



KINGS WATER ALLIANCE

MANAGEMENT ZONE

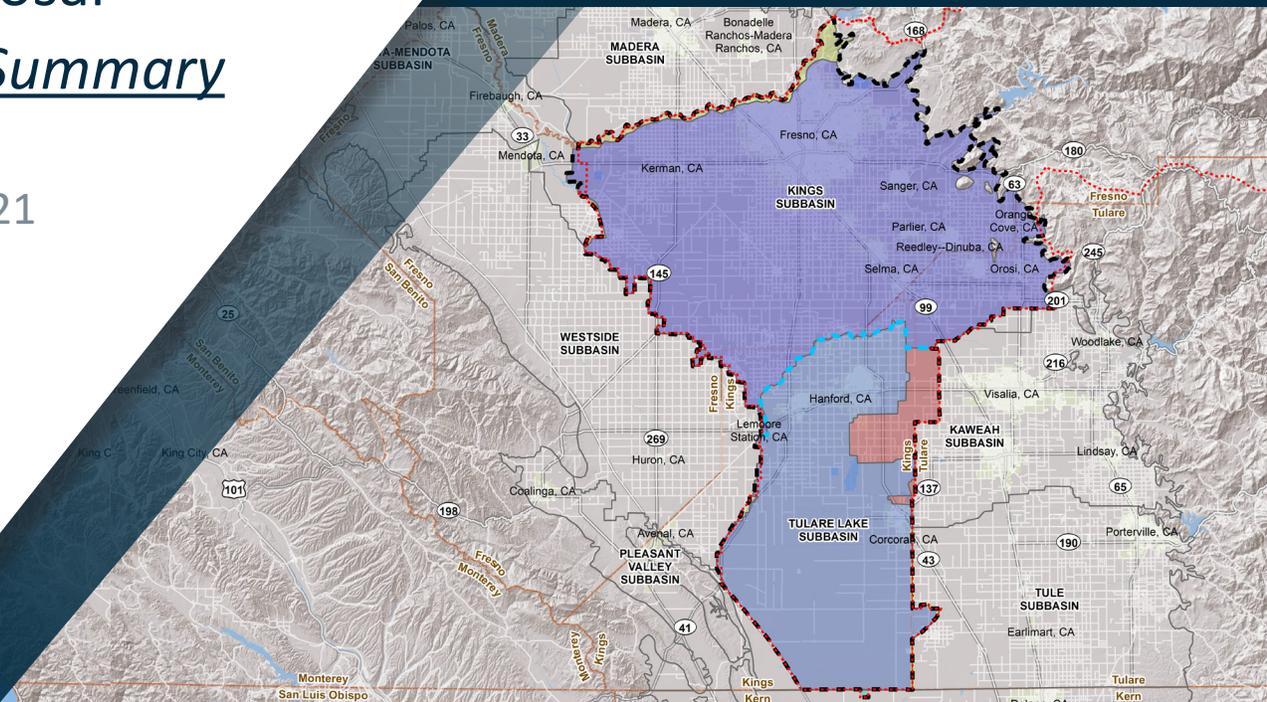
PREPARED BY:



Preliminary Management Zone Proposal

Executive Summary

MARCH 8, 2021



Executive Summary

ES 1. Preliminary Management Zone Overview

The Kings Water Alliance initiated the formation of the Kings Water Alliance Management Zone to comply with the State Water Resources Control Board Nitrate Control Program requirements. To address the growing needs of this large region of California to solve the nitrate problem in groundwater, representatives from local growers and farmers and other permitted dischargers in the Kings and Tulare Lake Subbasins formed the Kings Water Alliance. The Kings Water Alliance (KWA) elected to pursue Path B to comply with the Nitrate Control Program, which meant forming a Management Zone.

The Kings Water Alliance Management Zone includes the Kings Groundwater Subbasin, the Tulare Lake Groundwater Subbasin, and smaller areas of other neighboring groundwater subbasins (Figure ES-1). Due to differences in nitrate groundwater conditions within the subbasins of the Central Valley, the State Water Board assigned priorities based on the urgency of addressing nitrate problems in each groundwater subbasin. The Kings Subbasin and five other subbasins were deemed the highest priority, Priority 1, which means that their compliance with the Nitrate Control Program is on a fast-track compared to the Tulare Lake Subbasin (and seven other subbasins), which was deemed a Priority 2 basin.



The Kings Water Alliance Management Zone was formed to locally solve the nitrate problem in groundwater.

The overarching management goals of the Nitrate Control Program are (Central Valley Water Board, 2020):

Goal 1

Ensure a safe drinking water supply.

