

EXECUTIVE SUMMARY

Section 1

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) adopted amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin (Basin Plans) to incorporate a Salt and Nitrate Control Program. The Nitrate Control Program is designed to achieve the following three management goals in the Central Valley Region:

- Goal 1 – Ensure a safe drinking water supply;
- Goal 2 – Reduce salt and nitrate loading so that ongoing discharges neither threaten to degrade high quality waters absent appropriate findings by the Central Valley Board nor cause or contribute to exceedances of water quality objectives; and,
- Goal 3 – Implement long-term, managed restoration of impaired water bodies.

Permitted dischargers may choose to comply with the Nitrate Control Program through the establishment of a nitrate Management Zone, which allows dischargers to work collectively together to meet these three management goals. The Central Valley Water Board sent the Notice to Comply (NTC) with the Nitrate Control Program to dischargers in the Kings Groundwater Subbasin on May 29, 2020. Most recipients of the NTC began working immediately to establish the Kings Management Zone (Figure ES-1). A Preliminary Management Zone Proposal (PMZP) with Early Action Plan (EAP) to provide safe drinking water to residents with wells contaminated by nitrate was submitted in March 2021 and implementation of the EAP began in May 2021. The Final Management Zone Proposal (FMZP), submitted in August 2022, was accepted by the Central Valley Water Board in February 2023. Along with its acceptance of the FMZP, the Central Valley Water Board required submittal of this Management Zone Implementation Plan (MZIP) by September 5, 2023.

The Kings Water Alliance (KWA) governs the implementation of the Nitrate Control Program in the Kings Management Zone. Established November 17, 2020, the KWA is a non-profit, public benefit California corporation. The KWA is under the direction of a Board of Directors. Participants in the Kings Management Zone include representatives from multiple Sectors of permitted dischargers, including irrigated agriculture growers, milk cow dairies, confined bovine feeding operations, poultry operations, and Non-Chapter 15 Program facilities. Through an executed Management Zone Participation Agreement, these dischargers have committed to work collectively in the Management Zone to meet the requirements of the Nitrate Control Program.

