

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

MEETING OF JANUARY 13-14, 2021

ITEM 8
IRRIGATED LANDS REGULATORY PROGRAM DEVELOPMENT UPDATE

CHRONOLOGY	
February 7, 2018	The State Board adopted Water Quality Order WQ-2018-0002, reviewing the Central Valley Water Board’s Eastern San Joaquin (ESJ) River Watershed Agricultural General Order R5-2012-0116. State Board’s WQ-2018-0002 (the ESJ Review Order) establishes statewide precedential requirements for nitrogen tracking/reporting and other components of irrigated agricultural land permits.
September 18, 2019	At a Water Board meeting, staff presented an informational item on agricultural regulation in the state and the Lahontan Region. The presentation provided information on the distribution of irrigated lands in the Lahontan Region, general water quality impacts from irrigated agricultural, and outlined the ESJ Review Order’s precedential requirements.
Spring through Fall 2020	Based on input from the September 2019 Water Board meeting, staff conducted further research on regulatory approaches, analyzed water quality impacts in areas of concentrated agricultural lands, and conducted additional outreach to stakeholders and other Regional Water Board’s agricultural regulatory staff. This information was used to develop recommendations for actions on agricultural regulation in the region. Additionally, staff gained a clearer understanding of the precedential requirements of the ESJ Review Order and their applicability to the Lahontan Region’s agricultural discharge regulation. This information and recommendations are detailed in a staff report (Enclosure 1).

BACKGROUND
The ESJ Review Order establish that all Regional Boards must revise existing irrigated lands regulatory program (ILRP) permits to incorporate applicable ESJ Review Order precedential requirements by February 2023. However, there is no obligation created by the ESJ Review Order to develop any new ILRP for those Regional Boards that do not have an existing program. While the Lahontan Region does not have a formal, holistic program regulating agricultural discharges, the region has been issuing permits to control such discharges on a case-by-case basis since the 1980s. To be responsive to the ESJ Review Order, staff evaluated all existing

BACKGROUND

agricultural permits to determine whether they must be revised by 2023. To help inform future permit development, staff examined five areas of the Lahontan region where concentrations of irrigated crop production exist. Three areas in the northern part of the region were analyzed for surface water impacts, and two areas in the southern part of the region were analyzed for groundwater impacts. Based on the above evaluations, and the obligation and authority to address nonpoint source discharges as indicated in the Nonpoint Source Policy, the Porter-Cologne Act, and the Clean Water Act, staff has proposed four prioritized actions for irrigated agriculture in the Lahontan Region.

DISCUSSION

The precedential requirements of the ESJ Review Order comprise six major elements: 1) irrigation and nitrogen management; 2) erosion control planning and implementation, 3) management practice reporting, 4) water quality monitoring and evaluation, 5) education and outreach, and 6) record keeping and 3rd party coalition requirements. In the Lahontan Region, the only existing irrigated agricultural permit subject to the ESJ Review Order's February 2023 deadline is Waiver of Waste Discharge Requirements No. R6T-2017-0033 for Grazing Operations in The East Walker River Watershed (Bridgeport Valley and Tributaries) ("Bridgeport Grazing Waiver." Staff will incorporate relevant precedential requirements of the ESJ Review Order into a new or revised permit for those activities in the Bridgeport Valley by the required deadline. This effort is one of four proposed prioritized actions for future irrigated agricultural lands regulation for the region described in the staff report.

The four prioritized actions are based on several considerations: 1) fulfilling the ESJ Review Order requirements, 2) continuing our efforts to protect and restore water quality in areas of identified impacts, and 3) maintaining and leveraging progress on long-standing commitments and work already completed. The proposed actions are:

1. Renew and update the Bridgeport Grazing Waiver
2. Water quality improvement on grazing lands, Bishop Vision Project
3. Develop a General Order for irrigated pasture lands
4. Develop a General Order for irrigated agricultural food commodities and ornamentals such as row crops, orchards, flower/tree farms etc.

These actions recognize how the region's agricultural acreage amounts and distribution affect water quality priorities; and consider stakeholder and Board member input and acknowledge constraints on resource availability. An adaptive management review after five years will serve as the basis to build on these actions based on new information, monitoring data, effectiveness evaluations, funding and resources, and progress on priorities. A stakeholder outreach plan is included to ensure input from stakeholders is incorporated. To the extent that new agricultural permits are developed, the applicability of the ESJ Review Order's precedential requirements will be analyzed and incorporated in full or part as applicable.

SUSTAINABLE GROUNDWATER MANAGEMENT ACT BASINS

The Sustainable Groundwater Management Act (SGMA) requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into sustainability, that is, balanced levels of pumping and recharge. Medium to high priority basins are required to establish a Groundwater Sustainability Agency (GSA) and submit a Groundwater Sustainability Plan (GSP) to the Department of Water Resources (DWR) by January 31, 2022.

The California Department of Water Resources identified the following groundwater basins in the Lahontan Region as medium and high priorities:

Priority / Groundwater Basin

Medium / Tahoe Valley-Tahoe South (6-5.01)

High / Indian Wells Valley (6-054)

SGMA and GSPs for these groundwater basins are discussed in the enclosed staff report (Enclosure 1).

CLIMATE CHANGE RESPONSE

The recommendations in the staff report are consistent with [Resolution R6T-2019-0277](#), the Water Board's Climate Change Mitigation and Adaptation Strategy in the following key resources areas: (1) Protection of Wetlands, Floodplains, and Headwaters and (2) Protection of Groundwater Quality and Supply. In particular, recommendations to develop regulatory tools address discharges from irrigated agricultural will help protect sensitive riparian habitats, reduce erosion and sedimentation, and protect surface and groundwater water quality for constituents of concern such as sediment, bacteria, nutrients, salts, and pesticides.

Current and future impacts of climate change include increasing frequency of extreme weather events, heat waves, and more frequent and longer droughts, which have consequent effects on water quality and water availability. Examples of water quality impacts may include dry periods and drought lowering stream flow and reducing dilution of pollutant discharges, and more erosion and sedimentation caused when an intense rainfall event occurs. Groundwater quality and quantity may be reduced. Climate change also affects the habitat and prevalence of crop pests and weeds, forcing changes in pesticide use. These climate change impacts may affect potential future agricultural program activities. Future orders regulating irrigated agricultural discharges will need to incorporate management improvements for irrigation water use, sediment and erosion control, pesticide, and fertilizer use. A proposed adaptive management review will consider known and evolving information on climate change to proactively prepare for and respond to water quality and quantity issues.

PUBLIC OUTREACH/INPUT

The staff report and presentation were circulated with the Water Board's agenda package on December 23, 2020.

PRESENTERS

Ben Letton, Water Board, Supervising Engineering Geologist (presentation is Enclosure 2).

RECOMMENDATION

This is an informational item and no formal action is requested, though Water Board members may give direction to staff.

ENCLOSURE	ITEM	BATES NUMBER
1	Water Board Staff Report	8 - 5
2	Water Board Staff Presentation (Ben Letton)	8 - 75

ENCLOSURE 1



**ASSESSMENT OF AGRICULTURAL DISCHARGES AND
REQUIREMENTS OF THE EASTERN SAN JOAQUIN REVIEW
ORDER FOR THE LAHONTAN REGION**



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Jared Blumenfeld, Secretary

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AMMP	Alternative Manure Management Program
Basin Plan	Water Quality Control Plan for the Lahontan Region
Bridgeport Grazing Waiver	Board Order No. R6T-2017-0033, Renewal of General Conditional Waiver of Waste Discharge Requirements for Grazing Operations in the East Walker River Watershed (Bridgeport Valley and Tributaries)
BRO	Bridgeport Ranchers Organization
CAF	Confined Animal Facility
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfu/100 mL	Colony forming units per 100 milliliters of water, a measure of bacteria cells in water
COVID-19	A disease caused by a new strain of coronavirus. 'CO' stands for corona, 'VI' for virus, 'D' for disease and -19 for the year first detected.
CSP	Conservation Stewardship Program
CWA	Clean Water Act
DAC	Disadvantaged Communities
DDW	Division of Drinking Water
DWR	Department of Water Resources

Acronym/Abbreviation	Definition
ESJ review order	State Water Resources Control Board Water Quality Order WQ-2018-0002, In the Matter of Review of Waste Discharge Requirements General Order No. R5-2012-0116 for Growers Within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group Issued by the California Regional Water Quality Control Board, Central Valley Region.
ESJ WDRs	Central Valley Water Board's General Order of Waste Discharge Requirements for Agricultural Growers in the Eastern San Joaquin River Watershed
E. coli	Escherichia coli, bacteria which normally live in the intestines of people and animals
EQIP	Environmental Quality Incentives Program
GAMA	Groundwater Ambient Monitoring and Assessment
GSA	Groundwater Sustainability Agency
General Order	General Order of Waste Discharge Requirements, a waste discharge permit which applies to a group of dischargers sharing similar operations and waste characteristics
GSP	Groundwater Sustainability Plan
HSP	Healthy Soils Program
ILRP	Irrigated Lands Regulatory Program
IRWM	Integrated Regional Water Management
IWVGB	Indian Wells Valley Groundwater Basin
LADWP	Los Angeles Department of Water and Power
Lahontan Water Board	Lahontan Regional Water Quality Board
MCL	Maximum Contaminant Level
mg/L	Milligrams per liter (parts per million)

Acronym/Abbreviation	Definition
NRCS	Natural Resources Conservation Service
NPS	Nonpoint Source
NPS Policy	Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program
NWQI	National Water Quality Initiative
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
REC-1	Water contact recreation beneficial use of water, such as swimming, wading, etc.
Recycled Water Policy	Water Quality Control Policy for Recycled Water, adopted by State Water Board on December 11, 2018, effective April 8, 2019
Regional Water Board	Regional Water Quality Control Board
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nutrient Management Plan
SWAMP	Surface Water Ambient Monitoring Program
SWEEP	State Water Efficiency and Enhancement Program
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USDA	United States Department of Agriculture
U.S. EPA	United States Environmental Protection Agency
Waiver	Waiver of Waste Discharge Requirements
Water Board	Lahontan Regional Water Quality Control Board
Vision Plan/Project	A collaborative framework for implementing the CWA section 303(d) program in lieu of TMDL development

Acronym/Abbreviation	Definition
WDRs	Waste Discharge Requirements
WRRs	Water Reclamation Requirements
WQO	Water Quality Objective

1 Purpose and Intent

At the September 18, 2019 Lahontan Regional Water Quality Control Board (Water Board) meeting, Water Board staff presented an informational item on agricultural regulation in the state and the Lahontan Region. In that presentation, staff committed to bringing a future report with options for regulating agricultural discharges to the Water Board in 2020. This staff report fulfills that commitment.

To that end, this report provides an assessment of a 2018 State Water Resources Control Board (State Water Board) precedential review order (WQ-2018-0002, the Eastern San Joaquin [ESJ] review order¹), and its implications for regulation of agricultural discharges in the Lahontan Region. This ESJ review order, discussed in Section 3, sets precedential requirements for statewide agricultural discharge regulatory programs. The intent of this report is to:

- Address the comments and input received from Lahontan Water Board members and stakeholders during the September 2019 Water Board workshop and outline actions that staff have taken since September 2019 (see Section 2).
- Update the Board on the State Water Board's ESJ review order precedential requirements (see Section 3).
- Provide assessment and evaluation of surface and groundwater conditions in key agricultural areas in the region. Evaluate the Lahontan Region's existing agricultural discharge permits to determine if the ESJ review order precedential requirements are applicable and assess whether any existing permits need to be revised or updated to meet those requirements (see Section 4).
- Provide recommendations on actions for existing permits that are subject to the ESJ review order's precedential requirements and actions to address upcoming agricultural-related efforts (i.e., the Bishop Creek Vision Project, development of new irrigated lands regulatory permits) where the ESJ review order requirements may apply (see Section 5).
- Provide recommendations for future permitting approaches, including an adaptive management framework and outreach plans (see Adaptive Management Framework to Assess Progress and Inform Future Actions).

All actions presented in this staff report are subject to future resource availability and funding.

¹ The order's full title is: *State Water Resources Control Board Water Quality Order WQ-2018-0002, In the Matter of Review of Waste Discharge Requirements General Order No. R5-2012-0116 for Growers Within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group Issued by the California Regional Water Quality Control Board, Central Valley Region*. In this order, the State Water Board reviews on its own motion Waste Discharge Requirements issued by the Central Valley Water Board for irrigated lands agricultural discharges.

2 Previous Discussions on Agricultural Regulation: 2019 Water Board Workshop

At the September 2019 Water Board meeting, staff heard input from Board members and a stakeholder from the agricultural community.

2.1 Agricultural Stakeholder Input Summary

- Irrigated pasture uses no fertilizer or pesticides other than spot-spraying for scotch thistle. A clover mix in the pasture provides needed nitrogen.
- Sediment issues in pastures are not typically a problem as there is no soil disturbance unless grading fields (leveling) for irrigation efficiency, but that is very expensive.
- Stakeholder supports use of third-party coalitions; notes that it is challenging at first, but works well once established, especially for monitoring costs and Water Board staff workload efficiencies.
- Requests Board to consider a “low threat” permit that would cover irrigated pasture and other types of low threat operations. One size does not fit all and can result in increased and unnecessary monitoring costs that takes away from restoration projects.
- Requests Board to consider permit that accounts for regional differences in climate, agriculture type, etc.
- Requests Board to consider use of U.S. EPA’s E. coli standard rather than Lahontan’s fecal coliform objective.

2.2 Board Member Input Summary

- Apply regulatory efforts to areas of greatest need. Consider where regulation is needed to protect human health and water resources and consider the most common crops.
- Maintain flexibility in permits; one-size-fits-all will not work for dischargers.
- Consider lessons learned from other Regional Water Boards’ experiences.
- Consider future trends; for example, in adjudicated groundwater basins such as the Mojave groundwater basin, alfalfa farming may decrease over time due to land use shifts and water availability.
- Need to balance regulation with the important benefits of agriculture and food supply.
- Consider irrigated agriculture and its link to the Sustainable Groundwater Management Act; water quantity is a driver of agricultural land use.
- With no assigned staff resources or funding, this is very challenging. Available resources will inform scope of program.

2.3 Actions Since September 2019 Board Meeting

Based on input from the September 2019 Board meeting, staff conducted further research on regulatory approaches, including prioritization strategies such as regional, semi-regional, watershed, or commodity-based permits, and coalition-based approaches. Staff also conducted additional outreach to stakeholders and other Regional Water Board’s agricultural regulatory staff (described in Appendix F).

Also during 2020, staff consulted with State Water Board staff to gain a clearer understanding of the precedential requirements of the State Water Board’s ESJ review order and its applicability to the Lahontan Region’s agricultural discharge regulation. That understanding is reflected in this report and summarized in Section 3. Lastly, staff updated the analysis of agricultural lands distribution and water quality data proximal to those lands, using the most current datasets on land cover types from the Department of Water Resources (DWR), the California Environmental Data Exchange Network (CEDEN), the Surface Water Ambient Monitoring Program (SWAMP), and the 2014 and 2016 Clean Water Act (CWA) section 303(d) list and Integrated Report.

3 Agricultural Discharges Regulation and Interpretation of the State Water Board’s Eastern San Joaquin Review Order

At the September 2019 workshop on regulating agricultural lands in the Lahontan Region, staff provided information on developing an “Irrigated Lands Regulatory Program” (ILRP). While there is no statewide definition established for irrigated lands or an ILRP, that terminology has an important meaning in the context of the State Water Board’s ESJ review order. In that order, the State Water Board reviewed the Central Valley Water Board’s General Order of Waste Discharge Requirements for Agricultural Growers in the Eastern San Joaquin River Watershed (ESJ WDRs) in response to petitions filed following the ESJ WDRs’ adoption. The State Water Board’s ESJ review order established a robust set of “precedential requirements²” to be incorporated into all ILRP permits statewide by February 2023. The definition of irrigated lands contemplated in the ESJ review order is that used by the Central Valley Water Board in its ESJ WDRs:

“Irrigated lands” are defined as “Land irrigated to produce crops or pasture for commercial purposes; nurseries; and privately and publicly managed wetlands.” There is a footnote defining “commercial irrigated lands” as “irrigated lands that have one or more of the following characteristics: · The landowner or operator holds a current Operator Identification Number/ Permit Number for pesticide use reporting; · The crop is sold to a third party including, but not limited to, (1) an industry cooperative, (2) harvest crew/company, or (3) a direct marketing location, such as farmers’ markets; · The landowner or operator files federal taxes using federal Department of Treasury Internal Revenue Service Form 1040, Schedule F Profit or Loss from Farming.”

This definition provides insight into the types of statewide agricultural regulatory permits the ESJ review order’s precedential requirements were intended to be applied. The ESJ review order was not intended to apply to agricultural permits that do not fall under the definition of irrigated lands or those regulated by other programs, such as confined animal facilities, wineries, or permits allowing ancillary use of wastewater disposal for

² See Appendix D for descriptions of the ESJ review order precedential requirements.

irrigation. It is worth noting that while irrigated pasture and managed wetlands are included in the Central Valley's ESJ WDRs irrigated lands definition, the ESJ review order notes that some of the precedential requirements do not apply to permits regulating those uses, due to low or no use of nitrogen fertilizers, pesticides and minimal field plowing³.

Considering this interpretation, the ESJ review order's applicability to the Lahontan Region is presented in the following sections.

3.1 Developing a New ILRP

The State Water Board's ESJ review order, at page 9, contains the following direction:

Many of the findings and directions of this order are appropriate not only for the Eastern San Joaquin Agricultural General WDRs, but also for the subsequent generations of regional water quality control board (regional water board) irrigated lands regulatory programs (ILRP) statewide. In the sections that follow, we indicate which of our conclusions have precedential effect and will guide irrigated lands regulatory programs statewide. Our precedential direction is intended to guide all irrigated lands regulatory programs, including programs that directly regulate growers as individuals without a third-party intermediary and programs that regulate growers that are members of a third-party intermediary, except where specifically noted. We direct the regional water boards to revise their irrigated lands regulatory programs within the next five years⁴ to be consistent with our precedential direction in this order.

The ESJ review order does not create an independent deadline to create any new irrigated lands regulatory program. Rather, it sets precedential requirements for existing and future programs. This is important because it means the Lahontan Region can continue or expand irrigated agricultural regulation based on our regional priorities and agricultural land uses, and such efforts need not be driven by the February 2023 deadline in the ESJ review order. Separately from the ESJ review order, Regional Water Boards have an obligation and the authority to address nonpoint source discharges as indicated in the Nonpoint Source Policy, the Porter-Cologne Act, and the Clean Water Act Appendix C.

3.2 Revising Existing Permits

While the Lahontan Region does not have a formal, holistic program to regulate discharges from irrigated lands, the region has been issuing permits to control discharges associated with agriculture or issuing permits that allow for irrigation of crops

³ See footnote 100 at p. 34 of WQO-2018-0002, regarding exemptions from management and reporting requirements for irrigated pastures with no external nitrogen inputs and for managed wetlands. In general, the ESJ review order's precedential requirements are intended to strengthen regulatory permit elements that address impacts from nitrate fertilizers, pesticides, salts, and sediment. These impacts are often associated with irrigated agriculture lands growing high-value commodities such as food crops with more intensive use of nitrogen fertilizers, pesticides, irrigation needs, and sediment-generating cropping practices.

⁴ That is, by February 2023.

as an ancillary use of wastewater disposal on a case-by-case basis since the 1980s. Currently, the following WDRs, waiver of WDRs, and Water Reclamation Requirements (WRRs) are in place to regulate agricultural or managed wetland discharges or that allow for irrigation of crops as an ancillary use of wastewater disposal:

- Four individual WDRs for dairies in the south Lahontan basin, allowing ancillary use of wastewater to irrigate forage crops.
- One individual WDRs for Pacific Gas and Electric Company’s Hinkley remediation project, using chromium-contaminated groundwater to irrigate forage crops.
- Seventeen recycled water WDRs or WRRs, including individual WRRs, WRRs embedded into WDRs, or Master WRRs allowing ancillary use of wastewater to irrigate (mostly) forage crops.
- One individual WDRs for dust control activities on Owens Lake, allowing use of irrigation and recycled water to create managed wetlands and shallow playa flooding to reduce blowing dust.
- One waiver of WDRs for the East Walker River Watershed (Bridgeport Valley and Tributaries), regulating irrigated grazed pasture and rangeland (Bridgeport Grazing Waiver).

The precedential requirements of the ESJ review order must be incorporated into all ILRP permits statewide by February 2023. Permits regulating dairies or confined animals, or permits that allow for irrigation of crops as an ancillary use of wastewater disposal are not considered irrigated lands regulatory permits subject to ESJ review order requirements. Table 1 provides an assessment of each permit type listed above and the applicability of the ESJ review order requirements.

