



AGENDA

CITY COUNCIL - SPECIAL MEETING (WORKSHOP)

CITY OF BANNING, CALIFORNIA

February 11, 2025
4:00 p.m.
In Chambers

Council Chambers
99 E. Ramsey Street
Banning, CA 92220

The following information comprises the agenda for the regular meeting of the Banning City Council, a joint meeting of the City Council and Banning Utility Authority, and the Banning City Council sitting in its capacity as the Banning Successor Agency Board.

Per the City of Banning Manual of Procedural Guidelines, matters taken up by the Council before 10 p.m. may be concluded, but no new matters shall be taken up except upon a majority vote of the council members present and voting. Such an extension shall only be valid for one hour and each hour thereafter shall require a renewed action for the meeting to continue.

1. **CALL TO ORDER**

2. **PUBLIC COMMENTS - Agenda Items Only**

3. **WORKSHOP**

3.1 [Discuss the New California State Water Resources Control Board Hexavalent Chromium Regulation, Impacts to the City of Banning and Path to Compliance](#)

Recommendation: Discuss the New California State Water Resources Control Board Hexavalent Chromium Regulation, Impacts to the City of Banning and Path to Compliance.

4. **ADJOURNMENT**

AFFIDAVIT • DECLARACIÓN JURADA

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Caroline Patton, Administrative City Clerk
Secretario adjunto de la ciudad

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Public Comment

Agenda Items

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CITY OF BANNING STAFF REPORT

TO: CITY COUNCIL

FROM: Douglas Schulze, City Manager

PREPARED BY: Art Vela, Public Works Director

MEETING DATE: February 11, 2025

SUBJECT: Discuss the New California State Water Resources Control Board Hexavalent Chromium Regulation, Impacts to the City of Banning and Path to Compliance

RECOMMENDATION:

Discuss the New California State Water Resources Control Board Hexavalent Chromium Regulation, Impacts to the City of Banning and Path to Compliance.

BACKGROUND:

Chromium is a metal found in natural deposits of ores containing other elements, mostly as chrome iron ores. It is also widely present in soil and plants. Under most conditions, natural chromium in the environment occurs as Trivalent Chromium (Cr-3), but under oxidizing conditions chromium can exist as Hexavalent Chromium (Cr-6). Chromium also originates as a contaminant in the environment from the discharges of dye and paint pigments, wood preservatives, chrome-plating liquid wastes, and leaching from hazardous waste sites.

Since 1977 California has regulated Total Chromium (Cr-3 and Cr-6) at a Maximum Contaminant Level (MCL) of 50 parts per billion (ppb). The United States Environmental Protection Agency (EPA) had also adopted the 50 ppb standard, but in 1991 raised it to the current standard of 100 ppb. In 2001, the State established a Public Health Goal (PHG) of .02 ppb. In 2014, the California State Water Resources Control Board (SWRCB) established a Cr-6 MCL of 10 ppb. However, California was sued over this regulation in 2017 and the Superior Court of Sacramento County ruled that the state "did not adequately document why the MCL was economically feasible." Economic feasibility evaluates how costly Cr-6 treatment technologies are and whether the price tag is within a water utility's budget.

Since the Superior Court's invalidation of the Cr-6 MCL, the State has continued to work on establishing a new MCL for Cr-6. In 2020, SWRCB published a white paper "Discussion on Economic Feasibility Analysis in Consideration of a Hexavalent Chromium Maximum Level", which the City submitted a response to, see attached. In 2023, the SWRCB started the formal rulemaking process for establishing a new Cr-6 MCL and in 2024 adopted the new regulation setting the Cr-6 MCL at 10 ppb, which became effective on October 1, 2024.

Amongst other things, the adopted Cr-6 regulation requires that the City begin testing all of its wells by April 1, 2025, to develop a Cr-6 Compliance Plan, provide a public notice of Cr-6 exceedances and to be in compliance by October 1, 2026. Staff from the Division of Drinking Water has informed City staff that water produced in exceedance of the new Cr-6 MCL can be continued to be used so long as public notices are provided (see attached notices). This will be a policy decision that Council will have to consider when the time comes.

