Land Subsidence Management Plan

May 13, 2021

Prepared for:
Eastern Tule Groundwater Sustainability Agency

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Groundwater Consulting

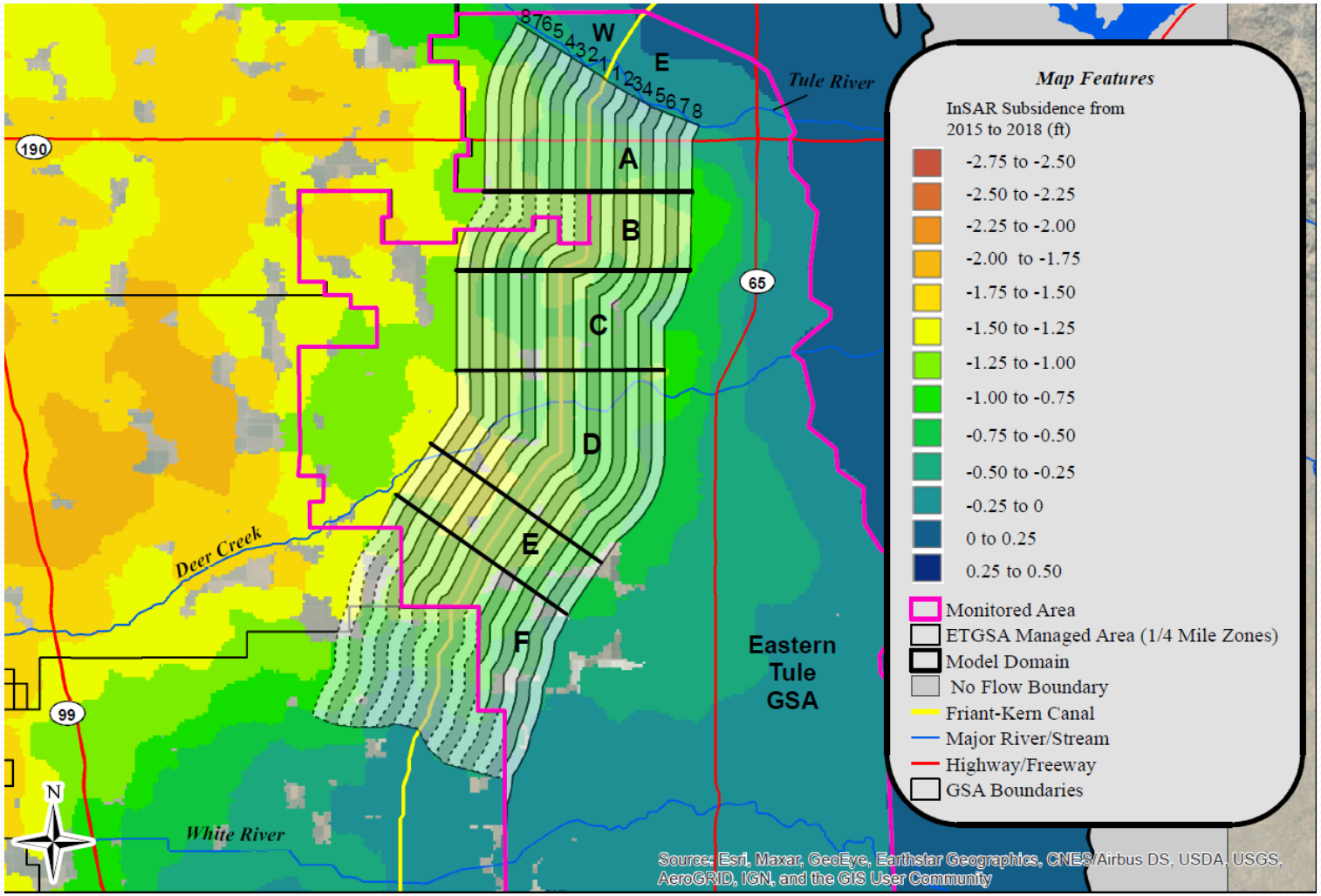
ETGSA Land Subsidence Monitoring and Management Plan Overview

1. Background
2. Land Subsidence Management Goal
3. Area Encompassed by the Management Plan
4. Tiered Land Subsidence Mitigation Approach
5. Land Subsidence Monitoring Network
6. Assessment and Improvement of Monitoring Network
7. Land Subsidence Monitoring and Management Committee
8. Reporting

Land Subsidence Management Goal

The goal of the Eastern Tule Land Subsidence Management Plan (LSMP) is to implement groundwater management measures necessary to minimize future non-recoverable land subsidence along the Friant-Kern Canal in the SGMA transition period from 2020 – 2040 and to arrest nonrecoverable land subsidence along the Friant-Kern Canal after 2040.