Table 1: Lahontan Region Agricultural Permits and ESJ Review Order Applicability

Permit	Subject to ESJ Precedential Requirements?	Rationale
Individual WDRs for dairies	No	Not an ILRP, regulated under Confined Animal Facility program. Allows agricultural irrigation as an ancillary use
Individual WDRs for Pacific Gas and Electric Company’s Agricultural Treatment Units	No	Not an ILRP, regulated under Site Cleanup program. WDRs are for groundwater cleanup; agricultural irrigation is an ancillary use

Permit	Subject to ESJ Precedential Requirements?	Rationale
Recycled water WDRs or WRRs, including individual WRRs, WRRs embedded into WDRs, or Master WRRs	No	Not an ILRP, regulated under Recycled Water policy. Allows agricultural irrigation as an ancillary use
Individual WDRs for Owens Lake Dust Control Mitigation, includes managed wetlands	No	Not an ILRP (Not a traditionally managed wetland). Purpose of project is to control dust. Irrigation of vegetation for wetlands value is an ancillary purpose
Waiver of WDRs for the East Walker River Watershed (Bridgeport Valley and Tributaries), (Bridgeport Grazing Waiver)	Yes, a limited subset of ESJ requirements apply and must be incorporated by February 2023	Waiver regulates irrigated grazed pasture and meets the definition of ILRP used in ESJ review order

4 Considerations for Future Program or Permit Development

The following sections include discussion on the distribution of irrigated agricultural acreage in the region, and surface and groundwater water quality data proximal to that agriculture. They also provide background on relevant planning and regulatory initiatives underway (both internal and external to the Water Boards) to address known water quality impacts from agriculture.

4.1 Existing Agriculture and Water Quality Data

This section provides a basic overview of agricultural acreage and corresponding water quality data in the Lahontan Region. This overview is intended to inform future program or permit development.

Five areas of the Lahontan region were evaluated where areas of concentrated crop production exist. Three areas in the northern part of the region were analyzed for surface water impacts, and two areas in the southern part of the region were analyzed for groundwater impacts.

While common agricultural pollutants were analyzed, a detailed source analysis cannot be concluded without further research. A regulatory approach that encompasses similar agricultural land uses and corresponding threats to water quality is recommended.

4.1.1 Agricultural Acreage

There are approximately 223,655 acres of irrigated agriculture located in the Lahontan Region, based on 2016 data from the Department of Water Resources (DWR). This dataset was created by Land IQ, a consulting firm contracted by DWR. Land IQ derived irrigated land information using aerial imagery and satellite data. The apportionment of irrigated lands by crop type in the Lahontan Region is illustrated in Figure 1.

The irrigated agriculture in the Lahontan Region consists of pasture, managed wetlands, unclassified agriculture, and miscellaneous food commodities.

- Pasture represents 70 percent of the irrigated agriculture area at 156,095 acres, and includes alfalfa, mixed pasture, and miscellaneous grasses.
- Managed wetlands represent 9 percent of the irrigated agriculture area at 20,430 acres.
- Unclassified agriculture represents 12 percent of the irrigated agriculture area at 28,083 acres.
- Miscellaneous food commodities represent 8 percent of the irrigated agriculture area at 19,046 acres, and includes grain and hay, nursery and berry crops, fruit and nuts, rice, field crops, etc.

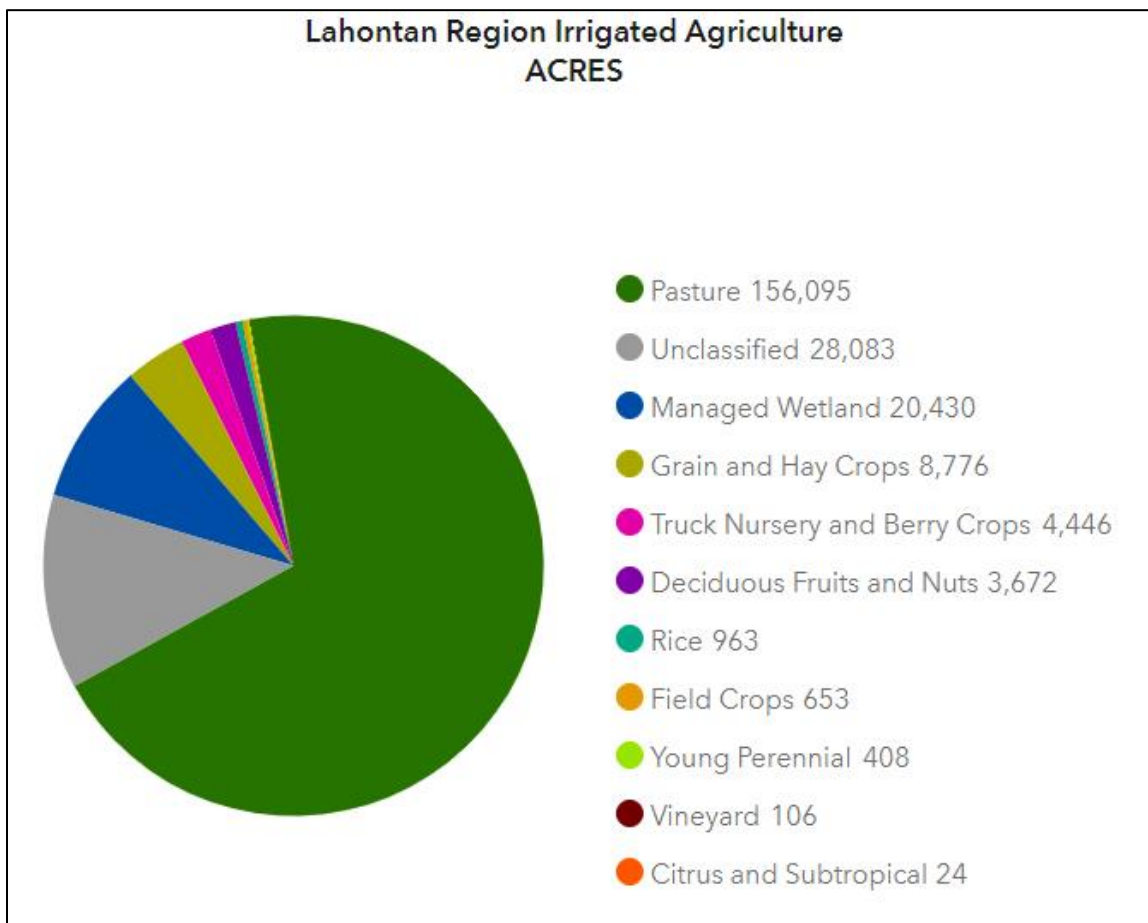


Figure 1: The total acreage of irrigated lands by crop type in the Lahontan Region

Pasture is the largest category of irrigated agriculture by area. Within pasture, alfalfa is the most dominate pasture crop representing 40 percent of the total area with 60,924 acres. Alfalfa is also unique among the pasture types in that it can either be grazed or harvested. Harvested alfalfa may use more fertilizers and pesticides/herbicides than grazed alfalfa, which could lead to a greater water quality impact by harvested alfalfa than grazed alfalfa. This is an area that may warrant further investigation and consideration for future permit or program development efforts.

4.1.2 Surface Water Constituents

A case study approach was taken for surface water quality data (detailed in Appendix A). Portions of three watersheds in the northern part of the region were chosen for comparing land use and surface water concentration data for constituents typically associated with agricultural runoff. These three watersheds are the Susan River, the East Walker River, and Bishop Creek as tributary to the Owens River.

Irrigated agriculture crop type data came from the Land IQ dataset described in Section 4.1.1. Based on those data, the three watersheds have similar crop types: predominantly alfalfa, mixed pasture, grain and hay crops, and managed wetlands. These types of agriculture generally present a lower water quality risk than traditional food commodity crops. However, these crops can still present a threat to water quality due to the occasional use of fertilizers and pesticides, the presence of grazing livestock contributing to bacteria and nutrients inputs from fecal material, and sedimentation from stream bank trampling and erosion.

The waterbodies analyzed are on the 303(d) list for constituents that are associated with agricultural runoff. The Susan River is listed for total dissolved solids, total nitrogen, turbidity, and unknown toxicity. The East Walker River and Bishop Creek are listed for indicator bacteria.

Water quality data for these water bodies were taken from CEDEN and collected at regional Surface Water Ambient Monitoring Program (SWAMP) sites. Analysis of the water quality data demonstrated elevated concentrations of nitrogen, phosphorus, and bacteria. Identifying specific sources of those constituents will likely require additional data collection and analysis within each watershed.

Developing future regulation may rely on existing work, such as collected data, completed analysis, and 303(d) list status. Similarities between each watershed, including crop types and water quality concerns, may allow for some extrapolation of analysis between watersheds. This could allow for a General Order that applies a limited subset of the ESJ review order requirements while considering the evident water quality impacts in the case study watersheds.

4.1.3 Groundwater Constituents

A case study approach was taken for groundwater water quality data (detailed in Appendix B). Two groundwater basins in the southern part of the region were chosen for comparing irrigated agriculture and groundwater concentration data for constituents typically associated with agricultural runoff. These two basins are the Indian Wells and Antelope Valleys.

Irrigated agriculture crop type data came from the Land IQ dataset described in Section 4.1.1. Based on those data, Indian Wells Valley consists of mainly pistachios and alfalfa. Differently, Antelope Valley consists of alfalfa, miscellaneous grasses, miscellaneous grains, sweet potatoes, carrots, wheat, onions, pistachios, peaches, and a variety of other food commodity crops with minimal acreages.

Water quality data for these basins were taken from the Groundwater Ambient Monitoring Program (GAMA) and include data from domestic, municipal, irrigation and monitoring wells. The data included nitrate and total dissolved solids (TDS), which can be discharged from agricultural operations and infiltrate groundwater. There do not appear to be groundwater quality concerns within the Indian Wells Valley basin that are in proximity to agriculture. However, in the Antelope Valley basin, there are elevated levels of both nitrate and TDS that are near agricultural land.

Additional research and analysis are needed to clarify the regulatory needs for these agricultural operations. First, other land uses may be sources of local groundwater pollutants. Second, in contrast to the northern part of the region, there are a diversity of crop types present in the southern part of the region; additional research into farming practices for these crops, such as fertilizer and pesticide application for each crop, is needed to determine the best regulatory approach. Third, Salt and Nutrient Management Plans, described in the proceeding sections, may help inform permit development.

4.2 Recycled Water Policy

The State Water Board's 2009 Recycled Water Policy (amended in 2018) requires local stakeholders to develop Salt and Nutrient Management Plans (SNMPs) for priority groundwater basins. SNMPs are included in the Recycled Water Policy to help address the potential for recycled water use to impact groundwater quality, to promote basin-wide management of salts and nutrients in groundwater, and to allow streamlined permitting for recycled water projects. Some recycled water is used for landscaping and forage crop irrigation in the Lahontan Region. Criteria for treatment and proper use of recycled water are established in regulations administered by both the State Water Board's Division of Drinking Water and Regional Water Boards.

4.2.1 SNMP Requirements

SNMPs are required to contain 1) a basin- or sub-basin-wide monitoring plan for salts, nutrients, and other constituents of concern; 2) water recycling use goals and objectives; 3) salt and nutrient source identification, basin or sub-basin assimilative capacity and loading estimates; 4) implementation measures to manage or reduce the salt and nutrient loading in the basin; and 5) an antidegradation analysis.

Further, the Recycled Water Policy requires Regional Water Boards to provide an evaluation of each basin or sub-basin within its boundaries before April 8, 2021 and identify basins where salts and/or nutrients are a threat to water quality and therefore need an SNMP to achieve water quality objectives in the long term. This evaluation will be updated every five years to consider any changes that have occurred that would revise findings from the initial evaluation.

4.2.2 SNMPs in the Lahontan Region

SNMP efforts in the Lahontan Region have focused on eight groundwater basins determined to be priority basins under the State Water Board's Groundwater Ambient Monitoring and Assessment Program (GAMA). SNMP efforts are underway or completed in all of the current eight priority basins, including completed plans for Antelope Valley, Mojave Region, Fort Irwin, Indian Wells Valley, and Fremont Valley. Work on SNMPS for the remaining three priority basins (Inyo/Mono, South Tahoe, and Honey Lake basins) is ongoing. The regional basin evaluation referred to above is in progress for the April 2021 deadline, and can serve as an adaptive management information source for evaluating trends in groundwater quality throughout the region related to agricultural operations.

4.2.3 Assimilative Capacity

One of the goals of preparing an SNMP is to quantify the assimilative capacity for salts and nutrients in a groundwater basin. Assimilative capacity is the ability of a receiving water body (here, groundwater) to receive a pollutant load (such as salts or nitrate) without exceeding the applicable water quality objective for that constituent. When a receiving water is able to absorb a pollutant load without exceeding the water quality objective, then assimilative capacity is said to exist, and the receiving water is a "high quality water" subject to Antidegradation Policy analysis (State Board Resolution 68-16 – Statement of Policy with Respect to Maintaining High Quality of Waters in California) in Regional Water Board permitting actions.

SNMPS can be helpful technical resources in developing waste discharge permits for projects within the area covered by the SNMP. The assimilative capacity calculations can serve as a prioritization tool, for example, to focus on areas where salts or nutrients may be close to or already exceeding assimilative capacity; to help develop permit conditions, for example, to determine where more robust permit conditions or groundwater monitoring may be needed; and to support antidegradation analyses in permits to demonstrate that the requirements of the Antidegradation Policy are met. SNMP assimilative capacity estimates and permit-specific antidegradation analyses can help guide decision makers when considering permit adoption to evaluate whether adequate assimilative capacity is preserved for future projects. However, decision makers should be cautioned that assimilative capacity estimates may not be precise enough (from either a quantitative perspective or due to the geographic scope of analysis) to pinpoint discrete areas of concern within a groundwater basin.

4.3 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into sustainability; that is, balanced levels of pumping and recharge. Medium to high priority basins are required to establish a Groundwater Sustainability Agency (GSA) and submit a Groundwater Sustainability Plan (GSP) to the Department of Water Resources (DWR) by January 31, 2022.

In the Lahontan Region, only two unadjudicated groundwater basins are medium priority or higher (adjudicated basins are not required to form GSAs or develop GSPs). South Lake Tahoe Groundwater Basin is designated as a medium priority basin and submitted an alternative plan that DWR approved (Staff notes that South Lake Tahoe does not

have any existing agriculture land uses). Indian Wells Valley Groundwater Basin (IWVGB) is a high priority basin and is critically overdrafted. The Indian Wells Valley GSP was submitted to DWR on January 31, 2020.

4.3.1 Indian Wells Valley GSP

There are approximately 3,100 acres of actively farmed land overlying the IWVGB. The primary crops grown in the Indian Wells Valley are pistachios (2,027 acres) and alfalfa (895 acres), with other miscellaneous crops (200 acres) such as grain and hay constituting a minority of production. A majority of the agricultural groundwater production wells are in the northwest portion of the IWVGB, east of Highway 395. The IWVGB is overdrafted by approximately 25,000 acre-feet per year. Overdraft occurs when outflows (e.g., groundwater pumping) exceed recharge, and there is a loss of groundwater from storage, resulting in an unsustainable condition.

In its GSP, actions to bring the IWVGB into sustainable yield⁵ are proposed. A key action is Management Action No. 1 (Implement Annual Pumping Allocation Plan, Transient Pool and Fallowing Program). This Management Action involves setting groundwater pumping allocations for users. Water pumped over the allocation would be assessed an Augmentation Fee to help fund other Management Actions, such as development of supplemental water supplies and conservation measure implementation. While this action will not directly limit groundwater extraction by any individual entity, it is anticipated that the costs associated with the Augmentation Fee will result in voluntary pumping reductions thereby assisting in achieving sustainability. Management Action No. 1 also outlines a Fallowing Program for inferior water rights holders, where they may sell back a limited one-time allocation of water, known as the Transient Pool, to the IWV Groundwater Authority. Groundwater pumpers electing to participate in the Fallowing Program may also explore alternative land uses for the fallowed land, such as enhanced habitat or grazing lands.

These actions may result in decreased irrigated agricultural activity in the Indian Wells Valley as they are implemented over the GSP planning period (2020-2040). DWR has two years to approve or deny GSPs.

4.4 Vision Projects

Inclusion of a water body on the 303(d) list requires the development of an action plan to address impairment of the water body. A total maximum daily load (TMDL) is typically used to achieve this end. Alternatives to a TMDL can also be used to outline management actions to attain water quality standards. The USEPA Vision includes a state's prioritization of its 303(d) listings. The Vision allows states to use alternative approaches, in addition to TMDLs, to address water quality impairments. Examples of

⁵ SGMA defines sustainable yield as the maximum quantity of water, calculated over a base period representative of long-term conditions in the Basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing undesirable results, such as water quality degradation, land surface subsidence, depletion of groundwater storage or interconnected surface water supplies.

alternatives include a 9-element Watershed Plan or adoption of a permit to address the impairment.

4.4.1 Bishop Creek

Data collected by the Lahontan Region’s Surface Water Ambient Monitoring Program (SWAMP) show that bacteria concentrations in the North and South Forks of Bishop Creek (collectively “Bishop Creek Forks) exceed the water quality objectives for *Escherichia coli* (*E. coli*) and for fecal coliform. These data supported the addition of Bishop Creek to the CWA Section 303(d) list of impaired waters during the 2018 Integrated Report assessment cycle. Staff identified the Bishop Creek watershed as a Vision Project watershed based on U.S. EPA’s updated vision of its impaired waters and TMDL approach.

In support of the Bishop Creek Vision Project, staff engaged with the Bishop Creek Paiute Tribe, local agencies, landowners, and participated in outreach events. Staff have held several meetings with key stakeholders in the watershed, including the Los Angeles Department of Water and Power. Private ranchers graze approximately 10 LADWP leases in the project area. The Bishop Creek Vision Plan is scheduled for completion in 2022 and will include a description of implementation measures to improve water quality related to grazing in the watershed and recommended means to support the installation of such measures. Successful implementation may require permit development. If regulatory tools such as WDRs or a Waiver to address irrigated grazing lands are developed, they would be subject to a limited subset of ESJ review order precedential requirements.

5 Priority Actions to Meet Requirements of ESJ Review Order

This section describes four prioritized actions for irrigated lands regulation in the Lahontan Region based on several considerations: 1) fulfilling ESJ review order requirements, 2) continuing our efforts to protect and restore water quality in areas of identified impacts, and 3) maintaining and leveraging progress on long-standing commitments and work already completed. The actions recognize how the region’s agricultural acreage distribution affects water quality priorities; consider stakeholder and Board member input and acknowledge constraints on resource availability.

Each action includes a table showing a conceptual schedule and estimates for staffing resource needs. Unspecified years (i.e., Year 1, Year 2) are used for scheduling, to recognize actions may not start immediately or may progress in nonsequential years due to project timelines, staffing, and resource limitations. An adaptive management review after five years will serve as the basis to build on these actions based on new information, monitoring data, effectiveness evaluations, funding and resources, and progress on priorities.

5.1 Action 1: Renew and Update the Bridgeport Grazing Waiver

5.1.1 Rationale

- Limited subset of ESJ review order precedential requirements must be incorporated into this existing waiver, so the February 2023 deadline applies (Table 1).

- Current waiver expires in 2022, so a statutory requirement to renew or replace the waiver applies.
- Continues efforts to protect and restore water quality in area of identified impacts.
- Maintains progress on work already completed.

5.1.2 Background

In July 2017, the Water Board adopted Board Order No. R6T-2017-0033, Renewal of General Conditional Waiver of Waste Discharge Requirements for Grazing Operations in the East Walker River Watershed (Bridgeport Grazing Waiver). The Bridgeport Grazing Waiver applies to landowners and operators conducting grazing operations on private lands in the Bridgeport Hydrologic Area. It does not apply to grazing on federal lands. A third-party coalition, the Bridgeport Ranchers Organization (BRO) assists with waiver implementation by conducting surface water monitoring and assessing management practice effectiveness with input provided by University of California Cooperative Extension and Water Board staff.

5.1.3 Description of Action

The 2017 Bridgeport Grazing Waiver will expire in July 2022, at which time the waiver must be renewed or replaced as required by California Water Code section 13269. Staff recommends considering a regulatory approach that at a minimum contains all applicable ESJ elements, so that the next 5-year waiver renewal deadline can be used for adaptive management to assess waiver effectiveness by 2028. Renewing the waiver will involve incorporation of the applicable ESJ review order precedential requirements for irrigated pasture. ESJ review order precedential requirements for irrigated pasture include: sediment and erosion control planning and implementation; management practice reporting; water quality monitoring and evaluation; education and outreach; and record keeping. The dischargers and the public will have an opportunity to comment on the incorporation of these requirements and any other changes to the Waiver during the review process of the Waiver.

5.1.4 Conceptual Schedule and Estimated Staff Resources Needs

Table 2: Schedule and Person Year (PY⁶) Estimates, Action 1

Year	PY	Tasks
1	1	<ul style="list-style-type: none"> • Stakeholder outreach • Waiver strategy development (watershed approach, bacteria limits, monitoring elements, ESJ requirements) • Waiver development

⁶ One PY equals 2,088 hours of staff time.

