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Appendix 4-B
Key Themes and Outcomes for Interconnected Surface Water Practitioners Work Group

APPENDIX 4-B

Sustainable Management Criteria (SMC) for the Depletion of Interconnect Surface Water (ISW)

Practitioner Work Group

Background, Proposed Adaptive Approach and Key Themes and Outcomes from March 22 Work Group Meeting

March 23, 2021

ISW SMC Background

Groundwater Sustainability Agency (GSA) Administrators for the Santa Rosa Plain, Petaluma Valley, and Sonoma Valley Subbasins convened a practitioner work group of experts to assist in the development of the ISW SMC. This document provides a brief overview of ISW SMC components and a recap of key outcomes from the work group's final meeting held on March 22, 2021.

As with other SMCs for Groundwater Sustainability Plans (GSPs) in the three subbasins discussed above, the ISW SMC consists of four *primary* components:

- A Significant and Unreasonable Conditions Statement (S&U) for the Subbasin, which provides the overall goal for the sustainability indicator in terms of conditions which must be avoided to achieve sustainability.
- Minimum Thresholds (MT) at each representative monitoring point which provide numerical targets for unreasonable conditions .
- Measurable Objectives (MO) at each representative monitoring point which provide numerical targets for the desirable conditions to be achieved with implementation of the GSP.
- Undesirable Results (UR), which provide a quantitative description of the combination of MT exceedances that cause significant and unreasonable effects in each subbasin. Avoiding URs is how sustainability is achieved in a subbasin.

Combined, these four components define how groundwater sustainability is achieved in relation to surface water depletion. However, the ISW SMC is unique in that information in the historical record linking surface water depletion directly to groundwater usage under the jurisdiction of the GSAs is very limited. In fact, at a majority of representative monitoring points in the subbasins, only one year of groundwater level data is available. Variable levels of correlation between simulated streamflow depletion and groundwater levels, a lack of existing instream flow targets, and limited data for assessing the presence of any *historically* significant and unreasonable conditions complicate the development of this SMC.[1] To address these data gaps, the GSA technical team propose a tiered adaptive management approach that will provide the information needed to update the SMC during the implementation phase of each of the GSPs, as summarized below.

[1] While it is recognized that low summer baseflows in certain years can impact aquatic species, until we know how much water they need to survive and thrive (via instream flow targets), a MT is difficult to determine. The current approach requires using historical data and avoiding conditions lower than historical surface water depletion amounts.

ISW SMC Proposed Adaptive Approach

In recognition of the significant information and data limitations and the importance of interconnected surface water to beneficial users within the Subbasin, potential future studies and activities have been identified and prioritized in coordination with the work group according to relative importance and potential costs. These studies and activities will be further developed and considered for the early implementation phase of the GSP based on available funding sources and future funding and partnership opportunities.

<u>Group 1 (Improves characterization of causes and effects of depletion, lower cost studies, outside funding or leveraged funding opportunities with partners):</u>

- Improve data/information on existing water wells and stream diversions
- Model improvements – focused calibration of surface water and groundwater interaction
- Improve GDE mapping/remote sensing for vegetation health (e.g., NVDI, GDE pulse, etc.)
- Compile and evaluate existing and relevant habitat field surveys
- Evaluate future airborne geophysical data (DWR funded)

<u>Group 2 (Monitoring network improvements, higher cost studies, etc.):</u>

- Additional shallow monitoring wells and stream gauges
- Focused geophysical studies
- Geomorphic and streambed conductivity assessments
- Additional focused habitat field mapping, as needed

In the meantime, an initial SMC must be developed and include the components above based on simulated data and the best available historical information that will be updated and, where appropriate, refined with actual observed data during the implementation phase. The general procedure for developing the initial SMC involves:

1. Use of groundwater-levels measured at shallow monitoring wells near streams (representative monitoring points [RMPS]) as a proxy for surface water depletion[2]
2. Use model to estimate years with highest levels of simulated streamflow depletion (20th percentile) between 2004 and 2018
3. Calculate percentile ranking of simulated dry-season groundwater levels associated with these years
4. Set initial MTs at this percentile ranking using available datasets for wells measured near RMPs
5. Set initial MO as mean of dry season measured groundwater-levels from historical record

The initial proposed S&U, MT, MO, and UR are as follows and will be refined through discussions with Advisory Committees in each of the three subbasins:

