FINAL REPORT | MAY 2024

Chino Basin Water Quality Management Program - Emerging Contaminants Monitoring Plan

PREPARED FOR

Chino Basin Watermaster

PREPARED BY

WEST YOST
Water. Engineered.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

1,2,3-TCP	1,2,3-Trichloroethene
CCL	Federal EPA Contaminant Candidate List
Chino-North GMZ	Chino-North Groundwater Management Zone
DDW	California State Water Resources Control Board Division of Drinking Water
ECMP	Emerging Contaminants Monitoring Plan
EPA	Environmental Protection Agency
FY	Fiscal Year
FRB	Field Reagent Blank
GE	General Electric
GenX	Hexafluoropropylene oxide dimer acid GenX Chemicals
HCMP	Hydraulic Control Monitoring Program
HBWCs	Health-based water concentrations
HPC	Health-protective concentration
IEUA	Inland Empire Utilities Agency
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MZ-3	Management Zone 3
NAWQA	National Water Quality Assessment
NDMA	N- Nitrosodimethyamine
ngl	Nanograms per liter
Nitrate	Nitrate As Nitrogen
NL	Notification Levels
OBMP	Optimum Basin Management Program
OBMPU	Optimum Basin Management Program Update
OEHHA	Office of Environmental Health Hazard Assessment
PBHSP	Prado Basin Habitat Sustainability Program
PE	Program Element
PFAS	Per and poly-fluoroalkyl substances

PFBS	Perfluorobutane sulfonic acid
PFNA	Perfluorononanoic acid
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PHG	Public Health Goals
Regional Board	California Regional Water Quality Control Board, Sant Ana Region
RL	Response Level
Santa Ana Water Board	Santa Ana Regional Water Quality Control Board
SARWC	Santa Ana River Water Company
SB	Senate Bill
SNMP	Salt and Nutrient Management Plan
TCA	1,1,1-trichloroethane
TCE	Trichloroethene
TDS	Total Dissolved Solids
TIN	Total Inorganic Nitrogen
UCMR	EPA Unregulated Contaminant Monitoring Rule
µgl	Micrograms per liter
Watermaster	Chino Basin Watermaster
WEI	Wildermuth Environmental, Inc.
WQC	Water Quality Committee

1.0 INTRODUCTION AND BACKGROUND

1.1 Purpose and Report Organization

This Emerging Contaminants Monitoring Plan (ECMP) was developed for the Chino Basin Watermaster (Watermaster) with advice from the Water Quality Committee (WQC). The ECMP is part of the Water Quality Management Program (WQMP), which is an adaptive and flexible framework for understanding water quality issues in the Chino Basin and how they could potentially effect basin management. The WQMP, led by the WQC, is a framework that is being reestablished under Program Element (PE) 6 of the Chino Basin Optimum Basin Management Program (OBMP), similar to the process implemented from 2003 to 2010.

The purpose of the ECMP is to define an initial plan for monitoring and assessing water quality in the Chino Basin during fiscal year (FY) 2024/25 with respect to contaminants of emerging regulatory concern (termed herein as "emerging contaminants"). Data collected through implementation of the ECMP will support the understanding of the distribution and concentration of emerging contaminants in the Chino Basin (which have the potential to impact basin operations and management) and inform WQC discussions and objectives of the WQMP. This initial ECMP establishes a framework for the future consideration and potential monitoring of identified priority emerging contaminants, in alignment with and adapting to, evolving water quality issues, trends, and concerns.

This ECMP is organized into the following Sections:

- **1.0 Introduction and Background** – This section provides background on the 2000 OBMP and 2020 OBMP Update (2020 OBMPU) as they relate to water quality and the opportunities to develop an enhanced WQMP that supports overall Basin management.
- **2.0 Identification of Emerging Contaminants**– This section describes the process to identify the emerging contaminants that should be considered for monitoring as part of the initial ECMP.
- **3.0 Current Monitoring of Emerging Contaminants** – This section characterizes the extent of recent monitoring of the emerging contaminants identified in Section 2 and identifies the priority emerging contaminants for monitoring in the Chino Basin in FY 2024/25.
- **4.0 Emerging Contaminant Monitoring and Analysis Plan** – This section describes the recommended monitoring of emerging contaminants for FY 2024/25, including the schedule, coordination efforts, and costs. And, it provides the plan for analyzing the data, including use of the information.
- **5.0 References** – This section lists the references cited in the ECMP.

1.2 Water Quality Management Under OBMP PE 6: 2000 to 2022

Watermaster, at the Court's direction, developed the 2000 OBMP through a collaborative stakeholder process ([Wildermuth Environmental [WEI], 1999). The 2000 OBMP established basin management goals, identified the impediments to achieving the goals, and defined the necessary actions to remove the impediments to achieve the goals. The management actions were grouped into logical sets of coordinated activities called Program Elements (PEs). One of the goals of the 2000 OBMP was to "Protect and Enhance Water Quality" to ensure the protection of the long-term beneficial uses of Chino Basin groundwater. The 2000 OBMP included multiple PEs with actions to protect and enhance water quality, including:

- PE 1—Develop and Implement Comprehensive Monitoring Program. PE 1 is a comprehensive monitoring program, including the collection of basin-wide water quality data, to collect the data necessary to characterize Basin conditions and support the implementation of the other PEs.
- PE 3—Develop and Implement a Water Supply Plan for Impaired Areas. PE 3 provided for the construction and operation of regional groundwater desalters—the Chino Basin Desalters—to pump and treat high-salinity groundwater in the southern part of the Basin to meet increasing municipal water demands and protect and enhance the Basin safe yield
- PE 6—Develop and Implement Cooperative Programs with the Regional Board and Other Agencies to Improve Basin Management. PE 6 was designed to assess groundwater quality trends in the Basin, evaluate the impact of OBMP implementation on groundwater quality, determine whether point and non-point contamination sources are being addressed by regulators, and enable collaboration with water quality regulators, in particular the Santa Ana Regional Water Quality Control Board (Santa Ana Water Board), to identify and facilitate the cleanup of soil and groundwater contamination.
- PE 7—Develop and Implement Salt Management Plan. PE 7 included actions to characterize current and future salt and nutrient conditions in the Basin and to subsequently develop and implement a plan to manage them under planned increases on loading from recycled water use (direct and indirect). The Chino Basin Desalters constructed pursuant to PE 3 became an integral management strategy of the Chino Basin Salt and Nutrient Management Plan developed under PE 7.

To support the development and implementation of the 2000 OBMP, Watermaster conducted a comprehensive basin-wide water quality monitoring program from 1999-2001 to characterize the spatial distribution of key water quality constituents. The comprehensive water quality monitoring program included compiling water quality data collected by Appropriators (and other cooperators) in the Chino Basin and adjacent basins and performing water quality sampling at all accessible private wells in the southern portion of the basin. During this time, Watermaster performed water quality sampling at 602 private wells. Data from this comprehensive water quality monitoring program established a baseline on the state of groundwater quality at the start of OBMP implementation. These data also became the foundation for achieving the objectives of PE 6: to assess water quality trends in the basin, to evaluate the impact of OBMP implementation on water quality, and to determine whether point and non-point contamination sources are being addressed by water quality regulators.

Since 2000, Watermaster's groundwater quality monitoring efforts under PE 1 have periodically been refined, as needed, to: assess trends over time for key constituents (such as total dissolved solids [TDS] and nitrate); support the detection and delineation of water quality plumes; and define the spatial distribution of contaminants of concern, such as perchlorate, hexavalent chromium, and 1,2,3-trichloroethene (1,2,3- TCP), and collaborate with the Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) in its efforts to work with dischargers to facilitate the cleanup of groundwater contamination.

In 2003, the WQC was convened to coordinate the activities performed under PE 6, including the review of water quality conditions in the Chino Basin and development of cooperative strategies and plans to improve water quality in the basin in collaboration with the Santa Ana Water Board. The WQC was comprised of representatives from interested parties and stakeholders that can guide the development and implementation of a WQMP and make recommendations to the Pools, Advisory Committee, and Board. The WQC met intermittently through 2010. The main activities of the WQC during that time included (1) investigations to characterize and address point and non-point sources of groundwater contamination in the Chino Basin, and (2) collaboration with the Santa Ana Water Board in its efforts to facilitate the cleanup of groundwater contamination. Some of the significant groundwater quality investigations performed under the guidance of the committee included:

- Characterization of groundwater contamination in OBMP management zone 3 (MZ-3) near the former Kaiser Steel Mill and Alumax facilities.
- Tracking investigations and actions to define the source, extent, and responsible party of the Chino Airport trichloroethylene (TCE) plume.
- Identification of potential sources and responsible parties for the South Archibald TCE plume.
- Characterization of perchlorate concentrations in the Chino Basin and identification of legacy sources of perchlorate contamination.

After the WQC discontinued its meetings in 2010, Watermaster continued to assist the Santa Ana Water Board with the investigation and regulation of point source contaminant sites in the Chino Basin and performed monitoring and analysis for contaminants related to point-source and non-point source contamination, as needed. The ongoing water quality monitoring and analysis performed by Watermaster as of 2023 includes:

- Conducting annual water quality sampling at key monitoring wells and private wells.
- Preparing annual or semiannual status reports on the monitoring and remediation of point-source contaminant sites, including the Chino Airport plume, South Archibald plume, General Electric (GE) Test Cell plume, GE Flatiron plume, former Kaiser Steel Mill Facility, CIM plume, Stringfellow plume, and Milliken Landfill plume.
- Preparing updated delineations of the spatial extent of the contaminant plumes every two years.
- Reporting on water quality trends and findings in the OBMP State of the Basin Reports, which are prepared every two years.

1.3 Water Quality Management Under OBMPU PE 6

In 2020, Watermaster completed the 2020 OBMPU through a collaborative stakeholder process to review and refine the goals, impediments, actions, and PEs of the OBMP (WEI, 2020). Through the 2020 OBMPU development process, the Watermaster with input from the stakeholders concluded that the goals and PEs defined in the 2000 OBMP are still relevant today and identified additional management activities necessary to achieve the goals of the 2020 OBMPU. Two of the 2020 OBMPU activities address groundwater quality related to emerging contaminants:

- Develop and implement a water-quality management plan to address current and future water-quality issues and protect beneficial uses.
- Develop strategic regulatory-compliance solutions that achieve multiple benefits in managing water quality.

The specific action identified to encapsulate these activities within the 2020 OBMPU for PE 6, is the development of a WQMP that addresses emerging contaminants to better prepare the parties for addressing compliance with new State and Federal drinking water regulations and provides for the long-term maximum beneficial use of the basin. It was proposed that reconvening the WQC would be the ideal approach to guide the development and implementation of the WQMP, following the model used from 2003 to 2010 for the 2000 OBMP implementation.

Watermaster held a kick-off meeting to reconvene the WQC on October 18, 2023. The objectives of the first WQC meeting were to educate the participants on historical water quality activities performed by Watermaster pursuant to the 2000 OBMP and introduce the opportunity and proposed scope and schedule for developing a WQMP, including development of an initial ECMP for implementation in FY 2024/25. At the October 18, 2023 WQC meeting, attendees were asked to provide initial feedback of goals and objectives for a WQMP and the WQC, and on the emerging contaminants to monitor for the ECMP (Watermaster 2024a). A second WQC meeting held on January 31, 2024 continued stakeholder engagement on the objectives for a WQMP and the WQC, and the process to develop the initial ECMP (Watermaster 2024b).

Informed by stakeholder recommendations and feedback received during the WQC meetings held in October 2023 and January 2024, the WQMP is proposed as an adaptive and flexible program informed by the WQC to address some or all the following objectives: (1) inform stakeholders on the available data and information on water quality; (2) provide a forum for regular education and information sharing regarding potential future water quality regulations; (3) implement an ECMP to characterize contaminant occurrence in the Chino Basin where data is not available; (4) track available grant funding and loan opportunities; (5) identify opportunities for multi-agency and/or multi-benefit projects; (6) enhance ability to identify potential impacts to the Chino Basin resulting from operational/management responses to water quality regulations; (7) conduct other activities of interest to the stakeholders to address water quality management or concerns; (8) establish annual scope of work and budgets for WQC activities.

The development of this ECMP is a first step to providing the data and information needed to understand the implications of potential water quality regulations on Chino Basin groundwater operations and management.

2.0 IDENTIFICATION OF EMERGING CONTAMINANTS

This section describes the process to identify emerging contaminants to consider for inclusion of the initial ECMP. The process included the identification and review of various resources and references that discuss contaminants that are being reviewed and evaluated for potential regulation. Most of the resources identified are from federal and state drinking water regulators, including the United States Environmental Protection Agency (EPA) and the California State Water Resources Control Board Division of Drinking Water (DDW). Each reference identified was reviewed to develop a comprehensive list of emerging contaminants under consideration for regulation that should be considered for monitoring as part of the initial ECMP. The resources reviewed include:

a. **Feedback provided by the attendees at the October 18, 2023 WQC meeting**. At the October WQC meeting two interactive live polls were conducted that asked attendees to provide input on emerging contaminants. The polls asked the following questions: (1) What contaminants come to mind when you hear "emerging contaminants of concern?" and (2) Are you aware of the following ten emerging contaminants of concern? The PowerPoint documenting the results of the polls at the October 2023 meeting is available on the Watermaster website (Watermaster 2024a) at this link: https://www.cbwm.org/docs/speccommit/WQC/presentations/20231018_Presentation_WQC_Kickoff.pdf

b. **CA DDW - Drinking Water Programs "News" webpage.** The DDW posts announcements and links on the latest information related to drinking water regulations, including announcement of new or proposed drinking water regulations. The webpage (State of California 2024a) can be accessed at: https://www.waterboards.ca.gov/drinking_water/programs/.

c. **CA State Water Resources Control Board (State Water Board) Resolution Number *2023-0007 Adopting the Proposed Prioritization of Drinking Water Regulations for Calendar Year 2023.*** The State Water Board adopted Resolution 2023-0007 in June 2023 to direct the DDW to prioritize actions in 2023 for the development of drinking water regulations (State Water Board, 2023). The DDW priority actions include considering eight contaminants for regulation under new or revised primary Maximum Contaminant Levels (MCL)[1] and three contaminants for regulation under notification levels (NL)[2] or response levels (RL)[3]. The resolution is available for download on the State Water Board website (State of California, 2024a) at: https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2023/rs2023-0007.pdf

d. **CA DDW "Emerging Contaminants" and "Contaminants in Drinking Water" webpages.** The DDW "emerging contaminants" webpage contains links and information about new and emerging contaminants that pertain to drinking water and recycled water (State of

[1] Primary MCLs are enforceable drinking water standards set by the DDW and/or EPA to protect the public from potential negative health effects associated with contaminants. Secondary MCLs are drinking water standards set by the DDW and/or EPA based on undesirable aesthetic, cosmetic, or technical effects caused by a respective contaminant.

[2] NLs are set by the DDW as a health advisory level for unregulated contaminants with the potential for negative health impacts. Drinking water suppliers are required to make notification to customers if monitoring results indicate that the contaminant concentration is above the NL. Contaminants with an NL may eventually become regulated with an MCL after a formal regulatory review.

[3] RLs are the level at which the DDW recommends the drinking water system remove the affected water source from the system. RLs range from 10 to 100 times the NL.

California 2024b, 2024c). The DDW "contaminants in drinking water" webpage contains links and information on the regulated contaminants with MCLs and/or NLs, contaminants with Public Health Goals (PHG)[4], and unregulated contaminants[5]. The webpages can be accessed at:
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/EmergingContaminants.html and https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Chemicalcontaminants.html

e. **CA DDW webpage on "Drinking Water Notification Levels".** The DDW provides various links and information on the contaminants with existing NLs. There are 32 chemicals with NLs in CA. Contaminants with NLs are candidates to go through the formal regulatory process to set MCLs for drinking water. The webpage (State of California 2024d) can be accessed at: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/NotificationLevels.html

f. **Federal EPA Unregulated Contaminant Monitoring Rule (UCMR)**. The Safe Drinking Water Act requires the EPA to establish a list of priority unregulated contaminants that public water systems are required to monitor every five years. EPA uses the UCMR to collect data for contaminants that are suspected to be present in drinking water and do not have MCLs. The two most recent UCMR cycles were UCMR 4 (2017-2021) and UCMR 5 (2022-2026). The UCMR program information is available at EPA's website (EPA 2024a, 2024b): https://www.epa.gov/dwucmr/learn-about-unregulated-contaminant-monitoring-rule and https://www.epa.gov/dwucmr

g. **Federal EPA Analytical Methods Developed by EPA for Analysis of Unregulated Contaminants webpage.** The EPA develops analytical methods for the analysis of unregulated contaminants. This webpage contains links to documentation for each of the methods listed (EPA 2024c). The webpage can be accessed at**:** https://www.epa.gov/dwanalyticalmethods/analytical-methods-developed-epa-analysis-unregulated-contaminants

h. **Federal EPA Contaminant Candidate Lists (CCL).** The EPA develops a drinking water CCL every five years pursuant to the Safe Drinking Water Act. The CCL is a list of contaminants that are currently not subject to any proposed or promulgated national primary drinking water regulations, but are known or anticipated to occur in public drinking water systems. Contaminants listed on the CCL may be regulated in drinking water in the future. The most recent CCL is CCL 5, which was finalized in 2022. The CCL website (EPA 2024d) can be accessed at: https://www.epa.gov/ccl

i. **Federal EPA Drinking Water Regulations Under Review webpage.** This webpage contains information on potential drinking water regulations the EPA is reviewing or developing, and the opportunity for public review and comment during the EPA's rulemaking process (EPA 2024e). The webpage can be accessed at**:** https://www.epa.gov/sdwa/drinking-water-regulations-under-development-or-review

[4] PHGs are set by the State of California Office of Environmental Health Hazard Assessment (OEHHA) pursuant to Health & Safety Code §116365 and are the concentrations in drinking water that pose no significant health risk if consumed for a lifetime . PHGS are set for contaminants with MCLs or that will have an MCL adopted in the future.