Year	PY	Tasks
2	1.5	<ul style="list-style-type: none"> • Waiver development • Board consideration of Resolution renewing/updating waiver with changes (see Section 5.1.3) by July 2022
3	0.65	<ul style="list-style-type: none"> • Implementation (inspections, report review) • Outreach
4	0.35	<ul style="list-style-type: none"> • Implementation
5	0.5	<ul style="list-style-type: none"> • Implementation • Adaptive management review

5.2 Action 2: Water Quality Improvement on Grazing Lands, Bishop Creek Vision Project

5.2.1 Rationale

- Continues efforts to protect and restore water quality in area of identified impacts.
- Maintains and leverages progress on long-standing commitments and work already completed.
- Specific actions will be identified following completion of the Bishop Creek Vision Plan, scheduled for completion in 2022, so priority reflects this timeframe.
- A limited subset of the ESJ review order precedential requirements may apply to any regulatory permit, but no deadline applies as no permit exists.
- Development of an approach to address known bacteria impacts to Bishop Creek may also serve as a template for development of future voluntary or regulatory actions on private grazing lands and public agency grazing leases in other parts of the Lahontan Region.

5.2.2 Background

Based on control measures being developed as part of the Bishop Creek Vision Project, this action may rely on an approach that will promote voluntary implementation of management practices with an increasing level of regulation if water quality does not show progress toward improvement. The approach that is developed here may also serve as a template for development of future permitting or voluntary actions to address water quality impacts private grazing lands throughout the Lahontan Region. A consideration when developing the implementation strategy for the grazed lands is that the ranching parties may not always be the landowners; however, they may be named or enrolled in permits and be responsible for meeting those permit requirements as operators and leases on grazed lands.

5.2.3 Description of Action

These actions are conceptual only; initial efforts may focus on implementing the Statewide Grazing Guidelines that are currently in development by the State Water Board’s Nonpoint Source Program staff. The Water Board will rely on provisions of Water Code section 13267 to request technical information and monitoring reports that will allow the Water Board to verify proper management measure implementation and determine whether the approach is effectively working to improve water quality within Bishop Creek. Developing a grazing permit (e.g., WDRs, waiver of WDRs, Action 3) may prove the most effective strategy. Other elements may include:

- Developing a rangeland water quality improvement plan (RWQMP) that shows continued water quality improvement in Bishop Creek toward the long-term goal of achieving the State Water Board’s bacteria water quality objective for E.coli established at 100 colony forming units/100 milliliters for waters designated with a REC-1 beneficial use.
- Describing planned, on-ranch management practices (herd management, limited pasture, rotation, stream exclusion fencing, salt placement, etc.) expected to be implemented by lessees on their individual allotments.
- Including an annual monitoring and reporting program to ensure the Water Board, dischargers, and the public can determine whether the RWQMP and all associated monitoring and reporting are effective in improving water quality. If monitoring results and annual reporting do not indicate improving trends in water quality additional actions such as a corrective action plan (additional management measures) and a schedule for implementation may be required.

5.2.4 Conceptual Schedule and Estimated Staff Resources Needs

Table 3: Schedule and PY Estimates, Action 2

Year	PY	Tasks
1	1	<ul style="list-style-type: none"> • Stakeholder outreach • Water quality improvement approach development (management practices, , quantifiable milestones, monitoring)
2	1.5	<ul style="list-style-type: none"> • Finalize approach • Stakeholder outreach
3	0.75	<ul style="list-style-type: none"> • Water Board consideration or workshop • Implementation (inspections, meetings, report review) • Outreach
4	0.5	<ul style="list-style-type: none"> • Implementation • Outreach

Year	PY	Tasks
5	0.75	<ul style="list-style-type: none"> • Implementation • Outreach • Adaptive management review

5.3 Action 3: Develop a General Order for Irrigated Pasture Lands

5.3.1 Rationale

- Actions 1 and 2 would help inform the development of a General Order for irrigated pasture lands that could apply to specific existing agricultural areas (e.g., Owens Valley or Susan River area) or regionwide.
- This action would address known surface water quality issues, 303(d) impairments, and would align with Regional Board priorities of protecting human health and aquatic resources.
- A limited subset of ESJ precedential requirements would apply to this action, but the February 2023 deadline does not apply as no regulatory permit currently exists.
- Priority reflects current lack of staffing or resources to complete a General Order and associated CEQA document, conduct outreach, incorporate limited ESJ requirements.

5.3.2 Background

A General Order of Waste Discharge Requirements (General Order) allows for consistent regulation of similar types of discharges, having the same or similar constituents of concern, similar threats to water quality, and requiring the same or similar treatment standards. A General Order for irrigated pasture lands would be considered an ILRP but would not be subject to the full suite of ESJ precedential requirements but rather a limited subset of those requirements. The General Order coverage would include irrigated pasture and animal forage crops such as alfalfa, hay, grains, and grasses. Pastures may be grazed or harvested. Food crops and ornamentals such as vineyards, nurseries, orchards, row crops, etc., would not be included, as those commodities typically represent a higher threat to water quality due to more intensive use of fertilizers, pesticides, and sediment-generating cropping practices. Input from stakeholders and other Regional Water Boards indicate that regulating irrigated pasture separately from food commodities is recommended. Actions 1 and 2 described previously, could help inform and provide the framework for development of an irrigated pasture General Order.

For this type of General Order, a tiering structure may be appropriate and developed based on a set of criteria related to threat to water quality from groups of irrigated pasture operations (i.e. geographic coalition groups) or individual discharges and operations. Criteria for determining threat to water quality for irrigated pasture could be based on size of area or operation, the landscape position of the site, hydraulic connectivity to surface water or groundwater, receiving water beneficial uses, generation of return flows or tail water, and soil stability. Under this type of tiering structure, a Tier 1 would have the highest threat to water quality with lower level

numeric Tiers having the lowest threat to water quality. As such, Tier 1 could require more regulatory oversight and monitoring, and lower level tiers could require less oversight and monitoring (see Appendix E for more detail). Permit requirements and conditions could be performance and incentive based, allowing Dischargers the ability to move from higher level tiers to lower tier if monitoring and indicates an improvement to water quality risk through improved site operations, implementation of BMPs, or a combination of both.

Third-party coalitions would be considered and encouraged.

5.3.3 Description of Action

No work on a General Order has begun, so all steps in General Order development, outreach, CEQA analysis are needed. These would include:

- Stakeholder outreach and education (ongoing throughout General Order development).
- Third-party (coalition) development and relationship building.
- General Order strategy development.
- General Order drafting, including ESJ requirements.
- CEQA analysis and outreach.
- Circulation and review of documents.
- Water Board consideration and adoption at public hearing.

Appendix E is a summary of potential General Order elements that may be considered.

5.3.4 Conceptual Schedule and Estimated Staff Resources Needs

Table 4: Schedule and PY Estimates, Action 3

Year	PY	Tasks
1	1	<ul style="list-style-type: none"> • Stakeholder outreach • Strategy for order development • Begin CEQA analysis
2	1.5	<ul style="list-style-type: none"> • Stakeholder outreach • Order writing • CEQA analysis
3	1.5	<ul style="list-style-type: none"> • Stakeholder outreach • Draft final Order • Complete CEQA analysis • Public review of documents
4	1	<ul style="list-style-type: none"> • Board consideration of General Order • Implementation
5	0.75	<ul style="list-style-type: none"> • Implementation

5.4 Action 4: Develop a General Order for Irrigated Agricultural Food Commodities and Ornamentals such as Row Crops, Orchards, Flower/Tree Farms etc.

5.4.1 Rationale

- Lower priority compared to Actions 1, 2, and 3, to reflect the Lahontan Region's limited extent of irrigated agricultural food crops (only approximately 8 percent of irrigated agriculture in the region is for such commodities)
- The full suite of ESJ precedential requirements would apply to this action, but the February 2023 deadline does not apply as no regulatory permit currently exists.
- Priority recognizes current lack of staffing or resources to complete a General Order and associated CEQA document, conduct outreach, incorporate full ESJ requirements.

5.4.2 Background

This General Order would be considered an ILRP subject to the full suite of ESJ precedential requirements. The General Order coverage would include irrigated food commodities and ornamentals such as row crops, orchards, flower farms, nurseries, etc. Irrigated pasture and alfalfa would not be included, based on input received from stakeholders and other experienced ILRP staff (see Section 2.1 and Appendix F) that pasture crops may be more effectively regulated by separate permits from high-value food crops due to differences in fertilizer and pesticide use and cropping practices. Third-party coalitions would be considered and encouraged.

5.4.3 Description of Action

No work on a General Order has begun, so all steps in General Order development, outreach, CEQA analysis are needed. These would include:

- Stakeholder outreach and education (ongoing throughout General Order development).
- Third-party (coalition) development and relationship building.
- General Order strategy development.
- General Order drafting, including all ESJ requirements.
- CEQA analysis and outreach.
- Circulation and review of documents.
- Water Board consideration and adoption at public hearing.

Appendix E is a summary of potential General Order elements that may be considered.

5.4.4 Conceptual Schedule and Estimated Staff Resources Needs

Table 5: Schedule and PY Estimates, Action 4

Year	PY	Tasks
1	1.5	<ul style="list-style-type: none"> Stakeholder outreach Strategy for Order development Begin CEQA analysis
2	1.5	<ul style="list-style-type: none"> Stakeholder outreach Order writing CEQA analysis Public review of documents
3	1.5	<ul style="list-style-type: none"> Stakeholder outreach Draft final Order Complete CEQA analysis Public review of documents
4	1	<ul style="list-style-type: none"> Board consideration of General Order Implementation
5	0.75	<ul style="list-style-type: none"> Implementation

6 Adaptive Management Framework to Assess Progress and Inform Future Actions

Staff proposes to conduct an adaptive management review and needs analysis after the first five years (e.g., in 2026) of implementing the actions described in Section 5. Annually during the first five-year period (2021-2025) of implementation, staff will report on progress and effectiveness in Executive Officer’s Reports to the Lahontan Water Board.

6.1 Five-Year Adaptive Management Framework and Needs Analysis

Adaptive management is a cycle of improvement based on setting priorities, developing strategies to fulfill those priorities, taking actions, and assessing results. The results of each cycle are used to develop new priorities, strategies, and actions for each successive cycle as demonstrated in Table 6. Regulation of agricultural discharges will include an adaptive management review of the progress and effectiveness of the actions, outlined in Table 6, and subsequent response to the results of actions.

Table 6: Adaptive management framework components

Component	Interim Result	Anticipated Priority/Strategy/Action
Water monitoring data	Updates to water quality and quantity monitoring data	<p>Aggregate data from regulatory monitoring reports, regional ambient monitoring data, SNMPs, and GSPs</p> <p>Use data to determine near-term action effectiveness and to help set priorities for longer-term actions</p>

Component	Interim Result	Anticipated Priority/Strategy/Action
Agricultural trends	Changes in agricultural land uses	Analyze updates to the DWR land cover database, SNMPs, and GSPs Conduct stakeholder outreach to understand trends in agricultural land use and potential effects on regulatory needs
Climate change	Impacts to water quality and availability through increasing frequency of extreme heat waves, droughts, and other weather events	Include management improvements for irrigation water use, sediment and erosion control, pesticide, and fertilizer use
Technologies	Emergence of new methods for irrigation, fertilizer use, monitoring, or other agriculture approaches	Work with agricultural stakeholders, State and Regional Water Board staff, UC cooperative extensions, and NRCS, to incorporate into future regulatory actions
Constituents of emerging concern	Identification of new constituents of concern for agricultural discharges	Work with agricultural stakeholders, State and Regional Water Board staff, UC cooperative extensions, and NRCS, to incorporate into future regulatory actions
Regulatory resources	Changes to staffing resource levels by 2026	Evaluate staff resources to determine what is reasonably achievable in terms of setting priorities and actions
Regulatory requirements	Updates to regulation applicable to the Lahontan Region	Evaluate new or revised regulations to understand how the Lahontan Region's priorities and stakeholders are affected
Program expansion	Identification of need to expand program	Consider developing regulatory tools for non-irrigated grazing

7 Outreach Plan

An effective outreach plan will be an integral component of continuing existing efforts and actions (i.e., updating the Bridgeport Waiver, developing the Vision Plan for Bishop Creek) or expanding agricultural regulation in the Lahontan Region (e.g., developing new regulatory permits for irrigated pasture or other conventional food crop commodities). Because of the current limitations on face-to-face meetings due to COVID-19, a variety of technology-based communication modes will be used to provide

information to and to get feedback from the different stakeholder groups. Existing resources include, but are not limited, to the following:

- Posting information to our Lahontan Water Board website.
- Distributing information via existing email subscription lists, and developing an agricultural lands-specific email subscription list.
- Hosting Zoom and Teams meetings and workshops.
- Mailing hard copies of outreach materials via postal service.
- Hosting teleconferences.

To ensure equal opportunity for participation from all stakeholder groups, we are committed to finding creative solutions for those with technological limitations and to provide translation and interpretation services when needed. As face-to-face restrictions are lifted, we intend to return to a full complement of in-person meetings combined with electronic and hard copy distributions of materials and information.

One component of an effective outreach plan is process transparency, including transparency in how requirements are established and how we respond to the concerns and comments raised by the public. To aid in transparency, we propose to implement as part of an outreach program a newsletter to document outreach events, track the schedule of proposed actions and associated milestones, and to provide a public forum to respond to comments and concerns received by the different stakeholder groups. The newsletter will be posted on the Lahontan Water Board website and distributed both electronically and in hard copy.

Staff will reach out to established stakeholder groups including Disadvantaged Communities (DACs) with particular attention to environmental justice. Outreach will include introductory information on state actions related to irrigated lands, encourage participation in developing program strategies, and provide presentations on program development at stakeholder meetings. Stakeholder groups may include, but not be limited to, the following:

- Technical Advisory Committee to the Mojave Water Agency (Mojave TAC)
- Antelope Valley Watermaster Advisory Committee
- Los Angeles Department of Water and Power
- Bridgeport Ranchers Organization (BRO)
- Eagle Lake Guardians
- Inyo-Mono IRWM Program
- California Rural Water Association (CalRural)
- California Trout (CalTrout)
- California Farm Bureau representatives
- California Cattleman's Association

- County Agricultural Commissioners

Staff will research opportunities for technical and financial resources to assist with program development and implementation (See Appendix G for a list of resources as of August 2020). Grant opportunities may be available through programs offered by the US Department of Agriculture, Natural Resources Conservation Service, and California Department of Food & Agriculture. Future information gathered on grant opportunities will be compiled and shared with stakeholders.

8 Summary and Conclusions

This staff report presents an analysis of the applicability of the ESJ review order and its precedential requirements to the Lahontan Region's current and future agricultural discharges regulation. It concludes that the ESJ review order requirements apply to an existing waiver of WDRs for grazing in the Bridgeport Valley, but does not represent a driver for developing any new irrigated lands regulatory program or specific permits regulating agricultural discharges in the Region. To the extent that new agricultural regulations are developed, the applicability of the ESJ review order's precedential requirements will be analyzed and incorporated in full or part as appropriate. Separately from the ESJ review order, this report recognizes that the Lahontan Water Board has an obligation and the authority to address nonpoint source discharges as indicated in the Nonpoint Source Policy, the Porter-Cologne Act, and the Clean Water Act, and will do so based on known or anticipated impacts to water quality from agricultural discharges.

The current amount, type, and distribution of agricultural acreage are compiled in Section 4.1.1. Notably, most of the agricultural acreage in the Region is planted to forage crops such as alfalfa, mixed pasture, and miscellaneous grasses. These types of agricultural commodities are considered a lower threat to water quality compared to food commodities, which represent approximately 8 percent of agricultural lands regionwide. The agricultural practices associated with pasture crops typically involve less fertilizer, pesticides, and sediment-generating cropping practices when compared with food commodities; however, these crops can still present a threat to water quality due to the occasional use of fertilizers and pesticides, the presence of grazing livestock contributing to bacteria and nutrients inputs from fecal material, and sedimentation from stream bank trampling and erosion. A subset of ESJ review order requirements would apply to permits regulating such commodities.

Surface water quality data from waterbodies near areas of concentrated agriculture were examined. Several of these waters are on the 303(d) list for constituents that are associated with agricultural runoff. The Susan River is listed for total dissolved solids, total nitrogen, turbidity, and unknown toxicity. The East Walker River and Bishop Creek are listed for indicator bacteria. Analysis of the water quality data demonstrated increased concentrations of nitrogen, phosphorus, and bacteria. Identifying specific sources of those constituents will require additional data collection and analysis within each watershed.

Groundwater quality data associated with agricultural areas in the Indian Wells Valley and Antelope Valley in the south Lahontan basin were examined. Water quality data included nitrate and total dissolved solids (TDS), which can be discharged from agricultural operations and infiltrate to groundwater. There do not appear to be

groundwater quality concerns within the Indian Wells Valley basin that are in proximity to agriculture. However, in the Antelope Valley basin, there are elevated levels of both nitrate and TDS that are near agricultural land. Additional research and analysis are needed to clarify the regulatory needs for these agricultural operations. ESJ review order requirements for permits regulating agricultural food commodities would be incorporated into any new permits as appropriate.

Based on input and direction received from the Lahontan Water Board in September 2019, further legal interpretation of the ESJ review order requirements, the assessment of surface and groundwater quality condition proximal to areas of significant agricultural acres in the region, and maintaining and leveraging progress on long-standing commitments and work already completed, staff proposes four prioritized actions to address agricultural discharges in the Region. These actions are:

- Action 1: Renew and Update the Bridgeport Grazing Waiver.
- Action 2: Water Quality Improvement on Grazing Lands, Bishop Creek Vision Project.
- Action 3: Develop a General Order for Irrigated Pasture Lands.
- Action 4: Develop a General Order for Irrigated Agricultural Food Commodities and Ornamentals such as Row Crops, Orchards, Flower/Tree Farms, etc.

The actions allow staff to focus limited resources on prioritized work while providing a road map for additional work if future resources allow. The adaptive management framework and needs analysis will provide an opportunity for staff, stakeholders, and Water Board members to understand progress made after a 5-year time interval, the effectiveness of efforts, and any changes needed.

Appendix A: Surface Water Data

The following section highlights three areas of agriculture and nearby water quality sampling data for surface water bodies within the northern part of the Lahontan Region. Each of these areas has water quality constituent data collected by the Lahontan Region's Surface Water Ambient Monitoring Program (SWAMP). These data are publicly available through the California Environmental Data Exchange Network (CEDEN) website.

Staff looked for sampling locations upstream and downstream of irrigated agriculture to determine possible surface water quality impacts. This combination of sites was considered because, assuming otherwise consistent river conditions, any significant increase in constituent concentrations from the upstream site to downstream site could indicate the agricultural land as a source.

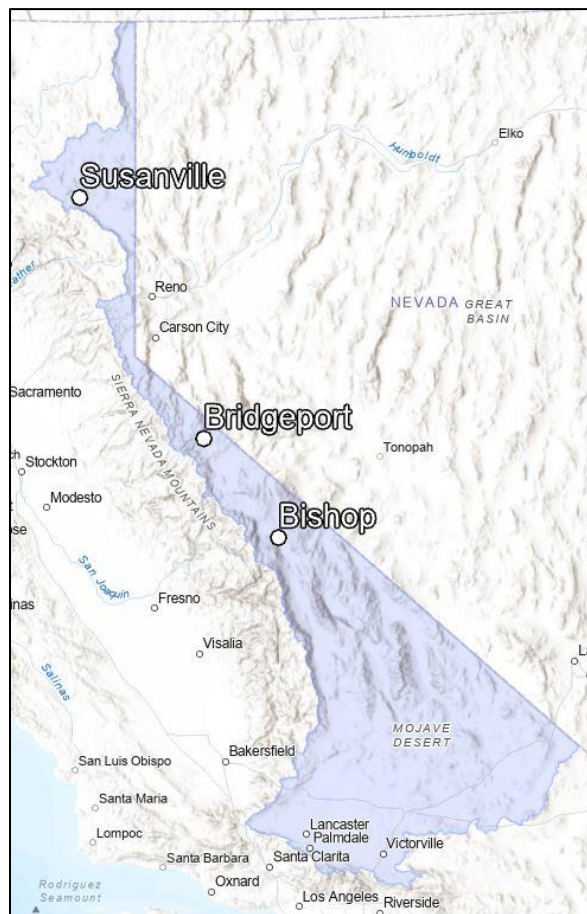


Figure A-1: Location of three analysis areas: Susan River passing through Susanville, East Walker River passing by Bridgeport, and Bishop Creek and Owens River near Bishop

A.1 East Walker River

The East Walker River flows through the Bridgeport Valley into the Bridgeport Reservoir. The predominant irrigated land use along this stretch of river is mixed

pasture with cattle grazing (Figure A-2). Cattle can be a source of fecal bacteria and nutrients when runoff from grazing operations enters a nearby waterbody.

Unfortunately, water quality sampling data were not available for sites upstream of the pastureland. Therefore, two sampling locations downstream of the pasture were selected (Figure A-3). The sampling site 630EWK006, was located above the reservoir and 630EWK001 was located significantly downstream of the reservoir where additional runoff from riparian areas would be expected to enter the East Walker River.