[2] Use of groundwater-levels as a proxy for surface water depletion focuses the SMC on conditions the GSA has authority to manage (i.e., groundwater conditions within the Subbasin)

- S&U Statement[3]: Significant and unreasonable depletion of surface water from interconnected streams occurs when surface water depletion, caused by groundwater pumping within the Basin/Subbasin, exceeds historical depletion or adversely impacts the viability of groundwater dependent ecosystems (GDEs) or other beneficial users of surface water.
- MT: The equivalent groundwater-level, representing the three years (2014-2016) during which the most surface water depletion due to groundwater pumping was estimated between 2004-2018. This is the number that serves as an indicator for the potential presence of undesirable results.
- MO: The mean groundwater level for any available dry-season observations during 2004–2020.
- UR: Options for consideration in determining undesirable results include:
    - 25% of RMPs (2 wells)
    - 25% of RMPs (2 wells) for 2 consecutive years
    - 25% of RMPs (2 wells) during drought years and 10% of RMPs (1 well) during non-drought years
    - 40% of RMPs (3 wells) during drought years and 10% of RMPs (1 well) during non-drought years

Prior to determining if undesirable results are occurring based on MT exceedances, the GSA would need to assess whether potential causes of exceedances are related to depletions associated with groundwater pumping or other activities not under the jurisdiction of the GSA

[3] Important definitions related to the S&U statement include:

- "groundwater pumping" excludes any diversions by surface water rights holders
- "historical depletion" estimated as simulated surface water depletion caused by groundwater pumping as informed by available historical measured data (2004-2018 for the Santa Rosa Plain)
- "groundwater dependent ecosystems" includes aquatic species and vegetation, as defined in Basin Setting
- "other beneficial users of surface water" include surface water rights holders and recreational uses (where applicable)

Key Themes and Outcomes from March 22 Work Group Meeting

Practitioner Work Group Members:

- Sam Boland-Brien, State Water Resources Control Board (SWRCB)
- Maurice Hall, Environmental Defense Fund (EDF)
- Jessie Maxfield, CA Department of Fish and Wildlife (CDFW)
- Andrew Renshaw, CA Department of Water Resources (DWR)
- Rick Rogers, National Marine Fisheries Service (NMFS)
- Melissa Rohde, The Nature Conservancy (TNC)
- Natalie Stork, SWRCB
- Val Zimmer, SWRCB

Data Gaps and Adaptive Management Approach (from March 22 Work Group meeting):

- Staff acknowledge a range of data gaps for the ISW SMC and recommend an adaptive management approach based on further study and increased monitoring during the implementation phase of GSPs for the Santa Rosa Plain, Petaluma Valley, and Sonoma Valley Subbasins.
- Practitioner Work Group members were highly supportive of the proposed adaptive management approach and recognized the significant data gaps due to a short period of record for RMPs in the Subbasins. Multiple participants acknowledged Sonoma Water is at the forefront of developing science around the ISW SMC.
- Suggested opportunities for future studies and partnerships to fill data gaps include:
    - CDFW Fisheries Restoration and Habitat Restoration Grant Programs may provide opportunities for future monitoring or studies.
    - GSAs will not be able to fund all necessary studies during the first 5 year update to the GSPs. Developing more information and monitoring on wells and surface water diversions should be the first priority.
    - Partnership with local academia, neighboring GSAs, and groups such as the Association of California Water Agencies (ACWA) could provide additional resources for studies, projects, and increased monitoring.
    - CDFW recommends increased analysis on the potential impact of cannabis cultivation for surface and groundwater levels as part of the Sonoma County Cannabis Land Use Ordinance Update and General Plan Amendment (Update). Partnership opportunities with CDFW and local jurisdictions may be available in relation to the Update.

Comments on approach and setting of MTs, MO, and URs (from March 22 Work Group meeting):

- Staff presented proposed MT/MO and UR options for consideration.
- Practitioner Work Group members generally agreed with the approach for developing the SMC, based on a thorough modeling analysis.
- Two primary suggestions were provided by Work Group members:
    - Using water years from 2014-2016 to set MTs could be problematic as these occurred during a historic drought. MTs based on these water years may not be protective of beneficial uses, most notably the health of aquatic species.

- For additional context on general streamflows, staff could consider providing the actual magnitude (in cfs) of flows *in addition* to the current relative percentages of depletion. Additionally, URs could be linked to the severity of MT exceedances to provide a sliding scale [for project/action implementation]