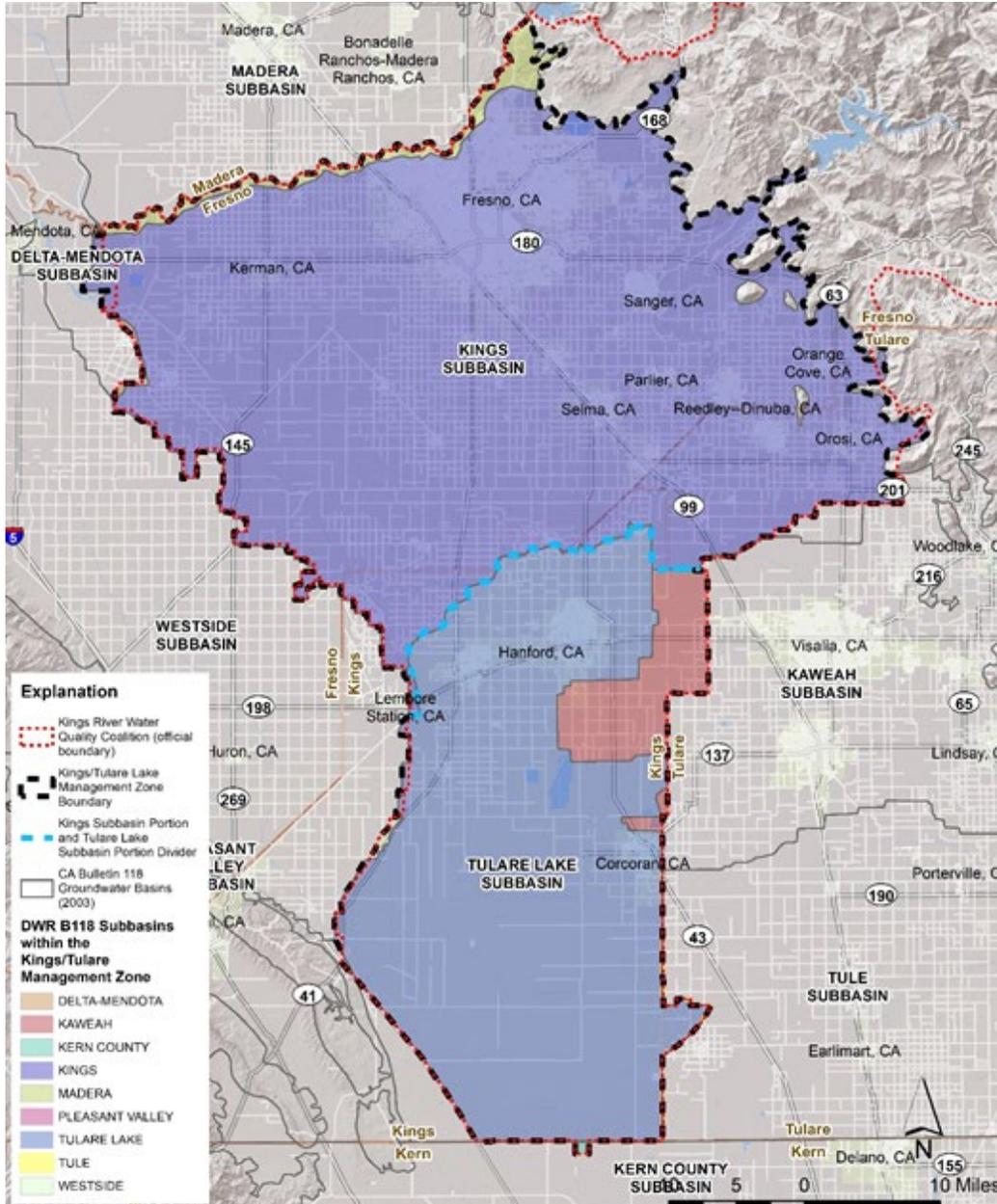
Goal 2

Reduce 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 nitrate water quality objectives.

Goal 3

Implement long-term, managed restoration of impaired water bodies.

Figure ES-1. Kings Water Alliance Management Zone



The Kings Water Alliance aims to work collaboratively with permittees to form a Management Zone to achieve these goals. This compliance path toward Nitrate Control Program compliance by forming a local Management Zone (Path B) allows an exception from the nitrate standard compared to Path A. Path A is for Individual Permitting and imposes requirements to the discharger that may be difficult and expensive (potentially including: making significant upgrades to a discharger’s facility, conducting extensive monitoring of discharge and local groundwater, providing replacement drinking water to local residents, etc.). The Path B option **encourages partnership and teamwork** within its discharging members to solve the nitrate problem within their Management Zone boundary.

The Kings Water Alliance works collaboratively with the permitted dischargers to achieve the Nitrate Control Program goals.

There are several documents that must be prepared to comply with Path B of the Nitrate Control Program. The first is the Preliminary Management Zone Proposal (this document), and a key attachment, the Early Action Plan (see Attachment D). For Priority 1 subbasins, these must be submitted to the Central Valley Regional Water Board (Central Valley Water Board or CVWB) within 270 days of dischargers receiving a Notice to Comply. These two main submittals are due on March 8, 2021 for the Kings Subbasin. Implementation of the Early Action Plan must begin within 60 days of submittal. The Final Management Zone Proposal is due 180 days after public comment and the CVWB's review of the Preliminary Management Zone Proposal. The Management Zone Implementation Plan is due 180 days after public comment and the CVWB's review of the Final Management Zone Proposal.