Land Subsidence Managed Area



- **Monitored Area**
- **Managed Area**
- **Management Zones**
  - 16 East-West Zones (8, ¼-mile Zones on Each Side of the FKC)
  - 6 North-South Zones
  - 96 Total Management Zones

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Tiered Land Subsidence Mitigation Approach

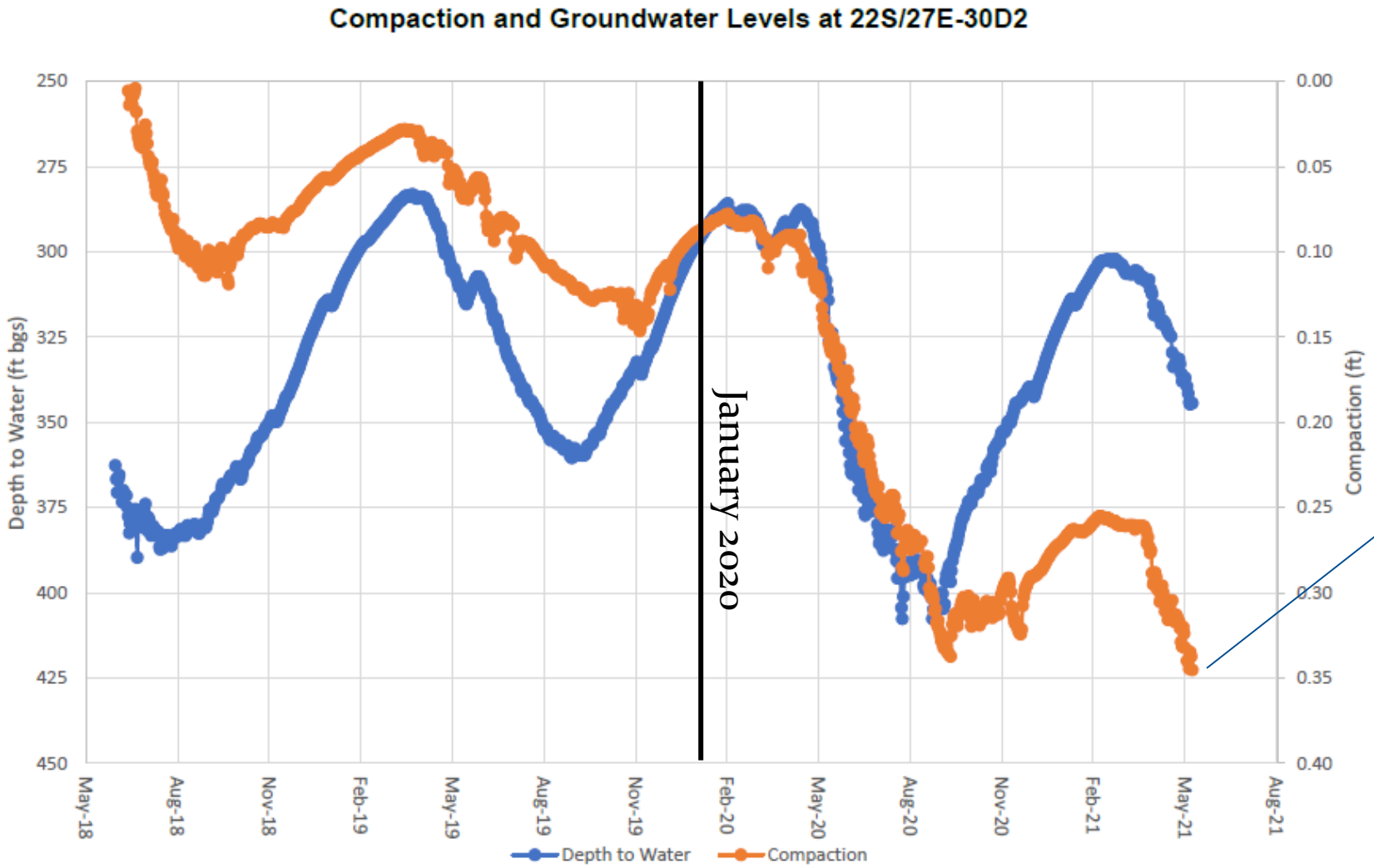
- Tier 1 – Land Subsidence Between 0 and 0.99 feet
- Tier 2 - Land Subsidence Between 1 and 1.99 feet
- Tier 3 - Land Subsidence Between 2 and 2.99 feet
- Tier 4 - Land Subsidence Greater than 3 feet