[5] Unregulated contaminants in drinking water do not have MCLs. Unregulated contaminants often have NLs and RLs and are considered for future regulation.

Upon review of these resources, an initial list of 15 emerging contaminants was developed for further consideration for monitoring as part of the ECMP. Table 1 is a comprehensive summary of these 15 emerging contaminants and identifies which resources listed above (bullets a. through i.) include references to the emerging contaminants. Table 1 also includes the following information:

- The NL, RL, Primary or Secondary MCL, and PHG, if they exist.
- A brief description of the existing advisory or regulatory limits and any recent regulatory actions or noted intent by regulators to go through a rulemaking process.
- Whether the emerging contaminant should be considered (yes/no) for monitoring for the initial ECMP and the reason why.

Eleven of the emerging contaminants in Table 1 were selected for consideration for monitoring. These 11 emerging contaminants are identified in multiple resources as likely candidates for regulation such that regulators have identified the intent and/or process to establish or revise health-based drinking water limits (PHG, NL, RL, and proposed MCL). The 11 emerging contaminants are:

- Manganese
- 1,4-Dioxane
- Hexavalent Chromium
- Arsenic
- Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS)
- Other Per- and Polyfluorinated Substances (PFAS)
- N- Nitrosodimethyamine (NDMA)
- Styrene
- Mercury
- Cadmium
- Perchlorate

The remaining four emerging contaminants in Table 1 are not recommended for further consideration for monitoring as part of the initial ECMP. The reasons to exclude these constituents at this time include that the contaminants are typically only a concern in non-groundwater supplies or that the studies for health effects and potential health limits are in the early stages of development.

Table 1. Summary of 15 Emerging Contaminants Identified for Consideration for Monitoring for the ECMP

Contaminant	NL µgl	RL µgl	Primary MCL µgl	PHG µgl	Resource a	b	c	d	e	f	g	h	i	j	Description of Regulatory Limits and Recent Regulatory Actions/Intent for Rulemaking	Further Consideration for Monitoring yes/no	reason
Manganese	20	200			X	X	X	X	X		X	X			California passed bill in 2022 to set in motion the development of a primary MCL. In February 2023 the state issued revised lower NL of 20 µgl and RL of 200 µgl as part of this process. A NL and RL for manganese is in the State DDWs prioritization of drinking water regulations development for 2023 (State Water Board, 2023).	Yes	Newly established NL and RL. Potential for future State MCL
1,4 - Dioxane	1	35						X			X	X			California NL of 1 µgl set in 2010 (revised from 3 µgl). In 2019 the State Board ask the California Office of Environmental Health Hazard Assessment (OEHHA) to set a PHG for 1,4-dioxane. The State Board indicated intent to begin a rulemaking process to set a MCL based on the PHG set for 1,4-dioxane.	Yes	Potential for future State MCL
Hexavalent Chromium			10 (proposed)	0.02	X	X	X	X					X		California issued notice of rulemaking for an MCL in June 2023 with a proposed MCL of 10 µgl. A revised MCL for hexavalent chromium is in the State DDW's prioritization of drinking water regulations development for 2023 (State Water Board, 2023).	Yes	Proposed State MCL
Arsenic			10	0.004	X	X	X								California has a MCL of 10 µgl established in 2008 (Federal in 2006). The PHG is 0.004 µgl. The CA DDW is investigating the technological and economic feasibility of lowering the MCL closer to the PHG. A MCL for hexavalent chromium is in the State DDW's prioritization of drinking water regulations development for 2023 (State Water Board, 2023).	Yes	Potential for future revised State MCL
PFOA/PFOS	0.0051/ 0.0065	0.01/ 0.04	0.004/ 0.004 (proposed)	0.000007/ 0.001 (proposed)	X			X	X	X		X	X		The Federal EPA issued proposed MCLs in 2023 of 4 ngl (0.004 µgl) individually for PFOA and PFOS, which are anticipated to go into effect in 2024. The current California NLs are 5.1 ngl and 6.4 ngl (0.0051 and 0.0065 µgl), respectively for PFOA and PFOS. MCLs for both PFOA and PFOS are in the State Board's prioritization of drinking water regulations development for 2023 (State Water Board, 2023).	Yes	Proposed Federal MCLs and potential for future State MCL
Other PFAS	0.003, 0.5 [a]	0.02, 5 [a]	Hazard Index = 1 (b)		X		X		X	X		X	X		The Federal EPA has issued proposed MCLs for other PFAS besides PFOA and PFOS; this includes: GenX, PFBS, PFNA, and PFHxS. The proposed MCL for these four PFAS compounds is a Hazard Index of 1.0 for them combined. California issued a NL for PFHxS of 3 ngl (0.003 µgl) in 2020 and a NL for PFBS of 0.5 ngl (0.0005 µgl) PFBS in 2022. NLs and Rols for other PFAS are in the State DDW's prioritization of drinking water regulations development for 2023 (State Water Board, 2023).	Yes	Proposed Federal MCLs and potential for future State MCLs and NLs
NDMA	0.01	0.3		0.003			X	X			X				California set a NL of 10 ngl (0.01 µgl) in 2002, and OEHHA established a PHG of 3 ngl (0.003 µgl). In 2020, OEHHA announced they were initiating the process to update the PHG. A MCL for NDMA is in the State DDW's prioritization of drinking water regulations development for 2023 (State Water Board, 2023).	Yes	Potential for future State MCL
Styrene			100	0.5			X								California and the Federal EPA have a MCL of 100 µgl for Styrene. OEHHA established a PHG of 0.5 µgl. There is intent by the CA DDW to update the MCL and they have set up a proposed rulemaking page for this indicating that "This rulemaking is in progress." A MCL for Styrene is in the State DDW's prioritization of drinking water regulations development for 2023 (State Water Board, 2023).	Yes	Potential revised State MCL in the future
Mercury			2	1.2			X								California and the Federal EPA have a MCL of 2 µgl for Mercury. There is intent by the CA DDW to update the MCL and they have set up a proposed rulemaking page for this indicating that "This rulemaking is in progress." A MCL for Mercury is in the State DDW's prioritization of drinking water regulations development for 2023 (State Water Board, 2023).	Yes	Potential revised State MCL in the future
Cadmium			5	0.04			X								California and the Federal EPA have a MCL of 5 µgl for Cadmium. There is intent by the CA DDW to update the MCL and they have set up a proposed rulemaking page for this indicating that "This rulemaking is in progress." A MCL for Cadmium is in the State DDW's prioritization of drinking water regulations development for 2023 (State Water Board, 2023).	Yes	Potential revised State MCL in the future
Perchlorate			6	1	X			X			X		X		California established an MCL of 6 µgl in 2007. In 2015 OEHHA revised the PHG from 6 µgl to 1 µgl, prompting the review of the perchlorate MCL. In 2017 the DDW began the process to investigate, develop, and propose revisions to the perchlorate detection limit for reporting (DLR) to gather data to support the revision to the MCL if warranted. Per an adopted resolution the DLR changed in phases and deceased to 1 µgl in January 2024. The Federal EPA has committed to issue a proposed MCL for perchlorate by November 21, 2025.	Yes	Potential revised State MCL in the future
Lithium					X					X		X			No regulatory or health limits for drinking water developed. Lithium is included on the EPA UCMR 5 list for the purpose of informing research and determine whether it poses health risks to people through drinking water from public water systems. The science on lithium's effects on human health, and at what levels, is still evolving.	No	Health effects and proposed health limits are being studied and considered. Some monitoring is already being done for UCMR 5.
Microplastics								X							No regulatory or health limits for drinking water developed. Pursuant to a 2018 State Bill the State Board adopted a definition of microplastics in drinking water in 2020 and in 2021 developed a policy handbook of the standard methodology for testing and reporting for microplastics. Currently the method available is expensive, with limited resources to perform, and the science is rapidly evolving. The policy outlines a two-phase approach for monitoring to obtain information to estimate risk through drinking water exposure. Each phase is two years along with an interim period between to "allow for DDW staff to assess results from the first phase and plan the second phase of monitoring accordingly." The policy was unanimously approved in September 2022.	No	Health effects and proposed health limits are being studied and considered. Some monitoring will be done through State Orders
Cyanotoxins							X		X	X		X			In 2021, the California DDW initiated the process to develop NL and RL for four cyanotoxins: microcystins, cylindrospermopsin, anatoxin-a, and saxitoxin. NLs and RLs for cyanotoxins are in the State DDW's prioritization of drinking water regulations development for 2023 (State Water Board, 2023). Concern for high levels in lakes, streams, ponds, and other surface water bodies. Cyanotoxins were on the UCMR 4 and 5.	No	This is a contaminant found in surface water bodies. The 2024 ECMP will focus on the groundwater supplies.
Disinfection Byproducts			80, 60, 10, 1,000	0.06 to 50			X					X	X		Disinfection byproducts (DBPs) are formed when disinfectants like chlorine interact with natural organic materials in water, such as in chlorinated drinking water. The federal EPA has set some MCLs for DBPs: trihalomethanes (THMs), haloacetic acids (HAAs), chlorite, and bromate. MCLs for DBPs is in the State DDW's prioritization of drinking water regulations development for 2023 (State Water Board, 2023), but there is has been no action or other information since the release of this prioritization. The formation of DBPs is usually a greater concern for water systems that use surface water, such as rivers, lakes, and streams.	No	This is a contaminant found in chlorinated drinking water. The 2024 ECMP will focus on the groundwater supplies.

(a) PFHxS has a NL of 0.003 µgl and RL of 0.02 µgl and PFBS has a NL of 0.5 µgl and RL of 5 µgl.
(b) The proposed MCL is Hazard Index of 1.0; Hazard Index is calculated as = ([GenX ngl]/10 ngl]+[PFBS ngl/2000 ngl]+[PFNA ngl/10 ngl]+[PFHxS ngl/9 ngl])

3.0 CURRENT MONITORING OF EMERGING CONTAMINANTS

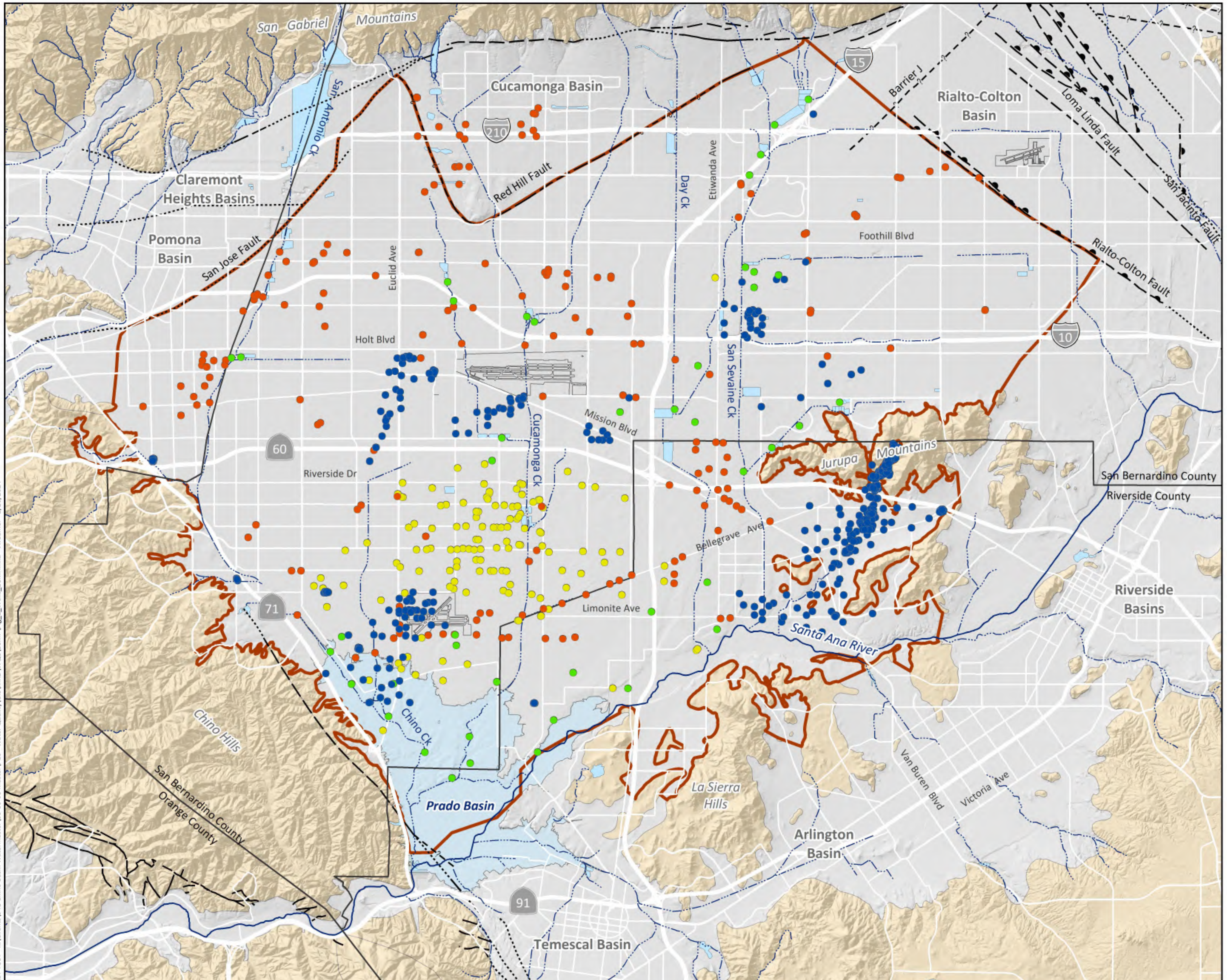
This section describes the current state of monitoring for each of the 11 emerging contaminants recommended for consideration for monitoring under the ECMP and recommends the monitoring that should be included the initial ECMP.

Watermaster's current water quality monitoring program under PE 1 relies on municipal producers (Appropriators), government agencies and others (cooperators) to supply water-quality data on a cooperative basis. Watermaster supplements these data through its own sampling and analysis of private wells and monitoring wells in the basin. Watermaster routinely collects all known groundwater and surface water quality data sampled in the basin and processes into standard format, uploads into the database, and reviews for QA/QC. Most of the water quality data for the Appropriators is collected from the State DDW water quality database. This means to utilize the State DDW database over collecting data directly from the Appropriators evolved over time as it was validated to be complete data set and sometimes more robust, a more efficient process, and it is in a consistent format. The same approach is used to collect the water quality data for many cooperators where most of the data is collected from publicly available databases such as the State Board GeoTracker website.

Watermaster's comprehensive groundwater database was used to characterize the current state of monitoring for each of the 11 emerging contaminants in the Chino and Cucamonga Basins over the last five years, from July 2018 to June 2023. Cucamonga Basin is included because it is tributary to Chino Basin and the groundwater pumpers in the Cucamonga Basin are all Chino Basin Appropriators. Figure 1 is a map that shows the network of wells in the Chino and Cucamonga Basins where groundwater quality sampling was performed between July 2018 to June 2023. Figure 1 symbolizes each well by well type. The well types used in this characterization are defined in Table 2. Table 2 also denotes the number of wells of each type that were sampled between 2018 to June 2023.

Table 2. Well Type Categorization for Monitoring Locations in Figure 1

Well Type	Description	Well Count
Appropriator Wells	Active or inactive pumping wells owned and operated by the Chino Basin Watermaster Appropriators. These wells used for municipal water supply, either potable or non-potable. Water quality monitoring is performed by well owners.	190
Watermaster/IEUA Monitoring Wells	Dedicated monitoring wells that are part of various Watermaster and IEUA monitoring programs for basin management. Watermaster collects water quality samples at 52 wells to comply with requirements of the Chino maximum-benefit SNMP (e.g. demonstrate hydraulic control and compute ambient water quality) and the Prado Basin Habitat Sustainability Program. IEUA collects water quality samples at 27 wells to comply with the requirements of the groundwater recharge program.	79
Cleanup Site Monitoring Wells	Dedicated monitoring wells that are part of a monitoring program to assess point-source groundwater contamination (i.e. Chino Airport; Stringfellow, etc.). This monitoring is performed by the responsible parties for the contamination sites.	751
Private Wells	Active privately owned and operated pumping wells used for private water supply uses such as domestic drinking water, irrigation, or other commercial uses. Watermaster performs sampling at the private wells.	80



Wells Sampled for Water Quality in the Chino and Cucamonga Basins Between July 2018 and June 2023

- Appropriator (180 wells)
- Monitoring - Watermaster/IEUA (79 wells)
- Monitoring - Cleanup Site (751 wells)
- Private (130 wells)

Base Map Features
* This figure is a reference for base map features of the other figures in this plan

- Chino Basin Hydrologic Boundary
- Streams & Flood Control Channels
- Flood Control & Conservation Basins

Geology

Water-Bearing Sediments

- Quaternary Alluvium

Consolidated Bedrock

- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

Faults

- Location Certain
- Location Approximate
- Location Concealed
- Location Uncertain
- Approximate Location of Groundwater Barrier

Prepared by:

WEST YOST
Water. Engineered.

