvious efficiency for the needs of water users in Umatilla Basin, the Basalt Bank concept could not be implemented under current law. Early on, the Commission identified specific legislative or rule changes needed to make the program work: First, a change in OWRD rules governing allocation of the SAY within the critical groundwater areas. Second, changes in OWRD statutes and rules regarding transfers and use of existing water rights. And third, enactment of a new process by which OWRD in cooperation with the bank could collectively review and approve multiple water use changes or other authorizations needed to implement a coordinated water management and banking plan. The pilot effort also revealed the need for an alternative governance structure to operate the bank with more direct involvement and control by affected water users.

#### **A. CGWA Rule Changes**

As noted above, following designation of the Butter Creek and Stage Gulch CGWAs, OWRD adopted a complex series of administrative rules to determine and distribute available groundwater.<sup>19</sup> Under these rules, basalt ground water right holders within the Butter Creek and

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<sup>18</sup> See, Cook, JR, *Program Concept Overview Draft*, May 17, 2013 (report to Umatilla Basin Water Commission and Northeast Oregon Water Association).

<sup>19</sup> OAR 690-507-0610 – 690-507-0700 (Methods for Determining and Distributing the Sustainable Annual Yield for the Butter Creek Critical Groundwater Area ), OAR 690-507-0750 – 690-507-0840 (Methods of Determining and Distributing the Sustainable Annual Yield for the Stage Gulch Critical Groundwater Area).

Stage Gulch CGWAs must annually provide OWRD with an estimate of irrigation needs for the upcoming season. OWRD then makes an allocation based on seniority of water rights and the amount of ground water expected to be available within the established SAY of the basalt aquifer. Despite this annual allocation process, there is no enforcement by OWRD of the allocation system; if a senior water right holder pumps more than the allocation amount, it simply means that in a subsequent allocation cycle, OWRD will determine there is a lesser amount of water available within the SAY. Similarly, if a senior water right holder does not use all of the annual volume allocated by OWRD for a given season, the senior user risks allocation of a lesser SAY amount in the future, with the difference added to the potential amount available in the SAY for more junior users. Under the rules, this allocation system may be modified only if all of the ground water users within a designated “sub-area” enter into a voluntary agreement with OWRD for an alternative water distribution plan.<sup>20</sup>

Within this framework, a banking concept could be implemented only if all of the groundwater users within a designated sub-area were willing to enter into a voluntary agreement with OWRD. In the absence of such an agreement, changes in the existing rules would be needed to allow senior ground water right holders who typically receive an allocation to “bank” the allocation and make it available to other water users through a bank transaction, rather than simply making that water available for the next junior user in the system. In addition, there would need to be some form of enforcement of the SAY to ensure stability and reliability of annual allocations.

## **B. Changes Relating Use of Existing Water Rights**

Current laws and rules allow only limited flexibility for changes to existing water rights, to allow for more active water “management” by water users. As noted above, a permanent or temporary transfer application is required to authorize changes in the place of use, type of use or point of diversion for any water right. Additionally, a water right holder is required to make full use of an existing “primary” source before using water under a “supplemental” (or back-up) water source, and in most cases the primary and supplemental rights cannot be separated. These principles are well-established in applicable statutes and rules in order to protect against injury or enlargement on a case-by-case basis. They work well for that purpose, but are antithetical to a water bank and marketing program designed to promote voluntary reallocation and coordinated water management.

Under the Basalt Bank proposal, available sources of water would be banked and re-allocated in the most efficient and cost effective manner, as determined by the market process. But under current law, this concept could be implemented only on a case-by-case basis that would render it infeasible. Each seller would be required to file a temporary or permanent transfer application to change the location of use of the existing primary ground water right to another specific location of use as designated by the buyer; *i.e.*, the specific “to” and “from” lands must be described and evaluated in the transfer application. In addition, any existing supplemental water right for the seller’s land would have to be included in the transfer, or cancelled. At the same time, the seller would be required to obtain a new water use authorization from OWRD in order to receive and apply alternative irrigation water provided from the

