7. Change in Groundwater Storage

7.1 Annual Changes in Groundwater Elevation (§ 356.2[b][5][A])

Annual changes in groundwater elevation are derived from comparison of fall groundwater elevation contour maps from one year to the next. For WY 2024, the fall 2023 groundwater elevations were subtracted from the fall 2024 groundwater elevations in both principal aquifers, resulting in maps depicting the changes in groundwater elevations that occurred during WY 2024. These groundwater elevations change maps are based on a reasonable and thorough analysis of the currently available data.

7.1.1 Alluvial Aquifer

Figure 13 shows the change in groundwater elevation for the Alluvial Aquifer from 2023 to 2024. There is a slight decline in groundwater levels in the Alluvial Aquifer in much the Basin by up to five feet, with up to 10 feet of decline in a very small area in the northern portion of the Basin.

7.1.2 Paso Robles Formation Aquifer

Figure 14 shows changes in groundwater elevation from 2023 to 2024, the most recent period evaluated. Declines in water levels of up to 40 feet were observed in the in the area north and south of Templeton Groundwater elevations in the areas to the north and east of Templeton increases by up to 40 feet. Groundwater elevations in the areas southeast of Templeton and near Asuncion increased by up to 10 feet. South of Atascadero groundwater elevations decreased by up to 10 feet.

7.2 Annual and Cumulative Change in Groundwater in Storage Calculation (§ 356.2[b][5][B])

The groundwater elevation change maps presented above represent a volume change within each principal aquifer for each water year. The volume change depicted on each map represents a total volume, including the volume displaced by the aquifer material and the volume of groundwater stored within the void space of the aquifer. The portion of void space in the aquifer that can be utilized for groundwater storage is represented by the aquifer storage coefficient (S), a unitless factor, which is multiplied by the total volume change to derive the change in groundwater in storage. Based on work completed for the Paso Robles Subbasin GSP (M&A 2020), S is estimated to be 7 percent for the Paso Robles Formation Aquifer.[7] The aquifer storage coefficient value used for the Alluvial Aquifer is 20 percent.[8] The annual change of groundwater in storage calculated for WY 2024 is presented in Error! Reference source not found. and the annual and cumulative change in groundwater in storage since 1981 are presented on **Figure 15**.

[7] Attachment H includes derivation of the storage coefficient from the Paso Robles Subbasin GSP groundwater model files and a sensitivity analysis as documented in the Paso Robles Subbasin First Annual Report (GSI 2020).

[8] In the case of the alluvial aquifer, the aquifer storage coefficient is equivalent to the specific yield, a unitless factor, which is estimated to be 20%.

