

For Discussion Purposes Only**REDUCING AGRICULTURAL GROUNDWATER USE (9)**

Objective 1: To encourage groundwater irrigators to use less water; To protect the water rights of an irrigator who conserves by changing their irrigation system to operate at a lower rate than what was originally permitted, and to keep conserved water from being used by another irrigator (i.e., “leave it in the ground”)

Strategy 1: Reduce groundwater use through conservation measures to help stop the decline in GW levels

Recommended Actions:

- 1.1.1 Educate groundwater irrigators on the misperception of umbrella phrase: “use it or lose it.”
 - 1.1.2 Demonstrate successes of irrigators reducing groundwater use for others to learn and to be encouraged.
 - 1.1.3 Obtain legal recommendations of where the barriers lie in State’s ‘allocation of conserved water’ program (e.g., in statute, rule, etc.), and what options are for overcoming those barriers.
 - 1.1.4 Find a way to reward irrigators for reducing groundwater use (i.e., incentives), when it is ensured that irrigators are indeed using less
 - 1.1.5 Work with OWRD staff to identify barriers and options, and consider reaching out to state legislators to help raise awareness that this is an issue, and one that applies across Oregon—this is not an issue only in Harney County; this type of coordination and outreach could be done through an organized local process
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Objective 2: To irrigate with less water by using more efficient technology in order to: a) help stabilize or recover groundwater levels, and b) maintain a good crop in an economically sustainable manner. (Note: the Groundwater Study will help determine the extent to which groundwater levels will be able to stabilize or recover in different areas of the basin)

Strategy 2: Increase use of efficient irrigation technology

Recommended Actions:

- 2.1.1 Identify incentives for adopting more efficient technology (e.g., finding equipment grants to help convert to more efficient technology, such as Natural Resources Conservation Service’s Environmental Quality Incentives Program, Bonneville Power Administration/Harney Electric Cooperative, Oregon Trail Electric Co-Op)
- 2.1.2 Promote precision irrigation and irrigation scheduling, informed by data such as AgriMet data (see Strategy #8)
- 2.1.3 Support a full time equivalent (FTE) position in the basin to help support irrigators in utilizing efficient technology (i.e., a crop advisor for irrigation efficiency)

- 2.1.4 Demonstrate successful use of efficient technology to help gain local support to implement new conservation technologies (e.g., “smart farms” like in Columbia River Basin)
 - 2.1.5 Ensure technical support is available in the basin to help maintain the equipment (e.g., technicians, technician school/courses for people to educate themselves)
 - 2.1.6 Continue researching irrigation technology, including sub-surface irrigation, and disseminate information (outreach) so irrigators know how to use the technology
 - 2.1.7 Utilize data and data-collecting technology for increased water use efficiency (AgriMet)
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Objective 3: To increase science-based and basin-specific information about economically-viable alternative crops and reducing groundwater use; To increase adoption of alternative crops and efficient irrigation practices to reduce groundwater use

Strategy 3: Partner with Oregon State University, the County, and the Eastern Oregon Agriculture Research Center to hire a professor of practice, who would research the development of alternative crops and improving irrigation efficiencies

Recommended Actions:

- 3.1.1 See Recommendation 2.1.3 (find reoccurring funds to support a full- or part-time position)
 - 3.1.2 Partner with Oregon Department of Agriculture’s Market Access Group and other experts (e.g., market-analysis consultants)
 - 3.2.1 Develop demonstration fields (note: link to this same action in #2?)
 - 3.2.2 Develop and disseminate market-analysis, economic, and risk-management analysis information to groundwater irrigators
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Objective 4: To install accountable water measurement devices on all groundwater points of non-exempt diversion; To develop appropriate reporting procedures for metered groundwater points of non-exempt diversion

Strategy 4: Reduce gw use through conservation measures to help stop the decline in GW levels

Recommended Actions:

- 4.1.1 Implement accountable water measurement and reporting on all groundwater points of non-exempt diversion, using technology appropriate for each area (e.g., sub-basin) (i.e., smart meters where voluntary agreements are enacted).
- 4.1.2 Recommend installation of real-time, accurate, and self-reporting metering (e.g., smart meters) on all groundwater points of non-exempt diversion, in order to allow effective implementation of the recommended strategies that have come forth from the Collaborative.
- 4.1.3 Find cost-share measures to assist in uniform measurement.
- 4.1.4 Explore requiring and/or providing (depending on legal authority) incentives for installing smart meters for exempt groundwater uses, with information reported locally

- 4.1.5 Ensure the water use information is available to the well user and reported to Oregon Water Resources Department and other appropriate water management agencies.
 - 4.1.6 Find cost-share measures to assist in reporting.
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Objective 5: To reduce groundwater use through a groundwater CREP with enrollment of up to 20,000 acres.