0 2 4 Miles
0 2 4 Km

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

Wells Sampled for Water Quality
July 2018 to June 2023

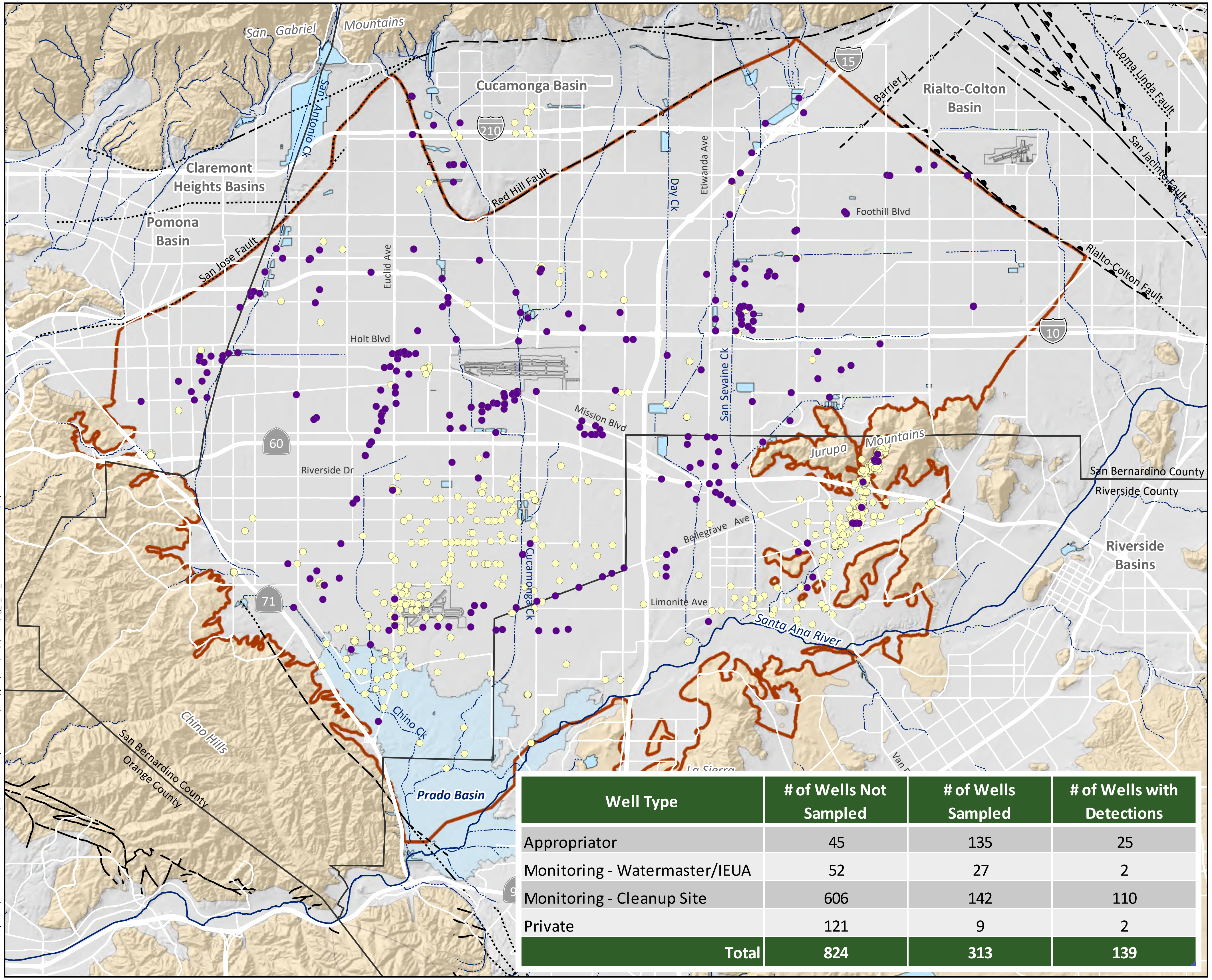
Figure 1

Figures 2 through 12 are maps characterizing the spatial distribution of sampling for each emerging contaminant for the July 2018 to June 2023 period. In each map, the wells are symbolized to demonstrate where the well was sampled or not sampled for the contaminant, and there is a summary table of the number of wells sampled by well type. Also provided in Figures 2 through 12 is a summary narrative describing each contaminant, the typical sources of the contaminant in groundwater, the identified health concerns related to drinking water, and any regulatory actions or considerations.

Each map was reviewed to understand the current state of monitoring and identify data gaps. Areas with data gaps will be recommended for sampling as part of the ECMP.

Table 3 summarizes the number and percentage of wells, by type, that have not been sampled in the last five years for each of the 11 emerging contaminants. Table 3 also includes the recommended monitoring action(s) based on review of current monitoring efforts and locations as shown in Figures 2 through 12. The recommendation identifies whether or not to sample the contaminant, including any exceptions by well type. If a contaminant is not recommended for sampling, Table 3 provides the rationale. Eight of the 11 emerging contaminants in Table 3 are recommended for monitoring for the ECMP at one or more well types. PFOA, PFOS, and other PFAS are grouped together under “PFAS” compounds since analysis for these compounds is done together with one laboratory method. Section 4 describes the monitoring plan for these seven emerging contaminants based on well type:

- Manganese
- 1,4-Dioxane
- PFAS (including PFOA/PFOS)
- NDMA
- Mercury
- Cadmium
- Perchlorate (using a low-level method)



Well Type	# of Wells Not Sampled	# of Wells Sampled	# of Wells with Detections
Appropriator	45	135	25
Monitoring - Watermaster/IEUA	52	27	2
Monitoring - Cleanup Site	606	142	110
Private	121	9	2
Total	824	313	139

Sampling for Manganese in Chino and Cucamonga Basins

- Well Sampled
- Well Not Sampled

* Other key map features are described in the legend of Figure 1.

Manganese is currently regulated in California with a secondary MCL of 50 micrograms per liter (µgl). In 2022, California Senate Bill (SB) 1124 established a timeline and funding mechanisms to evaluate the need to develop a health-based drinking water limit for manganese. SB 1124 requires development of a revised NL and a PHG. The PHG will provide the scientific basis for determining a primary MCL concentration for manganese in California. In February 2023, the State DDW EPA issued a proposed, revised, lower NL of 20 µgl and an RL of 200 µgl.

Manganese can enter groundwater through natural and anthropogenic inputs. Anthropogenic inputs can include runoff from industrial activities or landfill leaching. Natural processes include partitioning from soils containing manganese through weathering of primary minerals that contain manganese (II) or reductive dissolution of manganese (III)/(IV). Elevated manganese concentrations are typically associated with suboxic conditions where reductive dissolution of manganese (III/IV) minerals transforms to more soluble manganese (II). For this reason the fate and transport of manganese is strongly dependent on groundwater chemistry.

Research on the health effects of manganese exposure from drinking water has identified adverse health effects including neurotoxicity and irreversible learning and motor skill impairment in children. Based on this research, in 2021 the World Health Organization established a new provisional guideline value for manganese in drinking water of 80 µgl to be protective of these neurological effects. Manganese does not currently have a federal primary MCL, but does have a CA secondary MCL of 50 µgl that was established to address non-health related issues of water discoloration. Manganese was listed in CCL 4 in 2016 as a drinking water contaminant that is known or anticipated to occur in public water systems and is not currently subject to enforceable EPA drinking water regulations.

Prepared by:

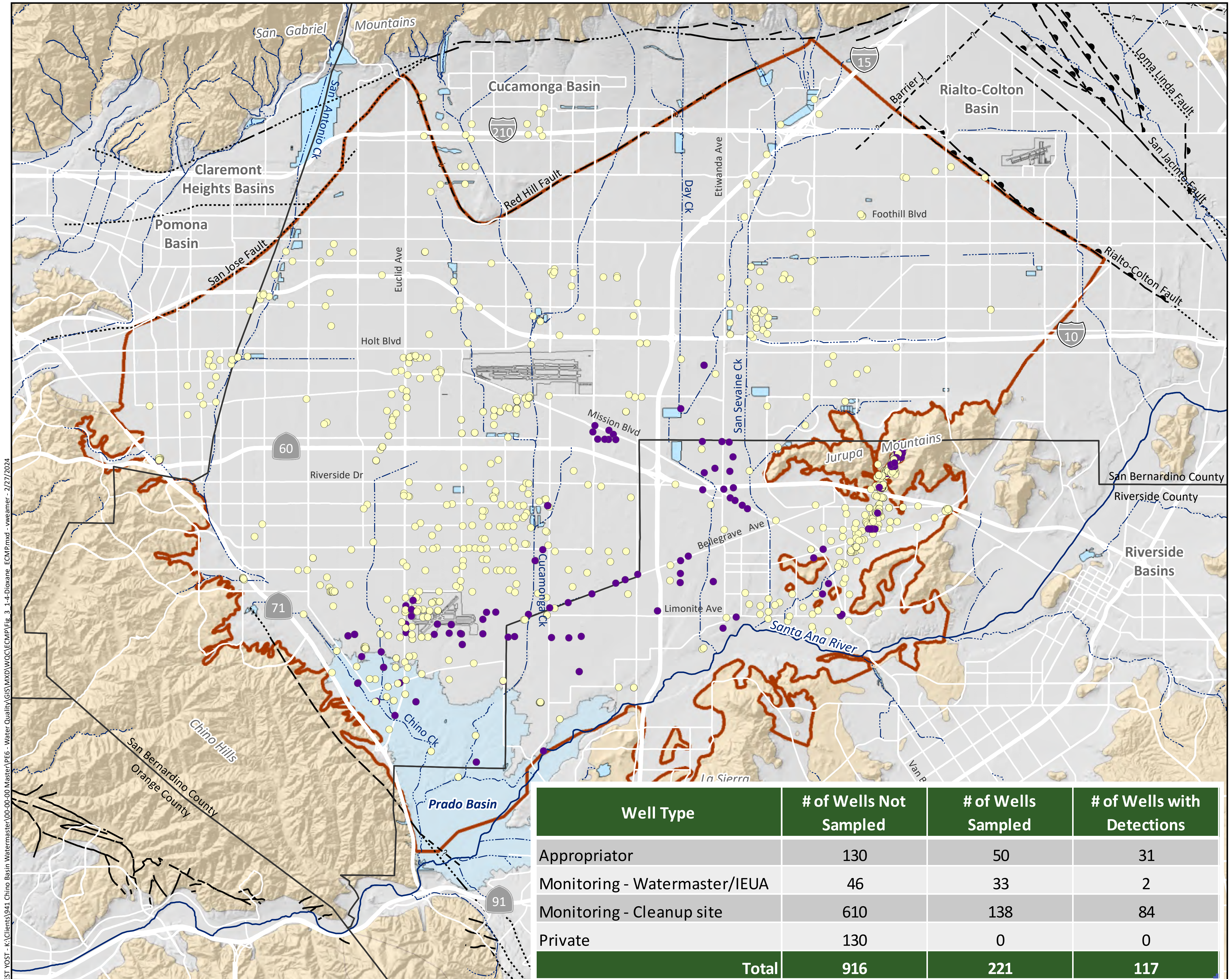
WEST YOST
Water. Engineered.

0 2 4 Miles
0 2 4 Km

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

Sampling for Manganese in Groundwater
July 2018 to June 2023

Figure 2



Well Type	# of Wells Not Sampled	# of Wells Sampled	# of Wells with Detections
Appropriator	130	50	31
Monitoring - Watermaster/IEUA	46	33	2
Monitoring - Cleanup site	610	138	84
Private	130	0	0
Total	**916**	**221**	**117**

Sampling for 1,4-Dioxane in Chino and Cucamonga Basins

- Well Sampled
- Well Not Sampled

* Other key map features are described in the legend of Figure 1.

1,4-Dioxane does not currently have a California or Federal MCL. In November 2010, the State DDW set a NL of 1 µgl in drinking water. On January 22, 2019, the DDW required California OEHHA to establish a PHG for 1,4-dioxane. Once a PHG is determined, DDW will set an MCL for 1,4-dioxane in drinking water as close as economically and technologically feasible to the PHG. 1,4-Dioxane was listed on the CCL 4 in 2016 as a drinking water contaminant that is known or anticipated to occur in public water systems.

1,4-Dioxane is a manmade industrial solvent commonly used as a stabilizer for other solvents, in particular 1,1,1-tricholorethane (TCA). It enters wastewater and groundwater though industrial discharge and contributions from commercial products. 1,4-dioxane does not readily degrade in the environment and is highly soluble in water. These properties result in relatively rapid movement through soil to groundwater and limited removal through standard wastewater and drinking water treatment processes. Recycled water may contain elevated concentrations of 1,4-dioxane due to lack of removal in standard wastewater treatment processes. Advanced oxidation processes such as peroxide and ultraviolet light /ozone can effectively destroy 1,4-dioxane, but chlorination can result in the formation of toxic byproducts. State Water Board data from 2009 to 2019 showed that 194 out of 1,539 active and standby wells in California had at least one detection of 1,4-dioxane above the NL, with the majority in Los Angeles and Orange Counties.

1,4-Dioxane is classified as a group B2 likely human carcinogen by EPA and a known carcinogen to the State of California. Long-term exposure through inhalation, dermal contact, and oral ingestion via drinking water have been shown to result in adverse effects to the liver and kidneys. As of January 2017, recycled water for groundwater recharge using subsurface application must achieve 0.5-log (i.e. 69%) removal of 1,4-dioxane through their water treatment systems, and as of April 2019 the Recycled Water Policy (State Water Board EPA, 2019) requires quarterly monitoring of 1,4-dioxane in recycled water for groundwater recharge and reservoir augmentation.

Prepared by:

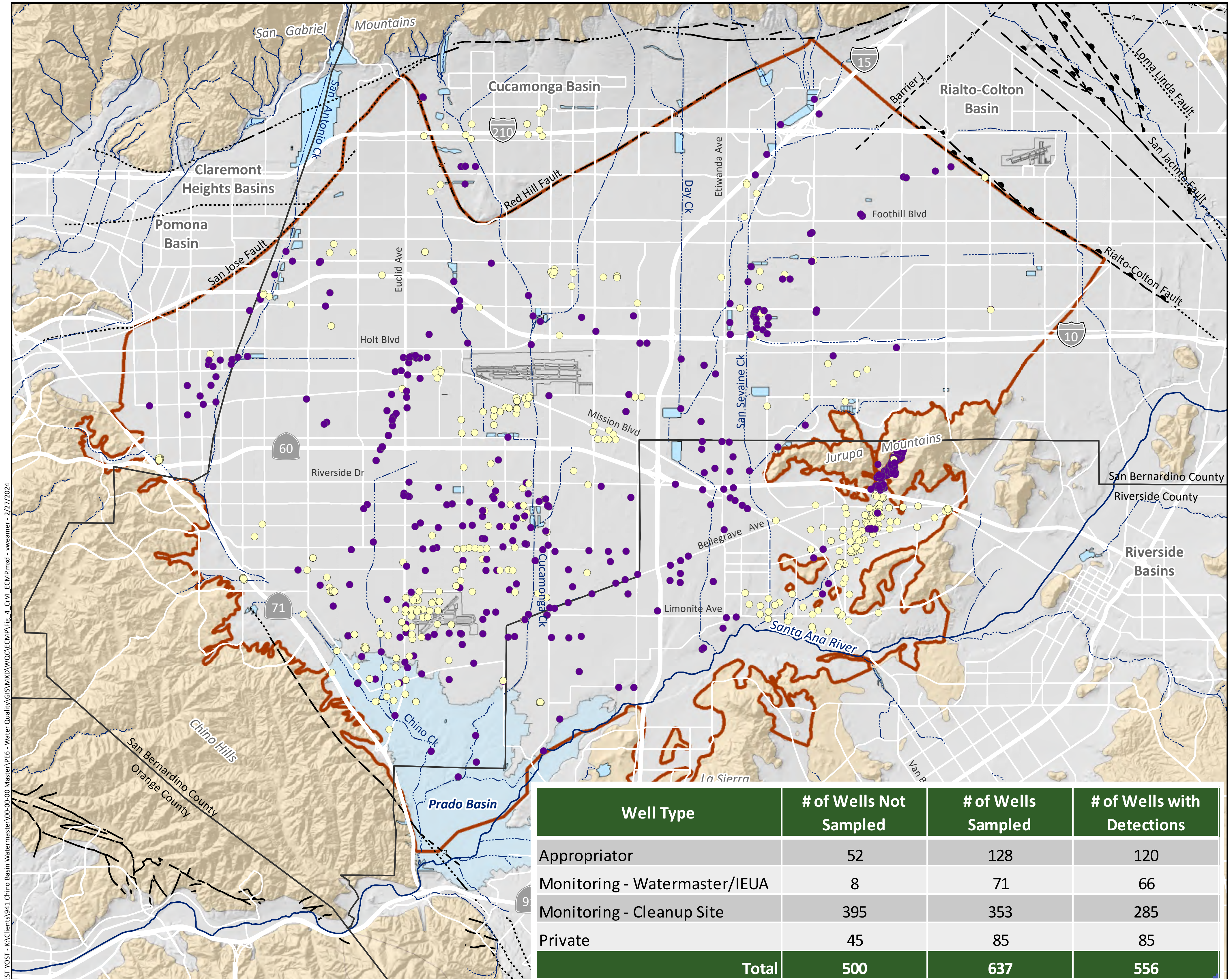
WEST YOST
Water. Engineered.

0 2 4 Miles
0 2 4 Km

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

Sampling for 1,4-Dioxane in Groundwater
July 2018 to June 2023

Figure 3



Well Type	# of Wells Not Sampled	# of Wells Sampled	# of Wells with Detections
Appropriator	52	128	120
Monitoring - Watermaster/IEUA	8	71	66
Monitoring - Cleanup Site	395	353	285
Private	45	85	85
Total	500	637	556

Sampling for Hexavalent Chromium in Chino and Cucamonga Basins

- Well Sampled
- Well Not Sampled

* Other key map features are described in the legend of Figure 1.

Hexavalent chromium is currently regulated by reference through the primary MCL of 50 µgl for total chromium (i.e. the sum of trivalent and hexavalent chromium) which was established in 1977. In 2014 California approved an MCL for hexavalent chromium of 10 µgl, but this MCL was invalidated by the Superior Court of Sacramento County in 2017 with an order to adopt a new MCL. In March 2022, the DDW released a draft MCL for hexavalent chromium of 10 µgl and held two public workshops for public comment. In June 2023 the State Water Board released a Notice of Proposed Rulemaking that established a proposed MCL for hexavalent chromium of 10 µgl with a detection limit for reporting of 0.1 µgl.

