5 MONITORING NETWORKS

Since submitting the original GSP in 2020, SVBGSA has focused on filling data gaps and expanding the monitoring networks. This section assesses each applicable sustainability indicator's monitoring network. The descriptions distinguish between changes in the monitoring network included in GSP Amendment 1 versus recommended for a future GSP revision.

5.1 Groundwater Level Monitoring Network Changes

The chronic lowering of groundwater levels SMC is evaluated by groundwater elevations monitored by MCWRA. During the evaluation period, SVBGSA expanded the groundwater elevation monitoring network and filled most data gaps.

The groundwater elevation network in the 2020 GSP consisted of 23 wells that were part of the California Statewide Groundwater Elevation Monitoring (CASGEM) program, all of which were RMS wells. The 2020 GSP identified data gaps in the monitoring network in all principal aquifers.

For GSP Amendment 1, SVBGSA expanded the RMS network to 91 wells by adding more existing wells to the monitoring network. In doing so, SVBGSA filled the data gaps in the 180-Foot and 400-Foot Aquifers. SVBGSA reassessed the Deep Aquifers data gaps and identified 5 remaining data gap areas in GSP Amendment 1. The changes made to the groundwater elevation RMS network in GSP Amendment 1 are shown on Figure 5-1, Figure 5-2, and Figure 5-3 for the 180-Foot, 400-Foot, and Deep Aquifers, respectively. Figure 5-4 shows the remaining data gaps in the Deep Aquifers, as noted in GSP Amendment 1, as well as how SVBGSA filled 3 of these data gaps by installing new Deep Aquifers monitoring wells through the SGM Round 1 Grant, adjusting the locations slightly based on additional analysis.

After GSP Amendment 1 was drafted, most changes made to the RMS network occurred in the Deep Aquifers. In 2024, the Salinas Valley Deep Aquifers Study was completed. It recommended additional existing wells be added to the monitoring network and refined data gaps. Figure 5-5 shows the Deep Aquifers Study's extent of the Deep Aquifers, recommended groundwater elevation monitoring network, and the data gaps. SVBGSA and partner agencies are planning to fill these Deep Aquifers data gaps. This GSP 2025 Evaluation recommends these additional Deep Aquifers data gaps be filled and included in a future GSP amendment.

Table 5-1 summarizes the number of RMS wells in each principal aquifer in the 2020 GSP, GSP Amendment 1, and recommended for a future GSP amendment. It includes wells removed due to well destructions or discontinued groundwater elevation monitoring. All changes will be included in the WY 2024 Annual Report. Appendix 6A includes a list of the groundwater

elevation monitoring wells, when they were added to the RMS network, and the reason they were removed from the network, if applicable.

GSP Regulations require a seasonal low and high groundwater elevation measurement for each RMS well annually. The seasonal low is represented by August groundwater elevations and the seasonal high is represented by fall groundwater elevations that occur from November to December. The SVBGSA adopted this approach from MCWRA, which recognizes the fall groundwater levels as the stable groundwater conditions after wells have recovered from seasonal pumping lows. To get biannual groundwater elevation measurements for all RMS wells, SVBGSA worked with MCWRA to add all RMS wells to both the August and Fall measurements. MCWRA collects monthly measurements in a subset of wells, which provides for seasonal analysis and context for understanding the biannual measurements.

Table 5-1. Total Groundwater Elevation Representative Monitoring Sites per Aquifer

Aquifer	2020 GSP	GSP Amendment 1	Recommended for Future GSP Amendment	Wells Removed from the RMS Network
180-Foot Aquifer	12	35	35	4
400-Foot Aquifer	10	45	43	7
Deep Aquifers	1	11	21	2
TOTAL	**23**	**91**	**99**	**13**

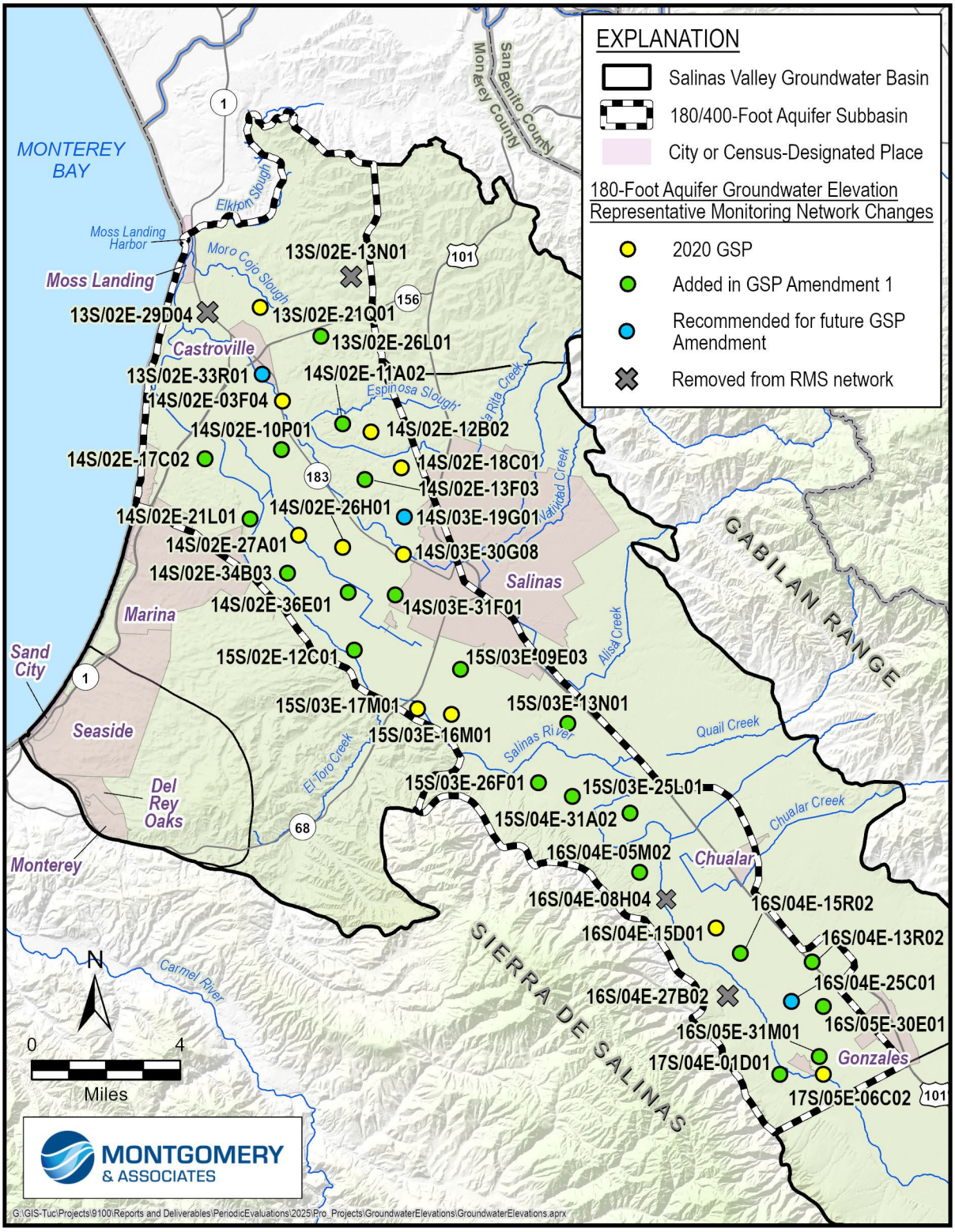

Figure 5-1. 180-Foot Aquifer Groundwater Elevation Representative Monitoring Network Changes