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<sup>20</sup> OAR 690-507-0670(5), Butter Creek CGWA; OAR 690-507-0810(5), Stage Gulch CGWA.

recharge project. This would typically be authorized through a temporary authorization known as a “limited license” as provided in ORS 537.143; however, current law limits issuance of a limited license for irrigation use only when the new use is from “stored water” and authorized “by a contract between the user and a local, state or federal government.” Thus, the seller could acquire replacement water from the aquifer storage project (as long as it was operated by a government entity) or McKay Reservoir, but would not be able to secure replacement water from the Columbia River or other live flow source. Alternatively, the seller’s use of stored water could be authorized under a new water right permit for use of stored water; however, in that case, the new permit would be issued as a “supplemental” source unless the seller were willing to permanently transfer the primary water right. There is no provision in current law for issuance of a short-term permit to provide an alternative source when the existing primary right is temporarily transferred to another use. Further, each of these approvals are subject to different review procedures and timelines, different approval standards, and different appeal provisions. There is no provision in current law to coordinate the review and approval of multiple transactions that would be necessary for an effective banking and marketing program.

### **C. Process for Coordinated Approval of Water Use Transactions through Water Management Plans**

The most innovative and significant legislative change needed to facilitate a banking program would be enactment of new statutory authority to allow simultaneous and simplified review and processing of the multiple individual water right transactions that would be needed to match willing sellers and buyers. Under this approach, banking and marketing operations would be approved under a single water management plan, filed on an annual basis, to provide greater flexibility and administrative efficiency in water management for plan participants, enhance instream values and environmental benefits, and ensure against injury to non-participating water users.

Conceptually, the banking entity would work with interested water right holders to develop an annual water bank and marketing plan, identifying sources of water deposited in the bank and matching sources with users. The plan could provide for changes in existing water rights and new water use authorizations such as limited licenses or permits that would be time-limited to coincide with the time period approved for the plan. Un-used water rights included under the plan would be protected against forfeiture or the threat of cancellation for non-use during the approved time period. The plan, as a whole, would be subject to approval by OWRD and upon approval, would override the need for individual applications and approvals to be obtained by each buyer and seller participating in the banking program. Once approved by OWRD, plans would remain in effect for the specified period of time and would include conditions for measuring, monitoring and annual reporting of water use under the plan. Any enforcement, regulation or distribution action by WRD during the term of the plan would be in accordance with the water use and management provisions of the plan. Upon termination of the plan, the water rights would revert to their original form.

To ensure against the traditional concerns of injury to other water rights minimum standards for plan approval could include no injury to water rights not included in the plan. Implicitly, this means that participants in the plan could agree, voluntarily, to allow what might otherwise be determined to be injury or enlargement with respect to specific water rights

included in the plan, with a recognition that under certain circumstances it may be to the participants' advantage to allow such consequences when overall water needs are satisfied and other objectives are achieved. The acquiescence to injury and tolerance of enlargement would apply only during the time that the plan was in effect.

To ensure protection of instream resources, plans could be conditioned upon a showing of measureable instream flow or water quality benefits.

This banking concept envisioned for the Umatilla Basin would be new to Oregon, but similar to a program already in place in the state of Washington's Walla Walla basin. The Walla Walla Watershed Management Partnership was legislatively authorized in 2009 as a pilot water management program for the State of Washington.<sup>21</sup> The program is intended to incentivize and test innovative, voluntary water management tools to allow for more effective use of existing water rights while simultaneously improving instream flows. An important element of the program is legislative authorization for Local Water Plans ("LWPs") that empower local governance of water resources, subject to clear standards to protect instream flow, aquifers, water quality and the interests of water users.<sup>22</sup>

In a 2015 report to the Washington Legislative Assembly, the Partnership called LWPs "the most powerful tool the Partnership has to offer to water users...."<sup>23</sup> The LWP program allows landowners to propose a comprehensive, integrated plan for managing water uses with substantially more flexibility than would be allowed under traditional water right management options available through the Washington Department of Ecology, the state's water resource management agency.<sup>24</sup> As a trade-off for the additional flexibility and local control, each LWP must provide a "public benefit" and a portion of any existing water rights included in the plan must be dedicated to instream flow enhancement. LWPs are reviewed and approved at the local level, by the Partnership, subject to the standard of ensuring public benefit and accountability. The program includes a "banking" mechanism to hold un-used water rights or portions of rights with protection from forfeiture due to non-use during the time period the water rights are banked (RCW 90.92.070).