It should be noted that water samples are required to be obtained at a well head, before the produced water enters the City's distribution system. In most areas of the City, water is delivered to customers below 10 ppb. See point-in-time water sample results for concentrations in the distribution system.

Nine (9) of the City's twenty-one (21) wells with Cr-6 concentrations at or near the Cr-6 MCL (wells C2, C3, C4, C5, C6, C8, M3, M10, M11). The Cr-6 concentration in these wells range from 9.6 ppb to 17 ppb.

The Public Works Department has conducted several studies to evaluate different approaches for complying with the Cr-6 MCL.

- 2016 Cr-6 Compliance Study – initial evaluation of treatment options and costs.
- 2022 Cr-6 Compliance Study Update – update to the original compliance study, incorporating treatment technology advancements and refreshing cost information.
- 2024 Cr-6 Compliance Study Update – system-wide update to the 2022 Cr6 compliance study providing cost and non-cost analysis of options (this document).

The objective of the 2024 Cr-6 Compliance Study was to evaluate options for addressing Cr-6 and to develop cost estimates including capital and operation and maintenance all to support the development of a treatment strategy. The 2024 Cr-6 Compliance Study evaluated best available technologies including (BATs) including weak base anion exchange (WBA), strong base anion exchange (SBA) and reduction, coagulation and filtration/microfiltration (RCF/RCMF).

BATs were assessed based on lifecycle costs and operability considerations (chemical consumption, residuals waste generation, and staffing requirements). While the accuracy range of lifecycle costs overlap for each of the alternatives, it was found that the RCF with horizontal filter configuration located at clustered treatment facilities and individual sites was the lowest point estimate lifecycle cost compared with WBA and SBA.

Additionally, the 2024 Cr-6 Compliance Study also identified next steps such as:

- Further analysis of sewer disposal at C2, C4, C8, M3 to confirm available sewer capacity.
- Confirm if brine can be sent to the wastewater reclamation facility.
- Further assessment of site layouts for Wells C3 and C5, which may require the purchase of additional land.
- Consider pilot unit options to train operation staff in advance of design and/or startup.

Staff will begin tackling each one of these items very soon.

JUSTIFICATION:

The new Cr-6 MCL will create financial and operating challenges for the City of Banning.

FISCAL IMPACT:

The draft 2024 Cr6 Compliance Study Update has developed a high level range of costs consistent with Association for the Advancement of Cost Engineering (AACE) Class 4 costs with an accuracy range of -30% to +50%. \$23,200,000 to \$84,700,000.

The 2024 Cr6 Compliance Study Update also provides a Total Projected Annual Costs (Capital plus Operations/Maintenance) range of \$2,400,000 to \$7,100,000.

The Water Operations Fund (Fund 660) currently has a revenue budget from metered sales of \$13,000,000.

It is important to note that the City's current water rate structure does not support the required financial investment to comply with the new Cr-6 regulation. A new rate study will have to be completed to determine rate impacts. Staff will have to work on having more detailed cost estimates developed in order to include those costs in a rate study.

In October, 2024, staff prepared and submitted a grant application for the Foothill West Cr-6 Cluster Facility to the WaterSMART: Drought Response Program: Drought Resiliency Projects. The grant application has asked for \$10,000,000, which is the maximum amount available per grant application. The estimated total cost of the project is \$16,801,636. Notice of awards are anticipated to be released by the end of February, 2025.