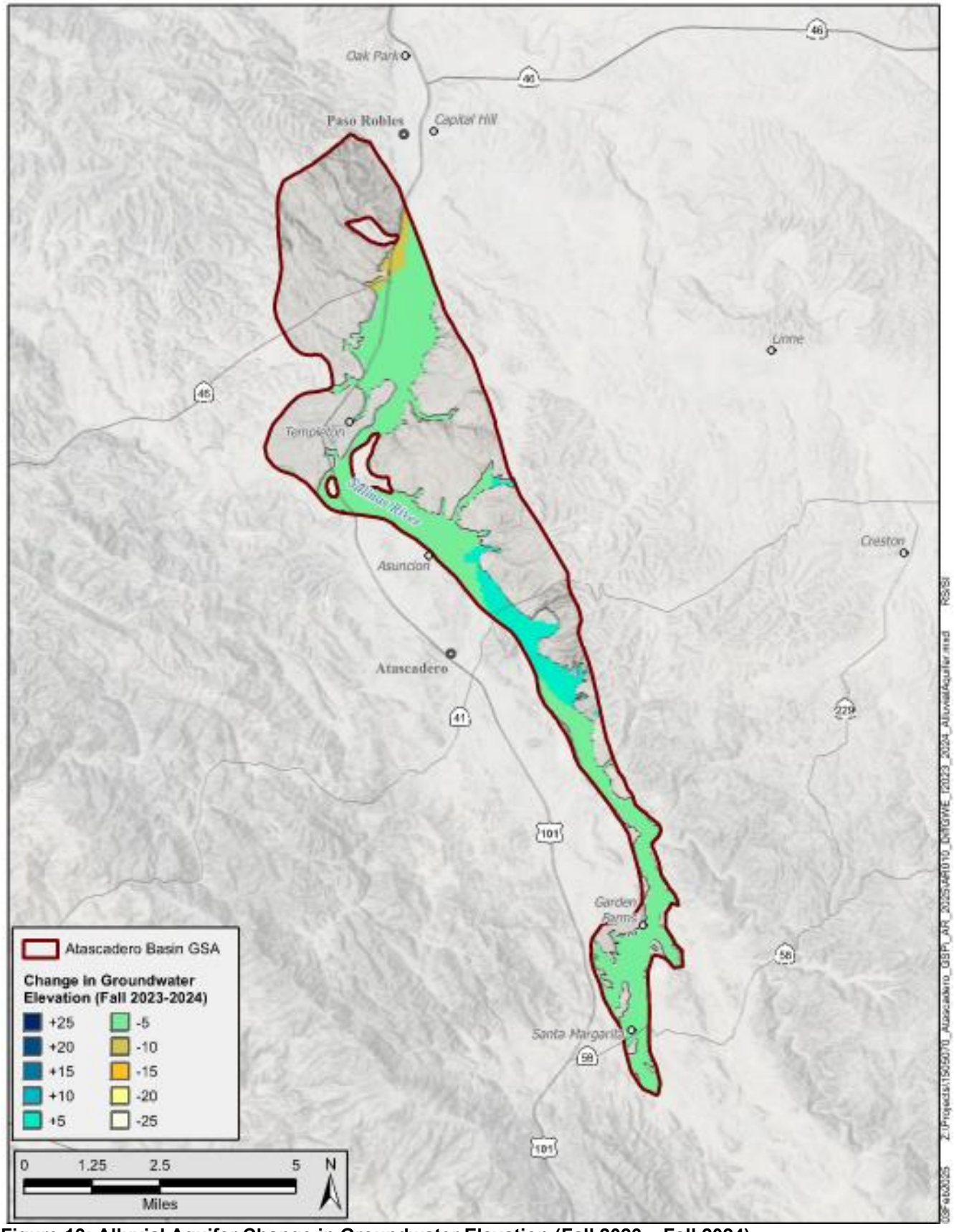

Figure 13: Alluvial Aquifer Change in Groundwater Elevation (Fall 2023 – Fall 2024)

Table 9: Annual Change in Storage

Water Year	Annual Change (AF)
2017	14,600
2018	-5,400
2019	4,300
2020	100
2021	-5,200
2022	-8,000
2023	15,700
2024	**3,600**