Strategy 5: Support a CREP program as reflected in the proposal

Recommended Actions:

- 5.1.1 The interagency team convened by the Oregon Watershed Enhancement Board (OWEB) develops a draft groundwater CREP proposal to be reviewed by Harney Basin stakeholders. The draft proposal should: a) meet federal requirements, including stewardship of enrolled lands (e.g., crop-cover and weed-management requirements), and b) have state willingness to participate. If the proposal lacks buy-in from stakeholders, the interagency team should create an avenue for further stakeholder input for improvement.
 - 5.1.2 If the CREP proposal is funded and a program is implemented, the CBWP Collaborative helps conduct outreach to encourage irrigator enrollment.
 - 5.1.3 Design a mechanism(s) that helps ensure that water ‘saved water’ through reduced use remains in the aquifer.
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Objective 6: To explore the potential of a voluntary groundwater market to reduce groundwater use in the Harney Basin, with declining allocation of shares overtime.

Strategy 6: Explore and consider a voluntary groundwater market approach; Review feasibility study (Upon review, the collaborative should make a recommendation to implement or not)

Recommended Actions:

- 6.1.1 CBWP partners, such as The Nature Conservancy, secure funding for a scoping assessment to determine potential implementation pathways of a voluntary groundwater market approach in the Harney Basin.
 - 6.1.2 The CBWP Collaborative reviews the results of the assessment and evaluates different approaches
 - 6.1.3 The CBWP Collaborative determines whether it supports the establishment of a groundwater market in the Harney Basin
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Objective 7: To ensure that groundwater saved via conservation or efficiency strategies is protected from consumptive use.

Strategy 7: Research policy or planning mechanisms to ensure that conserved water remains in the ground

Recommended Actions:

- 7.1.1 State agencies and others identify existing policy mechanisms to ensure that water remains in the ground.
 - 7.1.2 State agencies and others evaluate interpretations of the Allocation of Conserved Water Program to determine if the program could apply to groundwater savings.
 - 7.1.3 State agencies and CBWP partners, such as The Nature Conservancy and/or others, explore development of a novel policy protection such as in-place (“in situ”) groundwater rights.
 - 7.1.4 Local-scale planning protections for conserved water, such as voluntary agreements and/or contractual obligations, are established for water users in the Harney Basin. These agreements or contracts could be entered into between or among private parties, OWRD, and/or a local governance body.
 - 7.1.5 All above Recommended Actions are most effective if coupled with both metering of water use and monitoring of local groundwater levels near the site where water was initially conserved.
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Objective 8: To prepare for and strategically manage groundwater resources during drought events in a way that helps to meet the short-term needs of the Harney basin’s people, ecosystems, and economy, while helping to keep the basin on track with long-term groundwater-level goals

Strategy 8: Develop a plan to help mitigate and respond to the impacts of drought on the basin’s groundwater (meteorological, hydrological, precipitation and seasonal weather)

Recommended Actions:

- 8.1.1 Collect and summarize information to help understand how the Harney Basin is affected by and responds to the impacts of drought events, as related to water supply and use.
 - 8.1.2 Develop a basin plan with specific actions and tools to help mitigate and respond to meteorological drought impacts. Develop this plan in conjunction with, or as part of, the Harney County’s Natural Hazards Mitigation Plan, based on the Harney Community-Based Water Plan, and in consideration of other drought plans from similar basins (e.g., temporary fallowing programs for groundwater irrigated fields during times of drought).
 - 8.1.3 Collect measurements that can be used to ground-truth remotely sensed and airborne data, and develop higher resolution Groundwater Drought Indicator Maps for the Harney Basin through the National Integrated Drought Information System (NIDIS)
 - 8.1.4 Explore the accuracy and utility of Arizona’s long-term drought mapping methods, and consider supporting similar methodology for Oregon to help provide drought projections for the Harney Basin
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Objective 9: To help understand how and when supplemental groundwater use influences the basin’s groundwater levels, and how reliant the basin is on supplemental groundwater rights.

This understanding would help inform the development of a drought-impacts mitigation and response plan, as well as the development of voluntary agreements.