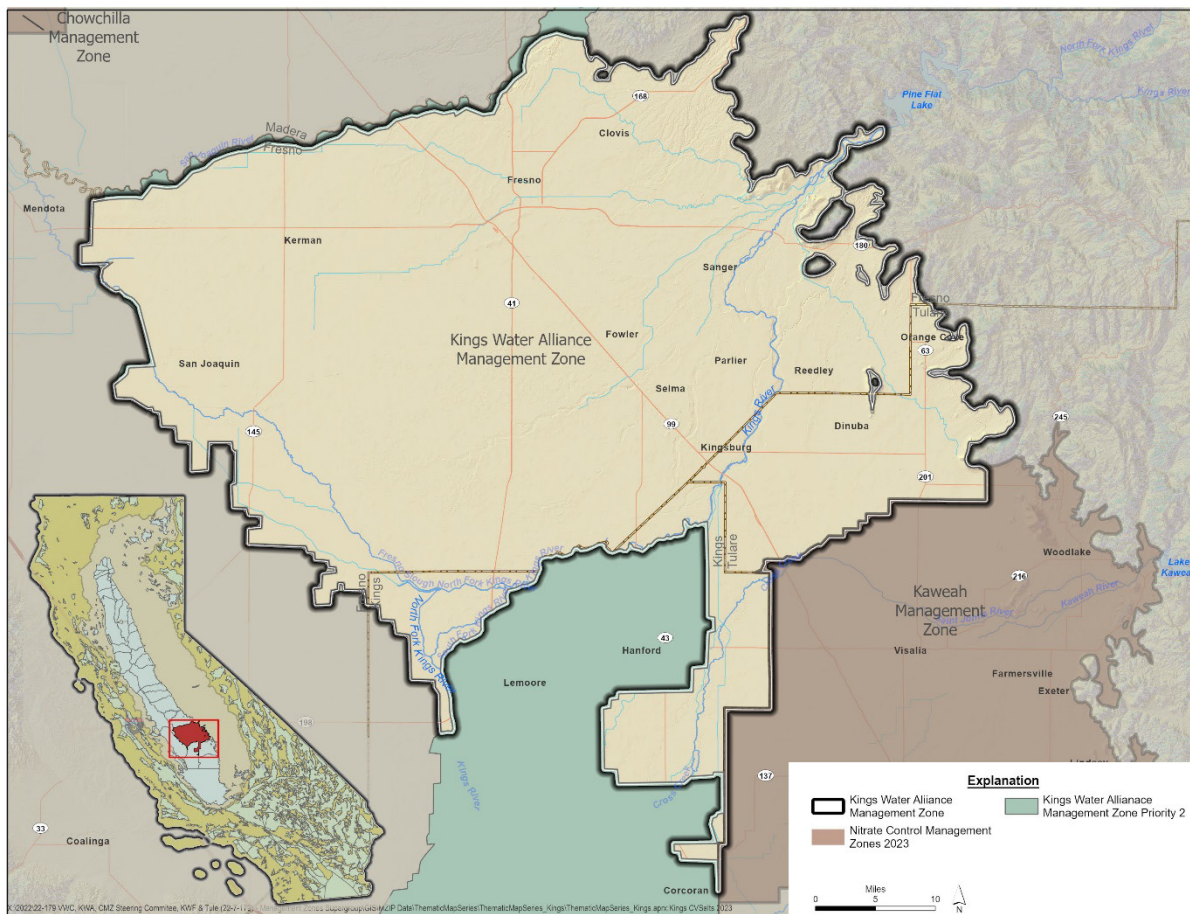


Figure ES-1. Kings Management Zone

The final goal of the Nitrate Control Program is for permitted dischargers participating in the Management Zone to cease causing or contributing to exceedances of the nitrate water quality objective in the underlying groundwater. Per the Basin Plans, a Management Zone may request Exceptions to meeting the nitrate water quality objective on behalf of all participating permitted dischargers. Under a Nitrate Control Program-approved Exception, all discharges of nitrate must cease causing or contributing to exceedances of water quality objectives in the underlying groundwater within a term that is as short as practicable for each discharger or category of dischargers participating in the Management Zone but in no case is longer than 35 years. The Nitrate Control Program requires submittal of an Alternative Compliance Project as part of a request for Exceptions to the nitrate water quality objective. For permitted dischargers participating in this Management Zone, this MZIP serves as the Alternative Compliance Project to support the request for an Exception.

Section 2

Several analyses were performed to help characterize nitrate conditions in groundwater in the Management Zone. The Nitrate Control Program requires an understanding of nitrate contamination in

the groundwater and how nitrate levels have impacted or can potentially impact drinking water supplies. This MZIP section characterizes nitrate conditions through an analysis of ambient nitrate concentrations for different aquifer depth zones, utilizing established groundwater horizons developed by the Central Valley Salinity Coalition. Trend analyses of nitrate concentrations were also performed to better characterize and understand how nitrate levels have changed historically and recently. The MZIP relies on publicly available groundwater nitrate data, including well test results from the Management Zone domestic well testing program and the Irrigated Lands Regulatory Program.

Groundwater elevations and movement are discussed to inform consideration of areas outside the Management Zone that may be impacted by nitrogen discharges within the Management Zone. An analysis of groundwater gradients and flow directions is coupled with ambient nitrate concentration levels to identify potential areas where the Management Zone may be contributing to elevated nitrate levels outside the Management Zone.

This MZIP also describes public water systems, including systems that are out of compliance with the State's Division of Drinking Water due to nitrate exceedances in their water source. An analysis of public water supply well capture zones occurred to assess the potential risk to a particular public water system due to the system's proximity to current or future nitrate exceedances. The identification of disadvantaged and severely disadvantaged communities is included in the analysis of public water systems.

Ambient nitrate concentration mapping in the Upper Zone (the portion of the groundwater aquifer where most domestic wells produce water from) is used to estimate the number of potentially impacted domestic wells and the population of residents within the Management Zone affected by nitrate conditions.

Section 3

The Nitrate Control Program required the establishment of an EAP for proposed Management Zones, defined as a plan that identifies community outreach activities and an implementation schedule that will ensure access to safe drinking water for those dependent on groundwater wells exceeding the nitrate drinking water standard of 10 milligrams per liter nitrate as nitrogen (mg/L-N). Since May 8, 2021, the Kings Management Zone's EAP has been providing local residents with well tests for nitrate and replacement water where needed.