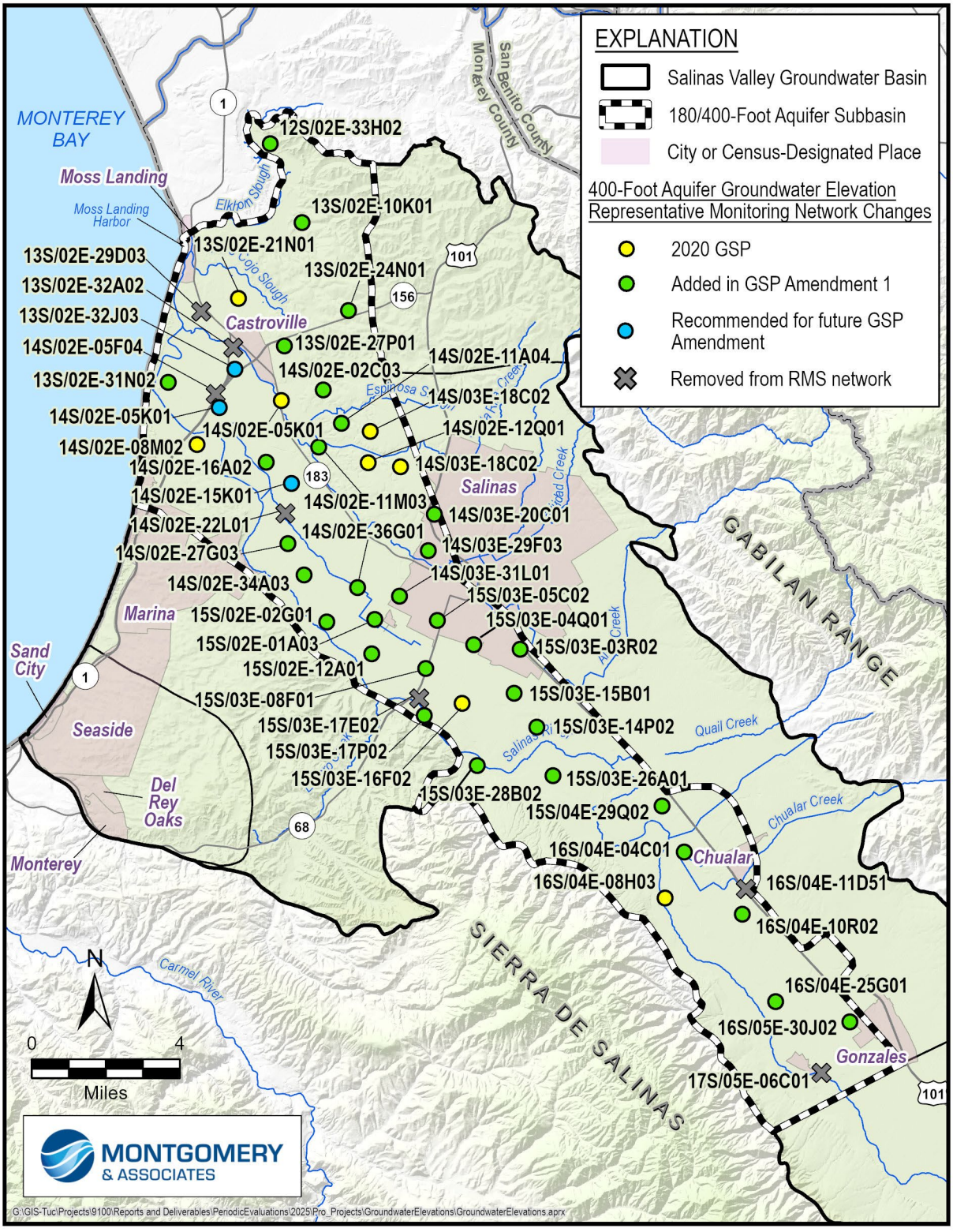

Figure 5-2. 400-Foot Aquifer Groundwater Elevation Representative Monitoring Network Changes

