

Kern Subbasin GSP Determination Comment Matrix

Deficiency 1. The GSPs Do Not Establish Undesirable Results that are Consistent for the Entire Subbasin

| Regulation | Key Points | DWR Example | DWR Proposed Corrective Actions | Recommendations/Questions for DWR |
|---|--|---|--|-----------------------------------|
| <p>§354.26(a) Undesirable Results. Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.</p> | <p>The Plan has a lack of an explanation of the specific effects, occurring throughout the subbasin, that, when significant and unreasonable, would be undesirable results (page 14).</p> | <p>For chronic lowering of groundwater levels, the Coordination Agreement's discussion of the Subbasin-wide effects is limited to the statement that it is "the point at which significant and unreasonable impacts over the planning and implementation horizon, as determined by depth/elevation of water, affect the reasonable and beneficial use of, and access to, groundwater by overlying users." (page 14)</p> | <p>The Plan's Coordination Agreement should be revised to explain how undesirable results definitions are consistent with requirements of SGMA and GSP regulations, which specify that undesirable results represent effects caused by groundwater conditions throughout the Subbasin (page 16).</p> | |
| | <p>The Coordination Agreement calculation framework lacks clear description of Subbasin-wide effects caused by groundwater management that the entire Subbasin is attempting to avoid (page 14).</p> | | <p>Include descriptions of how the Plans have utilized the same data and methodologies to define the Subbasin-wide undesirable results (page 16).</p> | |
| <p>§354.28(b)(4) Minimum Thresholds. How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.</p> | <p>The Plan provides no specific information on Subbasin-wide effects of groundwater lowering related to accessing groundwater by beneficial uses and users (page 14).</p> | | <p>Include descriptions of how the Plans have considered the interests of beneficial users of groundwater (page 17).</p> | |
| <p>§354.20(a) Management Areas. Each Agency may define one or more management areas within a basin if the Agency has determined that creation of management areas will facilitate implementation of the Plan. Management areas may define different minimum thresholds and be operated to different measurable objectives than the basin at large, provided that undesirable results are defined consistently throughout the basin.</p> | <p>The Plans have widely varying approaches to define management-area-specific undesirable results in the individual GSP's and management area plans (page 14).</p> | <p>The KGA GSP Semitropic management area, KGA GSP Rosedale-Rio Bravo management area, and the Buena Vista GSP Buttonwillow management area are adjacent and represent slightly more than 15 percent of the Subbasin area. Each of these agencies have identified different conditions representing when localized undesirable result for chronic lowering of groundwater levels occurs (page 16).</p> | <p>The GSAs must commit to comprehensively report on the status of Minimum Thresholds exceedances by area in annual reports and describe how groundwater conditions at or below minimum thresholds may impact beneficial uses and users prior to the occurrence of a formal undesirable result (page 17).</p> | |
| | <p>The Coordination Agreement's use of the term "minimum thresholds" in the definition does not refer to minimum thresholds as defined in the GSP Regulations (page 15).</p> | | | |
| | <p>Management area definitions that include a multi-year time period or combination of criteria are not considered by Department staff to be a reasonable approach to achieving sustainable management and avoiding undesirable results in the Subbasin. This allows for situations where groundwater conditions could degrade for potentially significant portions of the Subbasin without triggering the Subbasin's definition of an undesirable result (page 15).</p> | <p>In the KGA GSP Cawelo Water District Management Area, Cawelo decided that its area would only contribute to the Coordination Agreement's 30 or 15 percent of land area undesirable result definition if 30 percent of their representative monitoring wells were below the minimum threshold for three successive spring measurements (page 15).</p> | | |
| <p>§354.26(a) Undesirable Results. Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.</p> | <p>The Plan has incomplete descriptions of conditions under which an undesirable result would occur, according to the land area calculation framework of the various GSPs and Management Area Plans. By the Subbasin's definition of an undesirable result, tracking which management area(s) have been triggered as "undesirable" is paramount to determining when an undesirable result occurs (page 15). see footnote 1</p> | <p>Some GSPs or Management Area Plans refer to these management areas with "undesirable" local conditions as "watch areas" but the terminology used in the plans is inconsistent and should be standardized (page 15).</p> | <p>The GSAs must adopt clear and consistent terminology to ensure the various plans are comparable and reviewable by the GSAs, interested parties, and Department staff. Terminology should also adhere to the definitions of various terms in SGMA and GSP Regulations including the understanding that undesirable results are conditions occurring throughout the Subbasin (page 17).</p> | |
| | | | <p>The Plan and associated coordination materials must also be revised to clearly document how all of the various undesirable results definitions and methodologies achieve the same common sustainability goal (page 17).</p> | |