Sources of hexavalent chromium in groundwater are both anthropogenic and naturally occurring. Anthropogenic sources include industrial releases from dyes, paint, wood preservatives, and stainless steel production facilities and leaching from chromium waste disposal sites. Chromium also occurs naturally in the environment, most commonly as the relatively immobile and nontoxic form trivalent chromium. Trivalent chromium in rocks, minerals, and aquifer materials can be oxidized by naturally occurring manganese oxides, resulting in generation of hexavalent chromium that causes natural groundwater contamination. In California most naturally occurring chromium groundwater contamination is associated with chromium-bearing rocks such as serpentinites and schists. In California naturally occurring hexavalent chromium affects more wells and people, over a larger area, than anthropogenic contamination.

Hexavalent chromium is a known carcinogen to the State of California and causes reproductive harm and liver toxicity. In 2011 the PHG for hexavalent chromium was set to 0.02 µgl based on the health-protective concentration (HPC) established for cancer effects. After review of the PHG and the underlying HPCs, in November 2023 OEHHA revised the HPC for noncancer effects from 2 to 5 µgl, but the PHG did not change because it must be set to the lowest HPC considering both cancer and noncancer effects.

Prepared by: WEST YOST Water. Engineered.

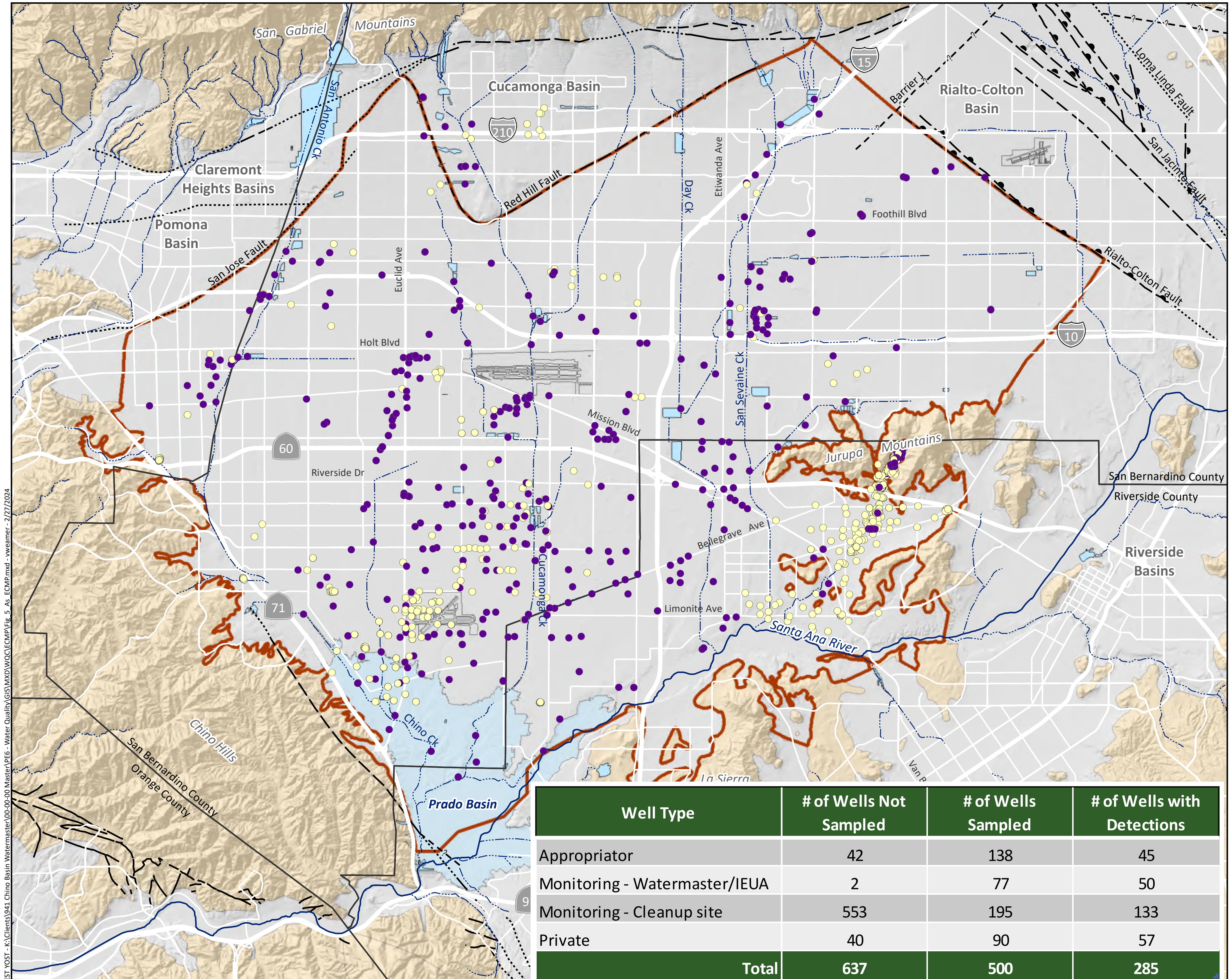
0 2 4 Miles
0 2 4 Km

Prepared for: Emerging Contaminants Monitoring Plan

Sampling for Hexavalent Chromium in Groundwater

July 2018 to June 2023

Figure 4



Well Type	# of Wells Not Sampled	# of Wells Sampled	# of Wells with Detections
Appropriator	42	138	45
Monitoring - Watermaster/IEUA	2	77	50
Monitoring - Cleanup site	553	195	133
Private	40	90	57
Total	637	500	285

Sampling for Arsenic in Chino and Cucamonga Basins

- Well Sampled
- Well Not Sampled

* Other key map features are described in the legend of Figure 1.

The current California MCL for arsenic is 10 µgl, which is also the Federal MCL. The EPA set an MCL Goal (MCLG) of 0 µgl while California has a PHG of 0.004 µgl. The MCLG and PHG reflect that there is no known safe level of chronic arsenic exposure. The current DLR in California is 2 µgl.

Arsenic enters groundwater through natural processes including weathering and dissolution of arsenic-bearing minerals, but higher concentrations in groundwater may exist due to anthropogenic sources such as industrial releases, mining, and the use of arsenic-based pesticides and wood preservatives. The partitioning and mobility of arsenic in groundwater is complex but generally is associated with high pH (i.e. alkaline) environments, moderately strong reducing conditions, and/or geothermal or volcanic-influenced water sources.

Chronic arsenic exposure through drinking water leads to cancers of the skin, lung, bladder, kidney, and liver; arsenic exposure is further associated with neurological, respiratory, cardiovascular, immunological, and endocrine effects (Naujkas, M. et al, 2013). Children exposed to arsenic exhibit developmental effects and increased risks of cancers and other diseases during adulthood.

The DDW is currently investigating the technological and economic feasibility of lowering the MCL below the current California and federal MCL and closer to the PHG. In November 2022 the DDW held a public workshop on proposed changes to DLRs, including for arsenic. The proposed change would lower the DLR from 2 µgl to 0.5 µgl during Phase II of implementation to bring the DLR closer to the PHG. The State of New Jersey set an arsenic MCL of 5 µgl, which is the lowest and most protective MCL in the U.S.

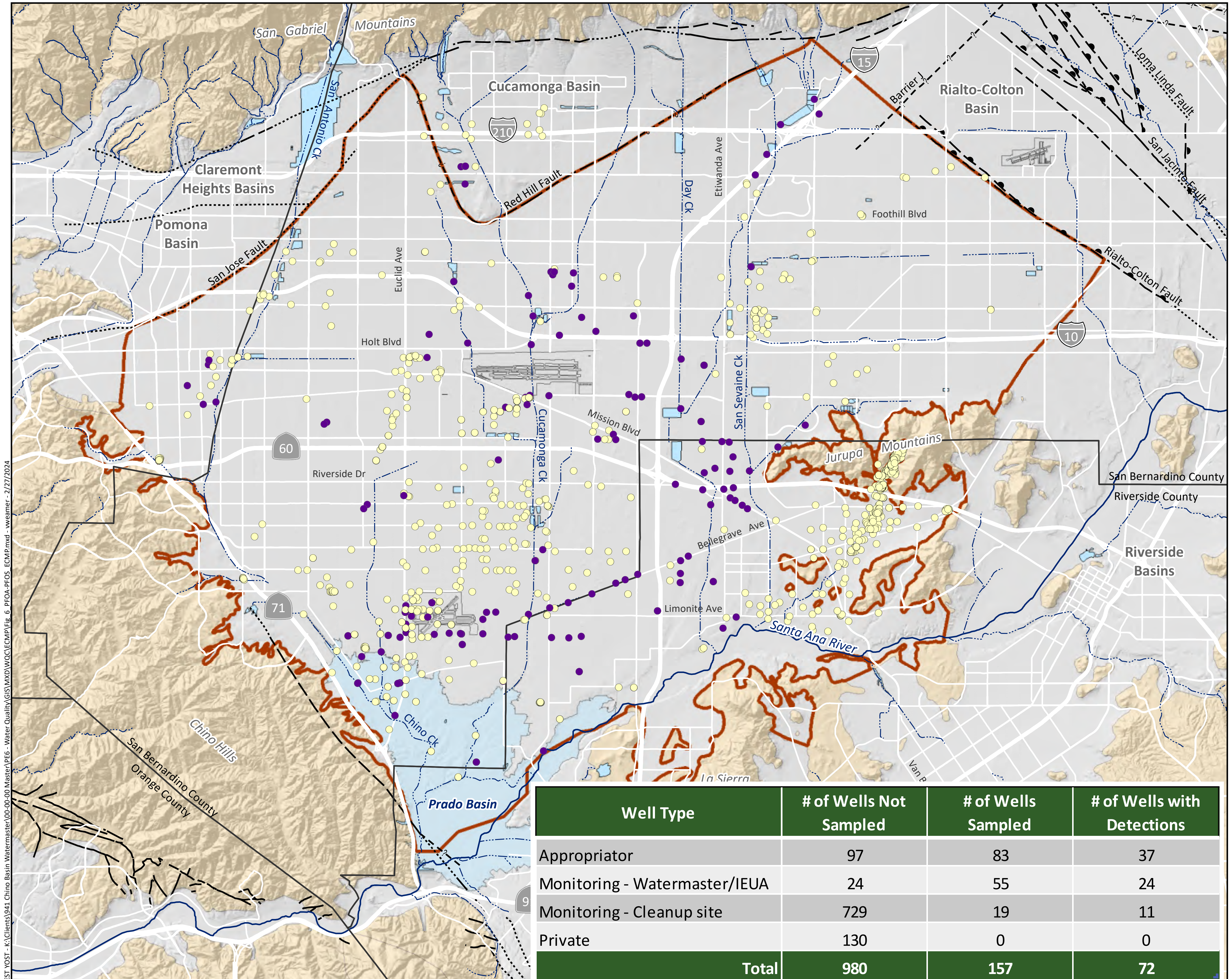
Prepared by:
WEST YOST
Water. Engineered.

0 2 4 Miles
0 2 4 Km

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

Sampling for Arsenic in Groundwater
July 2018 to June 2023

Figure 5



Well Type	# of Wells Not Sampled	# of Wells Sampled	# of Wells with Detections
Appropriator	97	83	37
Monitoring - Watermaster/IEUA	24	55	24
Monitoring - Cleanup site	729	19	11
Private	130	0	0
Total	980	157	72

Sampling for Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS) in Chino and Cucamonga Basins

- Well Sampled
- Well Not Sampled

* Other key map features are described in the legend of Figure 1.

PFOA and PFOS are currently unregulated drinking water contaminants in California with NLs of 5.1 and 6.5 ngl, respectively. PFOA and PFOS are manmade fluorinated chemicals that are part of a larger group of emerging contaminants of concern referred to as PFAS. In March 2023, EPA released proposed MCLs of 4 ngl (0.004 µgl) for both PFOA and PFOS. The proposed MCLs received over 120,000 public comments, and EPA submitted final MCLs for interagency review in winter 2023 and plans to finalize the rule in 2024. The proposed Federal MCLs are based on MCLGs of 0 (zero) for both PFOA and PFOS. The draft California PHGs are 0.007 and 1 ngl, respectively.

PFOA and PFOS sources to groundwater include direct discharges from industrial and manufacturing activities, leaching from landfills, percolation of wastewater containing PFOA and PFOS, and runoff from areas where PFAS-containing products such as firefighting foams have been used. PFOA and PFOS do not readily degrade in the environment and therefore can bioaccumulate. In November 2023 the U.S. District Court approved settlements to class-action lawsuits against 3M and DuPont that would restrict future litigation related to PFAS sources (including PFOA and PFOS) unless an entity opted out of the settlement prior to December 2023.

Exposures to PFOA and PFOS have been associated with developmental and reproductive harm, immune system impairment, liver damage, and increased risk of testicular and kidney cancers. The proposed PHG for PFOA is based on kidney cancer in humans, while the proposed PHG for PFOS is based on liver and pancreatic tumor development in rats.

The proposed Federal MCLs for PFOA and PFOS are currently in final review and are expected to become final in 2024. The Safe Drinking Water Act allows a three-year compliance period following formal adoption of the MCL, although the final rule could trigger significant litigation that could lead to delays in commencing compliance and enforcement activities

WEST YOST - K:\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE6 - Water Quality\GIS\MXD\WQC\ECMP\Fig_6_PFOA-PFOS_ECMP.mxd - vweamer - 2/27/2024

Prepared by:

WEST YOST Water. Engineered.

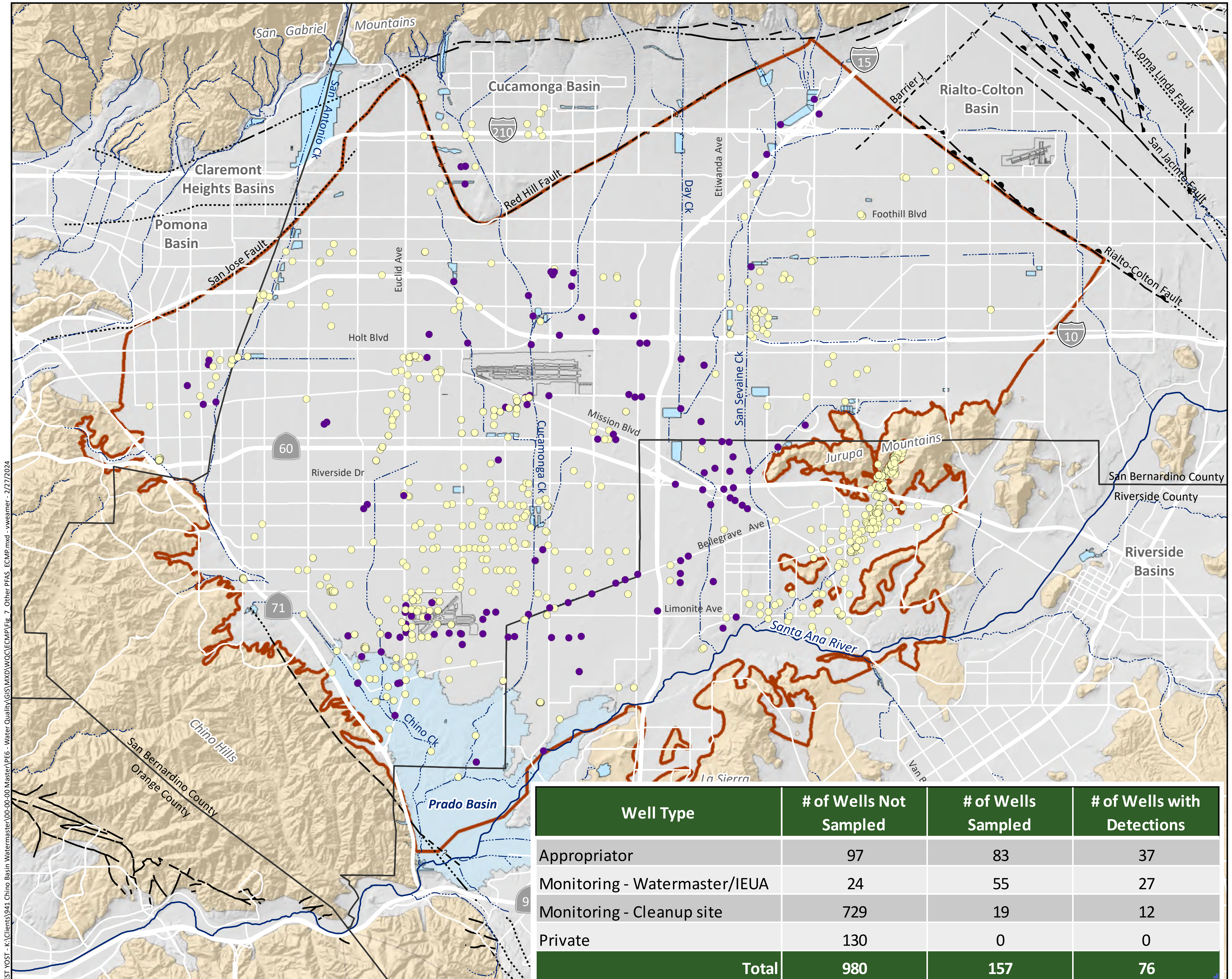
0 2 4 Miles

0 2 4 Km

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

Sampling for PFOA and PFOS in Groundwater
July 2018 to June 2023

Figure 6



Well Type	# of Wells Not Sampled	# of Wells Sampled	# of Wells with Detections
Appropriator	97	83	37
Monitoring - Watermaster/IEUA	24	55	27
Monitoring - Cleanup site	729	19	12
Private	130	0	0
Total	980	157	76

Sampling for Other Per- and Polyfluorinated Substances (PFAS) in Chino and Cucamonga Basins

- Well Sampled
- Well Not Sampled

* Other key map features are described in the legend of Figure 1.