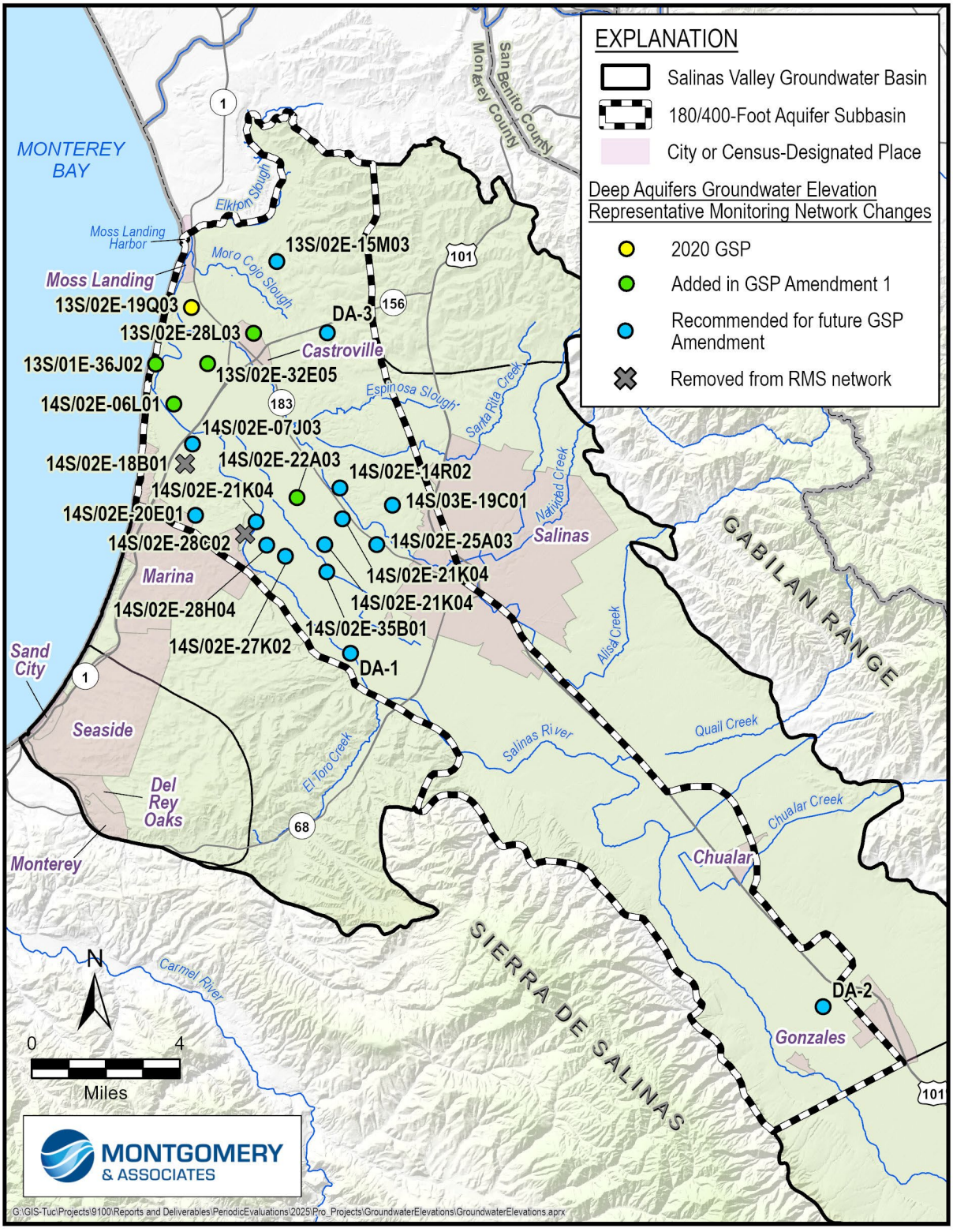

Figure 5-3. Deep Aquifers Groundwater Elevation Representative Monitoring Network Changes