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| <p>§357.4(a) Coordination Agreements. Agencies intending to develop and implement multiple Plans pursuant to Water Code Section 10727(b)(3) shall enter into a coordination agreement to ensure that the Plans are developed and implemented utilizing the same data and methodologies, and that elements of the Plans necessary to achieve the sustainability goal for the basin are based upon consistent interpretations of the basin setting.</p> <p>Water Code §10727.6 Groundwater sustainability agencies intending to develop and implement multiple groundwater sustainability plans pursuant to paragraph (3) of subdivision (b) of Section 10727 shall coordinate with other agencies preparing a groundwater sustainability plan within the basin to ensure that the plans utilize the same data and methodologies for the following assumptions in developing the plan:</p> <p>(a) Groundwater elevation data. (b) Groundwater extraction data. (c) Surface water supply. (d) Total water use. (e) Change in groundwater storage. (f) Water budget. (g) Sustainable yield.</p> | <p>The GSPs do not contain sufficient and consistent information for interested parties to track when the groundwater conditions in the management areas are "undesirable" or become "watch areas" (page 15).</p> | <p>Some GSPs or Management Area Plans refer to these management areas with "undesirable" local conditions as "watch areas" but the terminology used in the plans is inconsistent and should be standardized (page 15).</p> | <p>A map of entire Subbasin showing each of the GSP areas, including management areas and sub management areas within the management area plans, associated monitoring zones, etc. that have a locally defined "undesirable result" that can contribute to the Subbasin's undesirable result area-based definitions described in the coordination agreement (page 17).</p> | |
| | <p>The Plan, while purporting to be coordinated, presents a disparate range of definitions for what conditions in each area would be "undesirable" and could, therefore, contribute to the Coordination Agreement's undesirable results. Department staff found this to be true for all applicable sustainability indicators (page 16).</p> | <p>The KGA GSP Semitropic management area, KGA GSP Rosedale-Rio Bravo management area, and the Buena Vista GSP Buttonwillow management area are adjacent and represent slightly more than 15 percent of the Subbasin area. Each of these agencies have identified different conditions representing when localized undesirable result for chronic lowering of groundwater levels occurs (page 16).</p> | <p>A comprehensive table or another organized form of identifying each of the areas, the land coverage - both absolutely and as a percentage - of each of those listed areas in comparison to the Subbasin in total, and a clear and concise description of the conditions that would cause that area to trigger a localized undesirable watch. These materials should demonstrate that 100 percent of the Subbasin area is being managed under their various GSPs with reasonable definitions of undesirable results (page 17).</p> | |
| | | | <p>If GSAs elect to maintain the percentage of land area definition for undesirable results, the GSAs need to provide a comprehensive description of groundwater conditions that would lead to localized undesirable results in the GSAs and other management areas which ultimately contribute to the 15 percent of 30 percent of land area criteria (page 17).</p> | |

Footnotes

1. DWR Key Point may also refer to §354.26(b)(2) Undesirable Results. The criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.

Kern Subbasin GSP Determination Comment Matrix

Deficiency 2. The Plan Does Not Set Minimum Thresholds for Chronic Lowering of Groundwater Levels in a Manner Consistent with the Requirements of SGMA and the GSP Regulations

| Regulation | Key Points | DWR Example | DWR Proposed Corrective Actions | Recommendations/Questions for DWR |
|--|--|---|--|-----------------------------------|
| <p>§354.28(b)(1) Minimum Thresholds. The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting.</p> | <p>The GSPs do not consistently explain how the lowering of groundwater levels minimum thresholds and measurable objectives that are set below historical lows will impact other applicable sustainability indicators specifically water quality, land subsidence, and reduction of groundwater storage (page 19).</p> | <p>See Table 2 for Kern Subbasin groundwater level threshold summaries and corrective actions (page 20-35).</p> | <p>All GSPs must demonstrate the relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the GSA has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators (page 35).</p> | |
| | <p>Based on the groundwater level declines allowed for by many of the minimum thresholds, the GSPs need to explain how those groundwater level declines relate to the degradation of groundwater quality sustainability indicator. The GSPs must describe, among other items, the relationship between minimum thresholds for a given sustainability indicator (in this case, chronic lowering of groundwater levels) and the other sustainability indicators, degradation of groundwater quality in particular (page 19). <i>see footnote 1</i></p> | <p>See Table 2 for Kern Subbasin groundwater level threshold summaries and corrective actions (page 20-35).</p> | | |
| | <p>Table 2 presents a brief summary, based on Department staff's review, of the variety of methods used to develop groundwater level minimum thresholds across the numerous GSPs. The approaches used and the level of analysis to support those approaches, is disparate across various plans (page 20).</p> | <p>See Table 2 for Kern Subbasin groundwater level threshold summaries and corrective actions (page 20-35).</p> | <p>See Table 2 for DWR proposed corrective actions.</p> | |
| <p>§354.28(b)(2) Minimum Thresholds. The relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.</p> | <p>The GSPs use differing constituents and methods to establish minimum thresholds including some GSPs using groundwater levels as a proxy for degradation of groundwater quality (page 19). <i>see footnote 2</i></p> | <p>See Table 2 for Kern Subbasin groundwater level threshold summaries and corrective actions (page 20-35).</p> | <p>The GSPs should evaluate whether the Subbasin's 'with-projects' modeling scenarios still indicate that implementation of the projects and management actions would avoid minimum threshold exceedances. If not, the GSAs should modify their project and management actions accordingly (page 35).</p> | |
| | <p>The GSPs should consider and discuss the opportunities to coordinate and leverage existing programs and agencies to help understand whether implementation of the GSPs is resulting in degradation of water quality (page 20).</p> | <p>See Table 2 for Kern Subbasin groundwater level threshold summaries and corrective actions (page 20-35).</p> | | |