ALTERNATIVES:

N/A

BUDGETED?:

No

CONTRACT/AGREEMENT:

No

ATTACHMENTS:

1. [Cr-6 Regulation.pdf](#)
2. [Cr-6 FAQs.pdf](#)
3. [SWRCB Staff Report.pdf](#)
4. [Response Letter Regarding White Paper Econ Feasibility Analysis Hexavalent Chromium.pdf](#)
5. [Point in Time Cr-6 Concentrations in System.pdf](#)
6. [Public Notice Before Compliance Deadline.pdf](#)
7. [Public Notice After Compliance Deadline.pdf](#)

Title 22. Social Security
Division 4. Environmental Health
Chapter 15. Domestic Water Quality and Monitoring Regulations
Article 2. General Requirements

(1) Amend Section 64415 to read as follows:

§ 64415. Laboratory and Personnel.

(a) Except as provided in subsection (b), required analyses shall be performed by laboratories certified by the State Board to perform such analyses pursuant to Article 3, commencing with section 100825, of Chapter 4 of Part 1 of Division 101, Health and Safety Code. Unless directed otherwise by the State Board, analyses shall be made in accordance with the following U.S. EPA approved methods as prescribed at:

(1) U.S. EPA approved methods as prescribed at 40 Code of Federal Regulations sections 141.23 through 141.41, 141.66, and 141.89 (7-1-2019 edition), which are incorporated by reference; and

(2) U.S. EPA approved methods as prescribed at 40 Code of Federal Regulations section 141.852 (78 Fed. Reg. 10270 (February 13, 2013), as amended at 79 Fed. Reg. 10665 (February 26, 2014)), which is incorporated by reference; and

(3) Methods used for analysis of hexavalent chromium shall be performed using one of the following:

(A) U.S. EPA Method 218.6: Determination of Dissolved Hexavalent Chromium in Drinking Water, Groundwater, and Industrial Wastewater Effluents by Ion Chromatography, Rev. 3.3, (May 1994), which is incorporated by reference in its entirety; and

(B) U.S. EPA Method 218.7: Determination of Hexavalent Chromium in Drinking Water by Ion Chromatography with Post-Column Derivatization and UV-Visible Spectroscopic Detection, Version 1.0, (November 2011), which is incorporated by reference in its entirety.

(b) [No change to text]

Note: Authority cited: Sections 116271, 116350, ~~and 116375~~, and 116385, Health and Safety Code. Reference: Sections 116375, 116385 and 116390, Health and Safety Code; and 40 Code of Federal Regulations 141.

Article 4. Primary Standards—Inorganic Chemicals

(2) Amend Section 64431 to read as follows:

§ 64431. Maximum Contaminant Levels—Inorganic Chemicals.

Public water systems shall comply with the primary MCLs in ~~§~~Table 64431-A as specified in this article.

Table 64431-A
Maximum Contaminant Levels
Inorganic Chemicals

<i>Chemical</i>	<i>Maximum Contaminant Level, mg/L</i>
Aluminum	1.
Antimony	0.006
Arsenic	0.010
Asbestos	7 MFL *
Barium	1.
Beryllium	0.004
Cadmium	0.005
<u>Chromium (hexavalent)</u>	<u>0.010</u>
Chromium <u>(total)</u>	0.05
Cyanide	0.15
Fluoride	2.0
Mercury	0.002
Nickel	0.1
Nitrate (as nitrogen)	10.
Nitrate+Nitrite (sum as nitrogen)	10.

Nitrite (as nitrogen)	1.
Perchlorate	0.006
Selenium	0.05
Thallium	0.002

* MFL=million fibers per liter; MCL for fibers exceeding 10 µm in length.

Note: Authority cited: Sections 116270, 116271, 116293(b), 116350, 116365, 116365.5 and 116375, Health and Safety Code. Reference: Sections 116365, 116365.5 and 116470, Health and Safety Code.

(3) Amend Section 64432 to read as follows:

§ 64432. Monitoring and Compliance—Inorganic Chemicals.

(a) All public water systems shall monitor to determine compliance with the nitrate and nitrite MCLs in ~~Table~~ 64431-A, pursuant to subsections (d) through (f) and section 64432.1. All community and nontransient-noncommunity water systems shall monitor to determine compliance with the perchlorate MCL, pursuant to subsections (d), (e), and (l), and section 64432.3. All community and nontransient-noncommunity water systems shall also monitor to determine compliance with the other MCLs in ~~Table~~ 64431-A, pursuant to subsections (b) through (n), and, for asbestos, section 64432.2. Monitoring shall be conducted in the year designated by the State Board of each compliance period beginning with the compliance period starting January 1, 1993.