This document, the Preliminary Management Zone Proposal, along with one of its main attachments, the Early Action Plan, is the first step to complying with the Nitrate Control Program and starting the process of solving the nitrate problems that occur within the Management Zone boundary. One of the most important components of the development of the Preliminary Management Zone Proposal and Early Action Plan is public outreach and community engagement. California State law (AB 685) declares that "every person in the state has a right to clean, safe, and affordable drinking water." This policy is commonly referred to as the **Human Right to Water**. To promote this effort, the Kings Water Alliance Management Zone has been engaging the community through various outlets (including but not limited to: mailings, flyers, radio announcements, advertisements, emails, public webinars, public surveys) in order to empower residents within the Management Zone to become engaged and involved in the decision-making process associated with solving their local nitrate problems.



This Preliminary Management Zone Proposal document is purposely designed to address the two main subbasins (Kings and Tulare Lake Subbasins), as they have different timelines for compliance due to their different priorities. For purposes of this report, the Kings Water Alliance Management Zone is divided into two main portions: the KWA Northern Portion (Kings Subbasin area) and the KWA Southern Portion (Tulare Lake Subbasin Area). The Kings Subbasin follows the Priority 1 timeline. Section 2 of this document acts almost as a stand-alone document specifically for Kings Subbasin regulatory compliance. There have been no definitive timelines published that would indicate Priority 2 deadlines. As such, Section 3 of this document addresses the Management Zone Proposal requirements for the Tulare Lake Subbasin, pre-emptively following the guidelines set forth for Priority 1 basins. Many of the descriptions of basic features and components are similar across the two portions of the Management Zone; therefore, this document contains some repetition between Sections 2 and 3.

The contents of this Preliminary Management Zone Proposal include:

Section 1 Preliminary Management Zone Overview

This section provides an introduction and document roadmap, as well as background information about the Nitrate Control Program, more details on the Priority 1 and 2 timelines, the formation of the Kings Water Alliance Management Zone, a table cross referencing where in this document regulatory requirements are addressed, the preliminary governance, and the initial list of participants.

Section 2 KWA Northern Portion (Kings Subbasin Area) of Management Zone

This section includes:

- Description of the characterization of the Northern Portion (Kings Subbasin Area) of the Kings Water Alliance Management Zone, including: geography, jurisdictions, Groundwater Sustainability Agencies, water management entities, drinking water systems, Disadvantaged Communities and Disadvantaged Unincorporated Communities, and land use.
- The Initial Assessment of Groundwater Conditions, which is a crucial component to determining the extent of nitrate issues within the Management Zone. This involves a summary of hydrogeology, groundwater elevations and flow, delineation of the Upper Zone of the groundwater system (for which the Nitrate Control Program regulates), and most importantly the nitrate water quality. This section contains several maps illustrating these elements within the Management Zone and describes how the spatial interpretation of ambient nitrate conditions is developed. The ambient nitrate map is used to identify areas within the Management Zone that have elevated nitrate conditions as determined using scientific and analytical techniques with the most recent and complete dataset available at the time.
- This section contains a description and list of Management Zone participants, including both permitted dischargers subject to the requirements of the Nitrate Control Program, as well as non-dischargers that have agreed to work collaboratively with the permitted dischargers to support implementation of the Program.
- This section also contains descriptions of current nitrate treatment and control efforts or management practices that exist within the Management Zone. These descriptions mainly originate from dischargers themselves, whether under a General Order (such as the Irrigated Lands Regulatory Program or Concentrated Animal Feeding Operations) or an individual permit.

Section 3 KWA Southern Portion (Tulare Lake Subbasin Area) of the Management Zone

This section contains all of the same information as Section 2 but for the Tulare Lake Subbasin. There is some repetition between these two sections (Sections 2 and 3) due to similarities in content between the two subbasin areas.

Section 4 Early Action Plan Development

This section provides an overview of the Early Action Plan (which is an attachment to this Preliminary Management Zone Proposal).

Section 5 Plan to Finalize Management Proposal

This section discusses how the Management Zone will finalize its Management Zone Proposal to be consistent with the requirements of the Nitrate Control Program.