Despite not being ideal, the two sampling sites provided meaningful information. Notably, the East Walker River upstream of the reservoir is on the 303(d) list for fecal coliform. The site upstream of the reservoir shows elevated levels of bacteria, particularly during the growing season when cattle are likely present, compared to the data downstream of the reservoir (Figure A-4). This suggests dilution of bacteria levels as it flows through the reservoir.

Nutrient data was only available at the site downstream of the reservoir. Sampling data is available on a sporadic basis for the past 20 years. There have been exceedances for both total nitrogen and total phosphorus site specific objectives throughout the past 20 years (Figure A-5).

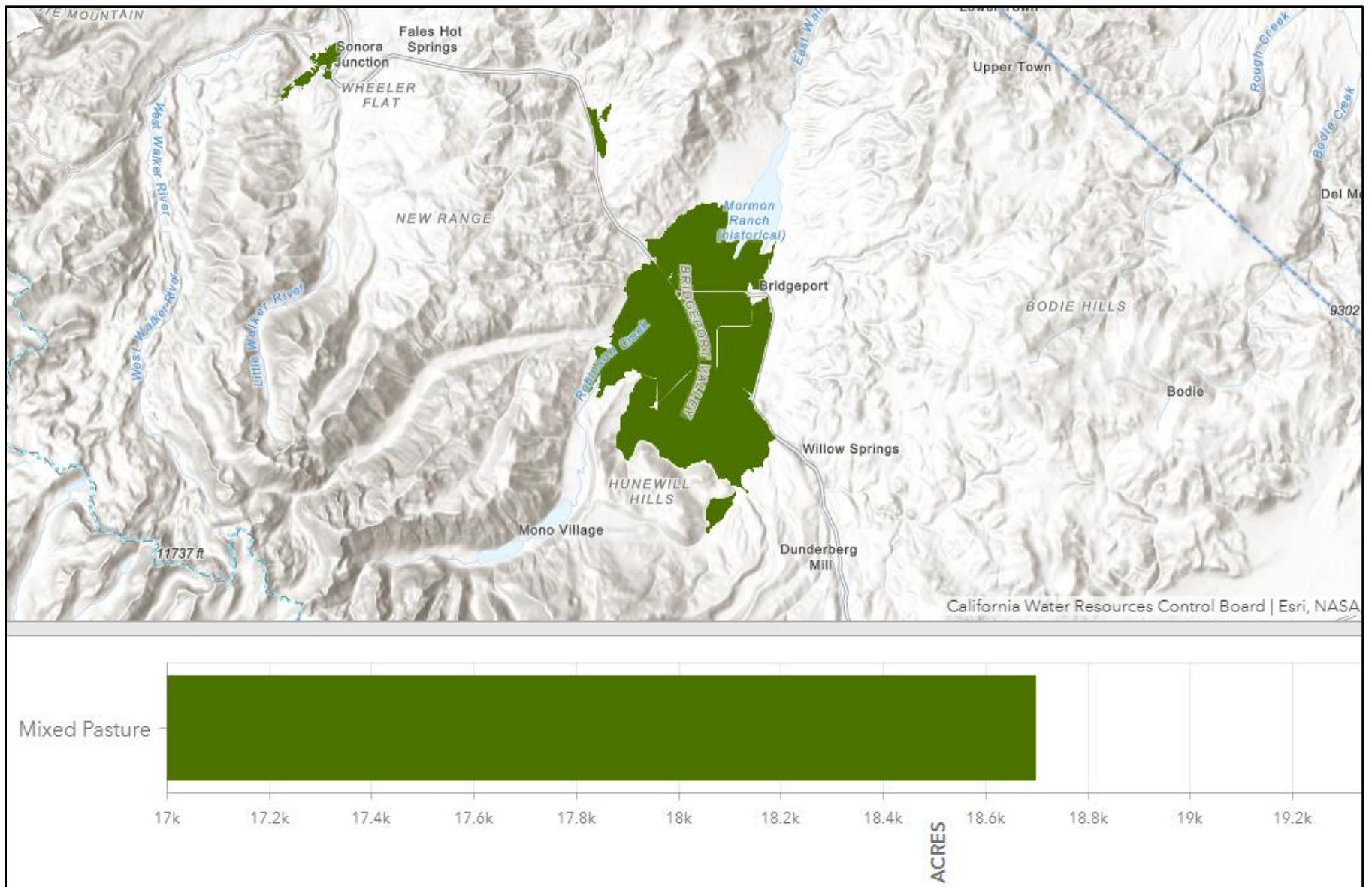


Figure A-2: Bridgeport Valley irrigated agriculture



Figure A-3: Sampling locations 630EWK006 is located above the reservoir and 630EWK001 is located downstream of the reservoir

East Walker River Indicator Bacteria

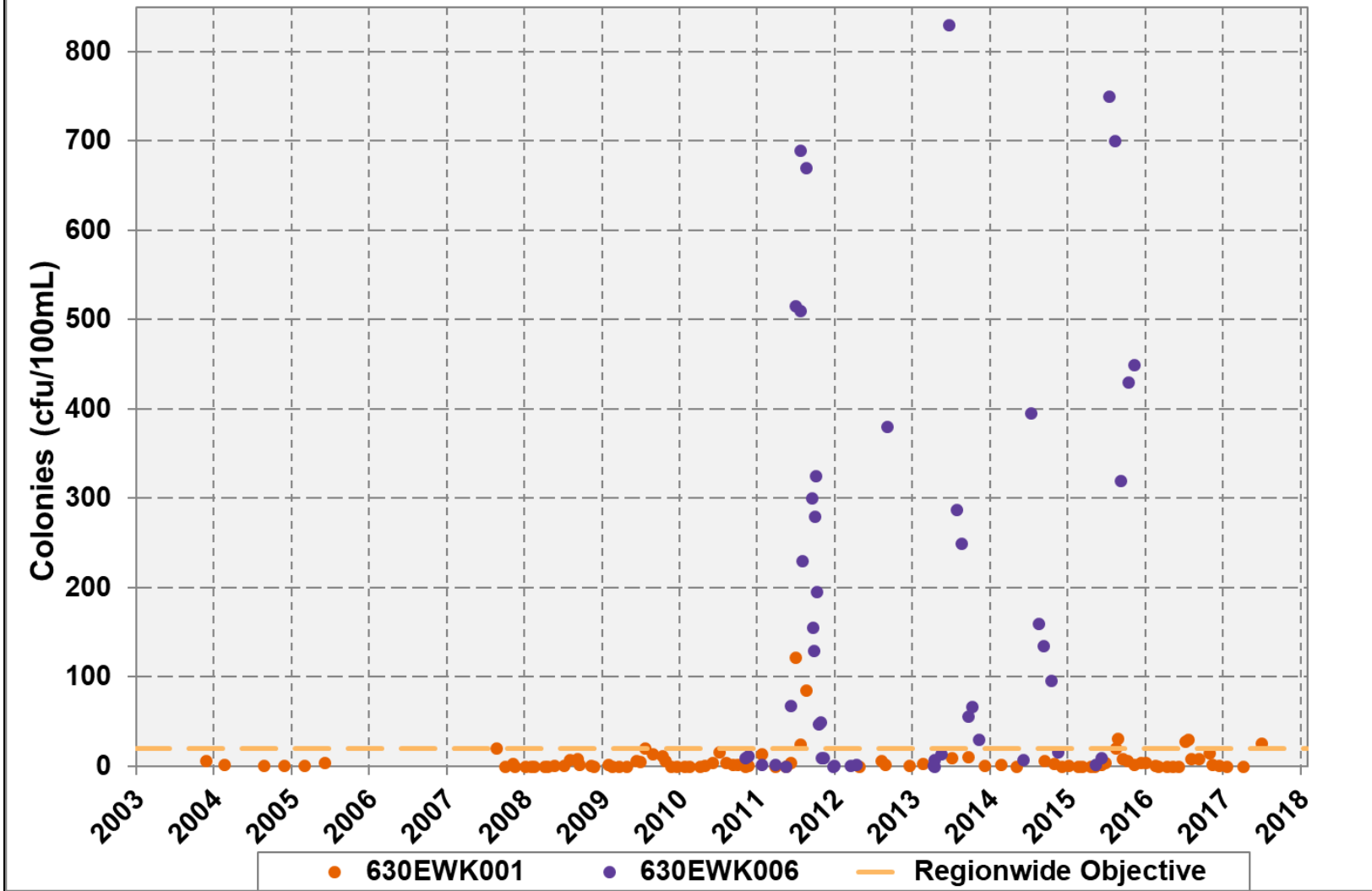


Figure A-4: East Walker River Indicator Bacteria Data (Fecal Coliform)

East Walker River at 630EWK001 Nutrients

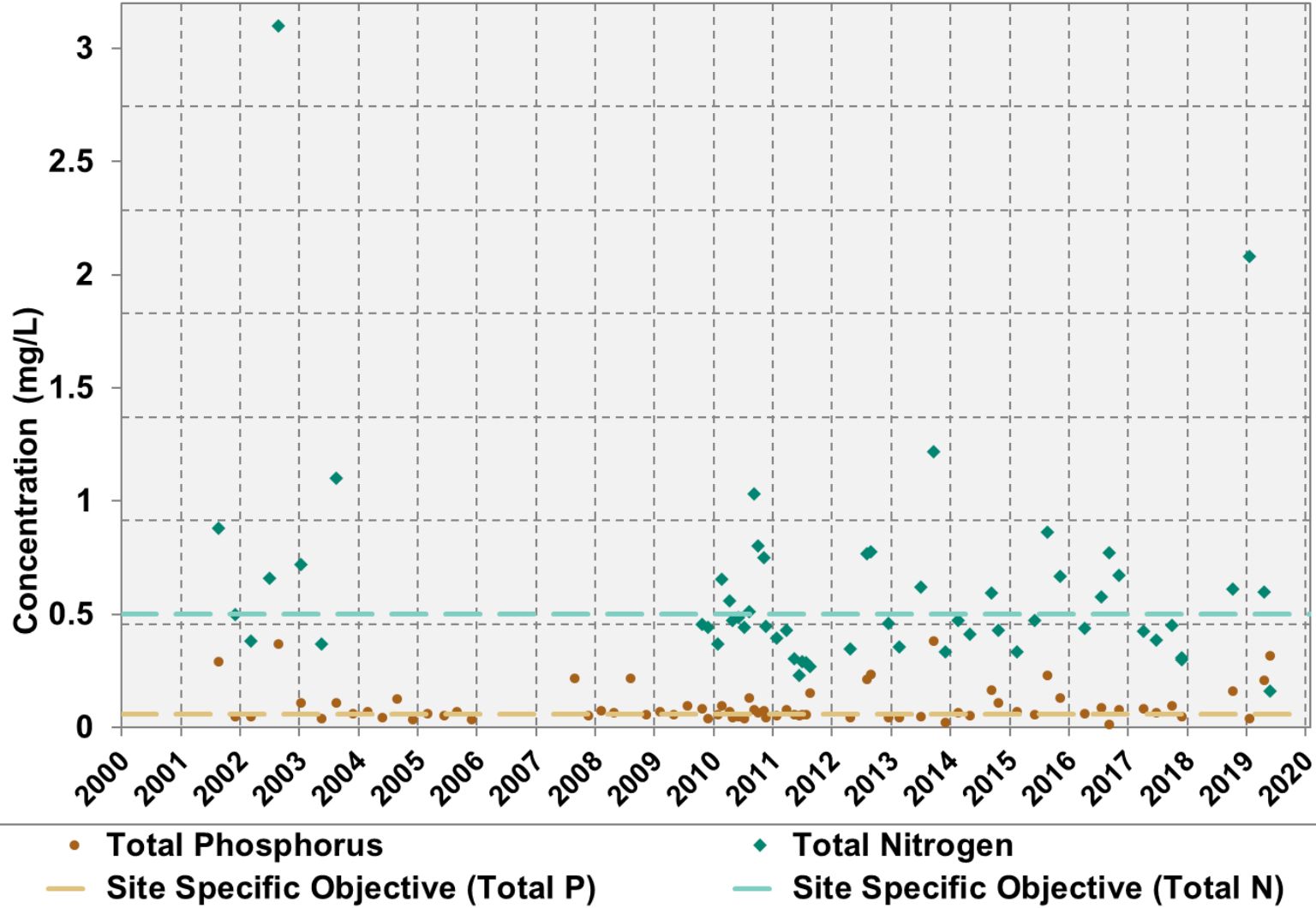


Figure A-5: East Walker River-nutrient water quality data downstream of the Bridgeport Reservoir

A.2 Bishop Creek and Owens River

Bishop Creek originates in the Sierra Nevada mountains and passes through the Bishop Paiute Tribe Reservation and through the city of Bishop before emptying into the Owens River near Poleta Road. The creek is diverted for agriculture and residential purposes beginning upstream of the Bishop Paiute Tribe Reservation in an area known as West Bishop and continues throughout the lower watershed, including on Tribe lands and within the City of Bishop. Such diversions create a complex local hydrology of irrigation ditches and water impoundments which provide water for agricultural irrigation, hobby ranching, and residential backyard watering. The majority of the irrigation tail water is returned to Bishop Creek. Land uses in this area consist of mostly mixed pasture, rural residential, and urban land uses inside the city (Figure A-6). There is also additional agriculture located along the Owens River upstream of the junction with Bishop Creek.

Data from three water quality sampling locations were compared along Bishop Creek and the Owens River. The furthest upstream site along Bishop Creek, 603BSP111, is located upstream of West Bishop on the downgradient portion of the alluvial fan at the foot of the Sierra. The site downstream along Bishop Creek, 603BSP021, is located downstream of mixed pasture to the north of the city of Bishop. The furthest downstream site 603LOW011, is located on the Owens River near Warm Springs Road downstream of the junction with Bishop Creek. These sites are displayed on Figure A-7.

The reach of Bishop Creek that flows from West Bishop through the City of Bishop was identified as impaired during the 2018 Integrated Report because concentrations of Indicator Bacteria exceed water quality objectives. This reach of Bishop Creek is included on the recent 303(d) list which is under review by U.S. EPA. Bacteria data collected from Bishop Creek at site 603BSP111 upstream of irrigation diversions were reported as undetectable or at low levels consistent with naturally occurring fecal bacteria. At the downstream site on Bishop Creek, 603BSP021 which is within the area where irrigation diversions occur, indicator bacteria data were reported at levels which exceed water quality objectives. Elevated concentrations of bacteria in this portion of Bishop Creek, coincide with irrigation season which begins in the spring and continues throughout the summer months when cattle typically graze (Figure A-8). The reach of the Owens River to which Bishop Creek empties is also a new addition to the 303(d) list resulting from the 2018 Integrated Report because Indicator Bacteria exceeds water quality objectives.

Both 603BSP111 and 603BSP021 on Bishop Creek showed similar concentrations of nitrogen and phosphorus. However, the Owens River site, 603LOW011, showed increased concentrations of nitrogen and phosphorus (Figure A-9 and Figure A-10). The additional agriculture upstream of the junction of Bishop Creek and the Owens River may contribute to these elevated levels. The majority of sampling data was below the site specific objective for total nitrogen of 0.7 milligrams per liter.

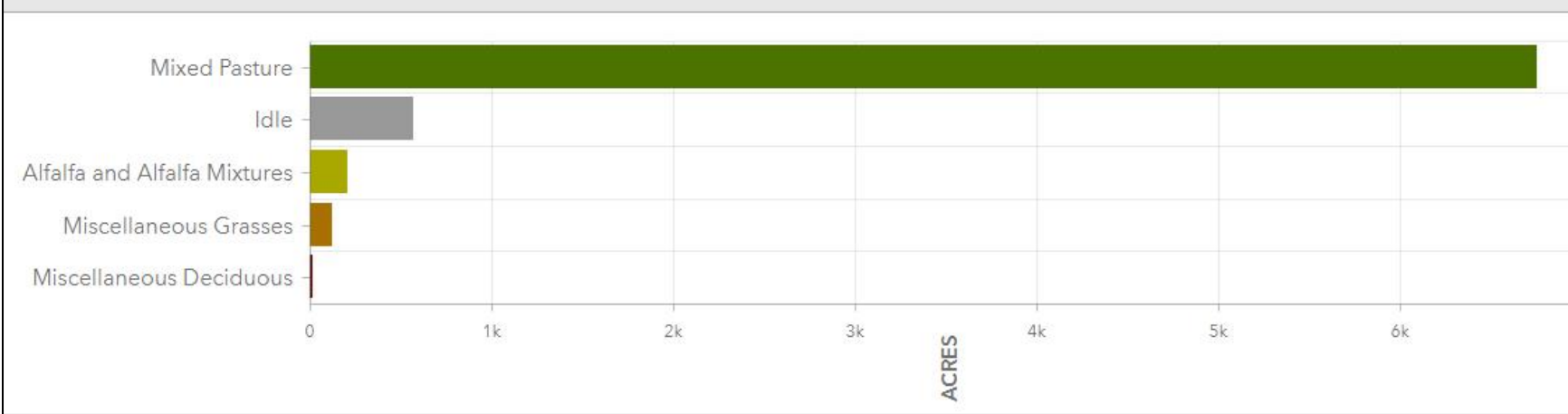
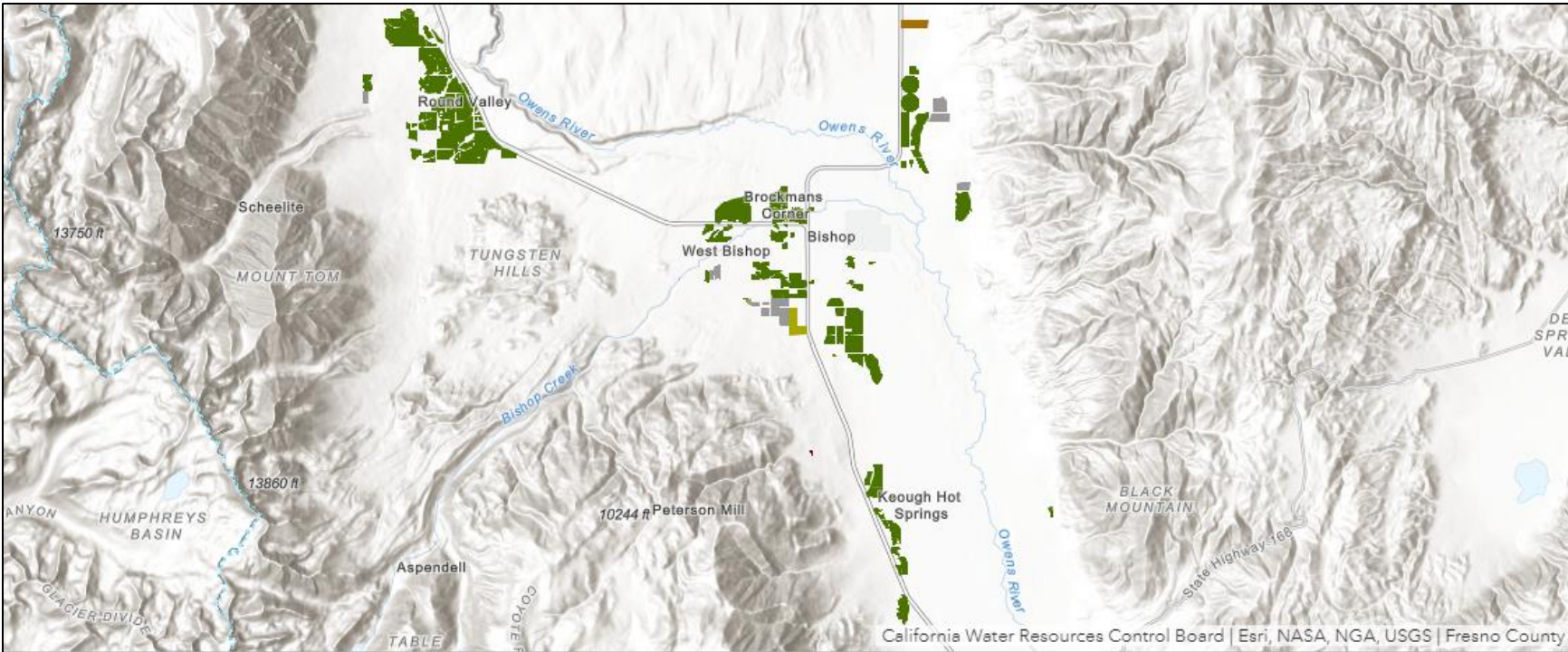


Figure A-6: Bishop Creek and Owens River irrigated agriculture distribution



Figure A-7: Sampling Locations 603BSP111 located upstream, 603BSP021 located downstream of mixed pasture, and 603LOW011 located downstream of Bishop Creek on the Owens River