Under this MZIP, the Kings Management Zone will continue to implement the EAP as its Emergency & Interim Drinking Water Program. This Program provides an immediate solution for those currently experiencing unsafe levels of nitrate in their drinking water source. Any eligible residence located in the Kings Management Zone may request to have its domestic well tested for nitrate. The KWA will send a representative to test the well at no cost to the resident. Results from the well test, which may also include analysis for other contaminants, determines the next steps. For example, if nitrate levels are unsafe the KWA will work with the resident to provide a safe source of drinking water, typically through home delivery of bottled water. The Emergency & Interim Drinking Water Program will continue without interruption while the Management Zone implements its Long-term Drinking Water Program (as described in this MZIP) that will establish permanent solutions to provide safe drinking water to residents in the Management Zone. Further, as part of this program, the Kings Management Zone through the KWA,

is in the process of applying for funding from the State Water Resources Control Board's Safe and Affordable Funding for Equity and Resilience (SAFER) to test wells for other contaminants besides nitrate. Where other contaminants are located, the Kings Management Zone will continue to use its available SAFER funds to provide residents with a safe source of drinking water.

Section 4

One of the most important duties of the Management Zone is to help facilitate long-term drinking water solutions for residents impacted by nitrate in their groundwater supply. Areas within the Management Zone boundary with the most urgent need for long-term drinking water solutions were identified using a science-based approach together with local knowledge of the communities and areas within the Management Zone. Key criteria, including disadvantaged and severely disadvantaged community (DAC/SDAC) status and the density of domestic wells and population of residents in areas of elevated nitrate levels (above 7.5 mg/L as N), were used to establish Initial Focus Areas.

Each Initial Focus Area is described, including any local knowledge, the density of domestic wells and population, and DAC/SDAC status based on household income. Public water systems within a distance of three miles of each Initial Focus Area were evaluated. The MZIP includes information about the system type, compliance status, Safe and Affordable Funding for Equity and Resilience (SAFER) status (e.g., Failing, At-Risk, Not At-Risk, Not Assessed), and any available information about nitrate exceedances or other violations reported by the State's Division of Drinking Water. The number of domestic wells and population of residents within a buffer area of one- and three-miles from community public water systems is included to consider potential options to address nitrate-impaired drinking water associated with individual domestic wells within the Initial Focus Area.

The Management Zone recognizes the importance and essential nature of meaningful public outreach and engagement to address the needs of the communities impacted by elevated nitrate. Therefore, the Management Zone plans to conduct outreach activities to solicit input from residents within the Initial Focus Areas throughout the process of identifying and facilitating long-term drinking water solutions. Public outreach activities will be performed to obtain local input on potential solution projects. The milestones and schedule associated with drinking water solutions is also provided in this section of the MZIP.

As a companion to this section of the MZIP, the Management Zone also provides an Interim and Long-Term Drinking Water Solutions Workplan (Appendix LT-2), which contains information about the roles and responsibilities of the Management Zone in identifying and facilitating long-term drinking water solutions to assist nitrate-impacted residents. Information about potential drinking water solutions and implementation challenges is also provided for: (a) traditional solutions; (b) watershed/indirect solutions; and (c) non-traditional solutions. The appendix also describes the framework for next steps to take regarding Initial Focus Areas, milestones, and the schedule for addressing long-term drinking water solutions in the Initial Focus Areas (and other areas), outreach and coordination activities, potential funding options, and steps for implementing long-term drinking water solution projects.

Section 5

The Nitrate Control Program requires that the MZIP include a Nitrate Reduction Program that establishes a plan to reduce nitrate loading so that ongoing permitted discharges do not cause or contribute to

exceedances of water quality objectives within the Management Zone. This MZIP includes Sector-specific Nitrate Reduction Programs for the following permitted dischargers: irrigated agriculture growers, dairy and bovine facilities, poultry facilities, and Non-15 Program facilities. In addition, this MZIP also considers other sources of nitrogen, including septic systems, turfgrass, and leaky sewer systems in urban areas. In addition to the preparation of Sector-specific Nitrate Reduction Programs, this MZIP also includes a preliminary estimate of current nitrogen loading by each of the key Sectors and development of a compliance assessment approach to track progress by the Management Zone to meet nitrate reduction goals.