The following table lists the Nitrate Control Program requirements for the Preliminary Management Zone Proposal and where these requirements are addressed within this document (Table ES-1).

| Table ES-1. Preliminary Management Zone Proposal Requirements (Central Valley Water Board 2020) | |
|--|--|
| PMZP Requirement | Location in PMZP |
| Proposed preliminary boundaries of the Management Zone area | Section 1.3.1 |
| Identification of Initial Participants/Dischargers | Section 1.5 |
| Identification of other dischargers and stakeholders in the Management Zone area that the initiating group is in contact with regarding participation in the Management Zone | Section 4.1 |
| Initial assessment of groundwater conditions based on readily available existing data and information | Section 2.0 and 3.0 |
| Identification/summary of current treatment and control efforts, or management practices | Section 5.0 |
| Initial identification of public water supplies or domestic wells within the Management Zone area with nitrate concentrations exceeding the water quality objective | Early Action Plan, Attachment D |
| An Early Action Plan to address drinking water needs for those that rely on public water supply or domestic wells with nitrate levels exceeding the water quality objective | Summary in Section 4.0; complete Early Action Plan in Attachment D |
| Documentation of process utilized to identify affected residents and the outreach utilized to ensure that they are given the opportunity to participate in development of an Early Action Plan | Early Action Plan in Attachment D |
| Identification of areas within or adjacent to the Management Zone that overlap with other management areas/activities | Section 2.1 and 3.1 |
| Proposed timeline for: <ul style="list-style-type: none"> • Identifying additional participants; • Further defining boundary areas; • Developing proposed governance and funding structure for administration of the Management Zone; • Additional evaluation of groundwater conditions across the Management Zone boundary area, if necessary; and, • Preparing and submitting a Final Management Zone Proposal and a Management Zone Implementation Plan. | Section 5.0 |

ES 2. KWA Northern Portion (Kings Subbasin Area) of the Management Zone

This section of the document describes the area encompassed by the Northern Portion (Kings Subbasin Area) of the Kings Water Alliance Management Zone, including general geographic and hydrologic characteristics, jurisdictions located within the planning area and key planning agencies and utilities. This section also contains the initial assessment of groundwater conditions, as well as the Management Zone participants to date, and summaries of existing current nitrate treatment, control efforts, and management practices as performed by dischargers within the Management Zone boundary.

ES 2.1. KWA Northern Portion (Kings Subbasin Area) Characterization

The Northern Portion (Kings Subbasin Area) of the Kings Water Alliance Management Zone covers an area of approximately 1,547 square miles (990,133 acres), which represents about 64% of the total 2,424 square miles (over 1.55 million acres) of the entire Management Zone. This portion of the Management Zone lies within the Kings, Fresno, and Tulare Counties, and contains major surface water features, including the San Joaquin River, the Kings River, Fresno Slough, and James Bypass. Major communities within the Northern Portion (Kings Subbasin Area) of the Management Zone include: Kerman, Fresno, Sanger, Parlier, Selma, Orange Cove, Reedley, Kingsburg, Clovis, Fowler, San Joaquin, Dinuba, and Orosi.

Many Groundwater Sustainability Agencies established under the Sustainable Groundwater Management Act exist within the Northern Portion (Kings Subbasin Area) of the Management Zone. General information associated with these Groundwater Sustainability Agencies, including contact information and interested parties, is included in Attachment A. Other water management entities, including irrigation districts, water districts, community service areas, community service districts and drinking water systems, are also presented in this section. There are 230 Public Water Systems with known GIS boundary data within the Kings Water Alliance Management Zone; the majority (220) of these systems are located within the Northern Portion (Kings Subbasin Area) of the Management Zone.

There are 34 Disadvantaged Communities and 38 Disadvantaged Unincorporated Communities within the Northern Portion (Kings Subbasin Area) of the Management Zone, covering approximately 176 square miles (112,935 acres) and containing an estimated population of over 742,000. The majority of the Northern Portion (Kings Subbasin Area) of the Management Zone is covered by agricultural land use categories, with Deciduous Fruits and Nuts (22%), Vineyards (17%), and Urban (12%) as the predominant mapped land uses according to the California Department of Water Resources land use mapping effort in 2016.

ES 2.2. KWA Northern Portion (Kings Subbasin Area) Initial Assessment of Groundwater Conditions

The initial assessment of groundwater conditions is based on readily available existing data and information. The hydrogeology of the Kings Subbasin is summarized within this section, including the predominant physical features underlying the area. Groundwater elevation mapping indicates that groundwater flows regionally from the Sierra Nevada foothills in the east to the southwest, and towards a groundwater depression located in the western-central area of the Subbasin.



The Nitrate Control Program focuses on the Upper Zone of groundwater, from which most domestic wells draw their water.

As mentioned above, the Nitrate Control Program focuses on the Upper Zone of the groundwater system. This zonation of the subsurface is a result of previous efforts from the Central Valley Salinity Coalition that attempted to define the depth from which groundwater is produced from most domestic wells across the Central Valley. In the Northern Portion (Kings Subbasin Area) of the Management Zone, the depth to the bottom of the Upper Zone ranges from 85 feet (at its shallowest in the northeast) to 500 feet (at its deepest in the southwest) below ground surface.

