# Harney Groundwater RAC: Discussion Group Materials: Success Indicators & Data Sources

Prepared for: Harney RAC Discussion Group

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Prepared for Discussion Purposes Only

The table below includes potential indicators of success that have been identified in various meetings of the Division 512 rulemaking advisory committee (RAC) or discussion groups (S[ept 16](https://www.oregon.gov/owrd/Documents/September%2016%20Meeting%20Summary.pdf) and [Sept 17](https://www.oregon.gov/owrd/Documents/September%2017%20Meeting%20Summary.pdf)), along with potential metrics and data sources for that indicator, how the data might be used, and questions and considerations for the data collection and use. The intent of this table is to help generate some questions and considerations the discussion groups can work through more on October 28, 2024. This is for discussion purposes only and the discussion group will seek to initially focus on indicators and data that have the *potential* to be considered within the scope of the rulemaking process (marked with an asterisk). The scope of the discussion groups include the rulemaking and more broadly supporting groundwater management. Other ideas likely outside of the scope of the rulemaking process, will be captured for complementary efforts in the basin. Across all of these indicators and metrics think about A) success now and for current generations, and B) in the future where the next generations have opportunities.

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| **Potential Indicator of Success** | **Metric/Source(s) of Data** | **Potential Use Cases** | **Questions and Considerations for Data Collection and Use** |
| **Hydrology** |
| \*Rate of decline decreases and eventually stabilizes (rate of decline = 0) and/or recovers over a specified period of time (TBD) by geography | Groundwater level measurements and trends (rate of change) | Groundwater level trends indicate whether the basin is “on track” and whether there is a need to adjust groundwater use reductions (amount, location, timing) in different geographies  | What data should be used for summary statistics (all data, just OWRD collected data, specific “sentinel wells,” etc)?What summary statistics should be used (mean, median, etc) Oct 2 RAC meeting pointed toward a “median + working with outliers” approach?What is OWRD’s authority/ability/capacity to monitor for groundwater levels?What is the existing OWRD monitoring network in each geography? What wells are currently proposed to be used and why?Is there an opportunity for the groundwater users/community to contribute groundwater level measurements? Under what circumstances?How do we consider static groundwater level measurements versus observing some new dynamic equilibrium over time?How do we account for “outliers” or “extremes”?What are the considerations for selecting monitoring wells? |
| \*Magnitude of decline does not exceed some set groundwater elevation or level | Groundwater level measurements and trends (overall change) | Groundwater level trends indicate whether the basin is “on track” and whether there is a need to adjust groundwater use reductions (amount, location, timing) in different geographies and may be used to curtail wells that exceed  | What is the “starting point” for measuring the magnitude of decline? How can the starting point be determined across a broad geography?Should we consider magnitude of decline in individual wells or for a broader area or both? What summary statistics should be used? |
| Groundwater pumping/use stays within “sustainable” limits (direct) | Groundwater use data (flow meters) |  | Should every water user in the basin measure and report groundwater use (including domestic and stockwater users) or should it only be irrigation users?Should all geographies have the same requirement to measure and report groundwater use or should certain areas be prioritized?At what timestep will groundwater use be measured? At what timestep will it be reported? To whom? How will those reported data be used?What are the lessons learned/best practices from Walla Walla?What happens if a groundwater user can’t maintain a functional flow meter / a well is abandoned? Is there any flexibility? |
| Groundwater pumping/use stays within “sustainable” limits (indirect) | Evapotranspiration data (OpenET), pump electricity records |  | Can proxies be used to estimate water use? What are the benefits and drawbacks of using proxies? Would proxies be used in addition to or in lieu of direct measurement in some geographies? |
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| **Environment & recreation** |
| Near-term and long-term impacts to natural discharge of springs and streams are minimized | Measurements of natural discharge of springs?Measures of natural discharge to surface flows? | Track changes in spring discharge and contribution of groundwater to stream flows to better understand the relationships between groundwater use and spring discharge and to inform potential adjustments to reductions in groundwater use over time | What is the geographic distribution of springs? What is the lag time between management actions and spring discharge for various parts of the basin?How would you actually measure spring flows or contribution of groundwater to stream flows? |
| Overall ecological health | Specific indicators? |  |  |
| Thriving bird and wildlife habitat and populations | Specific indicators? |  | Is habitat a close enough proxy for populations? Or are other measures important? |
| Vibrant opportunities to hunt and fish | Specific indicators? |  |  |
| Thriving recreation economy | Specific indicators? |  |  |
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| **Water users** |
| Near-term and long-term impacts to domestic and stock wells are minimized | Dry well complaints?Applications to WARRF and Harney County Well Fund?Treatment systems installed? |  |  |
| The footprint of groundwater irrigated agriculture is “sustainably” maximized in each geography | Evapotranspiration data (OpenET?) |  |  |
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| **Community & economy** |
| Near-term and long-term impacts to the local economy are minimized | County revenue?Hay production (acres, volume, value)?Farm net income? Agriculture support revenue? |  |  |
| Community cohesion and wellbeing | Change in assessed value of land?Public service levels? Public sector job numbers? Utility prices?Level of active community participation and cohesion?Mental health? |  |  |
| **System Dynamics Affecting Success** |
| Impacts of management actions between different geographies (how do actions in one area have the potential to affect another area) | Specific indicators? |  |  |
| Lag time of management actions on outcomes (when do we “see” impacts) | Specific indicators? |  | Document assumptions for how we expect actions to materialize in different parts of the basin. In the future would it be possible to update the model with new data? |
| Upland management and impacts to water budget (recharge and discharge) | Changes in surface water discharge?Changes to upland Evapotranspiration?  |  | How will the forest fires and other upland management activities affect surface water supplies and groundwater recharge?How does upland management (e.g., forest thinning, juniper removal) affect groundwater recharge at different scales? |
| Changes in climate and impacts on water budget (recharge and discharge) | Weather station?, Agrimet stations?, Changes in surface water discharge? |  |  |
| Larger economic drivers of change | Changes in hay prices? Changes in fuel costs? |  |  |
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