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| | Areas outside of management areas (non-districted lands) account for 18,013 acre-feet per year of total demand, which Department staff note is a larger volume than occurs in many of the areas covered by the management area plans. | See Table 2 for Kern Subbasin groundwater level threshold summaries and corrective actions (page 20). | Provide a comprehensive discussion of areas covered by the KGA GSP, but that are not contained within the various management area plans. Among other items, provide maps of these areas, describe the uses and users of groundwater in these areas, and either set sustainable management criteria for these areas or include robust discussions justifying why sustainable management criteria are not required. | |

Footnotes

1. DWR Key Point may also refer to §354.28(b)(2) Minimum Thresholds. The relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.
2. DWR Key Point may also refer to §354.28(4). Degraded Water Quality. The minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an is contour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin.

Kern Subbasin GSP Determination Comment Matrix

Deficiency 3. The Plan's Land Subsidence Sustainable Management Criteria Do Not Satisfy the Requirement of SGMA and the GSP Regulations

| Regulation | Key Points | DWR Example | DWR Proposed Corrective Actions | Recommendations/Questions for DWR |
|--|---|--|---|-----------------------------------|
| <p>§354.28(d) Minimum Thresholds. An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.</p> | <p>Based on Department staff's review, it is apparent that the Subbasin does not have a "basin wide coordinated GSP subsidence monitoring plan", nor any coordinated, Subbasin-wide subsidence sustainable management criteria or assessment of critical infrastructure that would be susceptible to substantial interference from future subsidence (page 37).</p> | <p>While some of the individual GSPs and management areas include some discussion of subsidence, there does not appear to be a Subbasin-wide approach (page 37).</p> | <p>The Subbasin's GSAs should coordinate and collectively satisfy the requirements of SGMA and the GSP Regulations to develop the sustainable management criteria for land subsidence (page 38).</p> | |
| <p>Water Code §10720.1 General Provisions. In enacting this part, it is the intent of the Legislature to do all of the following: (e) To avoid or minimize subsidence.</p> | <p>While Department staff do not dispute that KGA may have identified some monitoring data gaps, Department staff do not believe that it is appropriate to set aside development of an entire sustainability indicator that, by the information presented in the GSP, appears to be applicable (page 38).</p> | <p>The GSAs could have identified that their management strategy was to avoid further land subsidence, consistent with legislative intent of SGMA, and set their measurable objective to zero additional active subsidence and their minimum thresholds commensurate with the expected residual or delayed subsidence.</p> | <p>The Plan should identify the rate and extent of subsidence corresponding with substantial interference that will serve as the minimum threshold, or should thoroughly demonstrate that another metric can serve as a proxy for that rate and extent (page 38).</p> | |
| <p>§354.28(d) Minimum Thresholds. An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.</p> | <p>Department staff conclude that the Plan, including the Coordination Agreement and all GSPs, should be revised to present a Subbasin-wide management approach for subsidence that includes the elements required by SGMA and the GSP Regulations (38).</p> | <p>Department staff note that the Department provides aerial, remotely sensed subsidence data that may be used by GSAs in their monitoring and development of sustainable management criteria.</p> | <p>The Plan should explain how implementing projects and management actions proposed in the various GSPs is consistent with avoiding subsidence minimum thresholds, sufficient to avoid substantial interference. (page 38).</p> | |
| <p>§354.30 (d) Measurable Objectives. An Agency may establish a representative measurable objective for groundwater elevation to serve as the value for multiple sustainability indicators where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual measurable objectives as supported by adequate evidence.</p> | <p>The Plan should include clearly defined undesirable and appropriate minimum thresholds and measurable objectives (page 38).</p> | | <p>If land subsidence is not applicable to parts of the Subbasin, the GSPs must provide supported justification of such. The supporting information must be sufficiently detailed and the analyses sufficiently thorough and reasonable and must be supported by the best available information and best available science (page 38).</p> | |