All Land Surface Elevation Changes will be Measured Relative to January 2020 Elevations

Tiered Land Subsidence Mitigation Approach

- Management Actions Required Within Any Given Management Zone where Land Subsidence Exceeds the Action Criteria
- Action Criteria are Based on the Additional Land Subsidence Measured in Any Given Zone Relative to January 2020
- Baseline Land Elevations will be Included in Table 3 of the Plan (Not Yet Completed)

All Management Zones Will Start in Tier 1



Aquifer System Compaction Continues to be Active Near the Friant-Kern Canal (~0.25-ft or 3 inches since January 2020)

Data from USGS Site 355933119062001, https://maps.waterdata.usgs.gov/mapper/index.html
Extensometer depth 1,180 ft bgs and screened interval 1,083-1,180 ft bgs.

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Tier 1 – 0 to 0.99 Feet

- Prioritize Development of Additional Land Subsidence Benchmarks and Monitoring Wells
- Restrict Well Depths on Any New Permits to 600 feet
- Develop Conservation Easements
- Utilize Transitional Pumping Penalty Fees to Invest in New Projects, to be Evaluated and Recommended by the ETGSA Board
- Provide Outreach Workshops to Landowners in the Managed Area
- Limit Pumping from ASR or Banking Projects to Volume Recharged Minus a Leave Behind (10 Percent of Recharged Water Unless Otherwise Stated in Separate Policy). Pumping Only from Aquifer where the Water is Stored.

Tier 2 – 1 to 1.99 Feet

All Actions in Tier 1 Apply Plus the Following:

- Limit Groundwater Pumping to Upper 600 Feet Below Land Surface.
- Encourage Pumping Outside Affected Management Zones.
- Review Options to Reallocate Pumping from Affected Management Zone to Tier 1 Management Zone. Must Be Supported by Analysis Showing it will not Create an Impact.
- Create Reallocation Incentives to Encourage Land Fallowing. Establish Set Fee Amount for these Incentives.

Tier 3 – 2 to 2.99 Feet

All Actions in Tiers 1 and 2 Apply Plus the Following:

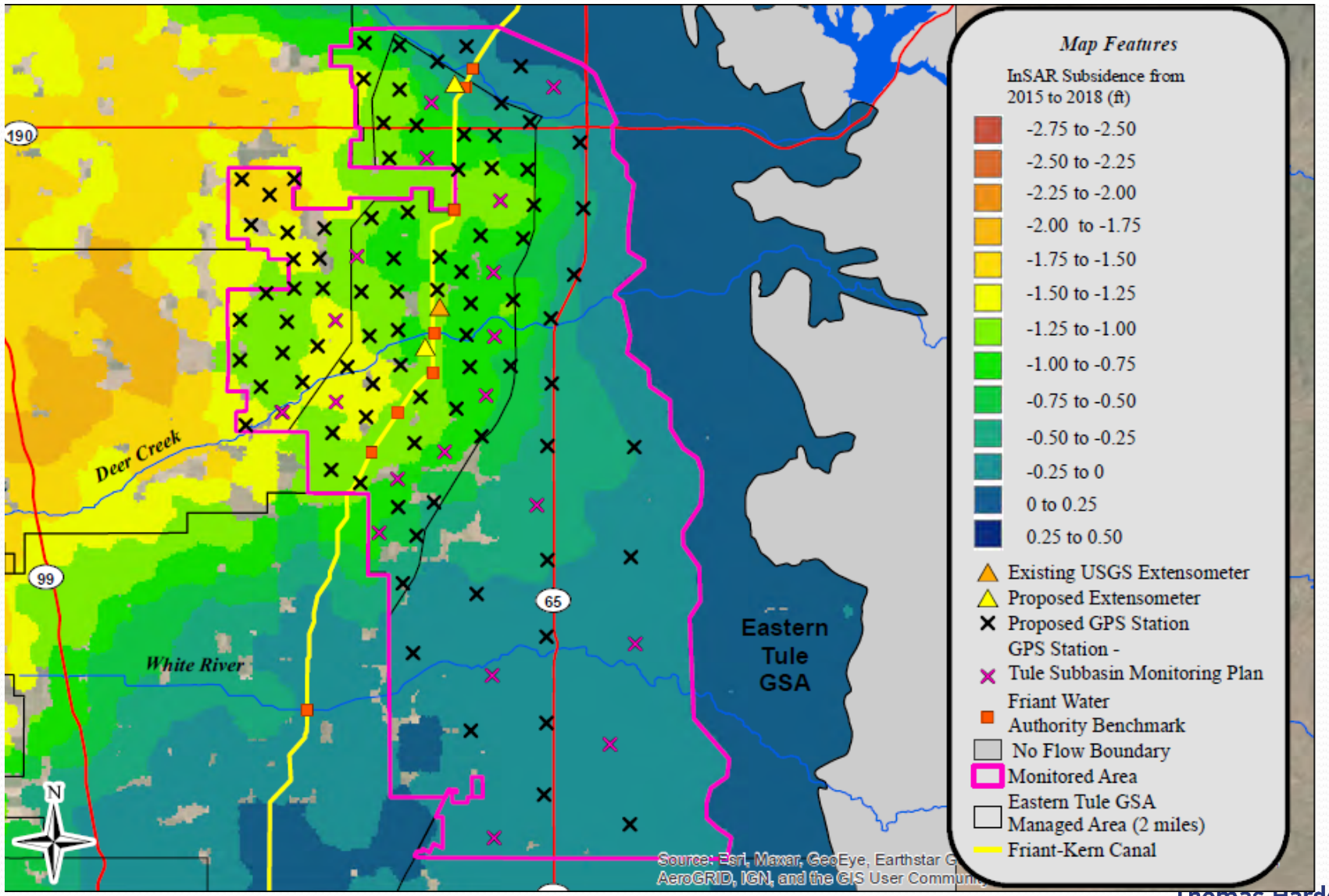
- Reevaluate Subbasin Contributions to Land Subsidence.
- Discontinue Groundwater Pumping with the Following Exception:
  - Groundwater Credits Can be Pumped in the Affected Management Zone if Analysis and Data Can be Shown that It Will Not Result in Additional Land Subsidence.
- Irrigation Demands Can be Met with Surface Water Supplies Only

Tier 4 – Greater than 3 Feet

All Actions in Tiers 1 through 3 Apply Plus the Following:

- No Groundwater Pumping Allowed in the Management Zone.
- No New Wells Allowed in the Management Zone.
- Modify GSP Minimum Thresholds.

Land Subsidence Monitoring Network



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Land Subsidence Monitoring and Management Committee

- Representation – Technical Experts from:
  - ETGSA
  - FWA
  - Tule Subbasin Technical Advisory Committee
  - County of Tulare
  - White Area Growers
  - Others?

Land Subsidence Monitoring and Management Committee

- Responsibilities:
  - Review and Analyze Monitoring Data
  - Review Land Surface Elevation Monitoring Trends
  - Review Proposed Refinements to the LSMP
  - Provide Recommendations to the ETGSA Board

Reporting

- A Report Will be Prepared Annually
- A Draft of the Report will be Submitted to the LSMP Monitoring and Management Committee for Review and Comment Prior to Submittal to the ETGSA Board for Consideration

https://www.easterntulegsa.com/wp-content/uploads/2021/05/thco_etgsa_landsub_mngt_plan_may_2021.pdf

Questions