PFAS are a group of emerging contaminants that includes thousands of compounds. In March 2023, EPA released proposed MCLs for six PFAS with compound-specific MCLs for PFOA/PFOS and a mixture-based MCL for perfluorononanoic acid (PFNA), perfluorohexane sulfonic acid (PFHxS), perfluorobutane sulfonic acid (PFBS), and hexafluoropropylene oxide dimer acid (HFPO-DA or GenX Chemicals). The proposed MCL uses a unitless Hazard Index based on the concentration of each of these chemicals relative to individual health-based water concentrations (HBWCs) of 10 ngl (PFNA), 9 ngl (PFHxS), 2,000 ngl (PFBS), and 10 ngl (GenX). If the running annual average of the sum of concentration/HBWC ratios of the four compounds exceeds 1.0, this would be above the MCL. The proposed MCLs received over 120,000 public comments, and EPA submitted final MCLs for interagency review in winter 2023 and plans to finalize in 2024.

PFAS sources to groundwater include direct discharges from industrial and manufacturing activities, leaching from landfills, percolation of wastewater containing PFAS, and runoff from areas where PFAS-containing products such as firefighting foams have been used. In November 2023 the U.S. District Court approved settlements to class-action lawsuits against 3M and DuPont that would restrict future litigation related to PFAS sources unless an entity opted out of the settlement prior to December 2023.

Exposures to PFAS have been associated with developmental and reproductive harm, immune system impairment, liver damage, and increased risk of testicular and kidney cancers. The following observed health effects provide the basis for determining the HDWC for each compound used in the Hazard Index calculation: PFHxS, thyroid effects; PFNA, developmental effects; PFBS, thyroid effects; GenX, liver effects.

The proposed Federal MCLs for PFAS are currently in final review and are expected to become final in 2024. The Safe Drinking Water Act allows a three-year compliance period following formal adoption of the MCL, although the final rule could trigger significant litigation that could lead to delays in commencing compliance and enforcement activities.

Prepared by:

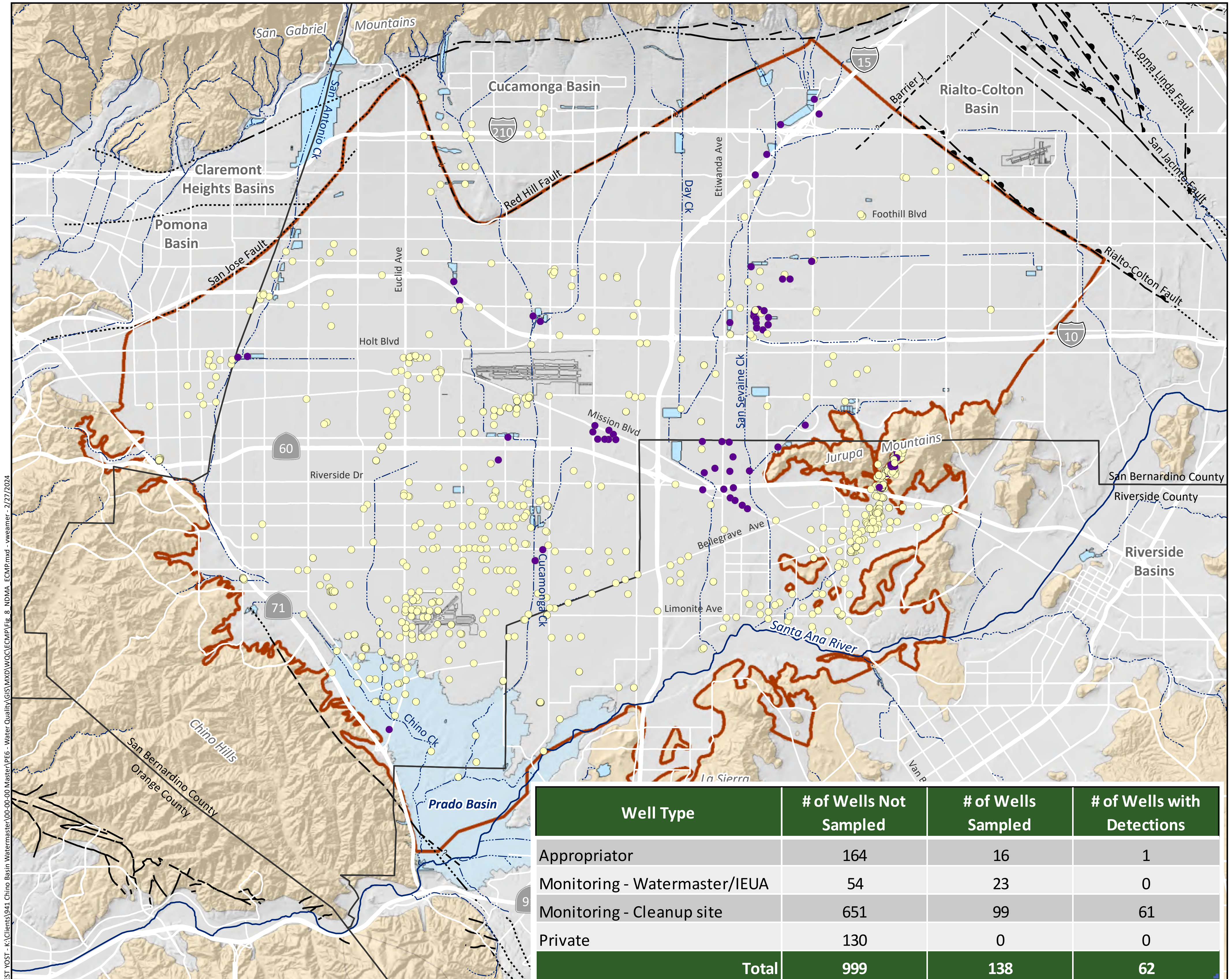
WEST YOST
Water. Engineered.

0 2 4 Miles
0 2 4 Km

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

Sampling for PFAS in Groundwater
July 2018 to June 2023

Figure 7



Well Type	# of Wells Not Sampled	# of Wells Sampled	# of Wells with Detections
Appropriator	164	16	1
Monitoring - Watermaster/IEUA	54	23	0
Monitoring - Cleanup site	651	99	61
Private	130	0	0
Total	999	138	62

Sampling for N-Nitrosodimethyamine (NDMA) in Chino and Cucamonga Basins

- Well Sampled (16 Appropriator, 122 Monitoring, 0 Private)
- Well Not Sampled (164 Appropriator, 704 Monitoring, 130 Private)

* Other key map features are described in the legend of Figure 1.

NDMA is part of a class of chemicals called nitrosamines. The current NL for NDMA in California is 10 ngl (0.01 µgl), and NDMA is the only nitrosamine that has a PHG, which is set at 3 ngl (0.003 µgl). NDMA is listed as a priority pollutant by the EPA, but there is currently no Federal or State of California MCL for NDMA.

Sources of NDMA include industrial discharges from the manufacture of rocket fuels, rubbers, and pesticides as well formation as a disinfection by-product during reaction of natural organic matter with monochloramine. NDMA is highly soluble, resistant to biodegradation and does not readily adsorb to soil minerals or soil organic matter (low KOC), so it travels easily through soils and groundwater. Elevated concentrations of NDMA may be found in recycled water because recycled water often contains precursors to NDMA formation such as dimethylamine functional groups, trimethylamine, dimethyl amides, the fungicide thiram, and the herbicide 2,4-D.

Nitrosamines are known carcinogens to the State of California and NDMA is considered a probable human carcinogen (Class B-2) by the EPA. Exposure to NDMA may result in increased risk of liver, kidney, and gastrointestinal cancers, and chronic exposure even at low levels may pose significant health risks.

In 2020 OEHHA initiated the process of updating the PHG for NDMA due to "numerous detections of NDMA in California public drinking water supply wells above the NL of 10 ngl. Following establishment of an updated PHG, the DDW will likely initial the process to develop an MCL.

Prepared by:

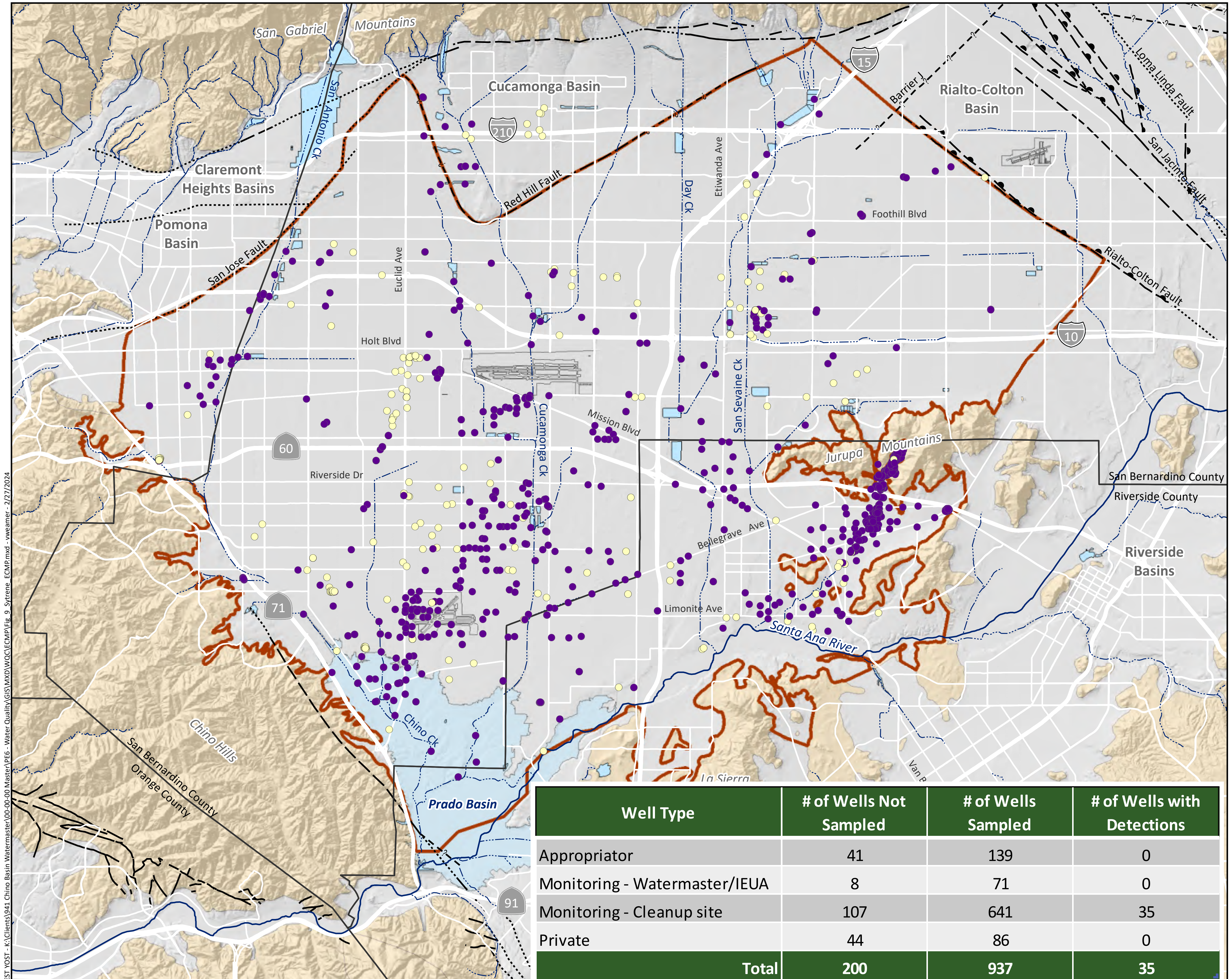
WEST YOST
Water. Engineered.

0 2 4 Miles
0 2 4 Km

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

Sampling for NDMA in Groundwater
July 2018 to June 2023

Figure 8



Sampling for Styrene in Chino and Cucamonga Basins

- Well Sampled
- Well Not Sampled

* Other key map features are described in the legend of Figure 1.

Well Type	# of Wells Not Sampled	# of Wells Sampled	# of Wells with Detections
Appropriator	41	139	0
Monitoring - Watermaster/IEUA	8	71	0
Monitoring - Cleanup site	107	641	35
Private	44	86	0
Total	200	937	35

Styrene in drinking water is currently regulated with an MCL of 100 µgl by the State of California and EPA. The EPA MCLG is also 100 µgl, but in 2010 OEHHA released a California PHG for styrene of 0.5 µgl.

The main sources of styrene in groundwater are discharge from rubber and plastic factories and leaching from landfills. Leaching of styrene-containing materials such as styrofoam and construction materials may provide additional sources. Styrene does not readily adsorb to soil and aquifer materials and may travel through soil to groundwater, but it does readily degrade under most environmental conditions.

Both short- and long-term exposure to styrene at concentrations above the MCL can cause adverse health effects. Short-term exposure may result in nervous system effects including depression, loss of concentration, weakness, fatigue, and nausea. Chronic exposure can cause liver and nerve tissue damage, respiratory effects, and possibly cancer.

The current styrene MCL of 100 µgl is significantly higher than the PHG of 0.5 µgl. The State DDW has indicated prioritizing the development of a revised MCL for styrene and set up a notice of rulemaking webpage that was last updated in August 2023 (State of California 2024e). However, this webpage does not currently contain any specific information or a timeline for development of a revised MCL.

Prepared by:

WEST YOST
Water. Engineered.

0 2 4 Miles

0 2 4 Km

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

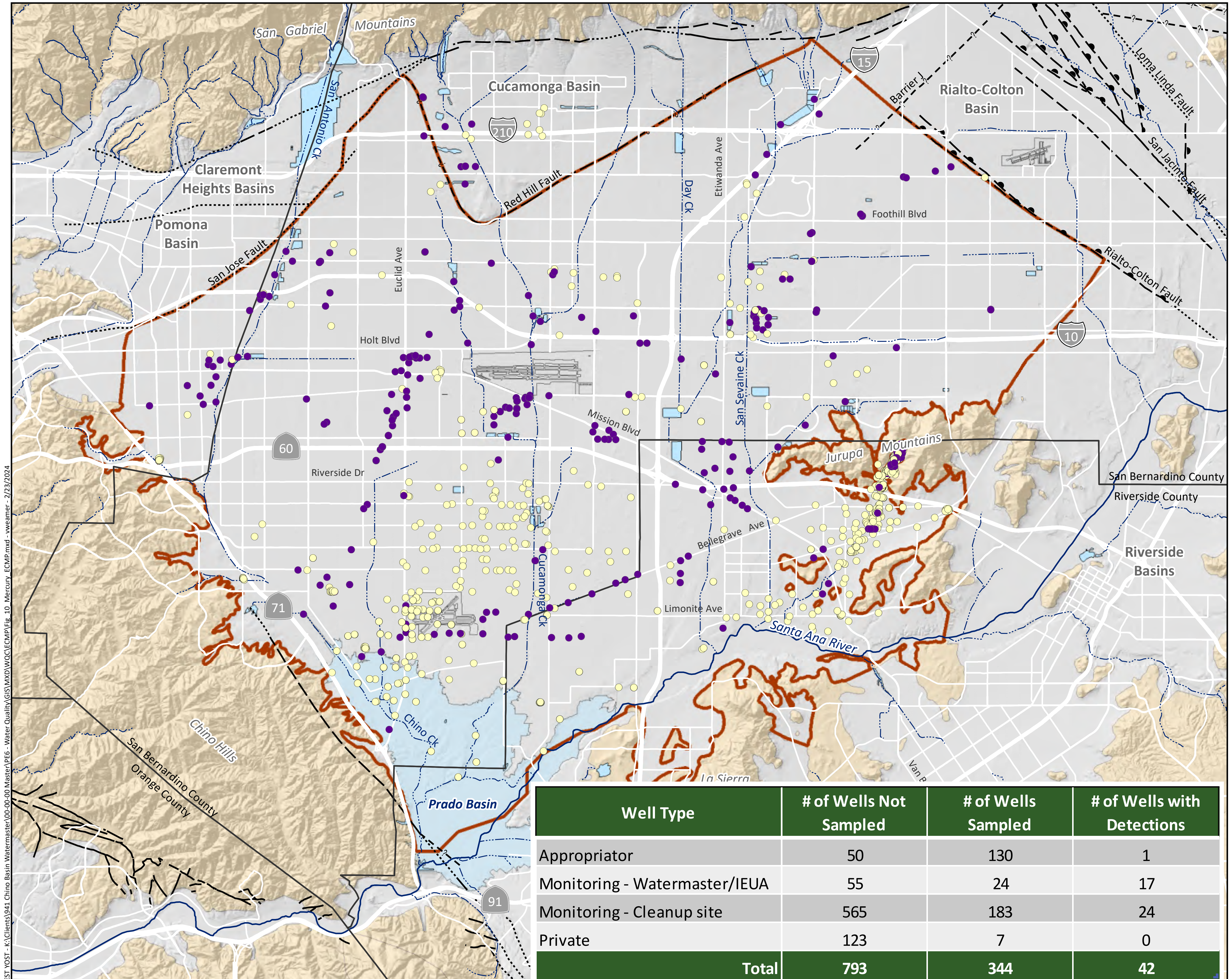
Sampling for Styrene in Groundwater
July 2018 to June 2023

Figure 9

Sampling for Mercury in Chino and Cucamonga Basins

- Well Sampled
- Well Not Sampled

* Other key map features are described in the legend of Figure 1.



Well Type	# of Wells Not Sampled	# of Wells Sampled	# of Wells with Detections
Appropriator	50	130	1
Monitoring - Watermaster/IEUA	55	24	17
Monitoring - Cleanup site	565	183	24
Private	123	7	0
Total	793	344	42

The current California MCL for mercury is 2 µgl, which is also the Federal MCL. The EPA MCL Goal is also 2 µgl while California has a PHG of 1.2 µgl. The current detection limit for reporting (DLR) in California is 1 µgl. The mercury MCL is based on total mercury concentration and does not differentiate between specific forms, e.g. inorganic and organic mercury.

Mercury may enter groundwater through both natural and anthropogenic processes. Natural processes include weathering and dissolution of mercury-bearing minerals. Anthropogenic sources include industrial releases, coal combustion, and mining. Atmospheric deposition is a significant source of mercury in the environment, and deposited mercury may leach to groundwater. The partitioning and mobility of mercury in the environment is complex and includes volatilization, redox and precipitation/dissolution reactions, and changes between inorganic and organic forms.