The MZIP provides a preliminary estimate of nitrogen loading currently occurring in the Management Zone by each of the key Sectors. These estimates, which are based on the best information available at this time, report nitrogen loading rates in pounds/acre/year (lbs/ac/yr) on a Management Zone township basis for irrigated agriculture, Management Zone basis for dairy and bovine facilities, and on an individual facility basis for Non-15 Program and some poultry facilities. The MZIP also includes estimated nitrogen loading rates for septic systems and urban sources of nitrogen based on mapped data for non-urban (unsewered) and urban areas.

The main MZIP document presents summaries of the Nitrate Reduction Programs to be implemented by each Sector in the Priority 1 Management Zones. The complete, detailed Programs are provided in the MZIP's appendices. To be consistent with the Nitrate Control Program regulations, each of the Nitrate Reduction Programs is structured using the following terminology: (a) milestones, which are the long-term goals to demonstrate progress in meeting nitrate reduction goals specific to the sector; (b) interim milestones, which are the specific nitrate management activities to be implemented to facilitate compliance with the nitrate reduction goals or milestones; and (c) interim deadlines, which is the schedule for implementation of interim milestones, generally presented in 10-year phases of two five-year periods.

The MZIP, which is the Alternative Compliance Project for the Management Zone, requests sector-specific Exceptions from the nitrate water quality objective. The specified milestone completion dates represent the number of years from the MZIP effective date, which may be the date that MZIP requirements are (a) approved by the Central Valley Water Board; (b) incorporated into a General Order or WDR; or (c) required to be implemented through a Central Valley Water Board Order, whichever comes first. Finally, and as detailed in the complete Nitrate Reduction Plans, the MZIP summarizes the Interim Milestones (i.e., nitrate reduction activities) to be implemented by permitted dischargers within each sector, primarily during the first 10 years of MZIP implementation. More detailed descriptions of these interim milestones and the schedule to complete them are provide in the sector-specific Nitrate Reduction Programs in the MZIP appendices.

The Nitrate Reduction Programs are designed to demonstrate how the Management Zone plans to reduce nitrate loading to groundwater so that ongoing discharges from permitted discharges do not cause or contribute to exceedances of the nitrate water quality objective within the Management Zone. To evaluate progress over time, the Management Zone will implement a compliance assessment approach that relies on the use of Groundwater Protection Targets (GWPTs) at a township level scale (36 square miles). Use of townships as the scale to evaluate compliance with the Nitrate Control Program, which builds on the Irrigated Lands Regulatory Program's (ILRPs) existing compliance assessment approach and is consistent with the purpose and intent of a Management Zone to provide a means for dischargers to work collectively to manage nitrate. Accordingly, the MZIP includes a process to establish Management

Zone-based Groundwater Protection Values (GWPVs) and GWPTs and use them to inform permitted dischargers of what is required to comply with Nitrate Control Program goals as a sector or as an individually permitted facility. This process includes its own interim milestones to be completed in a timely manner to support MZIP implementation.

Section 6

The Nitrate Control Program requires the MZIP to, “include a plan for establishing a managed aquifer restoration program to restore nitrate levels to concentrations at or below the water quality objectives to the extent it is reasonable, feasible and practicable to do so.” Given the Management Zone’s interest in maintaining or improving groundwater quality through various restoration approaches and the interest of Groundwater Sustainability Agencies to address similar objectives pursuant to the Sustainable Groundwater Management Act (SGMA) through Groundwater Sustainability Plan implementation, the opportunity exists to coordinate activities that may support efforts to meet the restoration goal of the Nitrate Control Program. Projects or management actions that maintain or improve groundwater quality may include (but are not limited to):

- 1) Controlling nitrogen sources to reduce the amount of nitrogen discharged to the land surface that may potentially affect groundwater quality.
- 2) Augmenting sources of water distributed across or injected into the groundwater system to recharge the system with high quality (low nitrate) source water, and
- 3) Extracting existing groundwater (including nitrate-impaired groundwater) for beneficial uses (e.g., for nonpotable uses such as pump and fertilize) thereby reducing the nitrate mass in the groundwater system and ultimately improving groundwater quality.

