Appendix J

Friant Water Authority Letter of Support for Subbasin Subsidence Mitigation on the Lower Reach of the Friant-Kern Canal

J1	Kern Subbasin Progress Report on Friant-Kern Canal Lower Reach Subsidence Mitigation Studies and Requests for Letter of Support from Friant Water Authority
J2	Friant Water Authority Letter of Support

April 16, 2024

Jason R. Phillips, CEO
Friant Water Authority
856 North Harvard Avenue
Lindsay, CA 93247
Via email: jphillips@friantwater.org

Subject: Kern Subbasin Progress Report on Friant-Kern Canal Lower Reach Subsidence Mitigation Studies and Request for Letter of Support from Friant Water Authority

Dear Mr. Phillips:

As you may be aware, the Kern Subbasin (Subbasin) Groundwater Sustainability Plans (GSPs) were deemed incomplete by the Department of Water Resources (DWR) in 2020 and inadequate in 2022. Since the receipt of the Inadequate Determination, the Subbasin Groundwater Sustainability Agencies (GSAs) have been diligently working to address the DWR-identified deficiencies in the Inadequate Determination, so as to avoid entering probation under the State Water Resources Control Board (SWRCB). At a very high level, the Subbasin GSAs need to address issues related to coordination and consistency of methodologies and set Sustainable Management Criteria that are consistent with SGMA regulations – including subsidence. The Subbasin has been making significant progress in addressing the issues in the Inadequate Determination, and the current schedule indicates the submittal of revised GSPs to the SWRCB in May 2024.

Regarding subsidence, the Subbasin has greatly appreciated the numerous meetings held with the staff and consultants of the Friant Water Authority (FWA). During those meetings, FWA staff has made it very clear that "any unmitigated subsidence beyond 2020 is unacceptable". Analysis has shown that our proposed groundwater level Minimum Thresholds (MTs) will lead to some amount of subsidence in the future along the lower reach of the Friant-Kern Canal (FKC), which is that portion that is covered by Kern Subbasin GSAs. As such, the Subbasin has been conducting analyses hand-in-hand with FWA staff and consultants to estimate the amount of potential future subsidence and estimate the cost to mitigate that potential subsidence. Through that work, the Subbasin has conservatively estimated a potential of up to 3 feet of subsidence along the aforementioned lower reach of the FKC, and a preliminary cost estimate of $40M attributable to Kern County GSAs.

Three tasks need to take place to move forward on this analysis and ultimately begin mitigating subsidence on the FKC:

1. Finalize the estimated amount of future potential subsidence caused by groundwater management in the Subbasin
2. Finalize the cost estimate to mitigate the potential subsidence, and determine how it will interact with the capacity correction projections FWA is currently working on
3. Conduct an attribution analysis to determine how mitigation costs may be split between Kern County GSAs

Unfortunately, none of the three tasks above will be completed prior to the May 2024 submittal of the revised GSPs to the SWRCB.

This letter has two goals: Firstly, the Subbasin GSAs wish to clearly state to FWA that the Subbasin GSAs are committed to working with FWA to expeditiously complete the above three tasks and mitigate post-2020 potential subsidence. Secondly, the Subbasin GSAs are requesting a letter of support from FWA for the Subbasin to include within their GSPs with regards to how the Subbasin is handling potential subsidence along the FKC. Since the above three tasks cannot be completed prior to submitting revised GSPs to the SWRCB, the hope is that the work the Subbasin has done to date with

FWA (several technical meetings, cost estimates, impacts analyses, installation of an extensometer along the FKC at Kimberlina Road) combined with the proposed path forward will be sufficient to assure FWA that post-2020 subsidence along the FKC will be mitigated.

To emphasize the Subbasin's commitment to this process, please find attached a scope of work and a cost-share agreement between most Subbasin GSAs to fund the model calibration necessary to complete tasks 1 and 3 above. The aim is to complete this work in 2024, and the Subbasin GSAs look forward to working with FWA to determine how mitigation will fit into the grand scheme of FKC Capacity Correction projects.

Please don't hesitate to contact Kristin Pittack if you have any questions or concerns.

Sincerely,

Kristin Pittack, MS
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CC:

Johnny Amaral, COO/Chief of External Affairs
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Attachments

Attachment 1 INTERA Scope of Work

INTERA Incorporated
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Torrance, California 90503 USA
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Proposal for Additional Data Collection and Modeling to Support Subsidence Mitigation Cost Analysis for the Friant Kern Canal

Additional data-collection, analysis, and modeling is necessary to evaluate future impacts on water levels and subsidence along the Friant Kern Canal (FKC) from groundwater pumping in different GSAs within the Kern Subbasin. This data collection and analysis was not included in the original scope and budget to support GSP revisions, as the previous sustainable management criteria for the FKC had not accounted for conveyance loss from future subsidence. Any unmitigated conveyance loss due to subsidence along the FKC has been deemed an "undesirable result" under SGMA by the Friant Water Authority (FWA). Hence, mitigation alternatives to raise the liner (and associated infrastructure) along the sagging sections of the canal are being evaluated currently. A cost-sharing framework is being developed to fund these future mitigation efforts. The cost-sharing framework will entail attributing costs based on future impacts on water levels and subsidence along sagging sections of the FKC from groundwater pumping in different GSAs. This proposal outlines the approach and cost involved with the data-collection, analysis, and modeling for this effort.