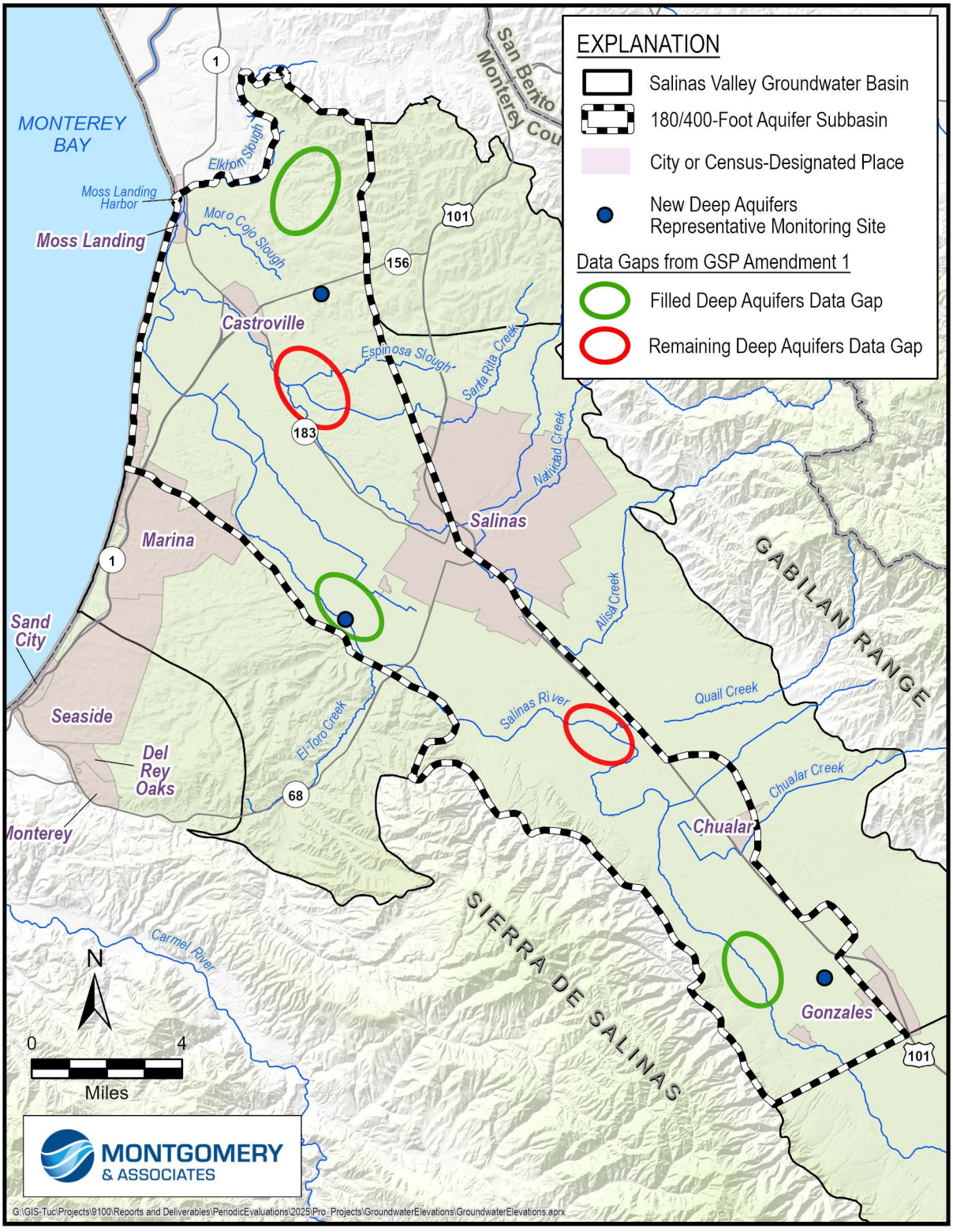

Figure 5-4. GSP Amendment 1 Groundwater Elevation Monitoring Data Gaps

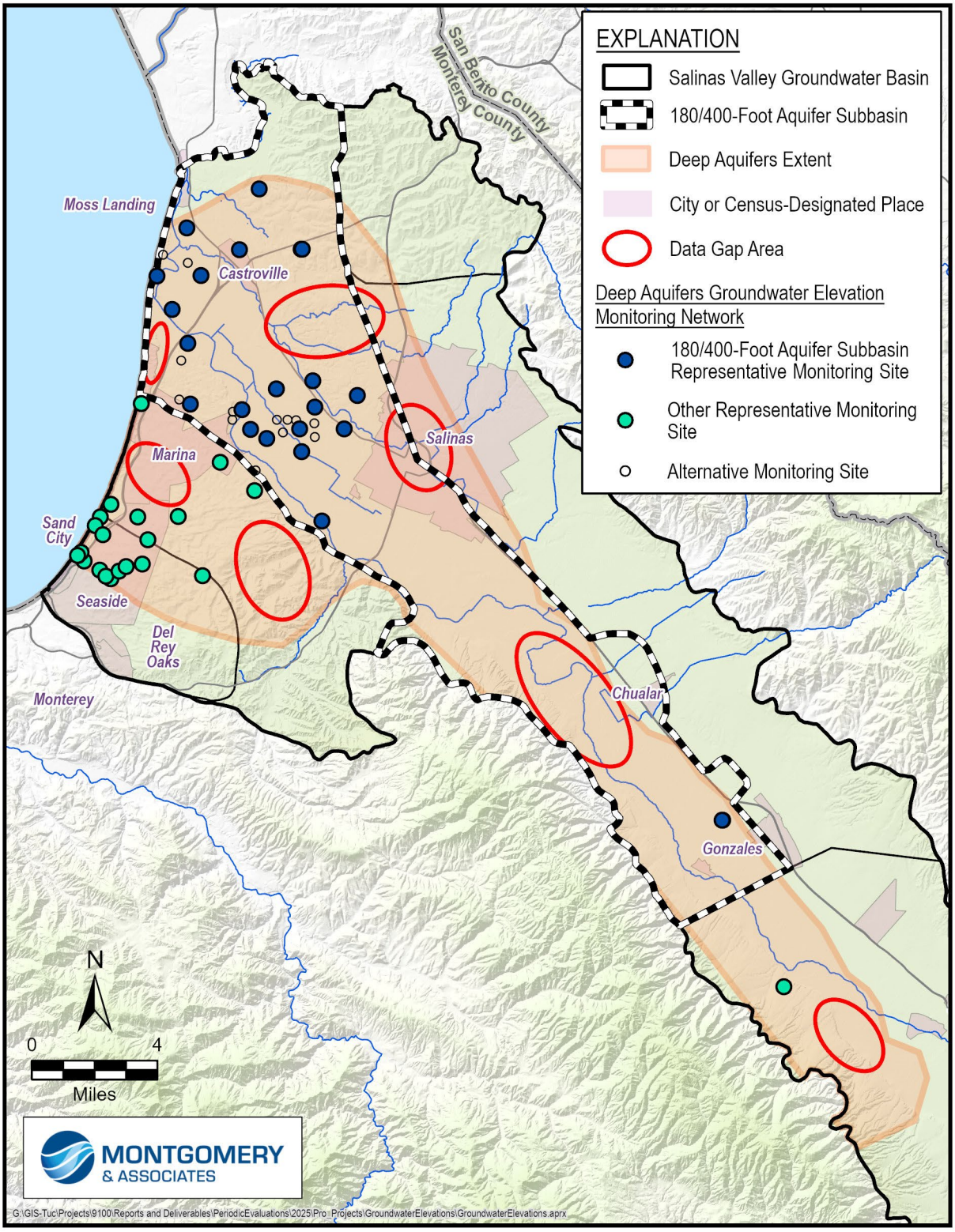

Figure 5-5. Deep Aquifers Study Groundwater Elevation Monitoring Data Gaps

5.2 Seawater Intrusion Monitoring Network Changes

The seawater intrusion SMC is evaluated using data collected and prepared by MCWRA. MCWRA monitors seawater intrusion by measuring the chloride concentration in a network of monitoring wells and mapping the 500 mg/L chloride isocontour that defines the seawater intrusion front. In the 2020 GSP, only a subset of the wells in MCWRA's monitoring network were included as RMS wells for the Subbasin. However, in GSP Amendment 1 SVBGSA adopted all wells in MCWRA's monitoring network in the Subbasin into the RMS network. MCWRA and MCWD GSA also have wells outside of the 180/400 Subbasin that they use to monitor seawater intrusion.

For a future GSP amendment, it is recommended that the wells are transitioned from the SGMA Representative monitoring network to the SGMA monitoring network because the seawater intrusion SMC is not based on chloride concentrations in specific wells. The wells recommended for a future GSP amendment are mainly the same as those included in GSP Amendment 1, except for wells that have been destroyed and 2 wells that were removed from the network because they are not completed in any of the principal aquifers. In 2024, MCWRA added 2 new wells to their monitoring network—1 in the 180-Foot Aquifer and another in the 400-Foot Aquifer. These wells are also recommended as additions to the seawater intrusion monitoring network in future GSP amendment.

Table 5-2 lists the number of wells in each principal aquifer that were included in the GSP, GSP Amendment 1, those recommended for future GSP Amendments, and those that have been removed from the network. The monitoring network includes 3 wells that are completed in both the 180-Foot and 400-Foot Aquifers and 3 other wells that are completed in both the 400-Foot and Deep Aquifers. Appendix 6A includes a list of the seawater intrusion monitoring wells, when they were added to the network, and the reason they were removed from the network, if applicable.

MCWRA's monitoring network provides sufficient coverage to assess the advancement of seawater intrusion in each principal aquifer in the Subbasin. Therefore, no data gaps exist in the seawater intrusion monitoring network.

Table 5-2. Total Seawater Intrusion Monitoring Sites per Aquifer

Aquifer	GSP	GSP Amendment 1	Recommended for Future GSP Amendment	Wells Removed from the Network
180-Foot Aquifer	17	32	33	1
400-Foot Aquifer	31	64	61	13
Deep Aquifers	0	34	30	4
In multiple principal aquifers	0	6	6	0
Not in a principal aquifer	0	2	0	2