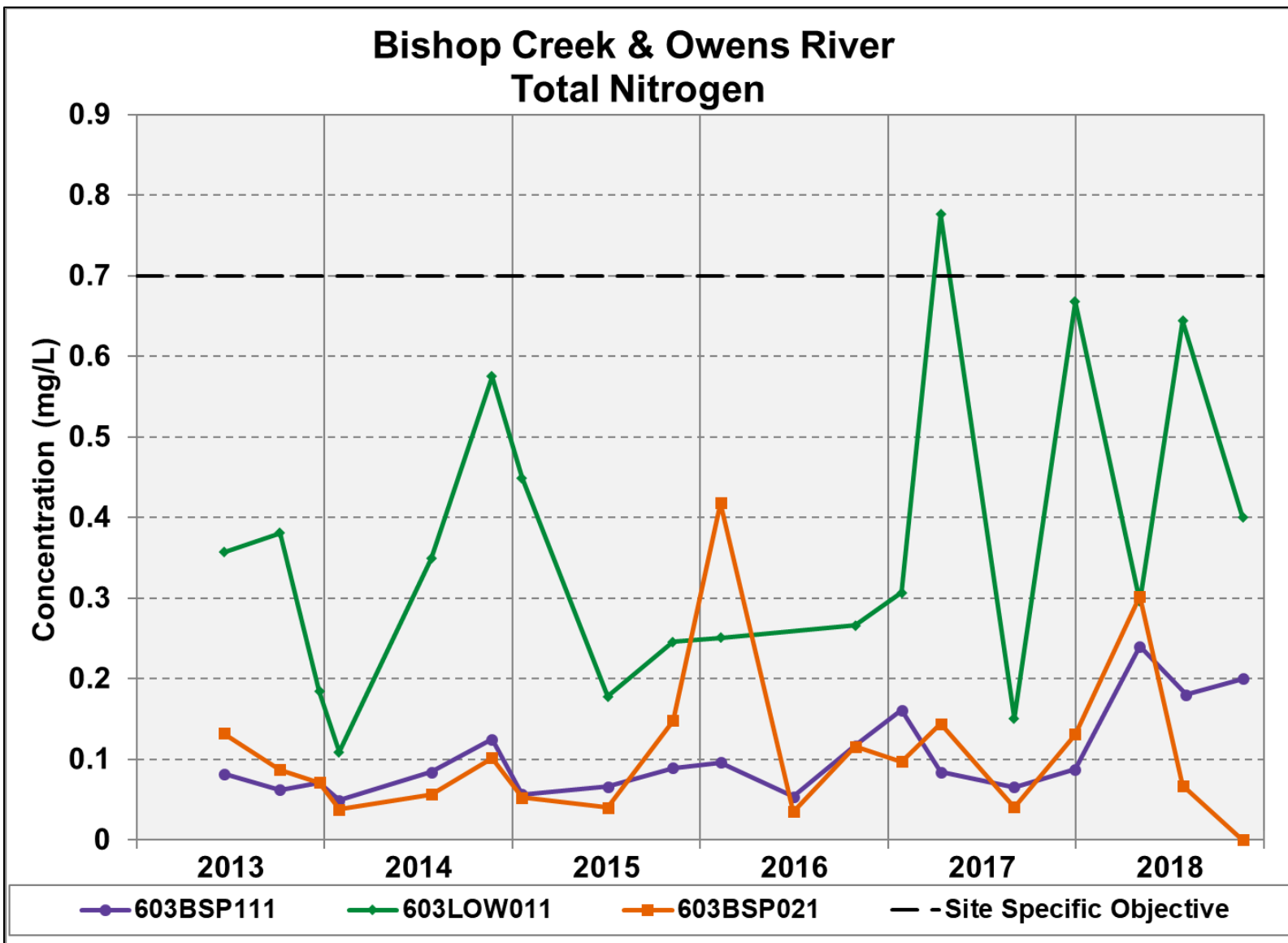


Figure A-9: Bishop Creek and Owens River total nitrogen data

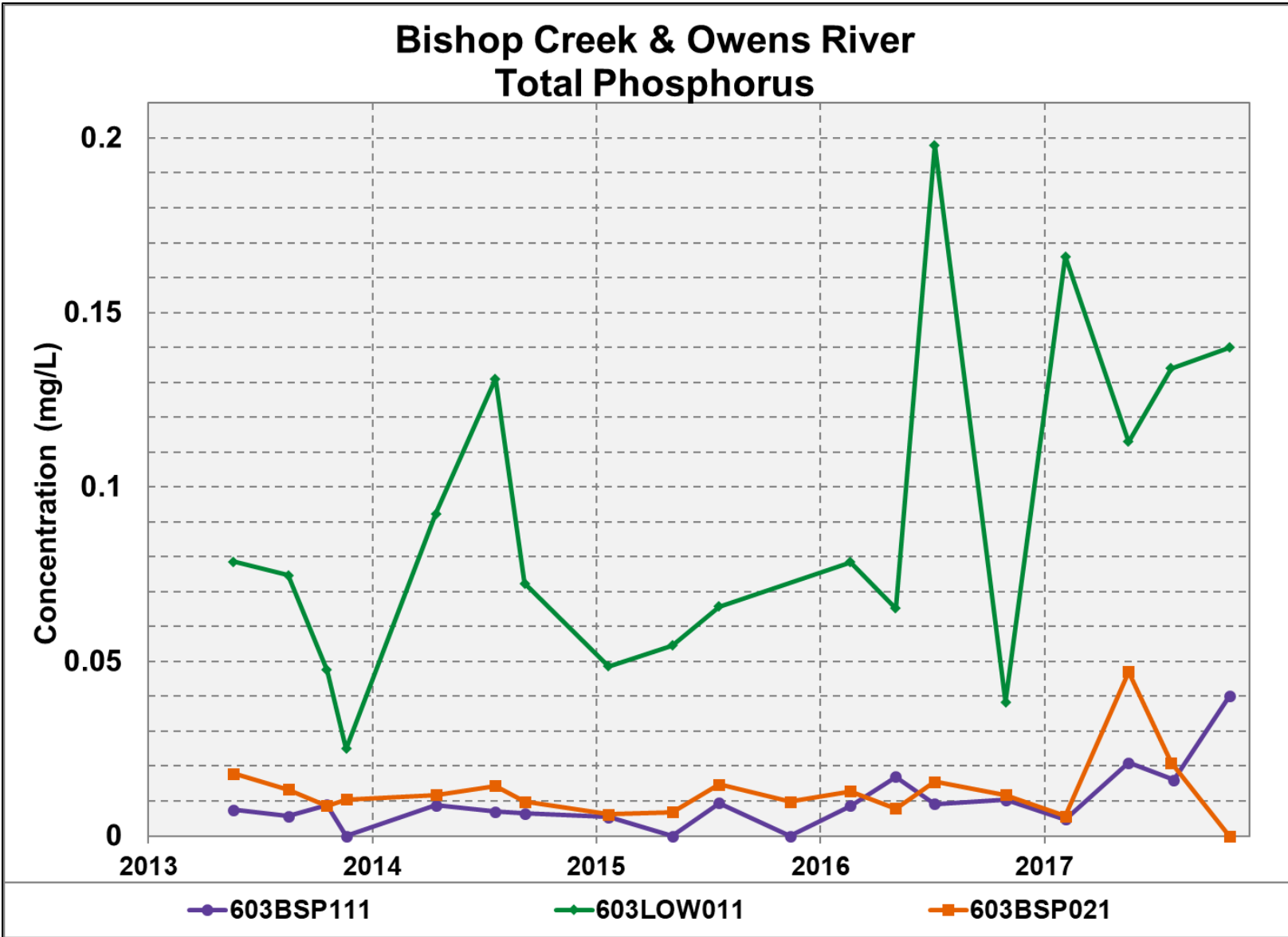


Figure A-10: Bishop Creek and Owens River total phosphorus data

A.3 Susan River

The Susan River flows through the city of Susanville and eventually flows into Honey Lake. There is agriculture along the Susan River between Susanville and Honey Lake. The predominant forms of agriculture are managed wetlands, alfalfa, mixed pasture, and grain and hay crops (Figure A-11). There are also urban land uses throughout the area. Although managed wetlands are not a typical type of agriculture, they are included in the ESJ definition of irrigated agriculture and are included here for discussion purposes.

Data from two water quality sampling locations were compared along the Susan River. The upstream site, 637SUS003, was located upstream of Susanville. The downstream site, 637SUS001, was located downstream of most of the urban (Susanville) and agricultural land uses (Figure A-12). Notably, additional agriculture areas are located downstream of site 637SUS001.

The Susan River is listed on the 303(d) list for total dissolved solids, total nitrogen, turbidity, and unknown toxicity. Total nitrogen and total phosphorus sampling data were compiled at 637SUS001 and 637SUS003. Total nitrogen sampling results did not show a clear trend across time or between the two sampling sites (Figure A-13). Both sites frequently exceeded the site specific objectives for total nitrogen. There was an increase in total phosphorus at the downstream site (Figure A-14). The upstream site frequently exceeded the site specific objective for total phosphorus, however the downstream site, despite increased phosphorus concentrations, remained less than the site specific objective.

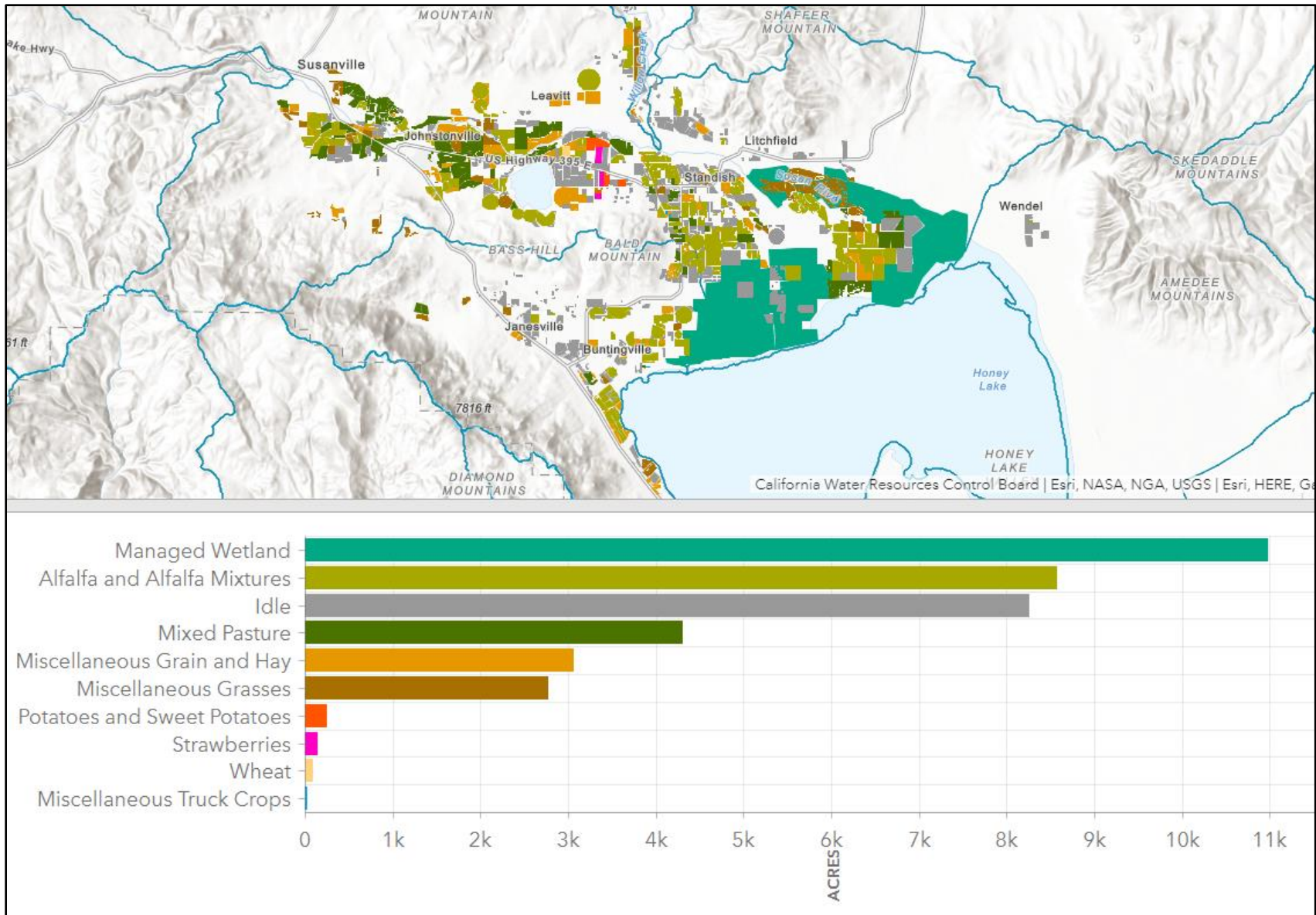


Figure A-11: Susan River irrigated agriculture distribution

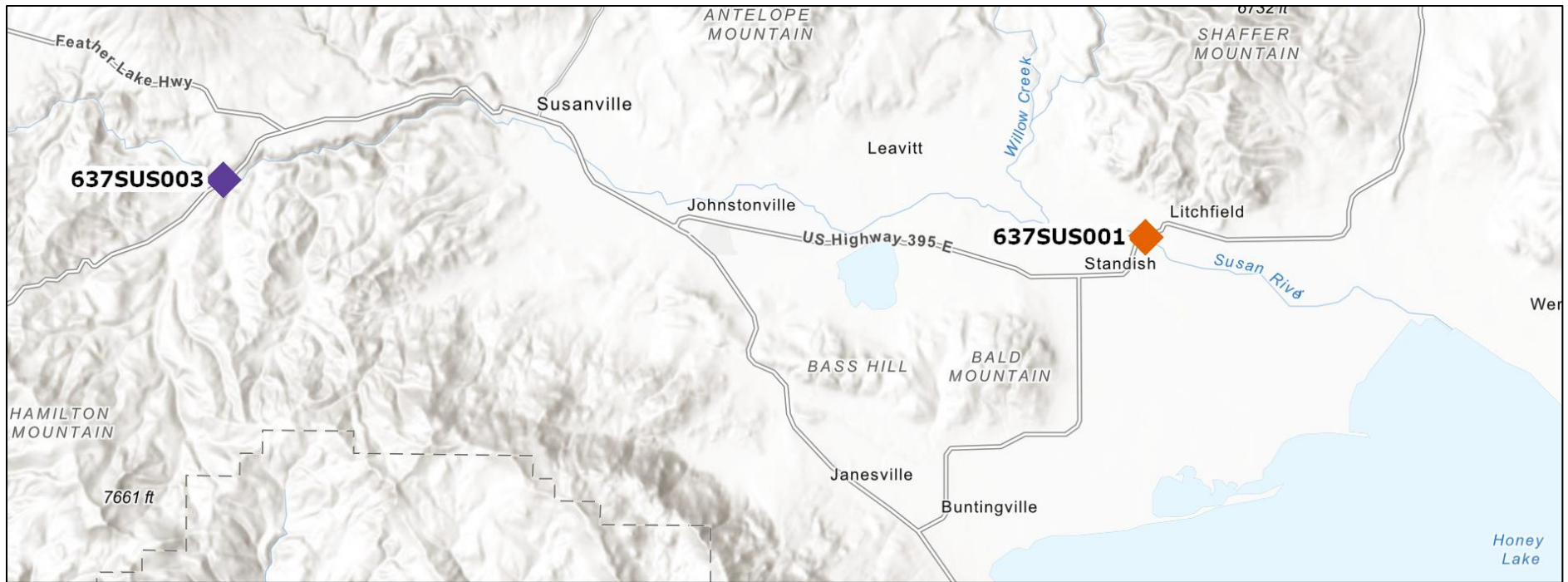


Figure A-12: Susan River sampling sites 637SUS003 located upstream and 637SUS001 located downstream

Susan River Total Nitrogen

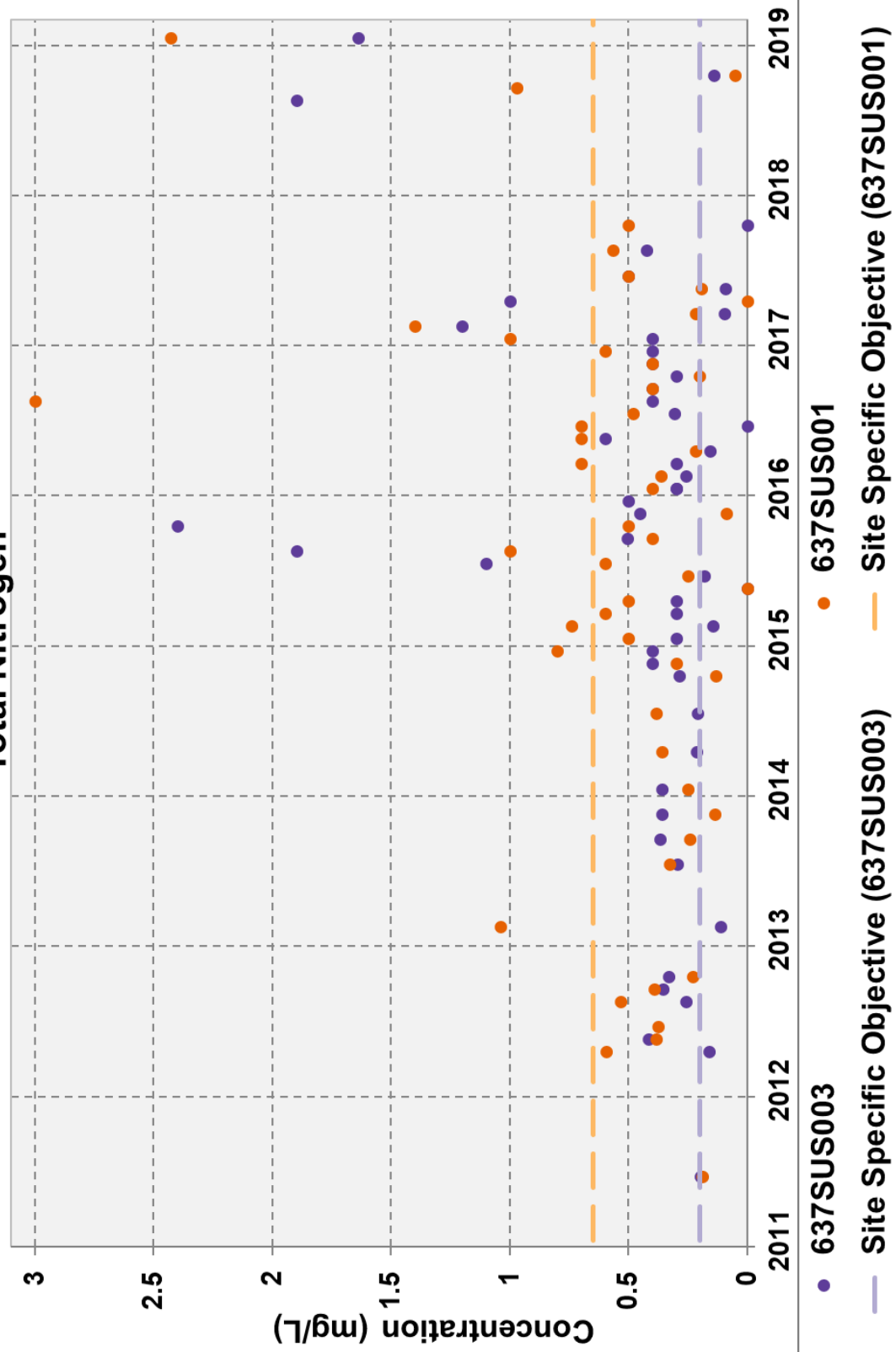


Figure A-13: Susan River total nitrogen data

Susan River Total Phosphorus

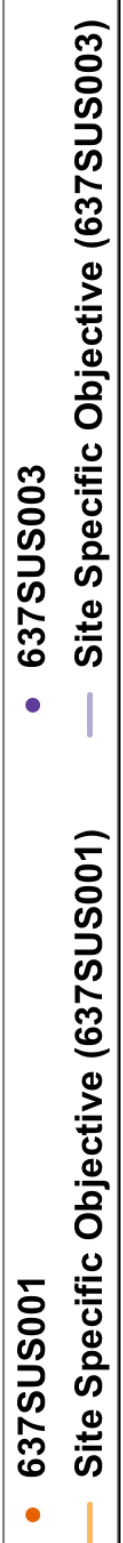
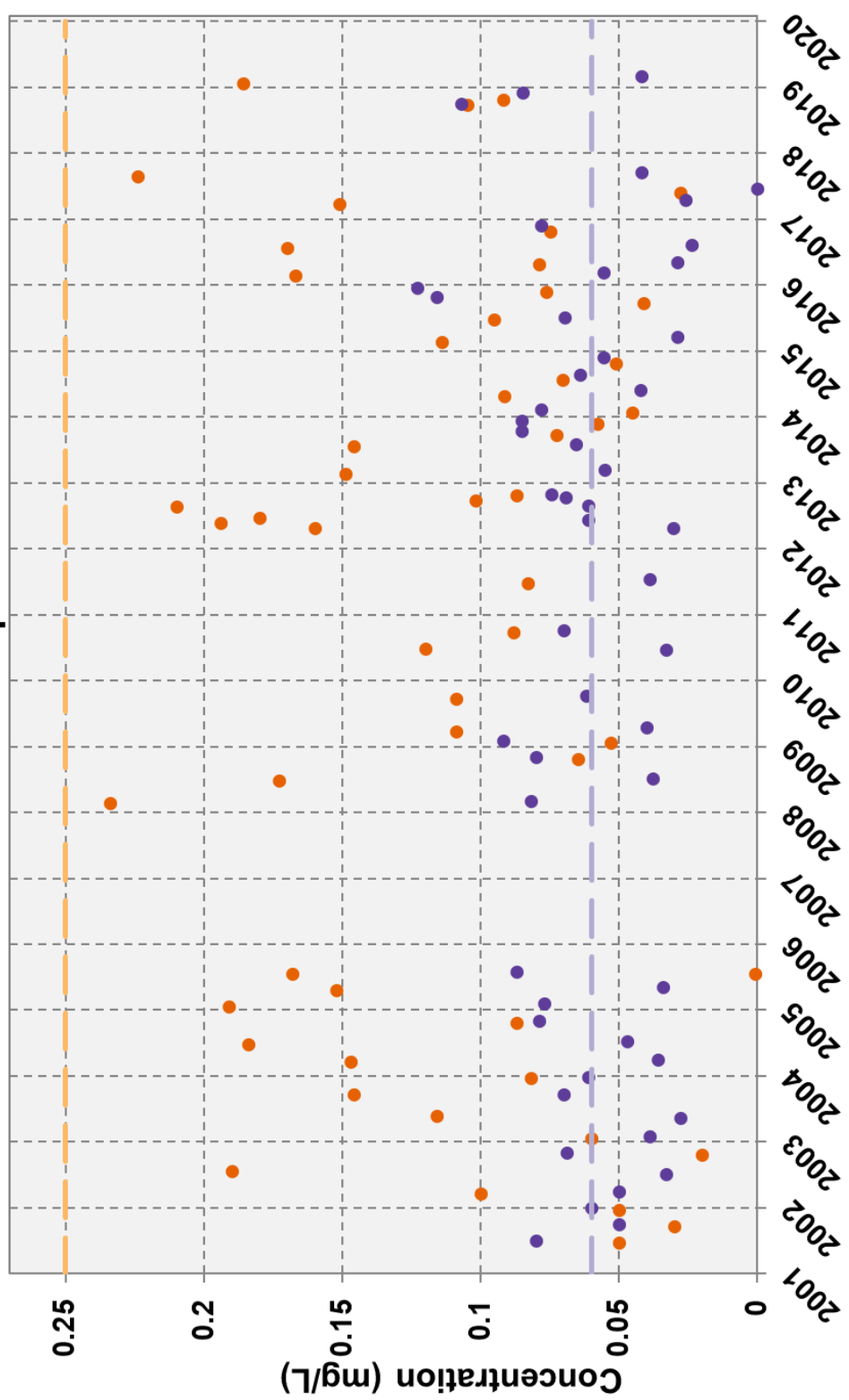