Strategy 9: Understand permitted and actual use of supplemental groundwater rights in the basin to better manage water resources during drought events

Recommended Actions:

- 9.1.1 Determine maximum authorized use of supplemental groundwater rights in the basin
- 9.1.2 Determine if maximum authorized supplemental groundwater use is significant in the basin and, if so, engage stakeholders to learn what triggers the use of supplemental groundwater rights (e.g., well issues, drought conditions)
- 9.1.3 Determine actual use of supplemental groundwater rights in the basin

ADDRESSING DOMESTIC WELL ISSUES (4)

Objective 1: Continue to secure funding for DWUs and ensure effective implementation of the funded programs

Strategy 1: Develop a fund to assist impacted domestic well owners, starting with the 2021 session of the Oregon legislature

Recommended Actions:

- 1.1.1 Utilize background information to request funding (for specific actions) from legislator for domestic well users experiencing decline in water quantity/quality to remedy well issues without going through a Burden of Proof.

Objective 2: To convey to OWRD the urgency of responsible water management, including permit compliance, **[insert other actions]**; To start reducing the amount of groundwater being pumped for irrigation; To implement short term actions that could start reducing the amount of GW being pumped. **[insert measurable, tangible objective]**

Strategy 2: Recommend to OWRD that it take actions in the short term to reduce the amount of GW being pumped for irrigation, including permit compliance

Recommended Actions:

- 2.1.1 **Ask OWRD to** enforce existing permit conditions
- 2.1.2 **Ask OWRD to** add metering & reporting requirement as rule
- 2.1.3 **Ask OWRD to** evaluate where groundwater decline condition exists and can be implemented.
- 2.1.4 Ask OWRD if there are short-horizon actions that can be taken to reduce water use
- 2.1.5 Ask OWRD if there are short-horizon actions that can be taken as a priority to reduce water use in areas of serious groundwater declines

Objective 3: Present community with alternative water delivery mechanisms (i.e. community wells, cisterns, etc...) and offer support to affected rural areas; In developing alternative water delivery mechanisms, provide protection for exempt livestock use

Strategy 3: Identify feasible alternative water delivery mechanisms to meet **exempt** water supply needs of rural residents

Recommended Actions:

- 3.1.1 Using the Anderson Perry report, Harney County GIS will identify areas of groundwater decline where there is an economically feasible cluster of homes that would benefit from alternative water delivery mechanisms
 - 3.1.2 Harney County court will determine community support/interest in alternative water delivery mechanisms
 - 3.1.3 Develop a strategy with community support for alternative water delivery mechanisms where feasible
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Objective 4: Identify and collaboratively recommend, where appropriate, actions in the short term that could start reducing the amount of groundwater being pumped for irrigation in the three cones of depression (CODs)

Strategy 4: Implement efforts for reducing GW pumping in areas that have been identified to be the cones of depression in the Harney Basin as a priority

Recommended Actions:

- 4.1.1 Focus on educational efforts in the CODs
 - 4.1.2 The collaborative emphasizes that OWRD should prioritize management actions in the CODs to reduce water use
 - 4.1.3 The collaborative recommends that SWCD/NRCS and other partners prioritize irrigation efficiency funding for irrigators in CODs
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CONSERVING GROUNDWATER DEPENDENT ECOSYSTEMS (2)

Objective 1: Protect and conserve groundwater dependent ecosystems to preserve their ecosystem services

Strategy 1: Implement actions to protect and conserve groundwater dependent ecosystems

Recommended Actions:

- 1.1.1 Identify and prioritize incentives (like CREP) to reduce groundwater use in areas where it would otherwise impact GDEs

- 1.1.2 When data are available, identify areas that could impact GDEs from groundwater withdrawals
- 1.1.3 Develop Collaborative consensus on managing springs on public lands for ecological benefits
- 1.1.4 Identify management tools that could help reduce groundwater use where it would otherwise impact GDEs.
- 1.1.5 Pursue more aggressive reductions in groundwater withdrawal in areas that affect GDEs
- 1.1.6 Assess what legal protections exist for springs

Objective 2: Pursue monitoring for GDEs in the Harney Basin

Strategy 2: Implement a monitoring program for groundwater dependent ecosystems (GDEs) and priority plants and animals that depend on them

Recommended Actions:

- 2.1.1 OWRD groundwater monitoring for the basin include consideration of the effects on GDEs
- 2.1.2 Develop a comprehensive GDE monitoring program that includes priority species of flora and fauna
- 2.1.3 Utilize monitoring data to inform adaptive management plans

LOCAL ORGANIZATIONS/PLANS + MEASURING & REPORTING (5)

Objective 1: To assure development does not further deplete available supplies

Strategy 1: Integrate water availability into land use planning

Recommended Actions:

- 1.1.1 Build an understanding of City and County authorities, tools, and limitations pertaining to land use and water planning (can lay out a vision for the community that State cannot--Refer to OAR 690 10)
- 1.1.2 County planning department take up the issue of considering water under goals 3 and 5 given the info that has been developed by both the GW study and PBP effort

Objective 2: To install approved groundwater meters on all groundwater points of non-exempt diversion to ensure proper management and accountability of groundwater resources; Develop appropriate reporting procedures for metered groundwater points of non-exempt diversion in the GHVGAC

Strategy 2: Measure and report irrigation groundwater use to inform water management decisions and outcomes and provide accountability.