Although the Washington model focuses on individual LWPs, rather than a large-scale basin plan, the concept is similar to what is needed in Oregon's Umatilla Basin. Effective water management and marketing will require the ability for water users to work together to use water differently, with appropriate requirements to avoid injury to non-participating water users, and to provide instream flow or other measureable environmental benefits.

## **V. Future Efforts and Potential Reforms**

A great deal of political attention and state funds have been – and are being -- dedicated to water supply problems in the Umatilla Basin. Although the pilot effort and governance

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<sup>21</sup> RCW 90.92, *See also*, Walla Walla Watershed Partnership Website, <http://www.wallawallawatershed.org/backstory/>.

<sup>22</sup> *Id* at 4.

<sup>23</sup> Walla Walla Watershed Management Partnership, *Interim Progress Report to the Legislature for 2013-2015*, p. 13 (December, 2015).

<sup>24</sup> *Id* at 14; RCW 90.92.080.



structure of the Umatilla Basin Water Commission proved to be insufficient, the concepts of aquifer restoration, instream flow benefits, and voluntary reallocation of water rights will be important components of a long-term solution. Even as work of the Commission was winding down, local stakeholders were already developing new options through a problem-solving forum convened by the Governor's office.

In February, 2013, more than 20 members of the Columbia River-Umatilla River Solutions Task Force (the "CRUST") signed a "Declaration of Cooperation" pledging to work together to promote both increased irrigation and agricultural water use and enhance salmon and native fish recovery efforts.<sup>25</sup> Convened under the Governor's "Oregon Solutions" program, the CRUST included representatives of the Governor, the CTUIR, state agencies, Morrow and Umatilla Counties, the Northwest Power and Conservation Council, environmental advocacy groups, landowners and other interested stakeholders. The Oregon Solutions program is designed to provide a forum for coordinating state agency support for locally-driven collaborative problem solving efforts.

For the Umatilla Basin, the CRUST was formed to help address and respond to issues and concerns that emerged from Stage 1 of the Aquifer Restoration Program. The group recognized that a wide range of strategies would be required to meet the dual objectives of instream recovery and increased water supply for irrigation. One of the specific strategies identified by the Task Force in the Declaration of Cooperation is a commitment to improve water management, including "improved water transaction mechanisms to move water between users and uses."

As a specific mechanism for water transactions, the CRUST Declaration recommended a "pilot transaction for a proposed Umatilla Basin Water Bank and Brokerage."<sup>26</sup> The pilot effort was intended to represent "the type of transaction that could be facilitated through a water bank ... to facilitate transactions in an effective, time-sensitive manner." Significantly, however, the Declaration of Cooperation specified the model transaction was to be administered using "current law and rules."

Not long after the CRUST agreement was signed, the UBWC dissolved and a new non-profit, the Northeast Oregon Water Association ("NOWA") was formed to carry on the work of representing local water users in the CRUST process and attempting to implement a pilot transaction program. As one of its initial projects, NOWA has worked toward development of a Comprehensive Umatilla Brokerage and Basalt Bank Program ("CUBB".) As described on the NOWA website:

The [CUBB] program is a non-profit effort to source water supplies through upstream leases and purchases or project development with willing landowners and stakeholders. The program's principles are to enable stream reach or targeted environmental benefits, additional water use opportunities, and ensure affordability through cost-share opportunities. The basalt bank program is being designed to help landowners with access to surface water infrastructure save – or bank – groundwater. Banking the water will help

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<sup>25</sup> See, <http://orsolutions.org/osproject/crustaskforce> (Declaration of Cooperation and program background).