Figure A-14: Susan River total phosphorus data

Appendix B: Groundwater Data

This section highlights two groundwater basins, Indian Wells Valley and Antelope Valley, located in the southern part of the Lahontan Region. These two groundwater basins have appreciably more agricultural activity than other basins. Groundwater data for nitrate and total dissolved solids levels were compiled from the State Water Board's Groundwater Ambient Monitoring and Assessment (GAMA) Program. This information is publicly available through the GAMA website.

Groundwater wells included in the dataset include municipal, domestic, irrigation, monitoring, and water supply wells. The dataset was filtered to only include data from the past 30 years.

B.1 Indian Wells Valley

Indian Wells Valley is a high priority groundwater basin as defined by the Sustainable Groundwater Management Act (SGMA) and considered critically overdrafted. There are approximately 3,100 acres of irrigated agriculture overlaying the groundwater basin. The main crops consist of pistachios (approximately 2,000 acres) and alfalfa (approximately 900 acres) as shown in Figure B-1.

Groundwater data report nitrate concentrations predominantly less than the maximum contaminant level (MCL) of 10 milligrams per liter within the basin. However, a few groundwater wells do show concentrations greater than the MCL (shown in Figure B-2). These locations are primarily surrounded by wells showing concentrations less than MCL and do not appear to be geospatially correlated with agricultural operations.

TDS has a secondary MCL⁷ of 500 milligrams per liter for drinking water and additional secondary thresholds at 1,000 and 1,500 milligrams per liter. Groundwater well sampling data near the city of Ridgecrest and China Lake Naval Air Weapons Station contain concentrations greater than the secondary MCL. These locations do not appear to be geospatially correlated with agricultural operations, and data from wells near agricultural operations do not show concentrations greater than the secondary MCL. These data are displayed in Figure B-3.

⁷ Secondary MCLs address non-health related effects of drinking water, such as taste and odor, clothes staining from washing, or appliance fouling due to precipitates.

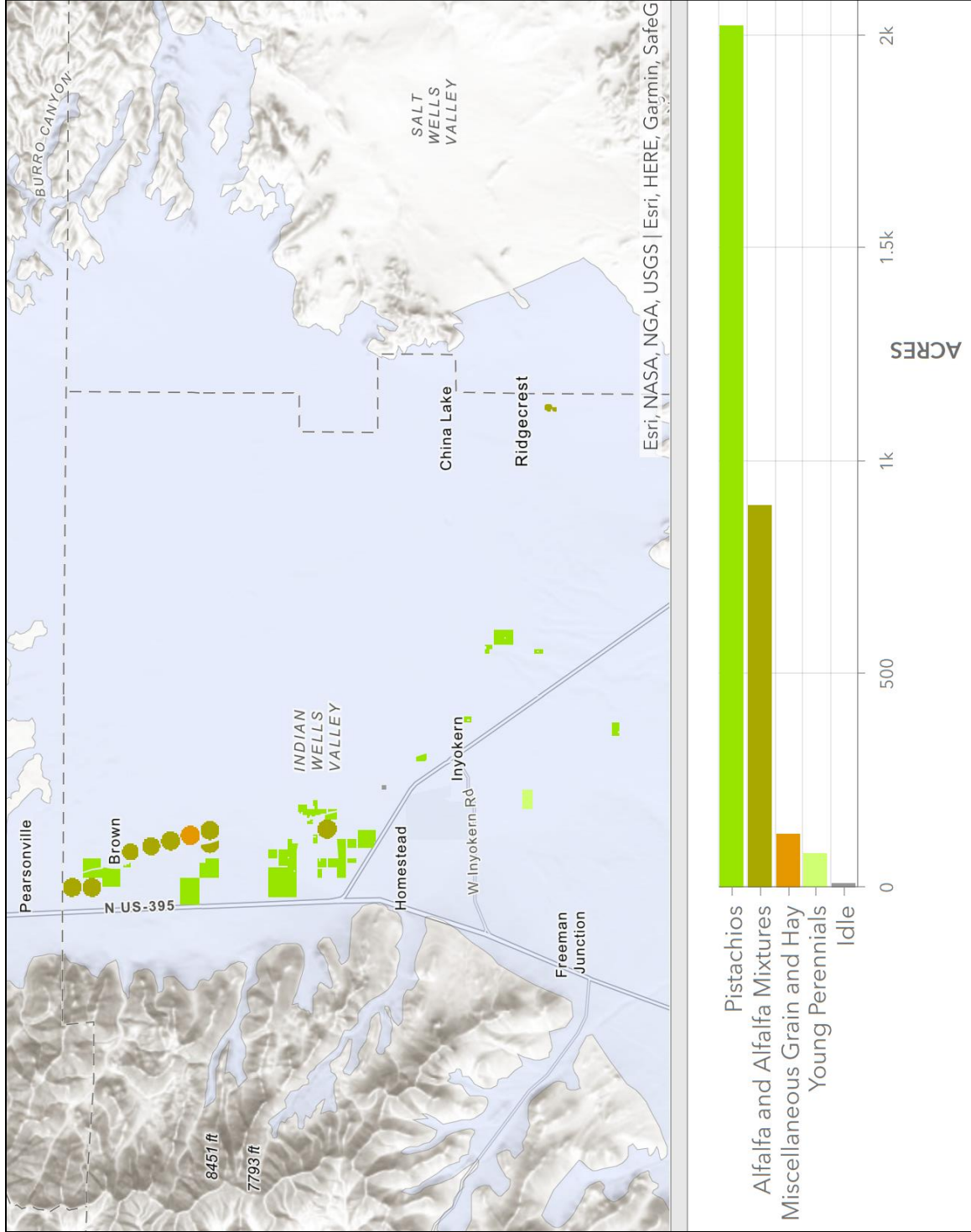


Figure B-1: Crop type and distribution overlaying the Indian Wells Valley Groundwater Basin

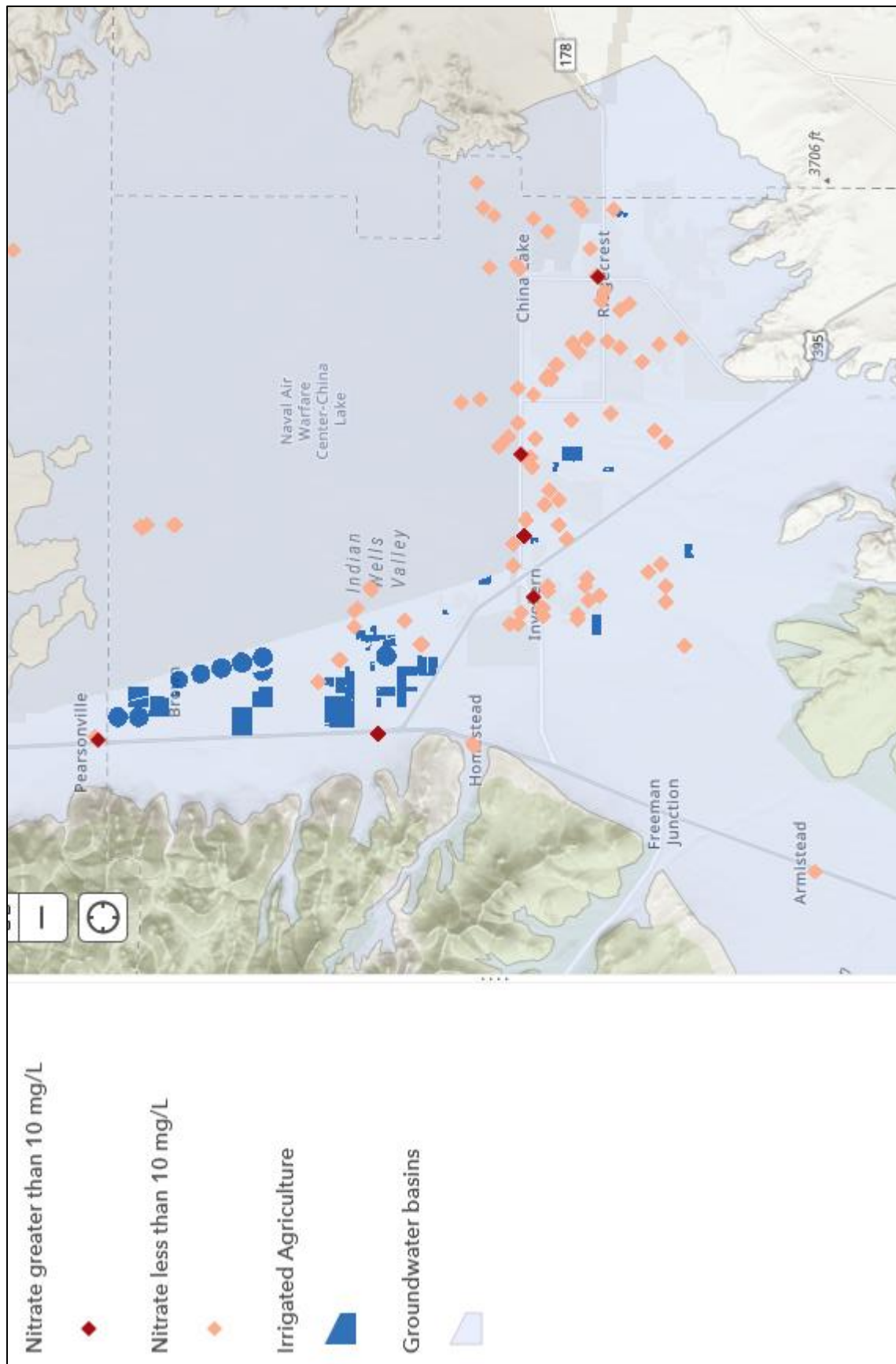


Figure B-2: Nitrate levels in Indian Wells Valley groundwater basin

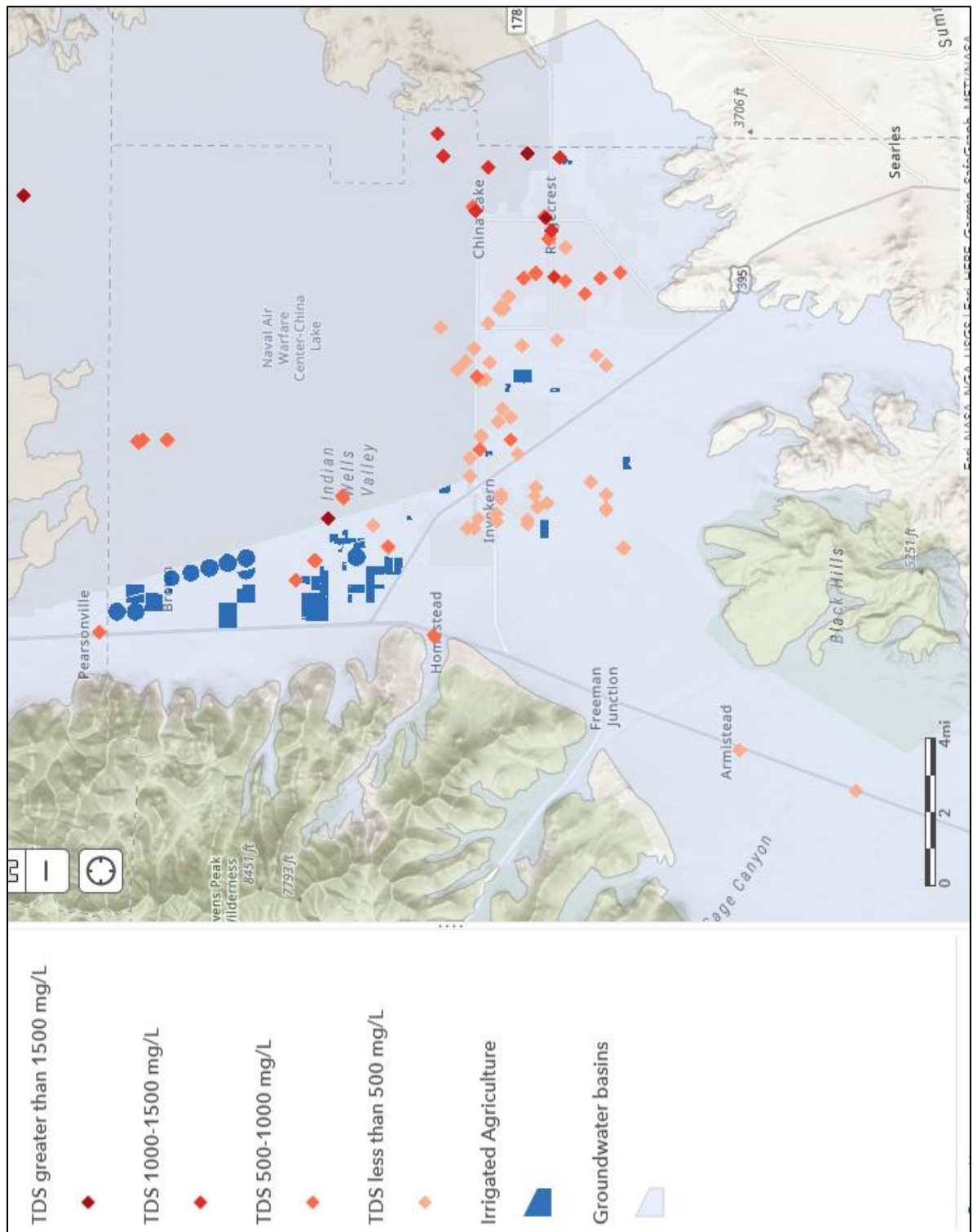


Figure B-3: Total dissolved solids in Indian Wells Valley groundwater basin

B.2 Antelope Valley

Antelope Valley is an adjudicated basin with an approved Salt and Nutrient Management Plan (SNMP). There are approximately 21,000 acres of irrigated agriculture overlaying the Antelope Valley groundwater basin. The main crops consist of alfalfa, miscellaneous grasses, miscellaneous grains, sweet potatoes, carrots, wheat, onions, pistachios, peaches, and a variety of other food commodity crops with minimal acreages as shown in Figure B-4: Distribution of crop types overlaying the Antelope Valley Groundwater Basin and Figure B-5: Acreage of irrigated crops overlaying the Antelope Valley Groundwater Basin.

Groundwater data include nitrate concentrations (MCL of 10 milligrams per liter) within the Antelope Valley basin. Due to the preponderance of wells, Figure B-6 is displaying the wells with nitrate sampling data greater than the MCL concentration; any well with sampling data concentrations less than the MCL are not shown. Of note, there are a cluster of wells southeast of Lancaster with sampling data concentrations greater than the MCL located near agricultural lands with alfalfa, miscellaneous grasses, grain, and sweet potatoes.

TDS has a secondary MCL of 500 milligrams per liter for drinking water. Groundwater well sampling data concentrations are greater than the secondary MCL near agricultural lands planted with alfalfa to the northeast of Lancaster and near the Rio Tinto Borax mine in the northeast area of the basin. However, most areas of agriculture within the basin have nearby wells with sampling data concentrations less than the secondary MCL. See Figure B-7: Total dissolved solids above the secondary MCL in Antelope Valley groundwater basin.