Task 1. Recover and survey elevations at selected benchmarks

Perform GPS RTK survey methods at eight benchmark sites near the FKC to obtain ellipsoid and orthometric elevations processed through NOAA's Online Positioning User Service (OPUS). For benchmarks located in areas where direct GPS observations are not possible, a nearby reference mark will be established, and conventional leveling will be used to determine the elevation of the benchmark.

Estimated Cost: $12,000

Task 2. Analyze and prepare long-term groundwater level and subsidence time series data and figures

Evaluate water-level data from the current period and historical water-level data near the FKC to provide a time series of data for the 1D model (Task 3) and to determine the pre-consolidation head and current critical head at eight selected locations of geodetic control (benchmarks). A time series of leveling data from benchmarks monumented by the National Geodetic Survey, U.S. Geological Survey, U.S. Bureau of Reclamation, and California Department of Transportation will be constructed from blue-booked leveled elevations and recoveries. Data compiled from the CASGEM, DWR water data library, and USGS will be used near the benchmark sites to construct a time series of water level data at various depth intervals. Approximately 75% of this data has already been collected as part of the development of the subsidence sustainable management criteria (SMCs). The cost below is for *additional* data collection and analysis to support the 1D modeling under Task 3.

Estimated Cost: $10,000

Task 3. Subsidence analysis using the Stanford 1D model

Use the Standford 1D model to forecast subsidence through 2040 or other desired planning timeframe to connect water levels and subsidence along the Frint Kern Canal (FKC). The model will be calibrated to the long-term subsidence and groundwater level data from Task 2. Well-log data will be compiled for each of the 8 sites to estimate the number and thickness of clay interbeds.

Estimated Cost: $35,000

Task 4. Updated model analysis of water level changes by GSA

Use updated IWFM-Kern model (currently being updated by Todd Groundwater to support the GSP revisions) to evaluate change in groundwater levels through 2040 or other desired planning timeframes to simulate future change in water levels under a range of different scenarios with GSAs within the Kern subbasin pumping at different rates to assess impacts on future water levels along the Friant Kern Canal. INTERA will work with Todd Groundwater to perform the water level scenarios. Water level results from the scenarios will be linked to the 1D subsidence model (Task 3) to translate water level impacts to subsidence impacts along the FKC. The 1D subsidence model is necessary since the IWFM-Kern model has not been calibrated to subsidence. This task assumes multiple iterations to support the determination of potential attribution of water level and subsidence impacts along the FKC. Relative contribution to future water level declines and subsidence along the most vulnerable reaches of the FKC would be the basis for the cost-sharing framework between the GSAs determined to be contributing to water level declines and subsidence along the FKC.

Estimated Cost: $60,000

Task 5. Meetings and Presentations

Results from the evaluation will be presented to the Kern Subbasin subsidence sub-committee, GSA managers, and coordination committee. The analysis will also be presented to the Friant Water Authority to get their buy-in on the approach and results. The analysis will be documented in a technical memorandum that may be used as an attachment to the Kern Subbasin revised GSP to document the FKC mitigation alternative.

Estimated Cost: $3,000

Total Cost and Schedule

The total cost for the scope above is estimated to be **$120,000**. Tasks 1-3 can be completed within 3 months of notice to proceed. Task 4 and 5 will require 3 additional months (including the time for presentation at various committee meetings) from receiving revised IWFM-Kern model files from Todd Groundwater. It is anticipated that the IWFM-Kern model will be ready for the modeling analysis by the late summer (August, 2024) timeframe.

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April 30, 2024

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Subject: Kern Subbasin Progress Report on Friant-Kern Canal Lower Reach Subsidence Mitigation Studies and Request for Letter of Support from Friant Water Authority

Dear Ms. Pittack and Kern Subbasin GSPs:

We are in receipt of your letter dated April 16, 2024. The letter accurately outlined the history of coordination and communication between Kern Subbasin GSAs and Friant Water Authority (FWA) with regards to subsidence along the lower reach of the Friant-Kern Canal (FKC). As the letter stated, numerous meetings have been held with the goal of estimating projected future subsidence and estimating the cost to mitigate that subsidence.

As you recalled, one of the common points made during the meetings between the Kern Subbasin GSAs and FWA was related to FWAs "zero-tolerance absent proper mitigation" position for future subsidence that impacts the carrying capacity of the Friant-Kern Canal. Given the severity of the carrying capacity impacts as well as the harm done to contractors and communities whose livelihoods depend on a fully functioning canal, FWA has no other choice than to rigorously adhere to this policy, by any means necessary.

With that said, we very much appreciate the candor and transparency of those meetings and that the Kern Subbasin GSAs are committed to adhering to FWA's policy. We also understand that more time is needed to further analyze and finalize subsidence projections, finalize cost amounts, and conduct an attribution analysis to ultimately determine a cost allocation between the Kern GSAs. Given the coordination thus far, we have confidence that this additional work will be completed expeditiously and that the GSPs in the Kern Subbasin will properly mitigate impacts to the FKC.

Sincerely,

Jason Phillips, CEO
Friant Water Authority