Collaboration between the Management Zones, Groundwater Sustainability Agencies, and other local entities will facilitate strategies to accomplish maintaining or improving groundwater quality. As noted in the Nitrate Control Program, not all portions of the nitrate-impaired groundwater system within the Management Zone will necessarily be restored reasonably and feasibly, or at least not all areas would be restored on the same time scale. Accordingly, it is worthwhile for the Management Zone, together with Groundwater Sustainability Agencies and other entities along with outreach to stakeholders, to optimize strategies that result in the highest benefit to the public by prioritizing Management Zone (and subbasin) restoration efforts.

The MZIP preliminarily identifies current or planned groundwater-related recharge projects, which were identified during the development of Groundwater Sustainability Plans or are SGMA-related projects initiated later through Department of Water Resources funding opportunities. Additionally, two Governor’s Executive Orders for floodwater diversion created streamlined permitting processes to help expedite groundwater recharge during water year 2023.

The progress and effects of restoration activities (groundwater recharge or other projects and management actions) on improving groundwater quality will be assessed by the Management Zone by tracking projects and management actions implemented and assessed through the Management Zone’s Surveillance and Monitoring Program (see MZIP Section 7).

Section 7

The Nitrate Control Program requires that the MZIP include a Surveillance and Monitoring Program. Specifically, the MZIP must include:

“A water quality surveillance and monitoring program that is adequate to ensure that the plan when implemented is achieving the expected progress towards attainment of management goals. All or parts of the surveillance and monitoring program may be coordinated or be part of a valley-wide and/or regional groundwater monitoring, if appropriate.”

There are many different monitoring programs already being conducted within the Management Zone (and throughout the Central Valley). The Surveillance and Monitoring Program approach for the Management Zone aims to utilize existing long-term programs that may be tailored specifically to meet the needs of the MZIP.

The Central Valley Salinity Coalition, the lead entity responsible for implementing the Central Valley Region Surveillance and Monitoring Program, submitted the Central Valley Region Salt and Nitrate Control Program, Surveillance and Monitoring Program Workplan, and Quality Assurance Project Plan (QAPP) (dated February 11, 2023) to the Central Valley Water Board. On March 23, 2023, the Central Valley Water Board approved the Surveillance and Monitoring Program (SAMP) Workplan, indicating it “adequately addresses the Salt and Nitrate Control Program requirements in both of the Central Valley Water Board Basin Plans.” The approved Central Valley Region SAMP provides many components that achieve the required objectives for the MZIP SAMP. Accordingly, the MZIP presents a two-pronged approach (regional and Management Zone-specific) to meet the MZIP SAMP objectives.

1. Central Valley Region SAMP (see Appendix SAMP): The Management Zone will utilize subbasin scale information already being addressed by the Central Valley Region SAMP to track and report on groundwater quality trends and conditions at the regional scale.
2. Management Zone-Specific SAMP: The Management Zone will use a subset of the monitoring well network included in the Central Valley Region SAMP to further track and assess expected progress towards the attainment of management goals, including nitrate reduction and long-term managed aquifer restoration to maintain or improve groundwater quality conditions at the Management Zone scale. The Management Zone monitoring network includes wells that have been vetted for use in robust monitoring programs administered by the U.S. Geological Survey/State Water Board Groundwater Ambient Monitoring and Assessment Program (GAMA) and the agricultural coalitions as part of the Irrigated Lands Regulatory Program (ILRP) Groundwater Quality Trend Monitoring (GQTM) Program (i.e., wells with known well construction information) and also have some prior monitoring history, which will facilitate assessment of local groundwater quality trends.

Since the GAMA and GQTM monitoring programs are still quite young and may not immediately provide sufficient time-series records to be used alone during the first five years of Management Zone implementation. Accordingly, the Management Zone SAMP includes review and tracking of nitrate trends in State Water Board Division of Drinking Water wells that have a historical monitoring record and have exhibited increasing trends in nitrate concentrations. As additional data become available for the GAMA

and GQTM wells, these wells would be the focus for reviewing and tracking trends in the Management Zone and assessing progress in achieving overall Nitrate Control Program goals.