<sup>26</sup> *Id.*, at 9.

naturally recharge the aquifer over time and mitigate the effects of drought or peak water use. The program *may* also allow a landowner with a senior basalt allocation to market the foregone allocation to a junior user to decrease the junior user's water cost. This will also help pay for new infrastructure required to access the surface water.<sup>27</sup> (emphasis added)

The operative word in NOWA's concept is "may." Without changes similar to those identified by the UBWC effort, the basalt bank and marketing program is not likely to get off the ground. With support of the CRUST, such changes are possible; Oregon's Legislative Assembly has a long history of recognizing and supporting consensus-based, locally driven concepts for innovation in natural resource management. But for now, no legislative proposals have been introduced and NOWA is focusing on more traditional tools for increasing the available water supply that do not rely on marketing and trading concepts.

A long-term solution for Oregon's Umatilla Basin will require legislative changes to authorize localized water planning and management under concepts similar to Washington's Walla Walla pilot effort. Although the CRUST has not yet been able to reach agreement on the need for specific law changes, at a statewide level OWRD has at least opened the door to more flexible, place-based water planning through provisions in the state's 2012 "Integrated Water Resources Strategy" (IWRS). The IWRS expresses a commitment to locally-based efforts, but stops short of recommending any significant statutory changes:

Because every river basin in Oregon is unique with widely varying ecological issues, community values and economic dynamics, place-based integrated water resources planning is vital to meeting Oregon's water management challenges. Such planning enables communities to engage in a collaborative process to determine how best to meet their unique instream and out-of-stream water needs. Place-based efforts provide a venue for water managers to interact with the people who live, work, and play in a watershed and care deeply about it.<sup>28</sup>

As a first step toward implementing the place-based planning approach, OWRD examined local and regional planning approaches in neighboring states, took public comment and conducted local workshops to help shape the IWRS planning guidelines that were released in 2014. A year later, OWRD launched a grant program to support local planning efforts as a means of testing the concepts; however the initial grant program did not include the Umatilla Basin as one of four priority areas targeted for funding.

For the Umatilla Basin, the state has committed to additional grant and loan funding to support development of new infrastructure that will allow direct diversions of surface water from the Columbia River to augment and replace curtailed groundwater for irrigation. The water diversion and piping project will rely on existing law to provide supplemental surface water for water users subject to groundwater curtailment. The development project has cautious support of environmental groups and tribes because bucket-for-bucket mitigation will be required to offset

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<sup>27</sup> NOWA Website, <http://www.northeastoregonwater.org/comprehensive>.

<sup>28</sup> *Oregon's Integrated Water Resources Strategy*, p. 78-79 (2012).  
[https://www.oregon.gov/owrd/Pages/law/integrated\\_water\\_supply\\_strategy.aspx](https://www.oregon.gov/owrd/Pages/law/integrated_water_supply_strategy.aspx)

the new Columbia River diversions. Mitigation will be provided through a cooperative arrangement with the City of Boardman, whereby excess municipal water rights held by the City will be transferred instream to offset the new development. Although this project will help increase available water supply, it is still envisioned as only part of a multi-tiered strategy for meeting the basin's long-term water supply and groundwater restoration needs. That long-term plan includes the "basalt bank" concept, and implementation of that concept, in turn, will require legislative changes.

## **VI. Conclusion**

The experience in Oregon's Umatilla Basin demonstrates the need for alternative water supply and distribution options. The local vision for a water banking and marketing program makes good sense but cannot be realized without new tools for more effective water management and more timely and integrated regulatory review. Such changes can be made within the legal framework of the prior appropriation doctrine by focusing on voluntary transactions and including safeguards to protect against injury to water right holders not participating in banking program. For those who do choose to participate, the Basalt Bank would offer an option for cooperative water management, achieved in a timely manner, with safeguards to protect and enhance instream flows and water quality.