Nitrate groundwater quality data were collected from readily available public databases, an existing Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS) database, as well as requested data from local entities including irrigation districts and County Departments of Environmental or Public Health. Groundwater nitrate data from wells were vetted and categorized based on well depth and/or well type to determine whether the data represent nitrate conditions in the Upper Zone of the Management Zone. The best readily available groundwater nitrate dataset compiled and analyzed included sample results for Upper Zone wells from January 2000 to August 2020. These nitrate data were temporally and spatially declustered for use in determining ambient nitrate conditions in the Upper Zone for the Management Zone. Ambient nitrate conditions were developed using spatial interpolation (kriging) on average post-2000 nitrate sample data for wells categorized into the Upper Zone, using a search radius of 1.5 miles. The resultant map (Figure ES-2) illustrates relative concentration areas across the subbasin, identifying areas (in red) that have elevated nitrate conditions that potentially exceed the drinking water standard (maximum contaminant level) of 10 milligrams per liter nitrate as nitrogen (mg/L as N). The Management Zone recognizes that the map

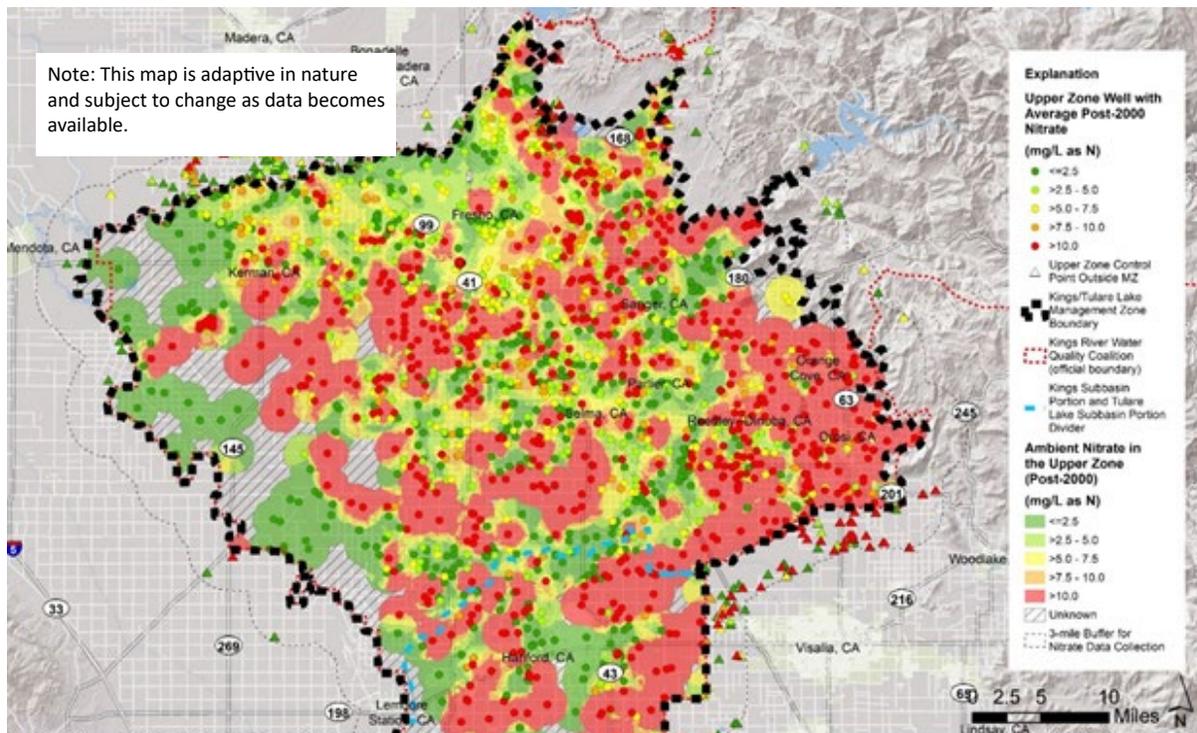


Figure ES-2. Ambient Post-2000 Nitrate Concentrations in the Upper Zone of Groundwater Underlying the KWA Northern Portion (Kings Subbasin Area) of the Proposed Kings Water Alliance Management Zone

of ambient nitrate in the Upper Zone has inherent uncertainty and is adaptive in nature. As more Upper Zone nitrate data become available (through implementation of the Early Action Plan’s well testing program, as well as other monitoring programs such as the Irrigated Lands Regulatory Program or Groundwater Sustainability Plans), this process and analysis will be repeated. The ambient map will be updated (and potentially changed) prior to the Final Management Zone Proposal submittal date.

ES 2.3. KWA Northern Portion (Kings Subbasin Area) Management Zone Participants

Dischargers that received a **Notice to Comply** with the Nitrate Control Program include: (a) Kings River Water Quality Coalition that represents growers subject to the Irrigated Lands Regulatory Program; (b) permittees subject to various General Orders applicable to concentrated animal feeding operations including milk cow dairies, confined bovine feeding operations and poultry operations; and (c) permittees that discharge under individual waste discharge requirements. The Management Zone conducted outreach to the representatives of permittees under General Orders and individual dischargers. The PMZP identifies the **permitted dischargers** that have elected to participate in the Management Zone.