(b) Unless directed otherwise by the State Board, each community and nontransient-noncommunity water system shall initiate monitoring for an inorganic chemical within six months following the effective date of the regulation establishing the MCL for the chemical and the addition of the chemical to ~~Table~~ 64431-A.

If otherwise performed in accordance with this section, groundwater monitoring for an inorganic chemical performed no more than two years prior to the effective date of the regulation establishing the MCL may be used to satisfy the requirement for initiating monitoring within six months following such effective date.

(c) Unless more frequent monitoring is required pursuant to this Chapter, the frequency of monitoring for the inorganic chemicals listed in ~~Table~~ 64431-A, except for asbestos, nitrate/nitrite, and perchlorate, shall be as follows:

(1) [No change to text]

(2) [No change to text]

(d) For the purposes of sections 64432, 64432.1, 64432.2, and 64432.3, detection shall be defined by the detection limits for purposes of reporting (DLRs) in ~~Table~~ 64432-A.

Table 64432-A

Detection Limits for Purposes of Reporting (DLRs) for Regulated Inorganic Chemicals

<i>Chemical</i>	<i>Detection Limit for Purposes of Reporting (DLR) (mg/L)</i>
Aluminum	0.05
Antimony	0.006
Arsenic	0.002
Asbestos	0.2 MFL>10µm*
Barium	0.1
Beryllium	0.001
Cadmium	0.001
<u>Chromium (hexavalent)</u>	<u>0.0001</u>
Chromium <u>(total)</u>	0.01
Cyanide	0.1
Fluoride	0.1
Mercury	0.001
Nickel	0.01
Nitrate (as nitrogen)	0.4
Nitrite (as nitrogen)	0.4
Perchlorate	0.002 0.001 (Effective January 1, 2024)

Selenium	0.005
Thallium	0.001

* MFL=million fibers per liter; DLR for fibers exceeding 10 µm in length.

(e) [No change to text]

(f) [No change to text]

(g) [No change to text]

(h) [No change to text]

(i) Compliance with the MCLs shall be determined by a running annual average; if any one sample would cause the annual average to exceed the MCL, the system is immediately in violation. If a system takes more than one sample in a quarter, the average of all the results for that quarter shall be used when calculating the running annual average. If a system fails to complete four consecutive quarters of monitoring, the running annual average shall be based on an average of the available data.

(j) [No change to text]

(k) [No change to text]

(l) [No change to text]

(m) [No change to text]

(n) [No change to text]

(o) Transient-noncommunity water systems shall monitor for the inorganic chemicals in ~~†~~Table 64431-A as follows:

(1) [No change to text]

(2) [No change to text]

(p) A water system shall comply with the chromium (hexavalent) MCL by the applicable compliance date in Table 64432-B.

Table 64432-B
Chromium (Hexavalent) MCL Compliance Date

<u>System Size</u> <u>(Service Connections Served on [INSERT</u> <u>EFFECTIVE DATE])</u>	<u>Chromium (Hexavalent) MCL</u> <u>Compliance Date</u>
<u>10,000 or greater</u>	<u>[INSERT DATE TWO YEARS AFTER</u> <u>REGULATION TAKES EFFECT]</u>
<u>1,000 to 9,999</u>	<u>[INSERT DATE THREE YEARS AFTER</u> <u>REGULATION TAKES EFFECT]</u>
<u>Fewer than 1,000</u>	<u>[INSERT DATE FOUR YEARS AFTER</u> <u>REGULATION TAKES EFFECT]</u>

(g) If before the applicable compliance date in Table 64432-B, a water system's monitoring for chromium (hexavalent) conducted pursuant to subsection (b) demonstrates an MCL exceedance as calculated in accordance with subsection (i), then no later than 90 days after the MCL exceedance a water system shall submit to the State Board a Hexavalent Chromium MCL Compliance Plan that is sufficient to demonstrate how the system will comply with the chromium (hexavalent) MCL.