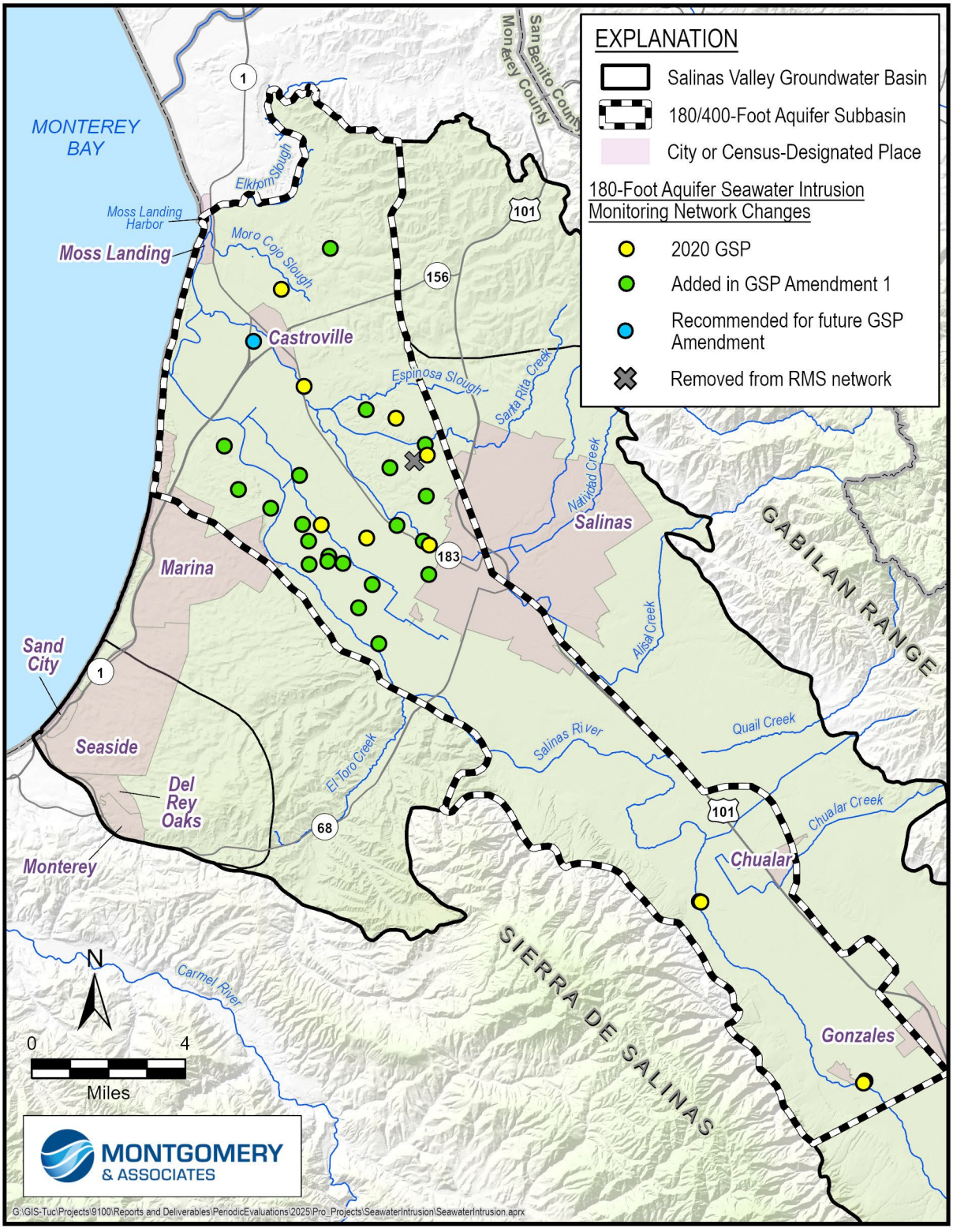

Figure 5-6. 180-Foot Aquifer Seawater Intrusion Monitoring Network Changes

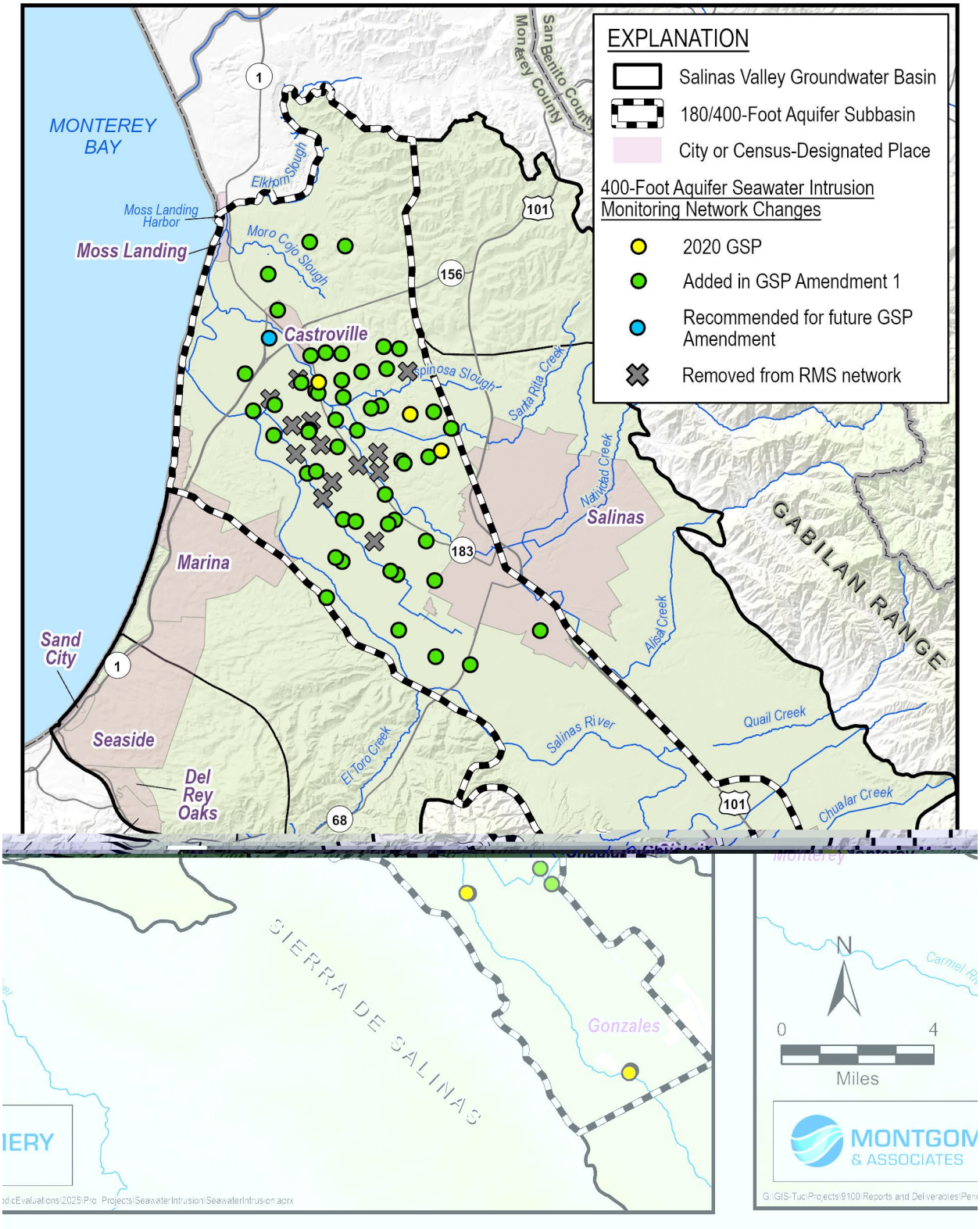

Figure 5-7. 400-Foot Aquifer Seawater Intrusion Monitoring Network

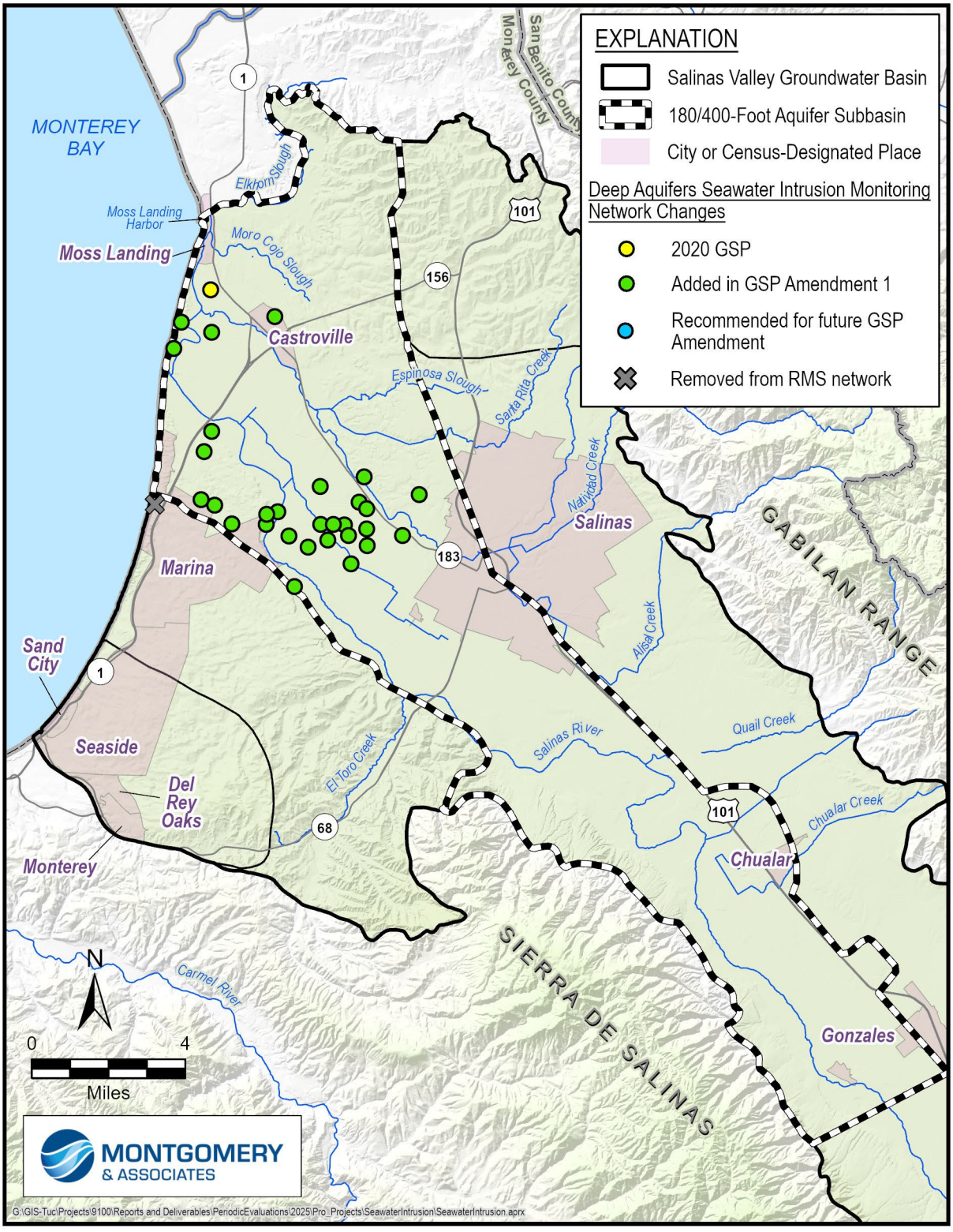

Figure 5-8. Deep Aquifers Seawater Intrusion Monitoring Network

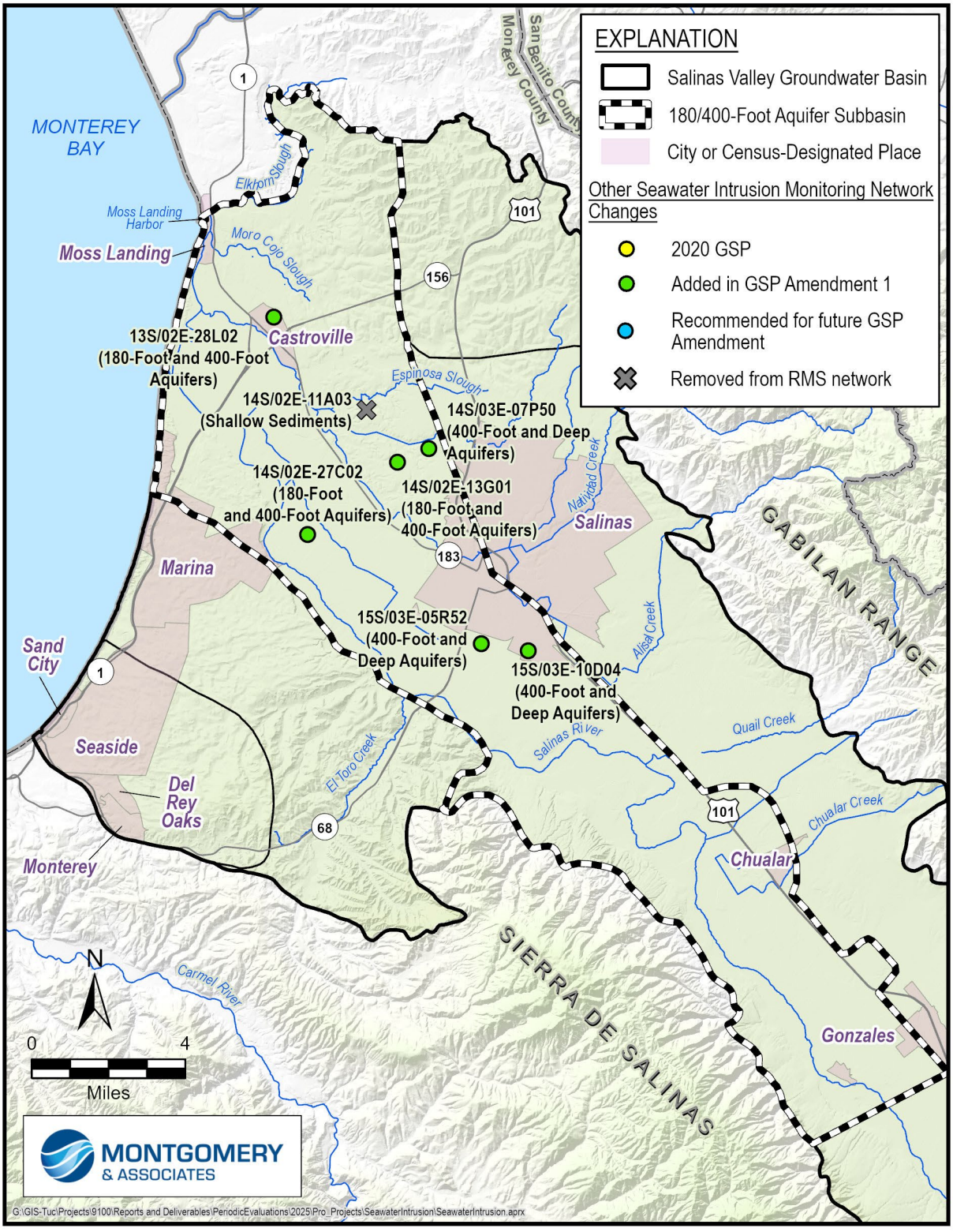

Figure 5-9. Other Seawater Intrusion Monitoring Network

5.3 Groundwater Storage Monitoring Network Changes

In GSP Amendment 1, the metric used to measure the reduction of groundwater in storage SMC was changed from annual pumping to proxy measurements of groundwater levels and seawater intrusion, as described in Section 2.4.1. Therefore, the groundwater storage monitoring network is the same as the groundwater levels monitoring network and seawater intrusion monitoring network. Accordingly, the data gaps in the groundwater level monitoring network also applies to the groundwater storage monitoring network. There are no data gaps in the seawater intrusion monitoring network.

5.4 Groundwater Quality Monitoring Network Changes

The degraded water quality SMC is evaluated by monitoring groundwater quality in water supply wells. Groundwater quality in public water supply wells is assessed using data collected by the SWRCB DDW. Data collected through the CCRWQCB's ILRP is used to assess groundwater quality in on-farm domestic and irrigation wells. Both datasets are available through the GAMA groundwater information system. However, the CCRWQCB and Central Coast Water Quality Preservation, Inc. have noted the ILRP data available through the GAMA groundwater information system is incomplete and will be supplemented with data provided directly by the CCRWQCB in future GSP amendment and annual reports.

The groundwater quality monitoring network presented in the 2020 GSP consisted of DDW and ILRP wells. Generally, this network remained the same in GSP Amendment 1 except for a small number of wells that were destroyed or completed after the 2020 GSP. The same monitoring network of active DDW wells is recommended for a future GSP amendment. The supplementary ILRP data provided by the CCRWQCB included wells that were not included in the ILRP monitoring network on the GAMA groundwater information system. The new wells included in CCRWQCB's ILRP dataset are recommended as additions to the groundwater quality monitoring network in a future GSP amendment.