Recommended Actions:

- 2.1.1 In the GHVGAC, require uniform groundwater meters installed on all groundwater points of diversion, except for exempt uses, and report, at least annually, to entities TBD and OWRD
 - 2.1.2 Approved meters correctly installed, at minimum, meeting requirements of OWRD
 - 2.1.3 Develop a list of approved meters to use in the Harney Basin
 - 2.1.4 Create infrastructure for smart meter compatibility and create incentives to encourage people to install smart meters
 - 2.1.5 Find cost-share measures to assist in cost of meters and installation
 - 2.2.1 Ensure the water use information is available to the certificate/permit-holder and reported to Oregon Water Resources Department and other appropriate water management agencies (e.g., water districts).
 - 2.2.2 Develop a funding mechanism for collecting, reporting, and interpreting groundwater use data
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Objective 3: To improve our understanding and management of water use in the Harney Basin

Strategy 3: Develop and implement OpenET as a tool to assess water use

Recommended Actions:

- 3.1.1** Continue participation of the Harney Basin as a pilot project of OpenET
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Objective 4: Develop a management plan for reducing groundwater irrigation use; **Reduce GW use in the Harney Basin**

Strategy 4: Based on review of the USGS/OWRD GW study, consider setting benchmarks and timelines for gw use reduction by sub-area to propose to OWRD in the form of a Voluntary Agreement or other mechanisms...

Recommended Actions:

- 4.1.1 Compile existing strategies discussed to reduce groundwater irrigation and quantify and prioritize the actions based on their effects on groundwater use. [current work of the Collaborative]
 - 4.1.2 Implement the conservation implementation strategy by NRCS to reduce groundwater use by **3000** acre feet/year
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Objective 5: To pay for conservation and management of groundwater / restitution for injured domestic wells

Strategy 5: Explore idea of assessing fees for groundwater use

Recommended Actions:

- 5.1.1 Due diligence re: other places that have employed fee structure (Nevada system?)
- 5.1.2 Should be part of a water improvement district (?)
- 5.1.3 OWRD/OWRC establish a water use fee system

IMPROVING STANDARDS + ENSURING COMPLIANCE (7)

Objective 1: Work with OWRD to prioritize compliance to ensure all water is being used legally within accordance of permit and certificates and has accountability to OWRD and the public; Ask OWRD to demonstrate all water use is accounted for so we can implement other parts of the water plan

Strategy 1: Work with OWRD to enact improvements in its enforcements of water rights and well construction standards in a publicly transparent manner

Recommended Actions:

- 1.1.1 Ensure all permits conditions and water use limits are met
- 1.1.2 Ensure all water right data, including water use data as required, is up to date and publicly available
- 1.1.3 Ask Harney County to ask OWRD to enforce certificate conditions
- 1.1.4 Include a recommendation for enforcement in the integrated plan
- 1.1.5 Enforce well construction standards (48)
- 1.1.6 Support OWRD in ensuring that all illegal water use ceases
- 1.1.7 Request that OWRD systematically assess where non-use of groundwater rights is occurring and pursue timely cancellation of unused groundwater rights when five years of consecutive non-use has occurred

Objective 2: Influence the decision of Oregon Water Resources Commission in helping to reduce groundwater use in the Harney Basin

Strategy 2: Propose community supported actions for OWRD to implement (through upcoming rulemaking or otherwise) to manage groundwater sustainably and to meet statutory requirements

Recommended Actions:

- 2.1.1 Utilize science-based, site-specific conditions, and cumulative effects when determining the reduction of water use by regulating well depth and capacity (#10)
- 2.1.2 Once a reasonably stable aquifer is defined, utilize science-based, site-specific conditions, and cumulative effects to reduce water use in areas of significant decline identified by OWRD
- 2.1.3 Once a reasonably stable aquifer is defined, utilize science-based, site-specific conditions, and cumulative effects to reduce water use basin-wide

- 2.1.4 OWRD should continue to utilize science-based, site-specific conditions, and cumulative effects when considering transfers and the development of new wells.
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Objective 3: Identify number of unused wells; Develop cost share program to address unused wells