(1) The Hexavalent Chromium MCL Compliance Plan shall state how the water system will comply with the chromium (hexavalent) MCL and include, at a minimum, the following:

(A) The proposed method for complying with the chromium (hexavalent) MCL; if a new or modified treatment process is proposed, the Hexavalent Chromium MCL Compliance Plan shall include a pilot study adequate to demonstrate that the new or modified treatment process will result in compliance with the chromium (hexavalent) MCL;

(B) If the proposed compliance method requires construction, the date by which the water system will submit to the State Board final plans and specifications for the proposed method of compliance;

(C) If the proposed compliance method requires construction, the anticipated dates for commencing construction and completing 100 percent of construction;

(D) If a new or modified treatment process is proposed, the anticipated date by which a Hexavalent Chromium Operations Plan as specified in subsection (r) will be submitted.

(2) A public water system may make amendments to its Hexavalent Chromium MCL Compliance Plan. Any amendment made shall be submitted to the State Board for review and approval that it meets the requirements of paragraph (1).

(3) A water system shall implement its State Board approved Hexavalent Chromium MCL Compliance Plan by the dates set forth therein.

(r) A water system utilizing a new or modified treatment process to comply with the chromium (hexavalent) MCL shall, prior to serving water treated by the new or modified treatment process to the public, submit to the State Board for review and approval a Hexavalent Chromium Operations Plan sufficient to ensure that water treated by the new or modified treatment process reliably and continuously meets the chromium (hexavalent) MCL. The Hexavalent Chromium Operations Plan shall include, at a minimum, the following:

1. Performance monitoring program that sets out how and when treatment will be monitored to ensure compliance with the chromium (hexavalent) MCL;

2. A program for maintenance of treatment process equipment that describes how and when equipment will be maintained and when equipment replacement is needed to ensure treatment is operating as designed;

3. A description of each treatment unit process and how it is operated;

4. A description of procedures used to determine chemical dose rates sufficient to ensure the treatment process is operating as designed;

5. A description of reliability features incorporated into the treatment process to ensure operation as designed; and

6. Treatment media inspection program sufficient to ensure the media is inspected at intervals and for conditions necessary to ensure compliance with the chromium (hexavalent) MCL.

...

Note: Authority cited: Sections 116271, 116275, 116293(b), 116350 and 116375, Health and Safety Code. Reference: Section 116275 and 116385, Health and Safety Code.

Article 12. Best Available Technologies (BAT)

(4) Amend Section 64447.2 to read as follows:

§ 64447.2. Best Available Technologies (BAT)—Inorganic Chemicals.

The technologies listed in ~~Table~~ 64447.2-A are the best available technology, treatment techniques, or other means available for achieving compliance with the MCLs in ~~Table~~ 64431-A for inorganic chemicals.

Table 64447.2-A
Best Available Technologies (BATs)
Inorganic Chemicals

<i>Chemical</i>	<i>Best Available Technologies (BATs)</i>
Aluminum	10
Antimony	2, 7
Arsenic	1, 2, 5, 6, 7, 9, 13
Asbestos	2, 3, 8
Barium	5, 6, 7, 9
Beryllium	1, 2, 5, 6, 7
Cadmium	2, 5, 6, 7
<u>Chromium (hexavalent)</u>	<u>5, 7, 14</u>
Chromium (<u>total</u>)	2, 5, 6 ^a , 7
Cyanide	5, 7, 11
Fluoride	1
Mercury	2 ^b , 4, 6 ^b , 7 ^b
Nickel	5, 6, 7

Nitrate	5, 7, 9
Nitrite	5, 7
Perchlorate	5, 12
Selenium	1, 2 ^c , 6, 7, 9
Thallium	1, 5

^aBAT for chromium III (trivalent chromium) only.