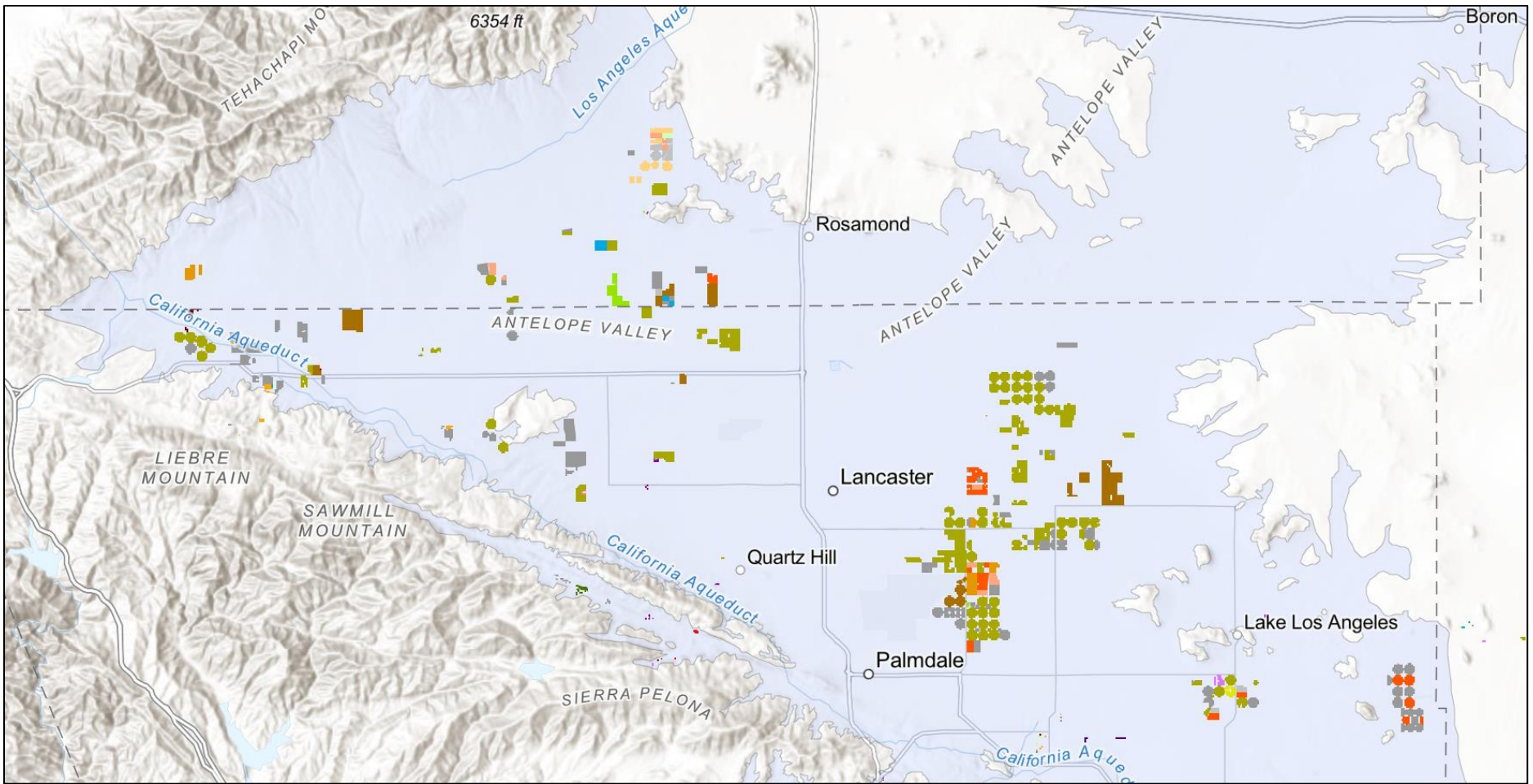


Figure B-4: Distribution of crop types overlaying the Antelope Valley Groundwater Basin

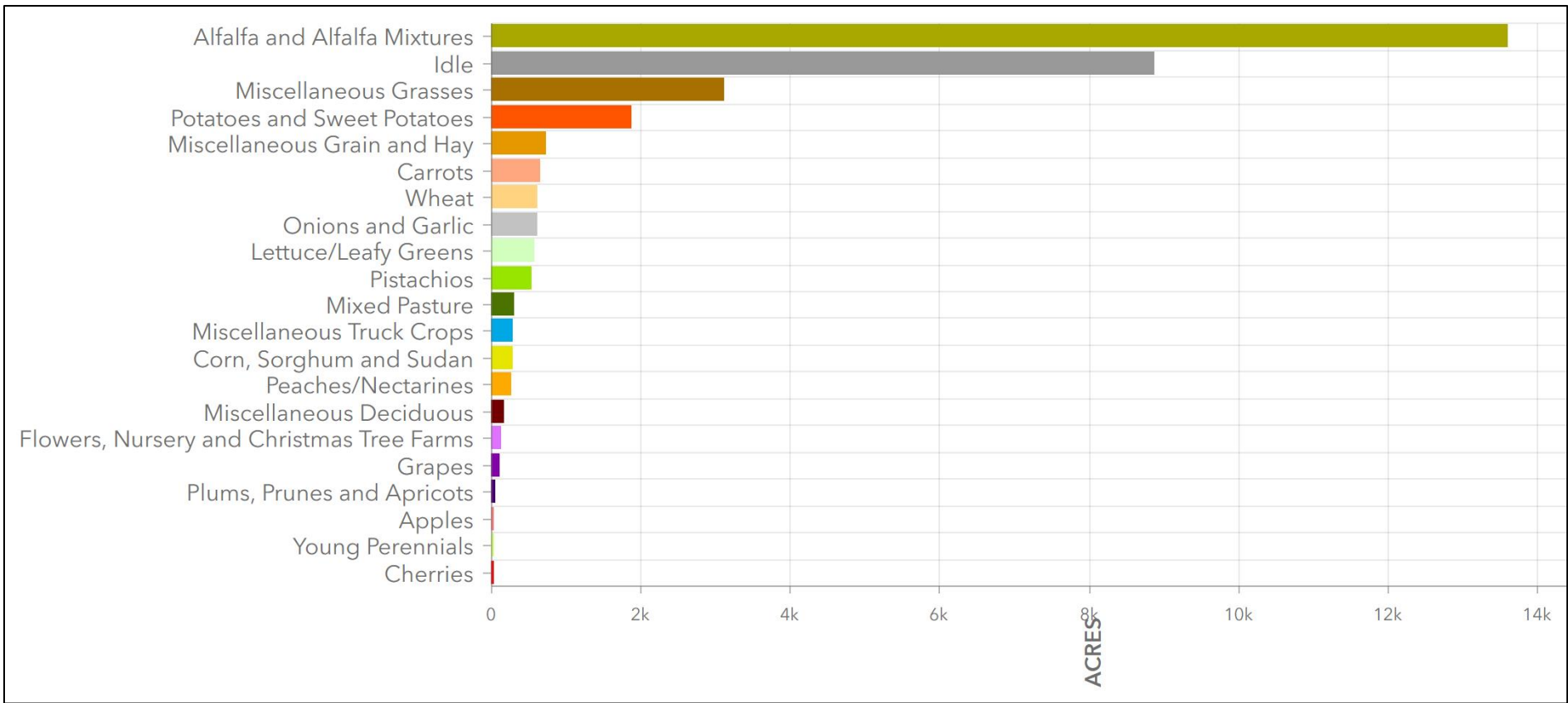


Figure B-5: Acreage of irrigated crops overlaying the Antelope Valley Groundwater Basin

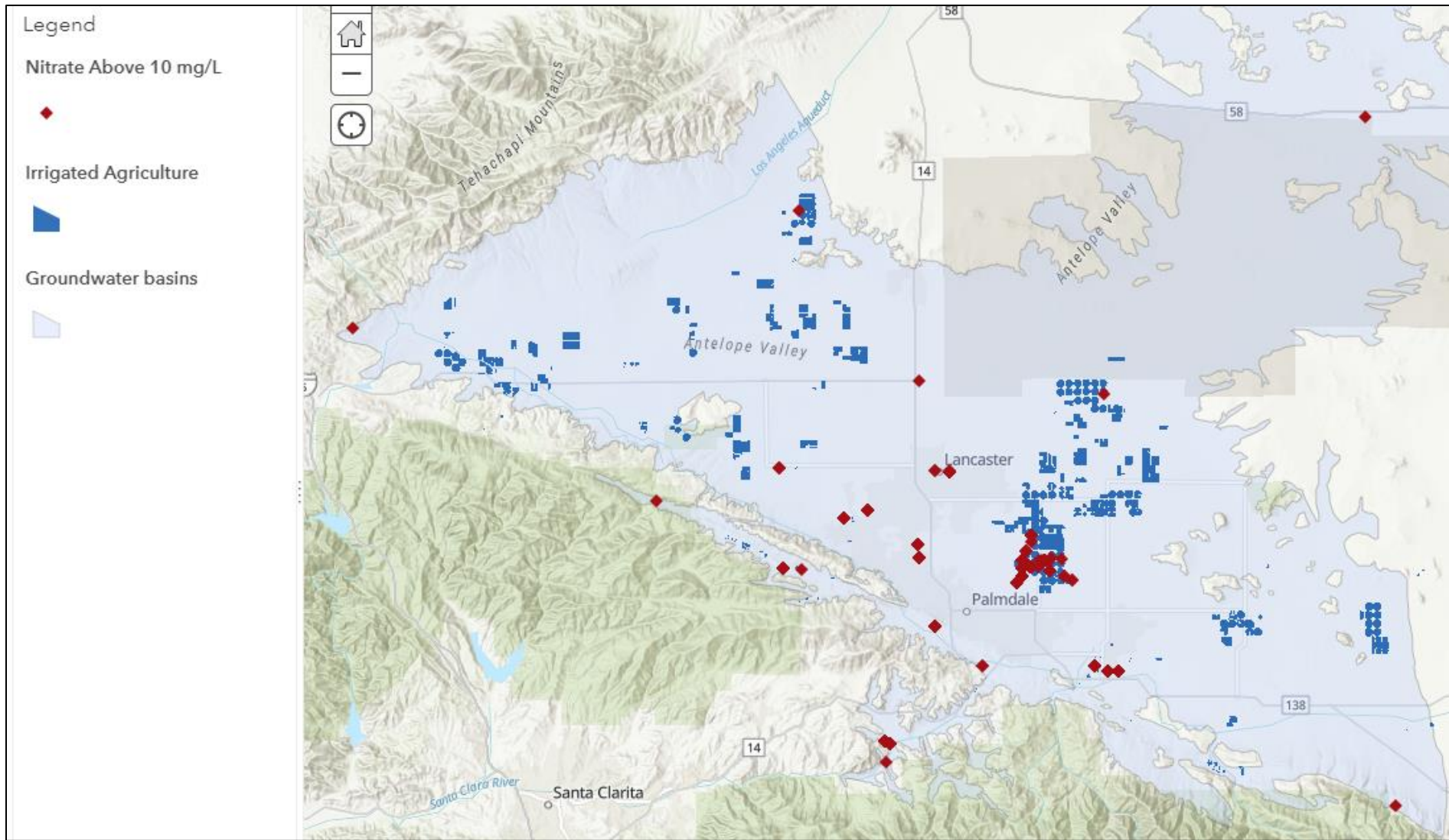


Figure B-6: Nitrate levels above the MCL Antelope Valley groundwater basin

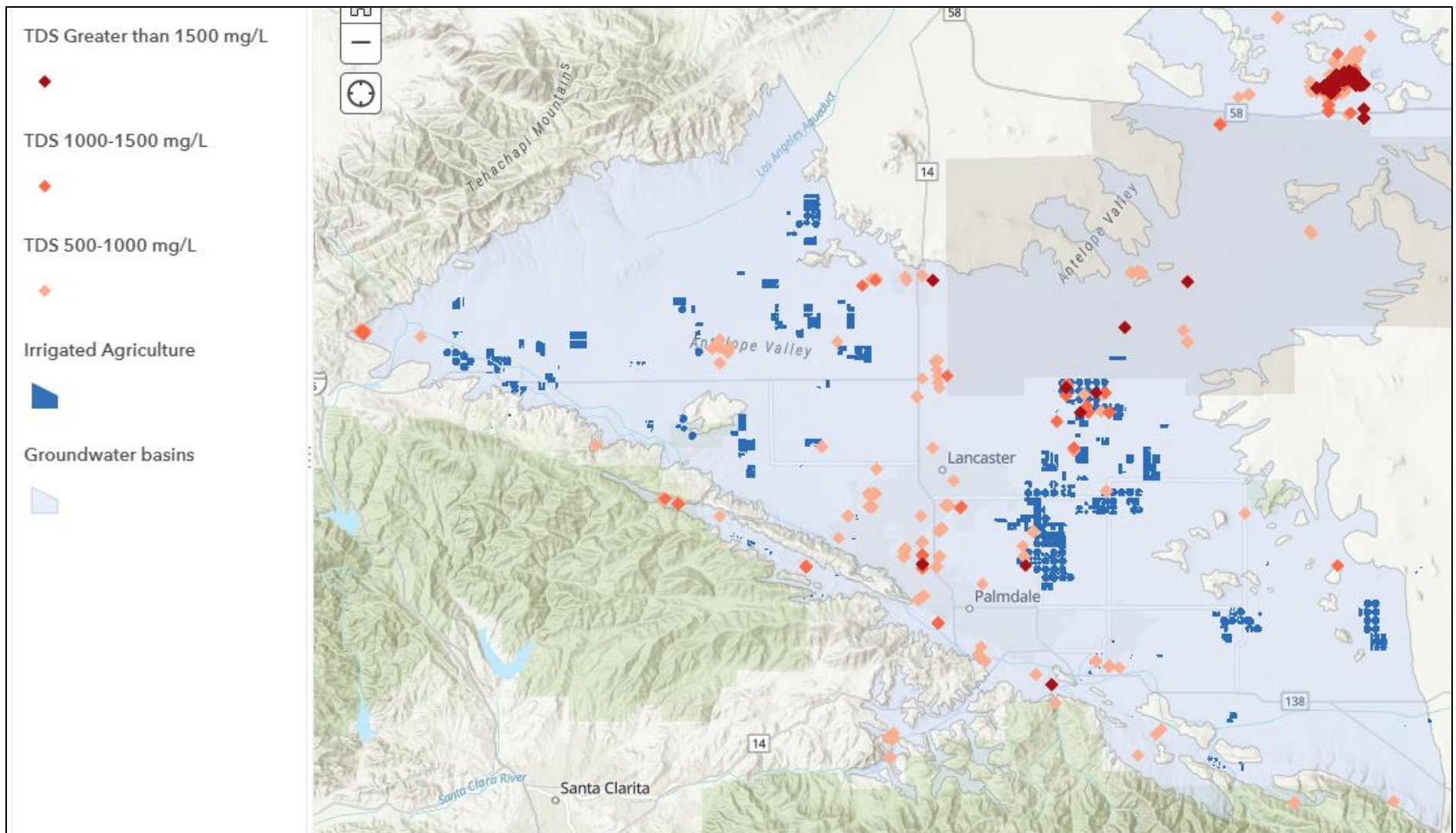


Figure B-7: Total dissolved solids above the secondary MCL in Antelope Valley groundwater basin

Appendix C: Legal and Regulatory Authorities for Addressing Agricultural Discharges

C.1 Porter-Cologne Act, Clean Water Act, and Nonpoint Source Implementation Policy

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) designates the State and Regional Water Boards as the agencies within the State of California with the primary responsibility for protecting water quality in California. The Porter-Cologne Act obligates Regional Water Boards to address all discharges of waste that could affect the quality of waters of the state, including potential sources of nonpoint source (NPS) pollution. In the Porter-Cologne Act, the term “discharge of waste” includes all discharges, from both point and nonpoint sources, including agricultural return flows and storm water discharges.

Section 319 of the CWA requires states to develop a management plan to address NPS pollution. To comply with this federal requirement, the State Water Resources Control Board (State Water Board) adopted its Plan for California’s Nonpoint Source Pollution Control Program (NPS Program Plan) to address NPS pollution in California and its Policy For Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy), which explains how the NPS Program Plan will be implemented and enforced. The NPS Policy requires the Water Boards to address potential NPS pollution issues through the issuance of waste discharge requirements, conditional waivers of waste discharge requirements and/or basin plan prohibitions. The NPS Policy requires that any NPS pollution control program incorporate five key elements:

KEY ELEMENT 1: The program’s ultimate purpose shall be explicitly stated.

Implementation programs must, at a minimum, address pollution in a manner that achieves and maintains water quality objectives.

KEY ELEMENT 2: The program shall include a description of the management practices (MPs) and other program elements that are expected to be implemented to ensure attainment of the implementation program’s stated purpose(s), the process to be used to select or develop MPs, and the process to be used to ensure and verify proper MP implementation.

KEY ELEMENT 3: Where a Regional Water Board determines it is necessary to allow time to achieve water quality requirements, the NPS control implementation program shall include a specific time schedule, and corresponding quantifiable milestones designed to measure progress toward reaching the specified requirements.

KEY ELEMENT 4: An NPS control implementation program shall include sufficient feedback mechanisms so that the Regional Water Board, dischargers, and the public can determine whether the program is achieving its stated purpose(s), or whether additional or different MPs or other actions are required.

KEY ELEMENT 5: Each Regional Water Board shall make clear, in advance, the potential consequences for failure to achieve an NPS control implementation program's stated purposes.

Together, the Porter-Cologne Act, the NPS Policy, and the Clean Water Act require Regional Water Boards to address activities with the potential to cause NPS pollution on lands within their respective jurisdictions.

C.2 Lahontan Basin Plan

On March 31, 1995, the Water Board adopted a Water Quality Control Plan for the Lahontan Region (Basin Plan), and in subsequent incorporated amendments, that establishes beneficial uses, water quality objectives, waste discharge prohibitions, and implementation policies that apply to waters of the state and discharges to waters of the state within the Lahontan Region.

The Basin Plan contains Chapter 4, Implementation, which includes discussions of general control actions (waste discharge requirements (WDRs), waivers of WDRs, discharge prohibitions, enforcement actions) to protect beneficial uses and achieve water quality objectives. Section 4.10, Agriculture, describes control measures and recommended future actions for irrigated agriculture, confined animal facilities, and aquaculture. Many of the measures generally recommend coordination with appropriate federal, state, and local agencies for monitoring, outreach, and guideline development for irrigation, nutrient, pesticide, and grazing management. This report is consistent with implementation recommendations for agriculture in the Lahontan Basin Plan.

Appendix D: Eastern San Joaquin Review Order Precedential Requirements

The Central Valley Water Board adopted Waste Discharge Requirements (WDRs) for agricultural discharges in the Eastern San Joaquin River watershed in 2012. The State Water Board reviewed the Central Valley Water Board's order and subsequently adopted an order modifying the Central Valley Water Board's order in February 2018. This State Board order is referred to as the Eastern San Joaquin review order, or ESJ review order (State Board Order WQ 2018-0002). The State Water Board designated portions of the ESJ review order as "precedential" and "direct[ed] the regional water boards to revise their irrigated lands regulatory programs within the next five years to be consistent with [the] precedential direction in [the ESJ review order]." This appendix summarizes those precedential requirements.

D.1 Outreach, Education, and Recordkeeping

Outreach. All growers must participate in outreach events; however, Regional Water Boards have discretion over the precise form and frequency of the outreach events as long as they are designed to reach all growers in the ILRP.

Required Follow-Up. Requires a third party to follow up with and provide training for nitrogen applied versus removed (AR) data outliers and for identification of repeated outliers. Regional Water Boards will be responsible for the follow up and training for ILRPs that directly regulate growers without a third-party intermediary (or coalition).

Recordkeeping. For all third-party irrigated lands regulatory programs, requires maintenance of the reports and records for ten years and requires a Third Party to back up field-specific data in a secure offsite location managed by an independent entity.

D.2 Planning

Sediment and Erosion Control Plan. Growers with the potential to cause erosion and discharge sediment that may degrade surface waters must prepare this plan. Regional Water Boards have discretion as to how these practices are documented and reported.

Irrigation and Nitrogen Management Plan. All growers must prepare an Irrigation and Nitrogen Management Plan (INMP) unless any category of Members (such as growers of a particular crop or growers in a particular area) seeking to be exempted from the precedential nitrogen management requirements of the Order make a demonstration, approved by the regional water board, that nitrogen applied to the fields does not percolate below the root zone in an amount that could impact groundwater and does not migrate to surface water through discharges, including drainage, runoff, or sediment erosion.. For those INMPs that the regional water boards require to be certified, plans must contain specified certification language for the INMP that states that the preparer used sound irrigation and nitrogen management planning practices to develop irrigation and nitrogen application recommendations and that the recommendations are informed by applicable training for meeting the crop's agronomic needs while minimizing nitrogen loss to surface water and groundwater.

D.3 Metrics and Coefficients

Metric for Nitrogen Application Management. Requires calculation of annual and multi-year nitrogen A/R ratio and A-R difference parameters for each grower by field, with some exceptions. The regional water boards have discretion as to the division of responsibilities among the growers, third parties, and regional water boards for determination of the values, provided that the values are known to both the growers and the third parties.

Multi-Year A/R Ratio and A-R Difference for Nitrogen Loading to Groundwater. Requires the development of Groundwater Protection Formula, Values, and Targets for third parties that proposed the methodology. Even if ILRPs do not require Groundwater Quality Management Plans, all of the regional water boards shall apply this methodology or a similar methodology, designed to determine targets for nitrogen loading within high priority townships or other geographic areas.

Requirement for Third Party to Determine Nitrogen Removed Coefficients. Requires development and use of coefficients for conversion of yield to nitrogen removed values. The Regional Water Boards have discretion to determine the number of crops to be analyzed and the timeline for development of the coefficients.

D.4 Reporting

Irrigation and Nitrogen Management Plan (INMP) Certification and Summary. Requires all growers to submit summary data from INMPs. INMP Summary Reports must detail the nitrogen applied and crop yield. Coalitions must calculate the nitrogen removed, annual and multi-year applied/removed (A/R) ratio, and annual and multi-year A-R difference for each field. Regional Water Boards must verify reported information to make sure appropriate follow up and responsive management practices are implemented. The Regional Water Boards have discretion as to whether to require certification of all growers or just a subset of growers based on a risk categorization such as the low/high vulnerability distinction.

Management Practice Implementation Report. All growers must submit these MPIRs. Regional Water Boards have discretion as to the form and frequency of such submissions.

D.5 Monitoring

Drinking Water Well Nitrate Monitoring. Requires on-farm drinking water supply well monitoring. The regional water boards have the discretion to require sampling at a frequency different from that specified in the ESJ review order.

Groundwater Quality Trend Monitoring. Requires groundwater quality trend monitoring; however, Regional Water Boards have discretion over specific requirements and the monitored constituents.

Appendix E: Key Considerations for Development of Waste Discharge Requirements for Irrigated Lands

This appendix describes considerations for developing future General Orders of Waste Discharge Requirements for Irrigated Lands (General Orders).

E.1 Geographic Scope

The geographic scope of future General Orders should be regionwide to allow for consistent regulation of irrigated agricultural discharges throughout the region and provide for full enrollment of all eligible dischargers regardless of their location in the region. It also recognizes that agricultural land use types and concentrations may change over time, so regionwide General Orders would most adaptable to such changes. Currently, grazed irrigated pasture is focused in the northern and central portions of the region, irrigated non-grazed lands are present throughout the region, and food commodities are principally (but not solely) concentrated in the southern portion of the region.

E.2 Commodity Types

Staff recommends regulating irrigated pasture lands separately from agricultural lands growing irrigated food commodity crops. This is based on input from stakeholders, other regions' irrigated lands regulatory program staff, and further understanding of how the State Water Board's Eastern San Joaquin precedential review order applies to different agricultural land uses based on fertilizer and pesticide use, and sediment-generating cropping practices.