Future nitrate trend analyses will also incorporate and utilize data and analyses resulting from monitoring conducted for other programs, including SGMA compliance (i.e., Groundwater Sustainability Plan monitoring networks) and Nitrate Control Program Management Zone implementation.

Since the Management Zone SAMP's purpose focuses on assessing whether the Management Zone Implementation Plan, "when implemented is achieving the expected progress towards attainment of management goals," the Five-Year Exceptions Status Report cycle provides a reasonable interval for assessing changes in groundwater quality conditions in response to implementation of Sector-based Nitrate Reduction Programs. Because the first 10 years of implementation of the MZIP involve improved data collection and Sector-specific efforts to initiate activities to achieve reductions in nitrate loading, and since changes in groundwater quality are anticipated to occur slowly, SAMP reporting would occur in the Management Zone Exceptions Status Reports at five-year intervals. Additionally, following the first Central Valley Region SAMP Groundwater Assessment Report submittal and approval (submittal due date November 30, 2031), the Management Zone Five-Year/Ten-Year Exceptions Status Reports would include a summary of any additional nitrate groundwater quality findings relevant to the Management Zone area and attaining Nitrate Control Program goals.

Section 8

Although almost every section of the MZIP contains an element of outreach and engagement, Section 8 provides a summary of outreach and engagement activities in three parts: first, a summary of outreach activities performed during development of the Preliminary and Final Management Zone Proposals; second, a summary of outreach activities performed during the compressed time period (about 6 months) for the development of the MZIP; and lastly, a summary of planned outreach activities mainly associated with long-term drinking water solutions and implementation of the Nitrate Reduction Program.

Section 9

The MZIP will be implemented in ten-year phases with each ten-year phase including two five-year parts. This overall ten-year phased framework was chosen purposefully to align implementation of the Nitrate Reduction Program with the five- and ten-year reporting requirements associated with the authorization and reauthorization of Exceptions from the nitrate water quality objective. Some implementation activities begin immediately upon submittal of the MZIP (e.g., Emergency and Interim Drinking Water Program); others will begin by the beginning of 2024 (e.g., initial activities to begin work in the Initial Focus Areas and outreach to Management Zone participants regarding MZIP content). Other activities may not begin until the MZIP becomes effective through action by the Central Valley Water Board. Following is a brief description of key elements of the MZIP implementation schedule:

Emergency & Interim Drinking Water Program

The Emergency & Interim Drinking Water Program is a continuation of the implementation of the Management Zone's existing EAP, which has been providing free well tests for nitrate to residents and, where needed, replacement safe drinking water to households since May 2021. Key interim milestones in this MZIP include:

- Continuing to promote and operate multiple water fill stations in the Kings Management Zone;
- Continuing to implement the existing outreach program to keep residents informed of the opportunity to have a free well test and receive replacement water if the well is nitrate contaminated;
- Conducting well testing and working with residents to obtain replacement water where needed; and
- Submitting program reporting metrics on a regular basis.

Long-term Drinking Water Solutions Program

The Long-term Drinking Water Program includes interim milestones to be implemented within each of the Management Zone's Initial Focus Areas over a five-year period, including extensive community outreach to discuss potential long-term solutions for each area, identification of potential alternatives for further evaluation, preparation of a feasibility analysis to identify a preferred alternative solution(s) and facilitating efforts to implement the preferred alternative. By the end of the fifth year of MZIP implementation, the Management Zone will identify new areas to target for identification of long-term permanent drinking water solutions. Once identified, the Management Zone will implement the above-described interim milestones in these new areas. This iterative process will continue across the Management Zone as long as needed to identify permanent solutions to drinking water in nitrate-contaminated areas. While this process is ongoing, the Emergency & Interim Drinking Water Program will continue to be implemented.

Nitrate Reduction Program

The permitted dischargers participating in the Management Zone will implement their respective Nitrate Reduction Programs to meet the required interim milestones established to meet the long-term nitrate reduction goals for the Sector. The specific schedule for completion of these interim milestones is provided within each Nitrate Reduction Program (see MZIP appendices).