Strategy 3: Develop a well clean up and safe harbor program

Recommended Actions:

- 3.1.1 Identify funding sources for an inventory of unused
- 3.1.2 Develop a community outreach to notify people of the need to address unused wells
- 3.1.3 Ask OWRD to provide guidance on developing cost share program (i.e. Mosier)
- 3.1.4 Explore alternative funding sources for cost share program (SWCD, HDP,...) both in the short and long term

Objective 4: Water is a public resource, managed by the State; The public must have a robust opportunity to weigh in on the Department's processes

Strategy 4: Strongly encourage that OWRD rebalances processes to give equal weight to the voice and comments of the general public regarding OWRD actions on groundwater permit matters

Recommended Actions:

- 4.1.1 Ensure public notice and opportunity for public engagement where the department reverses a decision

4.1.2 Ensure public engagement is representative of the water users in the basin

4.1.3. (THIS IS NOT THE FULL SUITE. WHAT ELSE?)

Objective 5: To increase accountability and ensure that all water use occurs in compliance with a valid water right

Strategy 5: Strongly encourage that OWRD initiate cancellation of terminate all expired permits and water rights that haven't been used in 5 years in the Harney Basin

Recommended Actions:

- 5.1.1 Request OWRD initiate continuous cancellation process for expired permits and water rights that haven't been used in 5 years and share information with the public
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Objective 6: Ensure deliberations and recommendations from the CBWP Collaborative, as well as stakeholder interests, are heard during rule-making process

Strategy 6: Strongly encourage that OWRD ensure fair representation in RAC

Recommended Actions:

6.1.1 Ensure balanced representation on the RAC

Objective 7: Ensure that water permitting decisions by OWRD properly account for the over appropriation of the basin and do not make matters worse

Strategy 7: Strongly encourage that OWRD increase scrutiny of all applications (new permits, extensions, transfers) and create a process requiring review of well-deepening, all with improved public input

Recommended Actions:

7.1.1 Request OWRD increase scrutiny of all applications

7.1.2 Request OWRD create a process requiring review of well deepening

7.1.3 Request OWRD improve public input on processes related to new applications

COLLECTING/SHARING INFORMATION (5)

Objective 1: Use the GW study for GW management considerations

Strategy 1: Fully utilize information from the Groundwater Study, including both the conceptual and numerical models.

Recommended Actions:

1.1.1 Clearly identify what is known about aquifer structure as well as what is unknown about the structure, boundaries, and groundwater movements

1.1.2 Identify the age of groundwater for consideration in regulation

1.1.3 Use the GW study for GW management decisions in the future

Objective 2: Building upon the GW study, identify information gaps that affect GW management

Strategy 2: Identify ongoing needs for further research and information, including evaluating above and below ground conditions periodically

Recommended Actions:

2.1.1 Use existing information and models to identify additional information necessary for effective management

Objective 3: Use the GW study, community-based information, and other verified information as a basis for the best information available on GW conditions

Strategy 3: Build community understanding of water resource conditions in the Harney Basin

Recommended Actions:

- 3.1.1 Acknowledge the value of data gathering efforts and the ongoing use of such data to management of water resources into the future. Use the products to engage the community's understanding of groundwater quantity and quality in the basin
 - 3.1.2 Improve water resource data collection, interpretation, and information sharing in the Harney Basin
 - 3.1.3 Encourage community support for the development and calibration of a groundwater model for the Harney Basin that is usable for testing alternative water management options
 - 3.1.4 Encourage the continuation of evaluation of groundwater dependent ecosystems and culturally significant species
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Objective 4: Ensure Harney County residents have access to information on the GW conditions in the basin as well as the current and past efforts of the CBWP Collaborative

Strategy 4: Develop community communications and information program to inform the public about conditions and planning effort

Recommended Actions:

- 4.1.1 Develop communication plan
 - 4.1.2 Build a coordinated communications story of the many components of this collaborative effort
 - 4.1.3 Develop short summary products for the community when major Collaborative milestones are passed
 - 4.1.4 Collaborative members coordinate communications amongst themselves and partners to develop short outreach products for implementation of other strategies (audience: other water users) (i.e. develop short brochure outlining strategy and digestible summary of implementation)
 - 4.1.5 Explore funding partnerships for outreach/communications endeavors
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Objective 5: To determine the comprehensive economic value of water in the Harney Basin

Strategy 5: Obtain/request state funding for economic feasibility studies/analyses

Recommended Actions:

- 5.1.1 Secure funding to conduct economic analyses
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TOTAL STRATEGIES= 32