Note: AF = acre-feet

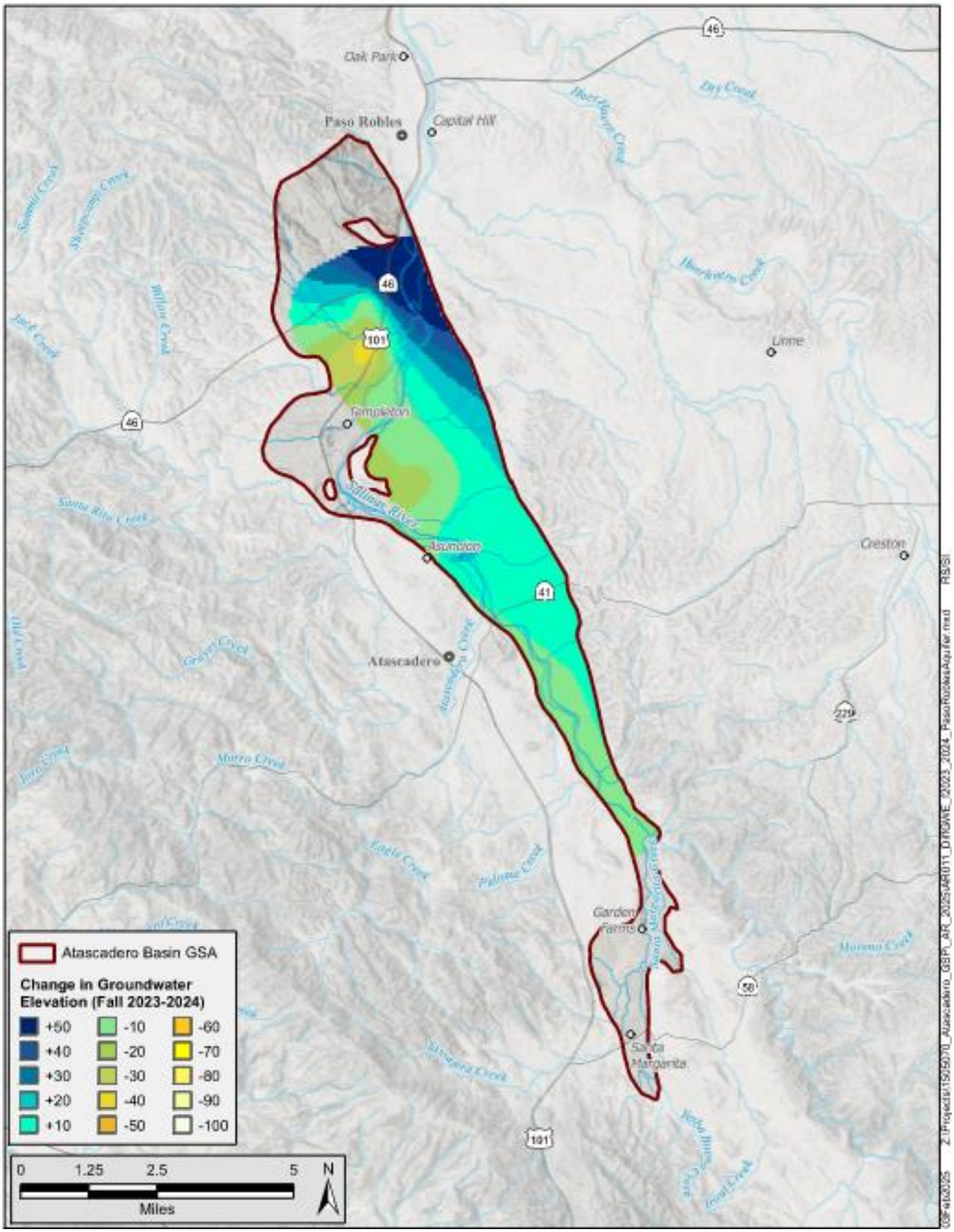

Figure 14: Paso Robles Aquifer Formation Change in Groundwater Elevation (Fall 2023 – Fall 2024)

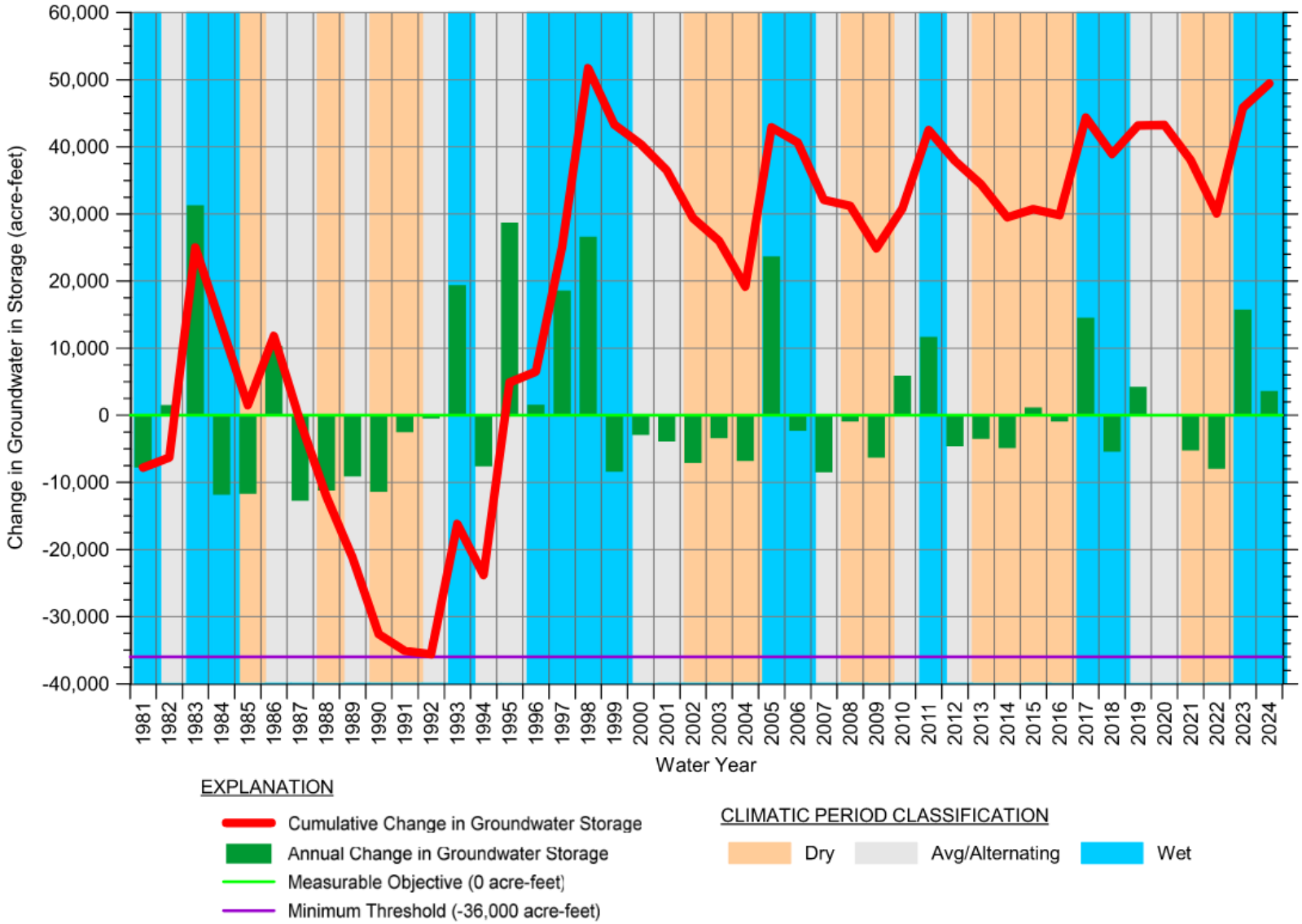

Figure 15: Estimated Annual and Cumulative Change in Storage

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