The health effects of mercury exposure have been known for centuries. The form of mercury has a substantial impact on its toxicity: inorganic mercury exposure can cause respiratory, neural, and renal system injury while the organic form of mercury, methylmercury (CH_3Hg^+) targets the nervous system and can be lethal even at small doses. Human exposure to mercury can occur through drinking water, although concentrations of total mercury (inorganic + organic) in the µgl range are rare.

In August 2023 the State DDW created a rulemaking webpage for cadmium and mercury MCLs (State of California 2024f), however as of February 2024 there is no information available on this webpage.

WEST YOST - K:\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE6 - Water Quality\GIS\MXD\WQ\ECMP\Fig_10_Mercury_ECMP.mxd - vwearner - 2/23/2024

Prepared by:

West Yost Water. Engineered.

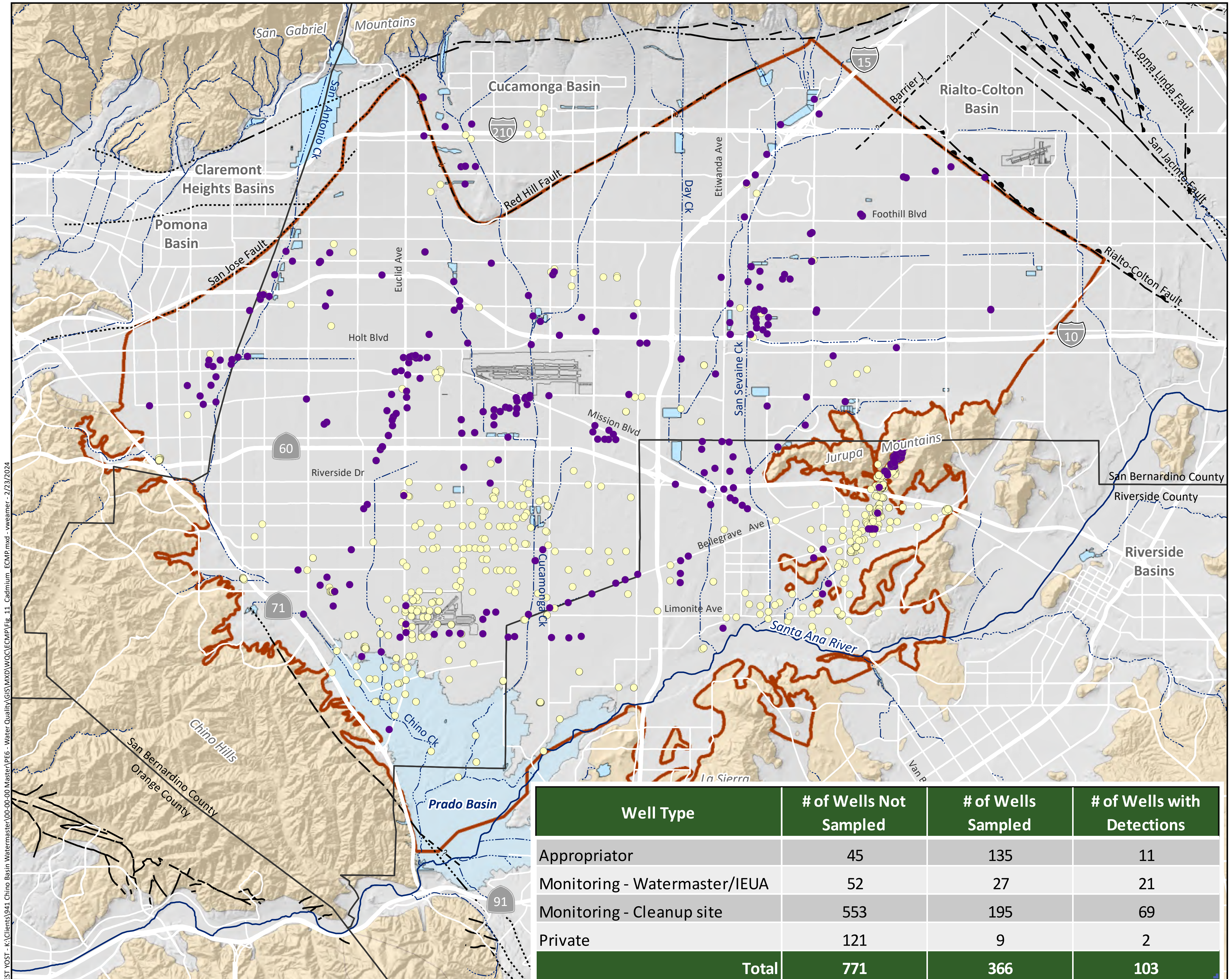
0 2 4 Miles

0 2 4 Km

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

Sampling for Mercury in Groundwater
July 2018 to June 2023

Figure 10



Well Type	# of Wells Not Sampled	# of Wells Sampled	# of Wells with Detections
Appropriator	45	135	11
Monitoring - Watermaster/IEUA	52	27	21
Monitoring - Cleanup site	553	195	69
Private	121	9	2
Total	771	366	103

Sampling for Cadmium in Chino and Cucamonga Basins

- Well Sampled
- Well Not Sampled

* Other key map features are described in the legend of Figure 1.

The current California MCL for cadmium is 5 µgl, which is also the Federal MCL. The EPA MCL Goal is also 5 µgl while California has a PHG of 0.04 µgl. The current detection limit for reporting (DLR) in California is 1 µgl.

Cadmium occurs mainly as the Cd2+ cation and is highly toxic and mobile. Mobility is generally higher under acidic (lower pH) conditions where adsorption is significantly lower than at alkaline (high pH) conditions. Cadmium can enter groundwater through both natural and anthropogenic processes. Natural processes include weathering and dissolution of cadmium-bearing rocks and minerals, and sulfide-bearing sedimentary rocks have been associated with elevated cadmium concentrations in groundwater. Wildfires in California have lead to increased cadmium concentrations in surface runoff which can infiltrate to groundwater. Anthropogenic sources include combustion emissions, industrial releases from the metal, mining, and battery industries, and the use of phosphate fertilizers and biomass ash which often contain elevated levels of cadmium. Atmospheric sources, water reuse, and agricultural activities may all be diffuse sources of cadmium.

Chronic exposure to cadmium causes kidney damage and osteoporosis due to competition with calcium and may increase risks of cancer and cardiac disease. Exposure to cadmium through food may also be significant, and exposure from all sources is important in determining health effects.

In August 2023 the State DDW created a rulemaking webpage for cadmium and mercury MCLs (State of California 2024f), however as of February 2024 there is no information available on this webpage.

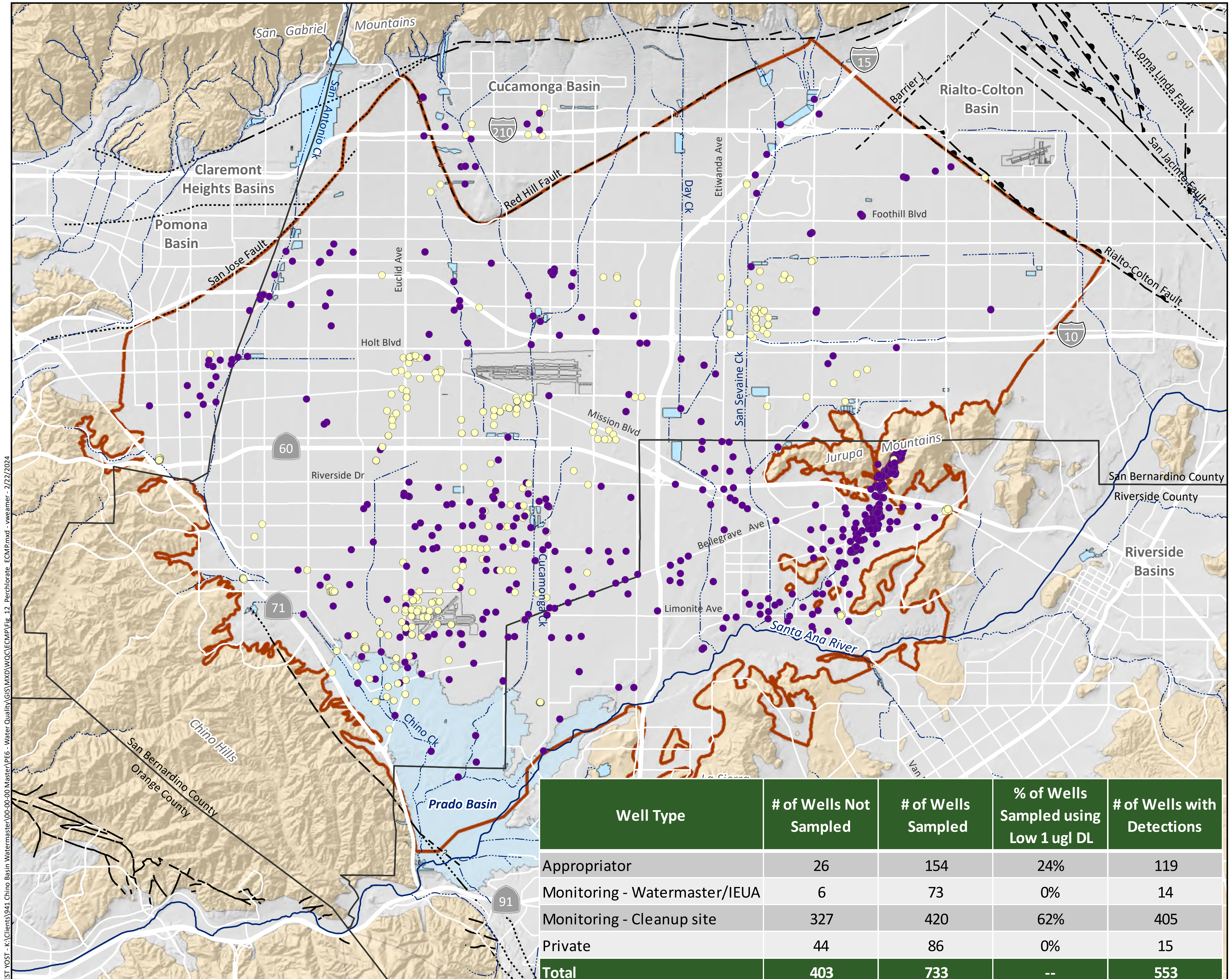
Prepared by:

WEST YOST
Water. Engineered.

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

Sampling for Cadmium in Groundwater
July 2018 to June 2023

Figure 11



Well Type	# of Wells Not Sampled	# of Wells Sampled	% of Wells Sampled using Low 1 ugl DL	# of Wells with Detections
Appropriator	26	154	24%	119
Monitoring - Watermaster/IEUA	6	73	0%	14
Monitoring - Cleanup site	327	420	62%	405
Private	44	86	0%	15
Total	**403**	**733**	**--**	**553**

Sampling for Perchlorate in Chino and Cucamonga Basins

- Well Sampled **

  ** Most wells were not sampled using a method with a lower dection limit of 1 ugl (equal to the PHG) or lower

- Well Not Sampled

* Other key map features are described in the legend of Figure 1.

The California MCL for perchlorate is 6 µgl and became effective in October 2007. There is currently no Federal MCL for perchlorate, but EPA has studied perchlorate health effects and committed to issue a proposed federal MCL for perchlorate by November 2025. The standard laboratory detection limit for reporting (DLR) for perchlorate is currently 1 µgl and was most recently lowered from 2 µgl on January 1, 2024. The DLR has been lowered multiple times since 2017 to collect additional data for review of the MCL. California established a PHG for perchlorate of 1 µgl in 2015.

Perchlorates are soluble and highly mobile in soils causing them to readily leach into groundwater. Perchlorate and its salts are used in solid propellant for rockets, missiles, and fireworks, and in matches and pyrotechnic applications. Their use can lead to releases of perchlorate into the environment through atmospheric deposition following the use of these products or release associated with manufacture and disposal. Perchlorate may also be found naturally including in northern Chile, where Chilean nitrate fertilizer contains elevated perchlorate concentrations and is distributed for agricultural applications.

Perchlorate exposure affects hormone production by the thyroid by partly inhibiting the thyroid's uptake of iodine and leading to hypothyroidism and ultimately goiter. Since perchlorate exposure affects hormone production essential to growth and development, exposure to children is expected to result in more likely adverse health outcomes. However, health outcomes are difficult to compare because a nation-wide survey found perchlorate in urine was ubiquitous, thus there was no unexposed control group with which to compare.

The stepwise lowering of the DLR in California indicates that as more data on the occurrence of perchlorate in groundwater become available, the MCL may be reevaluated in the future. The timeline for review and rulemaking for a revised MCL is uncertain.

Prepared by:

WEST YOST
Water. Engineered.

N

0 2 4 Miles

0 2 4 Km

Prepared for:
Chino Basin Watermaster
Emerging Contaminants Monitoring Plan

Sampling for Perchlorate in Groundwater
July 2018 to June 2023

Figure 12

Table 3. Summary of Evaluation of Current and Recommended ECMP Monitoring for 11 Emerging Contaminants

Emerging Contaminant	Figure No.	Number of Wells Not Sampled between July 2018 and June 2023										Recommendation for Monitoring for the ECMP
		Total Wells Not Sampled (out of 1,136)		Appropriator (out of 180)		Monitoring - Watermaster/IEUA (out of 79)		Monitoring - Cleanup Site (out of 748)		Private (out of 130)		
		Number	%	Number	%	Number	%	Number	%	Number	%	
Manganese	2	823	72%	45	25%	52	66%	606	81%	121	93%	Yes , but only at Watermaster monitoring wells and private wells
1,4-Dioxane	3	915	81%	130	72%	46	58%	610	82%	130	100%	Yes, at all well types
Hexavalent Chromium	4	500	44%	52	29%	8	10%	395	53%	45	35%	No, current monitoring is sufficient
Arsenic	5	637	56%	42	23%	2	3%	553	74%	40	31%	No, current monitoring is sufficient
PFOA and PFOS	6	980	86%	97	54%	24	30%	729	97%	130	100%	Yes , but only at Watermaster monitoring wells, private wells, and IEUA monitoring wells. Monitoring for PFAS is already being done by agencies at select locations for the UCMR 5
Other PFAS	7	980	86%	97	54%	24	30%	729	97%	130	100%	
NDMA	8	998	88%	164	91%	54	68%	651	87%	130	100%	Yes, at all well types
Styrene	9	200	18%	41	23%	8	10%	107	14%	44	34%	No, current monitoring is sufficient
Mercury	10	792	70%	50	28%	54	68%	565	76%	123	95%	Yes , but only at Watermaster monitoring wells and private wells
Cadmium	11	771	68%	45	25%	52	66%	553	74%	121	93%	Yes , but only at Watermaster monitoring wells and private wells
Perchlorate [(a)]	12	403	35%	26	14%	6	8%	327	44%	44	34%	Yes, at all well types but using low level detection limit (DL) method (DL of 1.0 µgl or lower)

Notes:
(a) Most historical sampling was performed using an analytical method with a DL greater than 1.0 µgl. 0% of the monitoring at the private wells and monitoring wells used a low detection limit ; and 76% of the monitoring at the Appropriator wells used a low detection limit.

4.0 EMERGING CONTAMINANTS MONITORING AND ANALYSIS PLAN FOR FY 2024/25

This section describes the recommended monitoring and analysis plan for the initial ECMP for FY 2024/25, based on the review and analysis of emerging contaminants and recent sampling described in Sections 2 and 3 of this report.

4.1 Recommended Monitoring by Well Type

Table 4 summarizes the recommended monitoring for seven emerging contaminants with data gaps. For each emerging contaminant, Table 4 identifies:

- The laboratory analytical method, detection limit for reporting, and estimated cost per sample. The recommended laboratory methods include EPA developed and approved methods and one non-EPA approved method (for PFAS) and all have method detection limits lower or equal to any health-based advisory limits for the contaminant (i.e. NL, RL, PHG, or draft MCL). The laboratory sampling costs for the EPA-approved methods were obtained from Clinical Laboratories in the City of San Bernadino, who currently performs analysis of water quality samples collected by Watermaster for other monitoring programs.
- Each well type to sample. For each well type, an “X” indicates that the constituent should be monitored, and a blank cell indicates that the constituent does not need to be monitored.
- The cost for laboratory analysis per well, by well type. The costs per well vary by well type, because each well type has a different set of recommended emerging contaminants for monitoring. The costs per sample are:
  - $465 per sample for Appropriator wells
  - $609 per sample for Watermaster monitoring wells
  - $225 per sample for IEUA monitoring wells
- The target number of wells, expressed as a percentage, that should be sampled by well type to fill data gaps identified in Section 3. The target percentages[6] are:
  - 30 to 50 percent of Appropriator wells
  - 50 percent of Watermaster monitoring wells
  - 50 percent of IEUA monitoring wells

[6] The recommended target percentage of wells is a conservative approach in that not all wells have to be sampled to help optimally fill data gaps identified in Section 3 of the ECMP.

Table 4. Recommended ECMP for FY 2024/25								
				Monitor at Well Type				
Contaminant	Detection Limit	Laboratory Analytical Method	Estimated Laboratory Cost	Appropriator Well	Watermaster Monitoring Well	IEUA Monitoring Well	Cleanup Site Monitoring Well [(b)]	Private Well [(C)]
1,4 - Dioxane	1 µgl	EPA 522	$195	X	X	X		
NDMA	0.003 µgl	EPA 521	$240	X	X			
Perchlorate (low-level method)	1 µgl	EPA 314	$30	X	X	X		
PFAS (55 Compounds)	1 ngl	Cyclopure - DEXSORB® [(a)]	$79		X			
Manganese	2 µgl	EPA 200.8	$15		X			
Mercury	0.2 µgl	EPA 200.8	$35		X			
Cadmium	0.5 µgl	EPA 200.8	$15		X			
Cost per Sample by Well Type:				$465	$609	$225	$0	$0
Target Percentage of Wells to Sample by Well Type:				30-50%	50%	50%	0%	0%

Notes:

(a) https://cyclopure.com/product/water-test-kit-pro/. A non EPA-approved method for sampling PFAS for informational purposes. Cyclopure designed a treatment technology that uses DEXSORB® to remove PFAS in water. DEXSORB® is a corn-based adsorbent with an adsorption mechanism to bind PFAS to the media. Cyclopure provides a water test for PFAS that uses a DEXSORB® disc to collect a sample to analyze for PFAS. The disc is sent to the Cyclopure laboratory where isotope dilution methods measure a total of 55 PFAS on HPLC-HRMS/MS equipment. The method analyzes for 55 PFAS compounds that are all analyzed between the EPA-approved methods 533 and 537. There is a significant cost saving to using the Cyclopure DEXSORB® method.