ES 2.4. KWA Northern Portion (Kings Subbasin Area) Current Nitrate Treatment and Control Efforts or Management Practices

The current nitrate treatment and control efforts or management practices being implemented by each of participating permittees located in the Northern Portion (Kings Subbasin Area) of the Management Zone are summarized in this PMZP. The PMZP provides a general summary of the permit requirements applicable to permittees that are members of the Kings River Water Quality Coalition or subject to a General Order for a concentrated animal feeding operation. For permittees with an individual WDR that are participating in the Management Zone, the PMZP provides a brief summary of the nature of the permitted facility and their existing permit requirements as they relate to the management of nitrate.

ES 3. KWA Southern Portion (Tulare Lake Subbasin Area) of the Management Zone

This section of the document describes the area encompassed by the Southern Portion (Tulare Lake Subbasin Area) of the Kings Water Alliance Management Zone that is mostly comprised of the Tulare Lake Subbasin. Similar to Section 2 (Northern Portion/Kings Subbasin Area), this section includes general geographic and hydrologic characteristics, jurisdictions located within the planning area, and key planning agencies and utilities. This section also contains the initial assessment of groundwater conditions, as well as the Management Zone participants to date, and summaries of existing current nitrate treatment, control efforts and management practices as performed by dischargers within the Management Zone boundary.

ES 3.1. KWA Southern Portion (Tulare Lake Subbasin Area) Characterization

The KWA Southern Portion (Tulare Lake Subbasin Area) of the Kings Water Alliance Management Zone covers an area of approximately 877 square miles (561,353 acres), which represents about 36% of the total area of the entire Management Zone. This portion of the Management Zone lies mostly

within Kings County, with a small portion of Tulare County in the east, and shares part of its northern boundary with Fresno County. Surface water features include the Kings River and several canals. Major communities within the Southern Portion (Tulare Lake Subbasin Area) of the Management Zone include: Lemoore, Hanford, and Corcoran.

Many Groundwater Sustainability Agencies established under the Sustainable Groundwater Management Act exist within the Southern Portion (Tulare Lake Subbasin Area) of the Management Zone. General information associated with these Groundwater Sustainability Agencies, including contact information and interested parties, is included in Attachment A. Other water management entities, including irrigation districts, water districts, community service areas, community service districts and drinking water systems, are also presented in this section. Of the 230 Public Water Systems with known GIS boundary data within the Kings Water Alliance Management Zone, eleven (11) of them are located within the Southern Portion (Tulare Lake Subbasin Area) of the Management Zone.

There are seven (7) Disadvantaged Communities and eleven (11) Disadvantaged Unincorporated Communities within the Southern Portion (Tulare Lake Subbasin Area) of the Management Zone, covering approximately 20 square miles (12,730 acres) and containing an estimated population of almost 62,000. The 2016 Department of Water Resources land use within the Southern Portion (Tulare Lake Subbasin Area) of the Management Zone indicates that Field Crops make up the most common mapped land use type (27% of the total Southern Portion area).

ES 3.2. KWA Southern Portion (Tulare Lake Subbasin Area) Initial Assessment of Groundwater Conditions

As mentioned above, the initial assessment of groundwater conditions is based on readily available existing data and information. The hydrogeology of the Tulare Lake Subbasin is summarized within this section that provides insight to the physical features that dominate the subsurface of the area, including the ancestral and former Tulare Lake Bed deposit of fine-grained lacustrine sediments in the central and southern parts of this area. Groundwater elevation mapping indicates that local flow directions are variable in the northern portion of the Tulare Lake Subbasin. There are very few wells located within the former Tulare Lake Bed, forming a large data gap area in the majority of the Tulare Lake Subbasin. This area of the former Tulare Lake Bed has received regulatory scrutiny in the past due to exceptionally high salinity making the water in parts of the subsurface unsuitable for domestic, municipal, and agricultural beneficial uses. As a result, groundwater in this area has been “de-designated” from beneficial uses within specified horizontal and vertical portions of the Tulare Lake Bed.

In the KWA Southern Portion (Tulare Lake Subbasin Area) of the Management Zone, the depth to the bottom of the Upper Zone ranges from about 200 feet (at its shallowest in the northeast) to about 600 feet (at its deepest in the central northwest) below ground surface.