A key challenge with respect to analyzing groundwater quality and its relation to groundwater management is that wells in the ILRP network often do not have well construction information that denotes the depth or screen interval of the well. Lack of screen interval information inhibits the ability to relate water quality data to groundwater levels or extraction. Additionally, there are likely duplicates among ILRP wells. That, as well as the irregular sampling frequency, means the number of wells in the monitoring network sampled every year varies.

As part of the well registration effort described in Section 1.2.3, MCWRA completed a desktop analysis to identify the location and screen interval of all wells with data on record. ILRP compliance has been reported at the parcel or ranch level historically, so water quality data is associated with any well on that property and not specifically tied to an individual well. Well

identifiers used for ILRP monitoring differ from MCWRA well numbers, and in many cases an MCWRA well seems to match to multiple ILRP well identifiers. ILRP well names are not necessarily consistent, and have often changed with operator changes, making the matching of water quality data to well construction information, as well as the development of a historical record, extremely difficult and uncertain. In addition to duplicates of wells, the well type was also noted as an unreliable descriptor, as many are denoted as dual-purpose agriculture and domestic, but are not actually used for both purposes. MCWRA, Preservation, Inc., and SVBGSA continue to work together to reconcile datasets. This work is a precursor to better understanding the relationship between groundwater quality, groundwater levels, and extraction both historically and during the evaluation period.

The DDW and ILRP monitoring networks provide sufficient spatial and temporal coverage to determine groundwater quality trends for the COCs and to assess impacts to beneficial uses and users. Work is underway to enable assessment of water quality by aquifer. Therefore, data gaps do not exist in the groundwater quality monitoring network.