Other MZIP Programmatic Elements

In addition to the key MZIP program elements summarized above, the MZIP includes additional interim milestones to be directed by the Management Zone to address other Nitrate Control Program requirements, including:

- Facilitating implementation of the Nitrate Reduction Program for septic systems through coordination with entities responsible for implementation of the State's Onsite Wastewater Treatment Systems (OWTS) program;
- Completing the steps required to develop and implement the Management Zone's compliance assessment program;
- Conducting the Management Zone's surveillance and monitoring program; and
- Administering the Management Zone, including, but not limited to, management of the Management Zone program; oversight of overall MZIP implementation, as needed coordination with other Priority 1 Management Zones; communication with Management Zone participants regarding compliance with program requirements; and overseeing MZIP reporting requirements.

Management Zone Reporting

The Management Zone will submit reports to the Central Valley Water Board to fulfill Nitrate Control Program reporting requirements, apprise Central Valley Water Board staff on the status of MZIP implementation activities, and document progress in meeting Nitrate Control Program goals. Four types of reports will be prepared during MZIP implementation (Figure ES-2):

- Periodic Emergency & Interim Drinking Water Reports;
- Annual Progress Reports to provide a brief summary of the status of implementation of the key program elements of the MZIP (Emergency & Interim Drinking Water Report, Long-term Drinking Water Solutions Program and Nitrate Reduction Program);
- Five-year Exceptions Status Reports to provide a status report summarizing compliance with the terms and conditions of the authorized Exceptions, including status of the Long-term Drinking Water Solutions Program; and
- Ten-year Exceptions Status & Technology Assessment Report that reassesses available BMPs and treatment technologies to manage nitrate and status report summarizing compliance with the terms and conditions of the authorized Exceptions, including status of the Long-term Drinking Water Solutions Program.

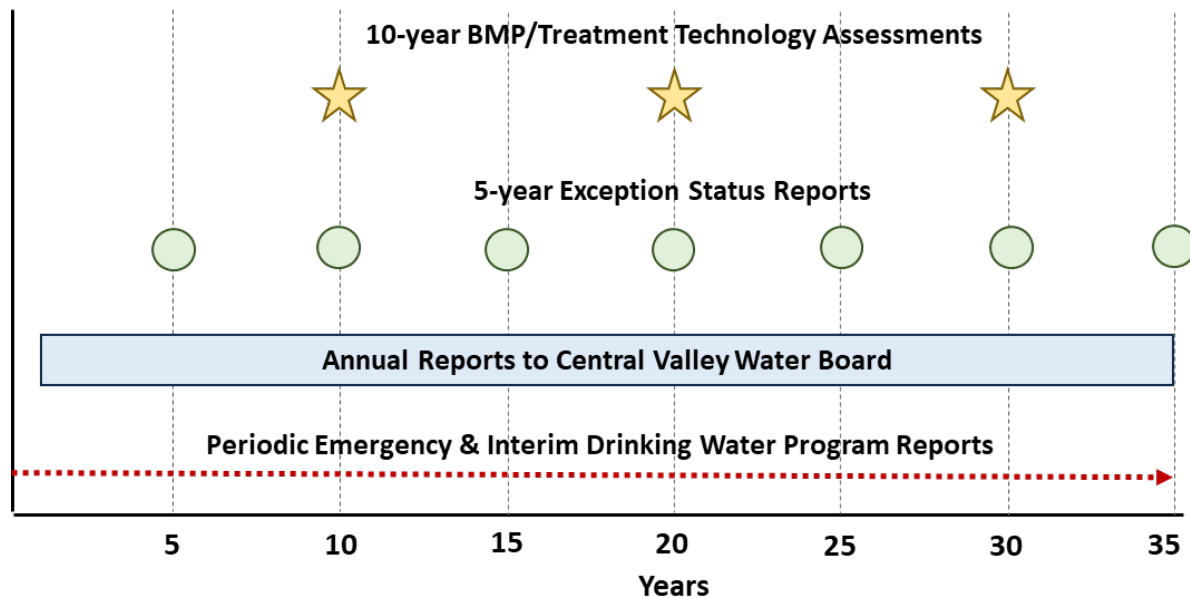


Figure ES-2. General Schedule for Submittal of MZIP Reports