Similar to the northern area of the Management Zone, nitrate groundwater quality data were collected from readily available databases and categorized based on well depth and/or well type to determine nitrate conditions in the Upper Zone of the Management Zone. Ambient nitrate conditions were developed using spatial interpolation on average post-2000 nitrate sample data for wells meticulously vetted and categorized into the Upper Zone (actual data utilized in the ambient nitrate conditions spatial interpolation kriging were from January 2000 to August 2020 and used a search radius of 1.5 miles). The resultant map (Figure ES-3) illustrates relative concentration areas across the Tulare Lake

Subbasin, identifying areas (in red) that have elevated nitrate conditions that potentially exceed the drinking water standard (maximum contaminant level) of 10 milligrams per liter nitrate as nitrogen (mg/L as N). The Management Zone recognizes that the map of ambient nitrate in the Upper Zone has inherent uncertainty and is adaptive in nature. As more Upper Zone nitrate data become available (through implementation of the Early Action Plan’s well testing program, as well as other monitoring programs such as the Irrigated Lands Regulatory Program or Groundwater Sustainability Plans), this process and analysis will be repeated. The ambient map will be updated (and potentially changed), prior to the Final Management Zone Proposal submittal date.

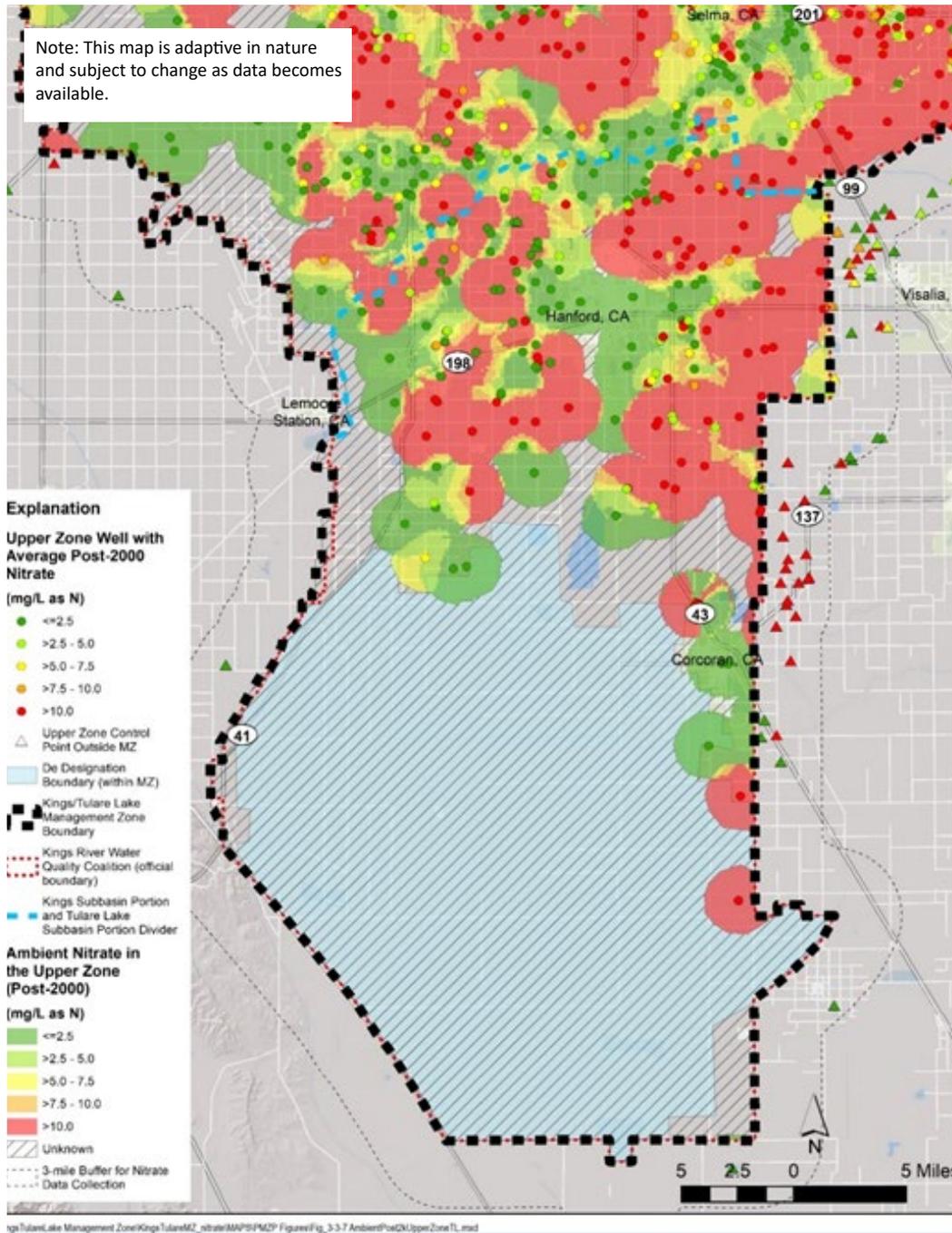


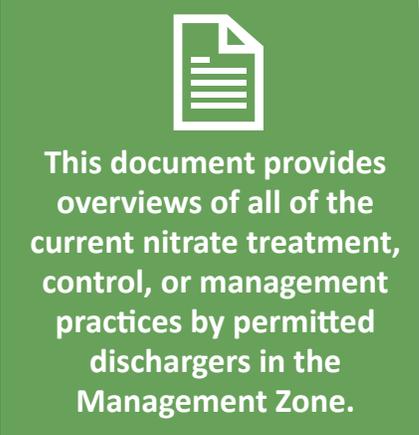
Figure ES-3. Ambient Post-2000 Nitrate Concentrations in the Upper Zone of Groundwater Underlying the KWA Southern Portion (Tulare Lake Subbasin Area) of the Proposed Kings Water Alliance Management Zone