5.5 Land Subsidence Monitoring Network Changes

SVBGSA adopts the land subsidence monitoring protocols used by DWR for InSAR measurements and interpretation. There are no data gaps associated with this monitoring network.

5.6 ISW Monitoring Network Changes

The metric used to evaluate ISW in the 2020 GSP was based on streamflow depletion modeled with the SVIHM, as noted in Section 2.7.1. In GSP Amendment 1, the metric was changed to align with the 2022 Salinas Valley GSPs where depletion of ISW is measured by proxy through shallow groundwater elevations. Depletion of ISW is only measured in areas where the Salinas Valley Aquitard is not present because the shallow sediments that exist above the Salinas Valley Aquitard are not considered a principal aquifer.

SVBGSA focused on wells near exiting streamflow gages to provide insight on the relationship between streamflow and groundwater elevations. The shallow groundwater monitoring network presented in GSP Amendment 1 comprised 2 existing wells monitored by MCWRA. After further assessment it was determined that 1 of these wells (16S/04E-08H02) is located within the extent of the Salinas Valley Aquitard. Therefore, it is recommended that well 16S/04E-08H02 is removed from the monitoring network.

GSP Amendment 1 identified 2 potential data gaps in the shallow groundwater elevation monitoring network near existing streamflow gages. The SVBGSA filled 1 of these data gaps by installing a new monitoring well using SGM Round 1 Grant funding. The remaining data gap is no longer considered a data gap because the Salinas Valley Aquitard is likely present at the

planned location based on lithologic logs from wells completed nearby. No other data gaps exist in the shallow groundwater elevation monitoring network.

The changes made to the shallow groundwater elevation RMS network used to monitor ISW are summarized on Figure 5-10. Appendix 6A includes a list of the shallow groundwater elevation wells in the ISW monitoring network, when they were added to the RMS network, and the reason they were removed from the network, if applicable.