^bBAT only if influent mercury concentrations < 10 µg/L.

^cBAT for selenium IV only.

Key to BATs in Table 64447.2-A:

- 1= Activated Alumina
- 2= Coagulation/Filtration (not BAT for systems <500 service connections)
- 3= Direct and Diatomite Filtration
- 4= Granular Activated Carbon
- 5= Ion Exchange
- 6= Lime Softening (not BAT for systems <500 service connections)
- 7= Reverse Osmosis
- 8= Corrosion Control
- 9= Electrodialysis
- 10= Optimizing treatment and reducing aluminum added
- 11= Chlorine oxidation
- 12= Biological fluidized bed reactor
- 13= Oxidation/Filtration
- 14= Reduction/Coagulation/Filtration

Note: Authority cited: Sections 116271, 116293(b), 116350 and 116375, ~~131052 and 131200~~, Health and Safety Code. Reference: Section 116370, Health and Safety Code.

Article 18. Notification of Water Consumers and the State Board

(5) Amend Section 64463.4 to read as follows:

§ 64463.4. Tier 2 Public Notice.

(a) A water system shall give public notice pursuant to this section if any of the following occurs:

(1) Any violation of the MCL, MRDL, and treatment technique requirements, except:

(A) Where a Tier 1 public notice is required under section 64463.1; or

(B) Where the State Board determines that a Tier 1 public notice is required, based on potential health impacts and persistence of the violations;

(2) All violations of the monitoring and testing procedure requirements in this chapter, and chapters 15.5, 17, and 17.5, for which the State Board determines that a Tier 2 rather than a Tier 3 public notice is required, based on potential health impacts and persistence of the violations; ~~or~~

(3) Failure to comply with the terms and conditions of any variance or exemption in place; or

(4) Exceedance of the chromium (hexavalent) MCL before the applicable compliance date in Table 64432-B, as calculated in accordance with section 64432, subsection (i).

(b) [No change to text]

(c) [No change to text]

(6) Amend Section 64465 to read as follows:

§ 64465. Public Notice Content and Format.

...

(d) [No change to text]

Appendix 64465-A. Health Effects Language Microbiological Contaminants

Appendix 64465-B. Health Effects Language

Surface Water Treatment

Appendix 64465-C. Health Effects Language

Radioactive Contaminants

Appendix 64465-D. Health Effects Language

Inorganic Contaminants

<i>Contaminant</i>	<i>Health Effects Language</i>
Aluminum	[No change to text]
Antimony	[No change to text]
Arsenic	[No change to text]
Asbestos	[No change to text]
Barium	[No change to text]
Beryllium	[No change to text]
Cadmium	[No change to text]
<u>Chromium (hexavalent)</u>	<u>Some people who drink water containing hexavalent chromium in excess of the MCL over many years may have an increased risk of getting cancer.</u>
Chromium <u>(total)</u>	[No change to text]
Copper	[No change to text]
Cyanide	[No change to text]
Fluoride	[No change to text]
Lead	[No change to text]
Mercury	[No change to text]
Nickel	[No change to text]
Nitrate	[No change to text]
Nitrite	[No change to text]
Perchlorate	[No change to text]

Selenium	[No change to text]
Thallium	[No change to text]

**Appendix 64465-E. Health Effects Language
Volatile Organic Contaminants**

**Appendix 64465-F. Health Effects Language
Synthetic Organic Contaminants**

**Appendix 64465-G. Health Effects Language
Disinfection Byproducts, Byproduct Precursors, and Disinfection Residuals**

**Appendix 64465-H. Health Effects Language
Other Treatment Techniques**

No change to Appendices 64465-A through C or 64465-E through H.

Note: Authority cited: Sections 116271, 116350 and 116375, Health and Safety Code.
Reference: Sections 116450 and 116470, Health and Safety Code.

Article 20. Consumer Confidence Report

(7) Amend Section 64481 to read as follows:

§ 64481. Content of the Consumer Confidence Report.