(b) Monitoring at the cleanup site monitoring wells is not recommended in this ECMP, as the intent is to focus on the monitoring of water supply wells and Watermaster monitoring wells to support an initial characterization of the identified emerging contaminants in the Chino Basin to inform analyses and discussions of the WQC on how these contaminants can impact pumping and management of the Basin. The results and analyses can inform where additional monitoring is needed, which could be at the site cleanup wells.

(c) Monitoring of private wells is not part of the ECMP (see Appendix A - May 2, 2024 Water Quality Committee Meeting Comment 1 and Response).

4.2 Monitoring Schedule, Coordination, and Cost

The recommended target monitoring period for conducting ECMP sampling for FY 2024/25 is between July and October 2024. This would allow the sample results to be available by early December 2024 to support performing a basin-wide characterization of the distribution of the contaminants in the Chino Basin.

Watermaster will perform the recommended monitoring at the Watermaster monitoring wells and will request IEUA and the Appropriator parties sample their own wells on a voluntary basis. Table 5 below summaries the total cost of conducting the ECMP.

Table 5. Summary of Total ECMP Costs

Well Type	Watermaster Monitoring Well	IEUA Monitoring Wells	Appropriator Wells	Total
Laboratory Cost	$15,834	--	--	$15,834
Labor Cost	$3,090	$750	$2,000	$5,840
Total: Watermaster FY 2024/25 Budget	**$18,924**	**$750**	**$2,000**	**$21,674**

Notes:
a) IEUA total cost are estimated as $3,150 to sample 50% of the monitoring wells (14 wells).
b) Appropriator total cost are dependent on the percentage of wells sampled by each Appropriator. Based on the recommendation to sample 30-50% of the wells, total laboratory cost amongst all Appropriators ranges from $26,505 to $37,200 (57 to 80 wells).

The process and cost to perform the monitoring for each well type is described in the subsections below.

4.2.1 Watermaster Monitoring Wells

In FY 2024/25, Watermaster will be performing routine sampling (quarterly, annually, or triennially) for their various regulatory monitoring programs, as follows:

- 3 NAWQA/SARWC wells (quarterly)
- 21 HCMP wells (annually)
- 6 MZ3 wells (annually)
- 5 Kaiser plume wells (annually)
- 17 PBHSP wells (triennially).

Watermaster will perform the ECMP sampling at the same time as this routine monitoring. Approximately 50 percent of the wells will be targeted for sampling and Watermaster will determine which of these monitoring wells to sample in a manner that optimally fills data gaps in the Basin. The additional laboratory cost to sample 50 percent of the wells (about 26 wells) is $15,834. Given that the wells will already be sampled as part of the routine monitoring efforts, the additional labor cost for the ECMP sampling and data management is nominal and expected to be about $3,090. These additional laboratory analysis and labor cost for the ECMP are included in Watermaster FY 2024/25 budget under PE 1 account 7505.

4.2.2 IEUA Monitoring Wells

In FY 2024/25, IEUA will be performing routine quarterly or annual sampling at a network of monitoring wells for the Chino Basin Recycled Water Recharge Program (termed "GWR monitoring wells"). There is a total of 27 GWR monitoring wells. Watermaster will request IEUA to perform additional sampling for the ECMP constituents at about 50 percent of the GWR monitoring wells (13 to 14 wells) during the routine monitoring events that occur during the target sampling period of July to October 2024. Watermaster will provide recommendations to IEUA on which wells to sample to optimally fill spatial/depth data gaps.

The additional laboratory cost to IEUA to collect the ECMP samples from 14 GWR monitoring wells on a voluntary basis is estimated to be about $3,090 based on the quote from Clinical Laboratory.

Given that Watermaster is already collecting and processing the GWR water quality data on a routine basis at part of PE 1, the additional Watermaster labor cost for processing and data management of any ECMP sampling performed by IEUA is nominal and expected to be about $750. This cost will be part of the Watermaster FY 2024/25 budget under PE 1 account 7502.

4.2.3 Appropriator Wells

Each Appropriator samples its wells on a variable frequency to meet regulatory requirements and other needs. Watermaster will prepare and submit a detailed request to each Appropriator for the voluntary sampling for the ECMP constituents recommended for sampling at the Appropriator wells at 30 to 50 percent of the wells. Watermaster will initially correspond with each Appropriator to determine the best means for each agency to provide this request. The percent of wells sampled will be based on the number of wells operated in Chino Basin and the history of sampling. Ideally, the samples would be collected in conjunction with routine monitoring already performed by the Appropriator during the target monitoring period of July to October 2024. Monitoring will still be recommended, even if it cannot be performed by the Appropriator during the target monitoring period. If desired, the Watermaster can provide recommendations on which wells to sample to optimally fill spatial/depth data gaps. If an Appropriator has performed sampling at their wells with the last five years for any of the contaminants recommended for voluntary sampling in the ECMP, and this data is not yet available to Watermaster, it is recommended that this data be provided to Watermaster so that it can be used to characterize contaminant occurrence in the basin. Sampling for the ECMP is not intended to be duplicate of prior sampling by the Appropriators.

As shown in Table 4, the additional laboratory costs to the Appropriators to collect samples for the ECMP is estimated to be about $465 per sample, based on the quote from Clinical Laboratory. Based on the recommendation to sample 30 to 50 percent of the wells, total cost amongst all Appropriators ranges from $26,505 to $37,200 (57 to 80 wells).

Given that Watermaster is already collecting and processing the Appropriator water quality data on a routine basis as part of PE 1, the additional Watermaster labor cost for processing and data management of any ECMP sampling is nominal and is estimated to be about $2,000. This cost will be part of the Watermaster FY 2024/25 budget under PE 1 account 7502.

4.3 Data Analysis

All ECMP sampling results will be compiled and used to develop maps that characterize the spatial distribution of each emerging contaminant. The maps will be analyzed and reviewed with the WQC, together with other relevant information, to support a discussion on the implications of the contaminant distribution, and related water quality topics of interest. The results of the ECMP sampling from FY 2024/25 can be used to identify and consider the need for future monitoring of priority emerging contaminants to fill data gaps. It is recommended that on an annual basis the WQC revisit the list of potential emerging contaminants and consider if additional monitoring is desired as part of an updated ECMP to support the WQMP.

5.0 REFERENCES

Chino Basin Watermaster (Watermaster) 2024a, *Chino Basin Watermaster* website, Special Committees, 2023-10-18, accessed 27 February 2024, https://www.cbwm.org/pages/meetings/special_committees/

Environmental Protection Agency (EPA) 2024a, *United States Environmental Protection Agency* website, Monitoring Unregulated Drinking Water Contaminants, accessed 23 January 2024, https://www.epa.gov/dwucmr/learn-about-unregulated-contaminant-monitoring-rule

Environmental Protection Agency (EPA) 2024b, *United States Environmental Protection Agency* website, Monitoring Unregulated Contaminants in Drinking Water, accessed 23 January 2024, https://www.epa.gov/dwucmr

Environmental Protection Agency (EPA) 2024c, *United States Environmental Protection Agency* website, Analytical Methods Developed by EPA for Analysis of Unregulated Contaminants, accessed 23 January 2024, https://www.epa.gov/dwanalyticalmethods/analytical-methods-developed-epa-analysis-unregulated-contaminants

Environmental Protection Agency (EPA) 2024d, *United States Environmental Protection Agency* website, Drinking Water Contaminant Candidate List and Regulatory Determination, accessed 23 January 2024, https://www.epa.gov/ccl

Environmental Protection Agency (EPA) 2024e, *United States Environmental Protection Agency* website, Drinking Water Regulations Under Development or Review, accessed 23 January 2024, https://www.epa.gov/sdwa/drinking-water-regulations-under-development-or-review

Naujokas, Marisa; Anderson, Beth; Ahsan, Habibul; Aposhian, H. Vasken; Graziano, Joseph H.; Thompson, Claudia; and . Suk, William A. 2013. The Broad Scope of Health Effects from Chronic Arsenic Exposure: Update on a Worldwide Public Health Problem. Environmental Health Perspectives, vol 121, Issue 3, pp 295-302. https://doi.org/10.1289/ehp.12058

State of California 2024a, *State Water Resources Control Board* website, Drinking Water Program, News, accessed 23 January 2024, https://www.waterboards.ca.gov/drinking_water/programs/

State of California 2024b, *State Water Resources Control Board* website, Drinking Water, Emerging Contaminants, accessed 23 January 2024, https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/EmergingContaminants.html

State of California 2024c, *State Water Resources Control Board* website, Drinking Water, Contaminants in Drinking Water, accessed 23 January 2024, https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Chemicalcontaminants.html

State of California 2024d, *State Water Resources Control Board* website, Drinking Water, Drinking Water Notification Levels, accessed 22 January 2024, https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/NotificationLevels.html

State of California 2024e, State Water Resources Control Board website, Drinking Water, SWRCBDDW 21 004 Styrene, accessed 27 February 2024, *https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/SWRCBDDW-21-004_styrene.html*

State of California 2024f, *State Water Resources Control Board* website, Drinking Water, SWRCBDDW 22 005 Cadmium Mcl, accessed 27 February 2024, https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/SWRCBDDW-22-005_cadmium_mcl.html

State Water Resources Control Board, *State Water Resources Control Board Resolution No. 2023-0007 Adopting the Propose Prioritization of Drinking Water Regulations Development for Calendar Year 2023.* Adopted on June 20, 2023.

Wildermuth Environmental, Inc. (WEI). 1999. *Optimum Basin Management Program. Phase I Report*. Prepared for the Chino Basin Watermaster.

Wildermuth Environmental, Inc. (WEI). 2020. 2020 *Optimum Basin Management Program Update Report*. Prepared for the Chino Basin Watermaster. Final Draft. October 2020.

State Water Resources Control Board, California Environmental Protection Agency (State Water Board EPA). 2019. Water Quality Control Policy for Recycled Water. Adopted December 11, 2018. Effective April 8, 2019

Appendix A

Response To Draft ECMP Comments

CITY OF ONTARIO (CHAD NISHIDA, PE)

Dear Edgar Tellez-Foster,

The City of Ontario (Ontario) has reviewed the Draft Chino Basin Water Quality Management Program (WQMP) Emerging Contaminants Monitoring Plan (ECMP) submitted on March 13, 2024. The ECMP was prepared for Chino Basin Watermaster (Watermaster) by West Yost and with input from the Water Quality Committee (WQC) from meetings held in October 2023 and January 2024. The ECMP is intended help with the long-term maximum beneficial use of the groundwater basin. Ontario understands the importance of characterizing the distribution and concentration of emerging contaminates in the Chino Basin in anticipation of complying with new and increasingly stringent State drinking water regulations. In addition, Ontario will continue to sample in accordance with all drinking water regulations to ensure its customers receive safe drinking water. Although Ontario is committed to working with the WQC to develop and implement the ECMP, we have reservations with respect to project costs, expanded scope, potential duplication of efforts, and the future implication that Watermaster's recommendations have on agencies already complying with the regulations.

The 2020 Optimum Basin Management Program Update (2020 OBMPU) aims to incorporate two activities related to contaminants of emerging concern. Activity E intends to collect and analyze data needed to characterize and proactively plan for water quality challenges to pumping groundwater for supply. Activity F intends to evaluate the treatment and related infrastructure improvements, including multi-benefit collaborative projects, to ensure groundwater can be pumped for beneficial uses. Under activities EF Task 2 is to develop and implement the ECMP

Comment 1 – General

The ECMP and related recommendations should include a public education component to explain the meaning and significance of the reported data. The fact that these chemicals are "unregulated" and that there are no applicable maximum contaminant levels does not generate a sense of public safety and security. It may instead create additional uncertainty and vulnerability in the public, the burden of which is placed on the Appropriator. Extreme care must be exercised in communicating the new data in order to avoid misinterpretation of the implied threat and misunderstanding of the actual health risks.

Response: The ECMP monitoring will be used to characterize contaminant occurrence in the Chino Basin where data is not available and inform the adaptive and flexible GWMP lead by the WQC that addresses emerging contaminants to prepare the parties for addressing compliance with new State and Federal drinking water regulations, and how those regulations could impact pumping in the basin. Section 2 and Table 1 of the ECMP provides background on how these are contaminants being reviewed and evaluated for potential regulation and provides factual information on the advisory or regulatory limits and what they mean, any recent regulatory actions, or documented intent for rulemaking.

The results from ECMP monitoring will be used in combination with any other data collected by Watermaster for these contaminants to prepare maps characterizing emerging contaminants in the Chino Basin to be shared at the WQC meetings. PowerPoints from the WQC meetings are posted to Watermaster website under the *Meetings/Special Committees/Water Quality Committee* page. Precaution will be used when preparing maps and PowerPoints, and a disclaimer will be added to all maps that reads: “Data shown on this map are to characterize the distribution of a constituent in water where the potential health effects and health levels are being researched and drinking water standards could be developed in the future. Data are from proactive monitoring of raw groundwater and are not representative of the drinking water supplies served in the Chino Basin.” Watermaster is open to continued feedback on the disclaimer used on the maps and ECMP material.

Comment 2 – Section 4.1- Recommended Monitoring by Well Type

The text indicates that the Appropriator wells are recommended to be sampled for a subset of specific emerging contaminants and the target number of wells that should be sampled ranges from 30-50%; however, no additional justification was provided in the ECMP.

a) a. What is the rational for determining 30-50% of Appropriator wells need to be sampled for 1,4-dioxane, N-Nitrosodimethylamine (NDMA), and low-level perchlorate?

b) b. Define the water quality data sources used from July 2018 to June 2023 (e.g., State databases). Has Watermaster contacted Appropriators for well sampling data?

c) c. Is it anticipated that a well attrition analysis will be prepared in the future, similar to the AWQ report for nitrate and total dissolved solids (TDS)?

Response:

a. The recommendation to sample 30 to 50 percent of the Appropriator wells for those three emerging contaminants is intended to be a conservative approach in that not all the wells have to be sampled to help fill the data gaps identified in Section 3 of the ECMP. This also applies to the recommended percentage of wells to sample for the other well types. <u>The following text was added to Section 4.1 of the ECMP to provide more information on this approach</u>:

- Added the bolded italic text to the following bullet under “Table 4 identifies”: “The target number of wells, expressed as a percentage, that should be sampled by well type ***to fill data gaps identified in Section 3***. The target percentages are:”

- Added a footnote to the bullet above that reads “The recommended target percentage of wells is a conservative approach in that not all wells have to be sampled to help optimally fill data gaps identified in Section 3 of the ECMP.”

b. Section 3 of the ECMP describes that Watermaster’s comprehensive groundwater database was used to characterize the current state of monitoring for the 11 emerging contaminants in Figures 2 through 12. The database is believed to be complete of all known existing data and was used to determine data gaps. The recommended voluntary monitoring for the Appropriators to fill data gaps is not intended to duplicate prior sampling by Appropriators (as indicted in Section 4.2.4 of the ECMP). Watermaster has not contacted Appropriators for well sampling data in addition to the routine data collection and upload to the Watermaster water quality database. <u>The following text was added to Section 3.0 to describe the data sources and completeness of Watermaster’s database</u>: “Watermaster’s current water quality monitoring program under PE 1 relies on municipal producers (Appropriators), government agencies and others (cooperators) to supply water-quality data on a cooperative basis. Watermaster supplements these data through its own sampling and analysis of private wells and monitoring wells in the basin.

Watermaster routinely collects all known groundwater and surface water quality data sampled in the basin and processes into standard format, uploads into the database, and reviews for QA/QC. Most of the water quality data for the Appropriators is collected from the State DDW water quality database. This means to utilize the State DDW database over collecting data directly from the Appropriators evolved over time as it was validated to be complete data set and sometimes more robust, a more efficient process, and it is in a consistent format. The same approach is used to collect the water quality data for many cooperators where most of the data is collected from publicly available databases such as the State Board GeoTracker website."

c. It is not anticipated that a well attrition analysis will be part of the ECMP in the future. The intent of the ECMP is to identify emerging contaminants to characterize in the Chino Basin as part of the GWMP and recommend monitoring to fill data gaps on the distribution and concentration of the contaminants by monitoring at known existing wells.

Comment 3 - Table 4 - Recommended ECMP for FY 2024/25

a) Do the sampling costs include field duplicates?

b) Footnote (b) indicates monitoring at site cleanup wells may be recommended in a future ECMP. We believe the burden should be placed on responsible parties to collect analyze these samples. Furthermore, point source contaminant monitoring is typically of greater concern especially when elevated concentration plumes are near drinking water production wells. Why is the priority put on non-point source contamination?

Response:

a. The sampling cost do not include field duplicates, and field duplicates are not required or recommended for the ECMP sampling.

b. The cleanup site monitoring wells were not included in the recommended ECMP monitoring because the intent of ECMP is to focus on monitoring for the identified emerging contaminants at the water supply wells and monitoring wells that Watermaster already samples to characterize the distribution and concentrations to inform analyses and discussions of the WQC on how contaminants can impact pumping and management of the Chino Basin. The WQC will analyze the results from the ECMP and this can inform where additional monitoring is needed, which could be at site cleanup wells. In addition, not including sampling at site cleanup wells in this ECMP is a cost consideration to not include time to work with cooperators and responsible parties to perform this monitoring. The Footnote (b) was modified to read " Monitoring at the cleanup site monitoring wells is not recommended in this ECMP, as the intent is to focus on the monitoring of water supply wells and Watermaster monitoring wells to support an initial characterization of the identified emerging contaminants in the Chino Basin to inform analyses and discussions of the WQC on how these contaminants can impact pumping and management of the Basin. The results and analyses can inform where additional monitoring is needed, which could be at the site cleanup wells."