Table E-1: Irrigated agricultural permit types and commodities

Permit	Commodities/Description
General Order for Irrigated Pasture Lands	Irrigated lands growing animal forage crops such alfalfa, hay, grain, grasses. Crop may be grazed or harvested. Minimal or incidental use of fertilizers, pesticides, sediment-generating cropping practices. Limited subset of ESJ review order requirements would apply.
General Order for Irrigated Lands Growing Food and Ornamental Commodities	Irrigated lands growing food crops such as vineyards, orchards, row crops, truck crops, etc. Could include nurseries, tree farms, flower farms, etc. Full set of ESJ review order requirements would apply

E.3 Constituents of Concern

The primary constituents of concern include herbicides and pesticides, nutrients from fertilizers or grazing animals' waste, sediment, and total dissolved solids. Bacteria and pathogens are additional constituents of concern for grazed pasture lands.

E.4 Threat to Water Quality

Threat to water quality could be used to establish what requirements (i.e., mitigation measures and/or BMPs) in a General Order would be appropriate and what tier a given discharge would qualify under. In staff's evaluation of threat to water quality there are several site-specific risk factors that could be considered. The risk factors to consider should include, but not be limited, to the following.

- a) Size of area or operation. The larger the area or operation, the higher the risk.
- b) The landscape position of the site.
- c) Hydraulic connectivity to surface water or groundwater.
- d) Receiving water beneficial uses.
- e) Depth to groundwater.
- f) Proximity to supply well(s).
- g) Generation of return flows or tail water.
- h) Soil stability.
- i) Wildlife habitat types (onsite and adjacent).

In general, those discharges that are determined to pose a higher threat to water quality will require more regulatory oversight and more robust and targeted monitoring under a General Order than discharges that are determined to pose a lower threat to water quality through a tiered approach.

E.5 Tiered Approach

For a General Order, a tiering structure may be developed. Each operation could be categorized based on commodity type, constituents of concern and threat to water quality into one of three tiers (Tier 1, Tier 2, and Tier 3). Tier 1 would have the highest threat to water quality and Tier 3 the lowest. Tier 1 would require more regulatory oversight and monitoring, Tier 2 would require less oversight and monitoring compared to Tier 1, and Tier 3 would have the lowest level of oversight and monitoring of all tiers. Under a General Order, Dischargers could have the ability to move from Tier 1 or Tier 2 into a lower tier if monitoring indicates an improvement to water quality risk through improved site operations, implementation of BMPs, or a combination of both.

E.6 Potential Performance-based or Incentive Elements

A General Order could incentivize operational improvements and/or voluntary implementation of BMPs that are shown to reduce risk and threat to water quality. Dischargers could have the ability to move from Tier 1 or Tier 2 into a lower tier if monitoring indicates an improvement to water quality risk as a result of improved site operations, voluntary implementation of BMPs, or a combination of both. Incentives could be a reduction in regulatory oversight and monitoring as a discharge is recategorized into a lower tier, and potentially monetary incentives with reduced annual fees due to a lower threat to water quality and complexity rating.

E.7 ESJ Precedential Requirements

A General Order for Irrigated Lands Growing Food and Ornamental Commodities would be subject to the full suite of ESJ precedential requirements, including:

- Irrigation and Nitrogen Management and Reporting
- Erosion Control Planning and Implementation
- Management Practice Reporting
- Water Quality Monitoring and Evaluation
- Education and Outreach
- Record Keeping and 3rd Party Coalitions

A General Order for Irrigated Pasture Lands would be subject to a more limited subset of the ESJ precedential requirements, including:

- Erosion Control Planning and Implementation
- Management Practice Reporting
- Water Quality Monitoring and Evaluation (limited applicability)
- Education and Outreach
- Record Keeping

More detailed descriptions of these requirements are included in Appendix D.

E.8 California Environmental Quality Act (CEQA)

Any future General Order could cover both new/expanded and existing irrigated land discharges for the specific permit types listed in Table E-1. The potential environmental impacts associated with those discharges will be evaluated in an Initial Study in accordance with CCR, title 14, section 15063. Based on that analysis, it will be determined whether a Negative Declaration (with or without mitigation measures) or an Environmental Impact Report should be prepared. It is the intent that any Irrigated Lands General Order will contain discharge requirements, that when imposed, would avoid potentially significant effects, or reduce the level of potential effect to a less than significant level.

Appendix F: Staff Report Outreach

During the September 2019 Irrigated Lands Regulatory Program (ILRP) workshop in South Lake Tahoe, staff committed to bring the Water Board a staff report with regulatory options for developing an ILRP for the Lahontan Region in 2020. The plan was to begin developing at staff report by seeking input from a variety of agricultural stakeholders in the region beginning in January/February of 2020. Some preliminary stakeholder outreach efforts were conducted through group emails and phone calls to County Agricultural Commissioners, County Farm Bureau Representatives, UC Cooperative Extension, and the Natural Resources Conservation Service (NRCS). Through that initial communication, staff planned on setting up a series of both focused stakeholder meetings (i.e., smaller groups of resource specialists) and larger regional public meetings (i.e., town hall style meetings at a minimum of three locations in the region) to further introduce the concept of developing an ILRP and get specific feedback from these agricultural stakeholders on a preferred approach for a regulatory permit (see Outreach Plan).

In early to mid-March 2020, the world-wide outbreak of the COVID-19 pandemic influenced staff's ability to conduct stakeholder outreach and meetings.

The outbreak of the COVID-19 virus resulted in many government offices, businesses, and public meeting locations shutting down or being closed per both state and county orders. Setting up in-person stakeholder meetings was impossible, and coordination virtual meetings was infeasible at that time, as many organizations and stakeholder groups were spending most of their efforts transitioning to a telework based work environment. Once those organizations and stakeholder groups were set up to conduct virtual, on-line style meetings, several of these stakeholder groups were consulted about the feasibility of conducting outreach meetings using different virtual platforms such as Zoom or Teams Meetings. The consensus between these groups and staff at that time was that using those types of platforms would be very challenging for many in the agricultural community because of lack of sufficient internet connection, unfamiliarity with software and technology needed to access these virtual meetings, and level of comfort with a virtual meeting compared to face-to-face meetings.

In addition, it was determined that the only existing permit regulating discharges from irrigated lands in the Lahontan Region that would need to be updated by 2023 to include precedential requirements of the ESJ review order is the Bridgeport Grazing Waiver. The ESJ Review Order does not specify when new ILRP permits must be developed. In addition to logistical challenges of conducting stakeholder meetings during the COVID-19 pandemic, the immediate need to develop a regulatory approach for development of a new ILRP in the Lahontan Region was reduced.

However, staff continued outreach to other regions' ILRP staff to address Water Board member input from the September 2019 ILRP workshop. In May 2020, an online meeting was held with ILRP staff from the Central Valley Water Board. The purpose of the meeting was to gain insights and lessons learned from the experience of agricultural program staff in the Central Valley. Topics included low threat permitting for irrigated pasture, third party coalitions, and permitting approaches based on commodities versus watersheds. The following insights were gained from the meeting:

- Low threat lands such as irrigated pastures may be appropriate to regulate under separate, less stringent permitting requirements. The Central Valley Water Board is exploring this option in the Goose Lake watershed. Consider developing minimum acreage criteria, nitrogen, and fertilizer use exemptions from permitting.
- Regulating different commodity types with the same permit structure was problematic. Recognize the different issues with different commodities and accordingly regulate; for example, irrigated pasture versus irrigated row crops have different nitrogen and fertilizer needs.
- Third party coalitions are very helpful. Important considerations are identifying groups with the willingness, knowledge, and capacity to implement third party responsibilities and who have trust and credibility to stakeholders. Farm Bureaus, Resource Conservations Districts, Water Districts or Grower Commissions with mandatory membership are good candidates for third party coalitions and outreach partners.

As outlined in Outreach Plan, implementation of these actions will include a robust stakeholder outreach process that is consistent with previous efforts by the Lahontan Water Board to fully engage specific stakeholder groups and the general public during development or updates to new or existing regulatory permits.

To provide stakeholders an opportunity to review and comment on this staff report, the report was circulated with the Water Board's January 2021 meeting agenda announcement on December 23, 2020. A notice was sent to several established email subscription lists including Bishop Creek – Pathogens; Regionwide Regulation and Permitting; Grazing, and Eagle Lake Watershed Livestock Grazing and Water Quality Issues. Focused email groups that were established for this effort in January/February 2020 also received a notice. As is customary with all Lahontan Water Board meetings, the public will have an opportunity at the January Board meeting to provide comments or questions.

Appendix G: Technical and Financial Resources for Stakeholders

G.1 Natural Resources Conservation Service (NRCS) Programs

The [National Water Quality Initiative \(NWQI\)](#) is a partnership among NRCS, state water quality agencies and the U.S. Environmental Protection Agency to identify and address impaired water bodies through voluntary conservation. NRCS provides targeted funding for financial and technical assistance in small watersheds most in need and where farmers can use conservation practices to make a difference.

The [Environmental Quality Incentives Program \(EQIP\)](#) provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, increased soil health and reduced soil erosion and sedimentation, improved or created wildlife habitat, and mitigation against increasing weather volatility.

The [Conservation Stewardship Program \(CSP\)](#) helps build on existing conservation efforts while strengthening farming and ranching operations. The CSP helps improve grazing conditions, increase crop resiliency, or develop wildlife habitat through custom designed-CSP plans. CSP plans help identify natural resource problems and provide technical and financial assistance to solve those problems or attain higher stewardship levels in an environmentally beneficial and cost-effective manner.

G.2 Clean Water Act section 319 Grants

The [State Water Board](#) annually administers grant money it receives from United States Environmental Protection Agency through Section 319(h) of the Federal Clean Water Act. These grant funds can be used to implement projects or programs that will help to reduce nonpoint source pollution, including from agricultural lands. Projects that qualify for funding must be conducted within the state's nonpoint source priority watersheds. Project proposals that address Total Maximum Daily Load (TMDL) implementation and those that address problems in impaired waters are favored in this process, provided that either a TMDL or alternative plan(s) that satisfy the USEPA nine element watershed plan criteria are in place and include the proposed projects.

California Department of Food and Agriculture (CDFA) Programs

The [Alternative Manure Management Program \(AMMP\)](#) provides financial assistance for the implementation of non-digester manure management practices in California, which will result in reduced greenhouse gas emissions.

The [State Water Efficiency and Enhancement Program \(SWEEP\)](#) provides financial assistance in the form of grants to implement irrigation systems that reduce greenhouse gases and save water on California agricultural operations.

The [Healthy Soils Program \(HSP\)](#) stems from the California Healthy Soils Initiative, a collaboration of state agencies and departments to promote the development of healthy soils on California's farmlands and ranchlands. The HSP has two components: the HSP Incentives Program and the HSP Demonstration Projects. The HSP Incentives Program provides financial assistance for implementation of conservation management that improve soil health, sequester carbon, and reduce greenhouse gas emissions. The HSP

Demonstration Projects showcase California farmers and rancher's implementation of HSP practices.

ENCLOSURE 2

Agenda Item No. 8

Irrigated Lands Regulatory Program Development Update

Lahontan Regional Water Quality Control
Board

January 14, 2021

8
Ben Letton, PG
Division Manager
North Lahontan Regulatory Division



Presentation Outline

Previous Discussions on Irrigated Lands Regulation

- ✓ September 2019 Irrigated Land Workshop

Staff Report Overview

- ✓ 2018 Eastern San Joaquin (ESJ) Review Order and Applicability to Lahontan Region
- ✓ Water Quality and Irrigated Agricultural in Lahontan Region: Case Studies
- ✓ Irrigated Lands-related Policies and Plans: Recycled Water Policy/SNMPs, SGMA, Vision Projects
- ✓ Recommendations for Future Irrigated Lands Permitting
- ✓ Adaptive Management Framework and Outreach Plan

Questions and Discussion

September 2019 Workshop

Agricultural Stakeholder Input

- ❖ Consider “low threat” permit
- ❖ One size does not fit all
- ❖ Support third-party coalitions

Board Members’ Input

- ❖ Maintain flexibility in permits
- ❖ Consider future trends
- ❖ Apply regulation to areas of greatest need to protect human health, water resources

Staff Report Overview

Purpose and Intent

- ❖ Address input received from September 2019 Irrigated Lands workshop
- ❖ Evaluate existing permits to determine if subject to ESJ Review Order requirements and 2023 deadline to incorporate
- ❖ Outline considerations for future regulation of irrigated lands
- ❖ Provide prioritized recommendations for future actions
- ❖ Discuss adaptive management and stakeholder outreach

2018 State Board ESJ Review Order

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WQ 2018-0002

In the Matter of Review of
Waste Discharge Requirements General Order No. R5-2012-0116
for Growers Within the Eastern San Joaquin River Watershed
that are Members of the Third-Party Group

Issued by the
California Regional Water Quality Control Board,
Central Valley Region

State Board reviewed Central Valley Water Board's Agricultural Waste Discharge Requirements for the Eastern San Joaquin (ESJ) River Watershed

"ESJ Review Order" established statewide precedential requirements for nitrogen tracking/reporting and other components of agricultural land permits

All Water Boards to incorporate ESJ requirements into existing permits by February 2023

- **No deadline to develop new irrigated lands permits**

Developing New Irrigated Lands Permits

**Regional Boards
Must Address
Nonpoint Source
Discharges**

Clean Water Act
Nonpoint Source
Policy
Porter-Cologne Act

ESJ Review Order Precedential Requirements

- ❖ Irrigation and Nitrogen Management
- ❖ Erosion Control Planning and Implementation
- ❖ Management Practice Reporting
- ❖ Water Quality Monitoring and Evaluation
- ❖ Education and Outreach
- ❖ Record Keeping and 3rd Party Coalitions



ESJ Review Order Applicability to Lahontan Region

Permits Evaluated

Dairies, PG&E's Hinkley, Recycled Water Permits, Owens Lake WDR, and Bridgeport Grazing Waiver

Conclusions

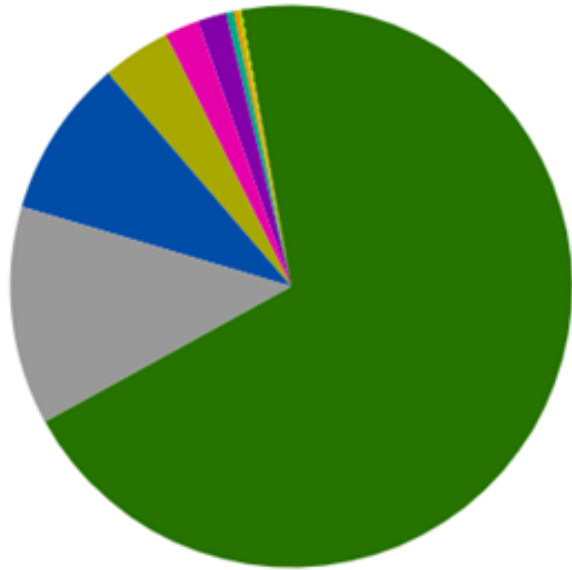
- ❖ Bridgeport Grazing Waiver is only existing agricultural permit needing revision
- ❖ Other permits do not meet definition of irrigated lands or are regulated by other programs or policies
- ❖ Future permits will incorporate relevant requirements as needed



Irrigated Lands and
Water Quality in
Lahontan Region

Total Irrigated Acres in Lahontan Region

Lahontan Region Irrigated Agriculture
ACRES



- Pasture 156,095
- Unclassified 28,083
- Managed Wetland 20,430
- Grain and Hay Crops 8,776
- Truck Nursery and Berry Crops 4,446
- Deciduous Fruits and Nuts 3,672
- Rice 963
- Field Crops 653
- Young Perennial 408
- Vineyard 106
- Citrus and Subtropical 24

Total irrigated
acres in Region =
223,655

Pasture = 70% of
irrigated agriculture
acreage

Food commodities
= 8% of
irrigated agriculture
acreage

Water Quality Case Studies

Surface Water

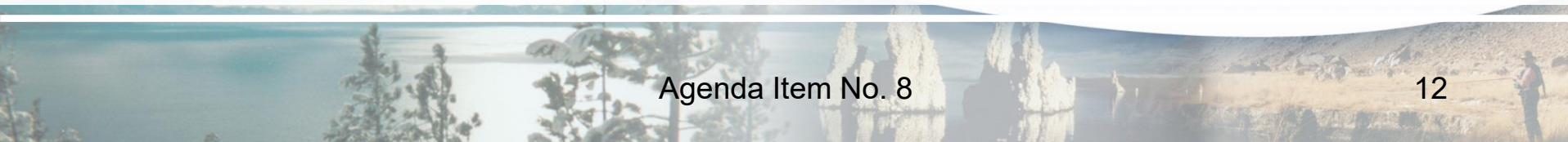


Groundwater





Irrigated Lands-related Plans and Policies



Nonpoint Source Policy

Five Key Elements of NPS Programs

- Purpose is implicitly stated, and addresses water quality issues to achieve and maintain objectives
- Includes descriptions of management practices, other elements, to achieve program's purpose
- May include a time schedule to achieve purpose, with quantifiable milestones to measure progress
- Contains feedback mechanisms such as monitoring to determine if program is meeting purpose
- Consequences are clear if stated purpose is not met

Recycled Water Policy: Salt and Nutrient Management Plans (SNMPs)

- ❖ Assimilative capacity for salts and nutrients in groundwater basins is limited or exceeded
- ❖ Information can be used to prioritize regulation, develop receiving water limits in permits

Sustainable Groundwater Management Act: Groundwater Sustainability Plans (GSPs)

- ❖ GSPs may contain management actions such as allocations, over-pumping fees, or fallowing programs to achieve sustainability
- ❖ Management actions in GSPs may limit future irrigated agriculture

Bishop Creek Vision Plan

- ❖ Alternative to TMDL for Impaired Waters
- ❖ Will help address Grazing Issues

A satellite map of a mountainous region, likely in the western United States. A yellow line, representing an irrigation system, winds through the terrain. A white diamond-shaped callout box is overlaid on the left side of the map, containing the text "Recommended Actions for Future Irrigated Lands Permitting". The map shows various geographical features, including mountains, valleys, and a large reservoir or lake on the right side. Labels for "Bridgeport" and "Sweetwater Rd" are visible. A copyright notice "© 2018 Google" is on the left, and "8 - 91" is at the bottom left.

Recommended
Actions for Future
Irrigated Lands
Permitting

Bridgeport
Bridgeport

182

Sweetwater Rd

Recommended Actions for Future Irrigated Lands Permitting

- **Action 1: Renew/Update Bridgeport Grazing Waiver**
- **Action 2: Water Quality Improvement on Grazing Lands, Bishop Creek Vision Project**
- **Action 3: Develop a General Order for Irrigated Pasture Lands**
- **Action 4: Develop a General Order for Irrigated Food Commodities and Ornamentals**

Action 1: Renew/Update Bridgeport Grazing Waiver

- ❖ Continues efforts to protect and restore water quality in area of identified impacts
- ❖ Subset of ESJ Review Order requirements to be incorporated into this existing waiver
- ❖ Current waiver expires in 2022
- ❖ Staff resources available

Action 2: Water Quality Improvement on Grazing Lands, Bishop Creek Vision Project

- ❖ Continues efforts to protect and restore water quality in area of identified impacts
- ❖ Bishop Creek Vision Plan in progress
- ❖ Subset of ESJ Review Order requirements may apply
- ❖ Development of approach could be template for future actions on other grazing lands
- ❖ Staff Resources Available

Action 3: Develop a General Order for Irrigated Pasture Lands

- ❖ Action addresses known surface water quality issues, 303(d) impairments, aligns with Region's priorities of protecting human health and aquatics resources
- ❖ Higher priority than Action 4, as pasture is majority (~70%) of agricultural acreage in Region
- ❖ Subset of ESJ Review Order requirements apply to this action, but 2023 deadline doesn't apply as no regulatory permit currently exists
- ❖ Staff resources currently not available staffing/resources

Action 4: Develop a General Order for Irrigated Food Commodities and Ornamentals

- ❖ Lower priority compared to Actions 1 - 3, reflecting Region's limited extent of irrigated agricultural food crops (approximately only 8% of irrigated agriculture here is for such commodities)
- ❖ All ESJ Review Order requirements would apply to this action, but 2023 deadline doesn't apply as no regulatory permit currently exists
- ❖ Priority reflects current lack of staffing/resources

Adaptive Management

Adaptive management review and needs analysis after the first five years of implementing the proposed actions



Outreach & Collaboration

- ❖ Integral component of continuing existing efforts or expanding agricultural regulation in future
- ❖ COVID-19 pandemic has limited typical face-to-face approach to outreach
- ❖ Technology-based communication will be used to provide information, get feedback from different stakeholder groups



Summary of Proposed Actions



Renew and update the Bridgeport Grazing Waiver



Water quality improvement on grazing lands, Bishop Vision Project



Develop a General Order for irrigated pasture lands



Develop a General Order for irrigated agricultural food commodities and ornamentals



Questions and Discussion