...

(c) If any of the following are detected, information for each pursuant to subsection (d) shall be included in the Consumer Confidence Report:

(1) Contaminants subject to an MCL, regulatory action level, MRDL, or treatment technique (regulated contaminants), as specified in sections 64426.1, 64426.6, 64431,

64442, 64443, 64444, 64448, 64449, 64533, 64533.5, 64536, 64536.2, 64653, and 64678;

(2) Contaminants specified in 40 Code of Federal Regulations part 141.40 (7-1-2007 edition) for which monitoring is required (unregulated contaminants);

(3) Microbial contaminants detected as provided under subsection (3); and

(4) Sodium and hardness.

(d) For contaminants identified in subsection (c), the water system shall include in the Consumer Confidence Report one table or several adjacent tables that have been developed pursuant to this subsection. Any additional monitoring results that a water system chooses to include in its Consumer Confidence Report shall be displayed separately.

...

(o) The eConsumer eConfidence rReport prepared and delivered by July 1, 2022 shall, for bacteriological monitoring conducted from January 1, 2021 to June 30, 2021, inclusive, include the following additional information in the report:

(1) The total coliform MCL expressed as shown in tTable 64481-C.

Table 64481-C
Total Coliform MCL for Consumer Confidence Report

<i>Contaminant</i>	<i>MCL</i>
[No change to text]	[No change to text]
[No change to text]	[No change to text]

(2) [No change to text]

(3) [No change to text]

(4) The likely source(s) of any total coliform, fecal coliform, or *E. coli* detected. If the water system lacks specific information on the likely source, the table shall include the typical source for that contaminant listed in ~~§~~Table 64481-D.

Table 64481-D

Typical Origins of Microbiological Contaminants with Primary MCL

<i>Contaminant</i>	<i>Major Origins in Drinking Water</i>
[No change to text]	[No change to text]
[No change to text]	[No change to text]

(5) Information on any data indicating violation of the total coliform MCL, including the length of the violation, potential adverse health effects, and actions taken by the water system to address the violation. To describe the potential health effects, the water system shall use the relevant language in ~~§~~Table 64481-E.

Table 64481-E

Health Effects Language for Microbiological Contaminants

<i>Contaminant</i>	<i>Health Effects Language</i>
[No change to text]	[No change to text]
[No change to text]	[No change to text]
[No change to text]	[No change to text]

(6) [No change to text]

(p) A Consumer Confidence Report issued after [INSERT EFFECTIVE DATE OF THE PROPOSED REGULATION] and prior to the applicable compliance date in Table 64432-B shall include the following information for chromium (hexavalent):

(1) If chromium (hexavalent) is detected, the Consumer Confidence Report shall include information pursuant to subsections (c) and (d).

(2) If chromium (hexavalent) exceeds the MCL, the Consumer Confidence Report shall include additional information indicated in Table 64481-F.

Table 64481-F CCR Language
Hexavalent Chromium MCL Exceedance

<u>CCR Language</u>
<u>Chromium (hexavalent) was detected at levels that exceed the chromium (hexavalent) MCL. While a water system of our size is not considered in violation of the chromium (hexavalent) MCL until after [INSERT APPLICABLE TABLE 64432-B COMPLIANCE DATE], we are working to address this exceedance and comply with the MCL. Specifically, we are [INSERT ACTIONS TAKEN AND PLANNED TO COMPLY WITH THE APPLICABLE COMPLIANCE DATE IN TABLE 64432-B].</u>

Appendix 64481-A.
Typical Origins of Contaminants with Primary MCLs, MRDLs,
Regulatory Action Levels, and Treatment Techniques

<i>Contaminant</i>	<i>Major origins in drinking water</i>
<i>Microbiological</i>	
[No change to text]	[No change to text]
<i>Surface water treatment</i>	
[No change to text]	[No change to text]

Radioactive

[No change to text]	[No change to text]
---------------------	---------------------