Comment 4 -Section 4.2.4 -Appropriator Wells

a) Clarify how the detailed request to each Appropriator will be submitted for voluntary sampling as part of the ECMP (e.g., email, letter, etc.). In addition, what type of justification and analysis will be included in the detailed request?

   i. We advise against references deadlines, level of priority, or similar language in the detailed request as Ontario is aware of and actively managing any groundwater water quality concerns.

Response: Watermaster will correspond initially with each Appropriator privately to consider the means that each agency considers the best approach to request the ECMP monitoring. The second and third sentences in Section 4.2.3 of the ECMP were modified to: "Watermaster will prepare and submit a detailed request to each Appropriator for the voluntary sampling for the ECMP constituents recommended for sampling at the Appropriator wells at 30 to 50 percent of the wells. Watermaster will initially correspond with each Appropriator to determine the best means for each agency to provide this request."

Comment 5 - Section 4.3 - Data Analysis

ECMPs should be managed to assure uniform quality, consistent data interpretation, eliminate redundant expenditures and should provide a measurable protection to the environment. 2020 OBMPU Activity EF Task 2 states that the ECMP will include a quality assurance project plan (QAPP) that will define the monitoring procedures, QA/QC protocols for data collection and review, and ensures consistent application of the plan. The current ECMP does not reference a QAPP which may lead to inconsistencies in data reporting and data interpretation.

Response: This 2020 OBMPU scoping report included an initial scope of work for Activity EF which described a QAPP as part of the ECMP developed for the WQMP. Task 1 of this initial scope of work was to convene the WQC and precisely articulate the objectives of a WQMP and refine the scope of work. Feedback received during the first two WQC meetings updated the scope of the WQMP to be an adaptive and flexible program informed by the WQC (not an actual plan developed over 7 years) and the ECMP would part of the WQMP to characterize contaminant occurrence in the Chino Basin where data is not available.

The ECMP data is being collected for informational purposes and not regulatory compliance; therefore, a QAPP is not required and would be an unnecessary cost to the parties. Data collected for the ECMP will be sampled and analyzed using the methods identified in the ECMP and corresponding protocols. Watermaster will collect all the samples results and upload to the database maintained by Watermaster. Data will be reviewed for QA/QC using the same procedures used for all water quality data collected and maintained by Watermaster. The data will be analyzed, reported, and shared with the WQC in a consistent manner. For any methods that require strict sampling protocols, an SOP of instructions will be prepared and shared with agencies who are participating in the voluntary monitoring.

Comments 6 - Section 4.4 -Annual Review and Update of the ECMP

a) According to the text, the ECMP is intended to be an adaptive monitoring program that will be revisited annually. Does Watermaster anticipate a scenario where the ECMP is no longer needed or can be evaluated on an alternate frequency (3/5/10-years, etc.)? Data collected within a simulated capture zone may be sufficient to postpone additional sampling for several years.

b) Was the capture zone of the municipal supply well included in this analysis?

c) Does Watermaster anticipate the annual cost of the ECMP sampling will increase or decrease in the future?

Response:

a. As part of the adaptive and flexible WQMP, the annual consideration of the list of priority emerging contaminants to monitor as part of a ECMP will be done annually through the WQC, and the recommended outcome or plan may be there is no sampling needed for the next year. Furthermore, the scope of the WQMP could adapt to a less frequent consideration of these priority emerging contaminants for recommended monitoring if desired by the WQC stakeholders.

b. The capture zone of the municipal wells was not part of the analysis to characterize data gaps for the ECMP. The capture zone can be considered when analyzing the results from the ECMP and could inform where there might need to be additional sampling. Model-generated groundwater-flow vectors can be evaluated with the results from the ECMP to evaluate groundwater flow directions with the water quality concentrations. This analysis could lead to additional analysis of a capture zone in more focused area/s identified by the WQC, that could use more advance tools like backwards particle tracking or fate-and-transport modeling.

c. The ECMP cost are dependent on the WQC's annual identification of the list of priority emerging contaminants to monitor for based on the evolving water quality issues, trends, and concerns, and where there are data gaps that need to be filled.

MONTE VISTA WATER DISTRICT (JUSTIN SCOTT-COE)

Comment 1 – General Comment

Watermaster cannot unilaterally update the Optimum Basin Management Program (OBMP) Implementation Plan (OBMP IP). The Chino Basin Parties stipulated to and the Court approved and ordered Watermaster to perform consistent with a series of Court-approved management agreements (CAMA), beginning with the 2000 Peace Agreement, which includes the OBMP IP. The OBMP IP, as amended by subsequent CAMA, is the Court-approved OBMP to be implemented by Watermaster and the Parties. The OBMP IP does not include an Emerging Contaminants Monitoring Plan (ECMP). Therefore, Watermaster is only authorized to develop an ECMP if Parties agree and the Court so orders. MVWD has not agreed to Watermaster developing an ECMP and is unaware of Watermaster being ordered to do so by the Court. The 2020 OBMP Update, which includes the proposed ECMP, is a planning document developed by Watermaster but neither approved by the Parties nor by the Court. Watermaster should seek consensus from the Parties before moving forward with the ECMP.

Response: The activities described in the Implementation Plan to implement Program Elements 1, 6 and 7 encompass the preparation of the Water Quality Management Program (WQMP), including the Emerging Contaminants Monitoring Plan (ECMP) and Water Quality Committee (WQC). The OBMP Implementation Plan expressly provides that Watermaster will conduct an ongoing groundwater and surface water quality monitoring program, continue monitoring and coordination efforts with the Regional Board, update a priority list and clean-up schedule for all known water quality anomalies, and implement projects of mutual interest, among other activities, at least through 2050. The ECMP is a monitoring plan. The ECMP does not compel any particular action upon analysis of monitoring data.

Comment 2 – Section 1.2

Section 1.2 is incomplete, as it does not describe the more narrow provisions in the OBMP IP under PE 6. Under PE 6 of the OBMP IP, the Water Quality Committee (WQC) was formed specifically to work with the Regional Water Quality Control Board's (RWQCB) staff "to recommend cooperative efforts for monitoring groundwater quality and detecting water quality anomalies." The expanded scope of the WQC and its empowerment to develop an ECMP to assist parties in meeting future drinking water regulatory standards does not fit within the existing Court-approved OBMP IP, which is focused instead on enhancing the RWQCB's capacity to oversee groundwater quality consistent with the Basin Plan. Therefore, once again, Watermaster should seek consensus from the Parties before moving forward with the ECMP.

Response: Section 1.2 states the purpose for convening the WQC in 2003 was to coordinate activities performed under PE 6. The Implementation Plan provides that the role of the WQC is to "review water quality conditions in the Basin and to develop cooperative strategies and plans to improve water quality in the Basin." (Implementation Plan, p. 35.) Development of the ECMP enables the WQC to conduct such a review and provides a framework for identifying water quality anomalies, assisting the Regional Board in determining the sources, and establishing clean-up priorities strategies jointly with the Regional Board, among other things. (See Implementation Plan, p. 34.) Additionally, see response to Comment 1, above.

Comment 3 – Section 4.2

Section 4.2 does not include a total estimated cost for the proposed ECMP. Please provide a total annual cost estimate for implementing the proposed ECMP.

Response: Total ECMP cost were added to the beginning of Section 4.2 as Table 5, in addition to the subtotals by well type described in Sections 4.2.1 – 4.2.4.

Comment 4 – Page 1, Section 1.1, Purpose and Report Organization, First Paragraph,

Edit first sentence from "…in coordination with the Water Quality Committee…" to "…with advice from the Water Quality Committee."

Edit second sentence from "… Water Quality Management Program (WQMP) that is being reestablished under Program Element (PE) 6 of the Chino Basin Management Program (OBMP)." to "… Water Quality Management Program (WQMP) that has been proposed through the 2020 Optimum Basin Management Program Update (2020 OBMPU) process."

Response: Made updates to the first sentence. The proposed edits to the second sentence were not incorporated; see response to Comment 1 above.

Comment 5 – Page 2, Section 1.2 Water Quality Management Under OBMP PE 6: 2000 to 2022, First Paragraph

Edit third sentence from "The management actions were grouped into logical sets of coordinated activities called Program Elements (PEs)." To "The proposed management actions were grouped into logical sets of coordinated activities called Program Elements (PEs)."

Response: The proposed edits were not incorporated. The management actions were developed and identified through multiple stakeholder OBMPU meetings.

Comment 6 – Page 2, Section 1.2 Water Quality Management Under OBMP PE 6: 2000 to 2022, Third Paragraph split at bottom of the page.

Before this paragraph that starts with "Since 2000, Watermaster's groundwater quality monitoring efforts under PE 1…" add the following: "In 2000, the parties stipulated to and the Court approved and ordered Watermaster to perform consistent with the Chino Basin Peace Agreement, which includes the OBMP Implementation Plan (OBMP IP). The OBMP IP contains a more narrow focus for PE 6 on enhancing the RWQCB's capacity to regulate water quality consistent with the Basin Plan."

Response: The proposed edits were not incorporated. See responses to Comments 1 and 2 above.

Comment 7 – Page 3 & 4, Section 1.3 Water Quality Management Under OBMPU PE 6, First Paragraph

Edit second sentence from "Through the 2020 OBMPU development process, the stakeholders concluded that the goals and PEs defined in the 2000 OBMP are still relevant today and identified additional management activities necessary to achieve the goals of the 2020 OBMPU" to "Through the 2020 OBMPU development process, ***Watermaster with input from*** the stakeholders concluded that the goals and PEs defined in the 2000 OBMP are still relevant today and ***proposed*** additional management activities necessary to achieve the goals of the 2020 OBMPU."

Response: The proposed edits were incorporated to the first portion of the sentence and not the second portion of the sentence since the management actions were identified through multiple stakeholder OBMPU meetings. Sentence now reads: "Through the 2020 OBMPU development process, Watermaster with input from the stakeholders concluded that the goals and PEs defined in the 2000 OBMP are still relevant today and identified additional management activities necessary to achieve the goals of the 2020 OBMPU."

Comment 8 – Page 4 Section 1.3 Water Quality Management Under OBMPU PE 6, First Paragraph split at the top of the page

Edit second sentence from "… and identified additional management activities necessary…" To "… and ***proposed*** additional management activities necessary…"

Response: The proposed edits were not incorporated. The management actions were developed and identified through multiple stakeholder OBMPU meetings.

Comment 9 – Page 4, Section 1.3 Water Quality Management Under OBMPU PE 6, Second Paragraph

Edit first sentence from "The specific action identified to encapsulate these activities…" to "The specific action ***proposed*** to encapsulate these activities…"

Edit second sentence from "It was identified that reconvening the WQC would be the ideal approach to…" to "It was ***proposed*** that reconvening the WQC would be the ideal approach to…"

Response: The proposed edit to the first sentence was not incorporated. The management actions were identified through multiple stakeholder OBMPU meetings. The proposed edit to the second sentence was incorporated.

Comment 10 – Page 4, Section 1.3 Water Quality Management Under OBMPU PE 6, Third Paragraph

Prior to this paragraph that starts with "Watermaster held a kick-ff meeting to reconvene the WQC…" please indicate "that the OBMP Update was not approved by the Parties nor by the Court, and the OBMP IP has therefore not been amended consistent with the OBMP Update.

Response: The proposed edits were not incorporated. See response to Comments 1 and 2 above.

STATE OF CALIFORNIA/WSP USA (RICHARD REESE, PG, CHG)

Comment 1 – General Comment

The ECMP is a comprehensive presentation of emergent contaminants in general. We appreciate the level of detail contained in the report for background information, regulatory status, and water quality data by well type. We believe that implementation of the ECMP will help to fill in data gaps for many emergent contaminants in the Chino Basin and will be useful to the parties in their planning efforts to meet future regulatory requirements.

Response: Thank you. Comment noted.

Comment 2 – Specific Comment

On pages ii and 7, NDMA is identified as "nitrosodiethylamine". We believe this should be Nitrosodimethyamine or more properly N-Nitrosodimethyamine, as identified in Figure 8.

Response: Updates made to page ii and 7 to spell N-Nitrosodimethyamine

Comment 3 –Specific Comment

On page 11, in the third paragraph, is a list of seven emerging contaminants. The last sentence states, "Seven of the 11 emerging contaminants are recommended for monitoring for the ECMP at one or more well types, including:" This wording leads the reader to believe that four of the 11 emerging contaminants were not recommended for monitoring. However, eight of the 11 emerging contaminants were selected and two of the eight emerging contaminants that are PFAS-related were combined to form the list of seven emerging contaminants.

Response: On page 11, updated the sentence to describe that "Eight of the 11 emerging contaminants in Table 3 are recommended for monitoring for the ECMP at one or more well types. PFOA, PFOS, and other PFAS are grouped together as 'PFAS' compounds since analysis for these compounds is done together with one laboratory method. Section 4 describes the monitoring plan for these seven emerging contaminants based on well type:"

CITY OF CHINO (DAVE CROSLEY)

Comment 1 – Figures 2-12

Figures 2-12. The figures present information describing the number and location of wells sampled, and the number of detections, but the well locations corresponding to the detections is not presented. Presentation of well locations corresponding to detections, similar to exhibits included in the State of the Basin report, may reveal geographic areas of concern for future focused attention.

Response: The WQC will evaluate results from ECMP sampling along with other data that is collected to characterize the distribution and concentration of emerging contaminants in the Chino Basin, which have the potential to impact basin operations and management. Concentration maps will be prepared of the emerging contaminants similar to the maps made for the State of the Basin Reports. The analyses will inform data gaps and/or potential areas for future focused monitoring or analyses of the WQC.

Comment 2 – Table 4

Table 4 presents information describing estimated laboratory costs for listed contaminants, and analyses cost per sample by well type. Section 4.2 describing various cost elements should also include an estimate of the total cost associated with implementation of the proposed Emerging Contaminants Monitoring Plan.

Response: Total ECMP cost were added to the beginning of Section 4.2 in addition to the subtotals by well type described in Sections 4.2.1 – 4.2.4.

MAY 2, 2024 WATER QUALITY COMMITTEE MEETING

There was feedback received on the draft ECMP at various meetings in addition to the written comments. This feedback was discussed at the May 2, 2024 WQC meeting and resulting updates were made to the final ECMP. The feedback and responses are described below.

Comment 1 – Proposed Monitoring at the Private Wells

The Agricultural Pool provided feedback at the pool meeting in March 2024 that Watermaster reconsider the monitoring that has been proposed in the draft ECMP at the private wells. Watermaster staff, Agricultural Pool members and legal council met in late April to discuss further. The Ag Pool described the concerns and potential implications of this monitoring for the private well owners and property, and requested further reconsideration of the proposed ECMP monitoring at the private wells.

Response: At the May 2024 WQC meeting it was discussed that the private wells should be removed from the ECMP monitoring and updates were provided on the cost implications to the Watermaster Engineering Budget for FY 2024/25. The monitoring at the private wells for the ECMP was removed from the recommended monitoring in Section 4 of the final ECMP.

Comment 2 – Consideration of Alternative Method for Monitoring for PFAS

At the January 31, 2024 meeting, a suggestion was provided to consider using an alternative, less expensive sampling method for PFAS compounds. The method is not EPA-approved but could provide cost savings.

Response: Watermaster researched this alternative PFAS method to determine accuracy and feasibility of its use and presented the information at the May 2024 WQC meeting, including the pros/cons, the cost implications to the Watermaster Engineering Budget for FY 2024/25, and a recommendation to use the method. The committee agreed that this alternative method should be used for the ECMP monitoring because the data collected from the ECMP is being collected for informational purposes and not for regulatory purposes. The PFAS method information was replaced in Table 4 to include the alternative PFAS method "Cyclopure-DEXTORB®" and a footnote was added that reads: "Non EPA-approved method for sampling PFAS for informational purposes. Cyclopure designed a treatment technology that uses DEXSORB® to remove PFAS in water. DEXSORB® is a corn-based adsorbent with an adsorption mechanism to bind PFAS to the media. Cyclopure provides a water test for PFAS that uses a DEXSORB® disc to collect a sample to analyze for PFAS. The disc is sent to the Cyclopure laboratory where isotope dilution methods measure a total of 55 PFAS on HPLC-HRMS/MS equipment. The method analyzes for 55 PFAS compounds that are all analyzed between the EPA-approved methods 533 and 537. There is a significant cost saving to using the Cyclopure DEXSORB® method."

Additionally, some sentences were removed in Sections 4.2.1 and 4.2.2 that described: 1) how Watermaster and the WQC would research this alternative method and further consider it for the ECMP, and 2) the use of field reagents blanks that are required for the EPA method 533 and 537 that is no longer being used for the ECMP.

Comment 3 – Implication of new PFAS MCL on the proposed ECMP monitoring

On April 10, 2024, the EPA announce the final rule for drinking water MCLs for six PFAS, including PFOA and PFOS. This has implications to monitoring that will be performed in the Chino Basin.

Response: Many of the Appropriator wells will be sampled for PFAS within 1-3 years pursuant to the new MCL rule; this is in addition to the PFAS monitoring that will be performed under the EPA's UCMR 5 between 2023-2025. The monitoring for PFAS was not recommended for the Appropriator wells because of this anticipated UCMR 5 sampling and now the monitoring for the new MCL. And PFAS will now be monitored at the IEUA monitoring wells near the recharge basins on an annual basis pursuant to monitoring requirements of the IEUA/Watermaster recycled water recharge permit R8-2007-0039, because of the new MCL. Because of this future sampling of PFAS at the IEUA monitoring wells, the recommended monitoring of PFAS at 50 percent of the IEUA monitoring wells in the draft ECMP was removed from the final ECMP.