ES 3.3. KWA Southern Portion (Tulare Lake Subbasin Area) Management Zone Participants

Dischargers that received a Notice to Comply with the Nitrate Control Program include: (a) Kings River Water Quality Coalition that represents growers subject to the Irrigated Lands Regulatory Program; (b) permittees subject to various General Orders applicable to concentrated animal feeding operations including milk cow dairies, confined bovine feeding operations and poultry operations; and (c) permittees that discharge under individual waste discharge requirements. The Management Zone conducted outreach to the representatives of permittees under General Orders and individual dischargers. The PMZP identifies the permitted dischargers that have elected to participate in the Management Zone.

ES 3.4. KWA Southern Portion (Tulare Lake Subbasin Area) Current Nitrate Treatment and Control Efforts or Management Practices

The current nitrate treatment and control efforts or management practices being implemented by each of the participating permittees located in the Tulare Lake/Kaweah Subbasin portions of the Management Zone are summarized in this PMZP. The PMZP provides a general summary of the permit requirements applicable to permittees that are members of the Kings River Water Quality Coalition or subject to a General Order for a concentrated animal feeding operation. For permittees with an individual WDR that are participating in the Management Zone, the PMZP provides a brief summary of the nature of the permitted facility and their existing permit requirements as they relate to the management of nitrate.



This document provides overviews of all of the current nitrate treatment, control, or management practices by permitted dischargers in the Management Zone.

ES 4. Early Action Plan Development

Establishment of a Management Zone requires the preparation of an **Early Action Plan (EAP)** that identifies initial actions the Kings Water Alliance will carry out to address sources of drinking water with unsafe nitrate levels. The key element of the EAP, which was developed in collaboration with the community, is the **Interim Replacement Water Program**. This Program provides immediate alternative sources of drinking water for those that depend on groundwater with unsafe levels of nitrate for their drinking and cooking needs, that is water with more than 10 mg/L as N.

The PMZP includes a summary of the key elements of the EAP including a summary of the wells potentially impacted by high nitrate levels, identification of areas within the Management Zone where the groundwater quality most likely exceeds 10 mg/L-N, a brief overview of key EAP elements such as community outreach, the interim replacement water options (e.g., bottled water delivery, point-of-use treatment systems and water fill stations), a well-testing program to support EAP implementation and a general schedule for implementation.



Bottled Water Delivery



Point-of-Use Treatment Systems



Water Fill Stations

The actual EAP, which includes more comprehensive information is attached to this PMZP as Attachment D.

ES 5. Plan to Finalize Management Proposal

This section discusses how the Management Zone will finalize its Management Zone Proposal, maintaining consistency with the requirements of the Nitrate Control Program. The Kings Water Alliance has conducted outreach to all permitted dischargers in the proposed Management Zone, but dischargers within Priority 1 basins have until May 7, 2021 to choose to be part of the Management Zone. Dischargers within Priority 2 basins will have longer to decide whether to participate in the Kings Water Alliance Management Zone. The Final Management Zone Proposal will be due no later than 180 days after receiving comments from the Central Valley Water Board on this Preliminary Management Zone Proposal.

Although it is not likely to change, the Management Zone boundary may be refined prior to the submittal of the Final Management Zone Proposal. The KWA Management Zone boundary may be modified as a result of dischargers in the Management Zone selecting Path A. If appropriate, the negotiated area determined to be the responsibility of Path A dischargers may be removed from the Kings Water Alliance Boundary. The groundwater nitrate assessment may also be updated prior to submittal of the final Proposal. This may be necessary if and when domestic well nitrate results become available through either: 1) implementation of well testing under the Irrigated Lands Regulatory Program, or 2) through implementation of the residential well testing program in the Early Action Plan (Attachment D). The funding and governance of the Management Zone will also be provided in the final Proposal.

The Preliminary Management Zone Proposal was made available for public comment on January 28, 2021 prior to submittal on March 8, 2021¹, but a **formal public comment period** will occur for at least 30 days after being publicly posted by the Central Valley Water Board on its website and through the Lyrus Management System. **The Central Valley Water Board will provide comments** on the preliminary proposal after completion of this formal public comment process. The Kings Water Alliance Management Zone will submit its Final Management Zone Proposal no later than 180 days after receiving comments from the Central Valley Water Board on this Preliminary Management Zone Proposal.

Key Milestones



¹ Comments and responses are provided from this first public comment period in Attachment C.