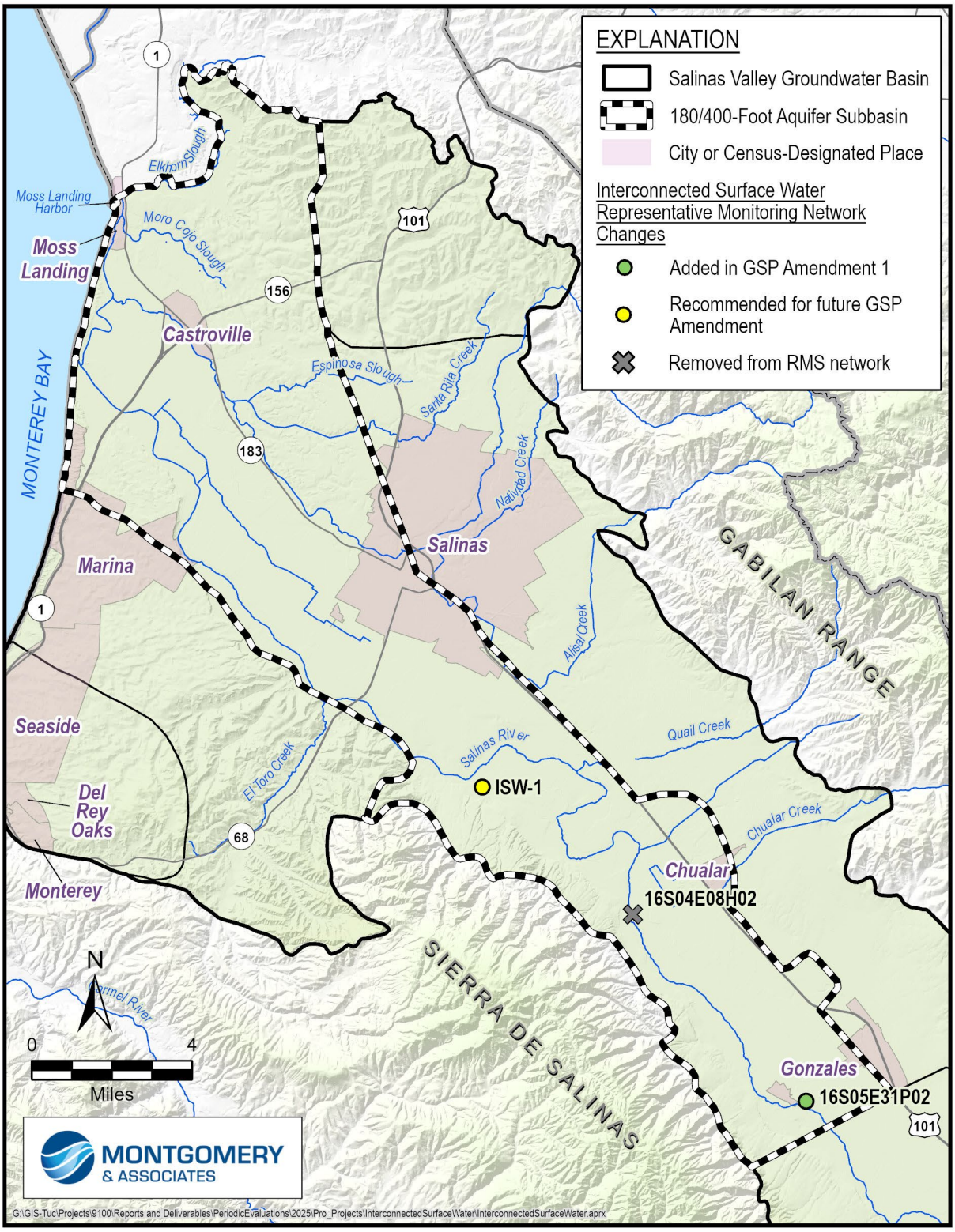

Figure 5-10. Interconnected Surface Water Representative Monitoring Network Changes

5.7 Other Monitoring Program Changes

In addition to the SMC monitoring networks, the monitoring programs for groundwater extraction and surface water use are important for groundwater management and SGMA reporting.

5.7.1 Groundwater Extraction

MCWRA's GEMS program monitors urban and agricultural extraction in the Subbasin. The GEMS program has been expanded since the 2020 GSP and is now a part of MCWRA's Groundwater Monitoring Program (GMP) adopted in October 2024. SVBGSA is working closely with MCWRA to improve collection and storage of regional groundwater data.

Previously, monthly groundwater extraction was reported for wells with an internal discharge pipe diameter greater than 3 inches within MCWRA Zones 2, 2A, and 2B. Extraction was reported annually to MCWRA; however, it was not available in time to be incorporated into the GSP annual reports. Nearly 500 well operators submit groundwater extraction information to MCWRA through GEMS, a program established in 1993, but data gaps exist, specifically on the northern coastal side of the 180/400 Subbasin.

The updated GEMS program requires all wells in the Salinas Valley to be registered with the MCWRA. Those wells extracting more than 2 AF/yr (i.e. non-*de minimis*) will also need to report extraction data to MCWRA through GEMS. Groundwater extraction data can be tracked with the well operator's choice of an approved method. Approved methods currently include water flowmeter, electrical meter, or hour meter (timer). Data must be recorded by the well operator monthly for each water year, from October 1 to September 30, and reported to MCWRA by November 1 of each year.

Making groundwater extraction data available for the annual reports is one improvement to the GEMS program being addressed with this effort and the changes will begin to be reflected in the Water Year 2025 Annual Report. Outreach, registration, and GEMS reporting for all non-*de minimis* users will occur over the next 3 years.

5.7.2 Surface Water

Salinas River watershed monthly diversion data are collected annually through the SWRCB's eWRIMS, with which SVBGSA tracks diversions from the Salinas River. Only diversions reported as Statement of Diversion and Use are used to supplement CSIP surface water use data from Monterey One Water. In WY 2022, the eWRIMS reporting period was changed to align with the water year instead of the calendar year. This was the only data gap identified for this dataset.

5.8 SGMA Monitoring Network Module

The SGMA Monitoring Well Network Module (MNM) has been updated with the changes and recommendations documented in this section of the GSP 2025 Evaluation. All new monitoring wells recommended for future GSP Amendment will be added to the MNM with their unique identification, reference surfaces, geography, well use, and construction during the preparation. Since only DWR can remove wells from the MNM, DWR has been notified of wells to be removed. The MNM has also been updated with SMC associated with new RMS wells for the groundwater elevation and ISW monitoring networks.