CHAPTER 3
SUSTAINABLE MANAGEMENT CRITERIA

3.1 INTRODUCTION TO SUSTAINABLE MANAGEMENT CRITERIA

On October 28, 2015, the FCGMA Board of Directors adopted the following resolutions regarding management of the four basins within its jurisdiction:

Control seawater intrusion front at its current position.

Do not allow groundwater quality to further degrade without mitigation.

No net subsidence due to groundwater withdrawal.

Promote water levels that mitigate or minimize undesirable results (including pumping trough depressions, surface water connectivity, and chronic lowering of water levels).

These goals guide the definition of specific undesirable results, specific minimum thresholds, and measurable objectives in the subsequent sections as required by SGMA. Sustainability does not necessarily mean that springtime high groundwater levels in the basin remain the same year after year. Rather the FCGMA defines sustainability over a drought cycle. Year over year groundwater levels may decline during a drought, but sustainable management results in groundwater levels returning to pre-drought levels in the wet years after a drought.

For groundwater sustainable management, the GSP can adopt a pre-SGMA effective date before January 1, 2015 for groundwater conditions to address undesirable results, or adopt a date of January 1, 2015. In either case, the GSP must provide groundwater sustainable management to avoid significant and unreasonable undesirable results by year 20. Additionally, the GSP must define "significant and unreasonable" as it relates to undesirable results, which may be variable depending upon geography, beneficial use, current and future water management, economic, and environmental considerations.

The following discussion presents an introduction as to how this GSP developed sustainable groundwater management criteria to address undesirable results consistent with the sustainability goals in Section 3.2.

Based on hydrographs (Section 2.3) and historical climate trends (Section 1.2.2.2), the Oxnard Subbasin of the Santa Clara River Valley Groundwater Basin shows groundwater level declines and recoveries, which correspond to periods of above- and below-average precipitation. A plot of long-term cumulative departures from average precipitation (Figure 1-6) shows six periods of reduced-precipitation drought periods, ranging from 5 years (1986–1991, and 2011–2016) to 18 years (1918–1936, Table 1-3). During these drought periods, the cumulative departure from the mean deficit ranged from -24.8 inches to -47.2 inches. The calculated mean annual precipitation in the central Oxnard Plain is 14.4 inches.

Although hydrograph data for the entire precipitation record is limited, wells that show good groundwater level correlation with precipitation cumulative departure were found for both the UAS and LAS. Figure 3.1 shows the location of wells 01N21W07H01S, 01N22W20J07S, 01N22W28G04, and 01N21W19L12S (UAS), and wells 01N21W07J02S, 01N22W26K04S, 01N21W28D01S, and 01N21W32Q01S (LAS). These wells have historical groundwater level data for the baseline water budget years from about 1985 to 2015 (Section 2.4), and have well screen information confirming that they represent water levels in the UAS and LAS. When the hydrograph data for these wells is plotted with cumulative departure from the mean annual precipitation, the correlation between groundwater levels and precipitation is clear (Figures 3.2 and 3.3). The hydrographs for these wells show that during the drought years from 1986 to 1991 and from 2011 to 2016 their water levels declined. Water levels recovered during wetter years 1991-1993 with increased precipitation and recharge.

The 113-year precipitation record demonstrates that the average drought duration was 8.2 years, and the average cumulative rainfall deficit during these droughts was -30.25 inches. It is reasonably conservative to base basin management on an 8-year drought. The sustainable management criteria will target groundwater levels compatible with avoiding undesirable results such as sea water intrusion, chronic declines in water levels and storage, subsidence, groundwater quality degradation, and that will preserve enough water in storage for a drought longer than the longest historical drought of 18 years.

The following sections rely on information obtained from the analysis of well hydrographs, precipitation, and water balance information discussed in Section 2.4 to understand the potential magnitude of undesirable result likely during drought conditions. The purpose of this detailed analysis is to present sustainable management criteria and projects to achieve sustainable goals over the average drought and groundwater deficit period.