Inorganic

Aluminum	[No change to text]
Antimony	[No change to text]
Arsenic	[No change to text]
Asbestos	[No change to text]
Barium	[No change to text]
Beryllium	[No change to text]
Cadmium	[No change to text]
<u>Chromium (hexavalent)</u>	<u>Erosion of natural deposits; transformation of naturally occurring trivalent chromium to hexavalent chromium by natural processes and human activities such as discharges from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities.</u>
Chromium (<u>total</u>)	[No change to text]
Copper	[No change to text]
Cyanide	[No change to text]
Fluoride	[No change to text]
Lead	[No change to text]
Mercury	[No change to text]
Nickel	[No change to text]
Nitrate	[No change to text]
Nitrite	[No change to text]
Perchlorate	[No change to text]

Selenium	[No change to text]
Thallium	[No change to text]

Synthetic organic

[No change to text]	[No change to text]
---------------------	---------------------

Volatile organic

[No change to text]	[No change to text]
---------------------	---------------------

*Disinfection Byproducts, Disinfection Byproduct Precursors, and Disinfectant
Residuals*

[No change to text]	[No change to text]
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...

Note: Authority cited: Sections 116271, 116350 and 116375, Health and Safety Code.
Reference: Sections 116275 and 116470, Health and Safety Code.



Frequently Asked Questions

Maximum Contaminant Level (MCL) for Hexavalent Chromium

Table of Contents

General Information	2
What is hexavalent chromium, and how can it affect a person's health?	2
Where does hexavalent chromium come from?	3
What is the State Water Board doing to help smaller, disadvantaged communities comply with the new MCL?	3
What treatment technologies have been identified as best available technology for addressing hexavalent chromium?	3
Current and Future Regulation	3
How is hexavalent chromium regulated in California drinking water?	3
Is there a point at which MCLs are re-evaluated?	4
Details of 2023-24 Regulation	4
Who does this regulation apply to?	4
What is the hexavalent chromium MCL and DLR?	4
How did State Water Board staff arrive at the hexavalent chromium MCL?	4
When and how often will water systems be required to test for hexavalent chromium?	4
Why do small water systems have a later timeline for complying with the hexavalent chromium MCL?	5
What environmental review did the State Water Board conduct in connection with this rulemaking?	5
Health Concerns	6
What are the anticipated health benefits of the hexavalent chromium MCL?	6
How can a person go about testing their water for hexavalent chromium?	6
How can a person decrease exposure to any hexavalent chromium in their household water?	6
How can I find out how much hexavalent chromium is in my water?	6
Details for Water Systems	7
When and how should initial sampling for the hexavalent chromium MCL occur?	7



How can previously obtained data be used to satisfy initial monitoring requirements?	7
What ongoing monitoring is required?	7
What monitoring is required for standby sources?	7
According to the compliance schedule, when would PWS first be required to comply with (supply water with hexavalent chromium levels below) the MCL?	8
How is compliance with the hexavalent chromium MCL assessed after the compliance deadlines?	8
What is the Hexavalent Chromium Compliance Plan?	9
When is the Compliance Plan due?	9
How is the Compliance Plan approved?	9
What is the Hexavalent Chromium Operations Plan?	9
When is the Operations Plan due?	10
How is the Operations Plan approved?	10
Are there any public notification requirements for exceeding the MCL, even during the initial compliance period?	10
What are the Consumer Confidence Report requirements for the hexavalent chromium MCL?	10
Additional Resources	11
Public Health Goal:	11
Rulemaking Status and Information:	11
DDW Announcements and Information on Hexavalent Chromium:	11

General Information

What is hexavalent chromium, and how can it affect a person's health?

Chromium is an odorless and tasteless heavy metal that occurs throughout the environment and is commonly found in either a trivalent or hexavalent form. The “valent form” of chromium refers to the state of the electrons in a chromium atom in terms of the number of electrons involved in or available for chemical bond formation. Atoms can convert between valence states.

Chronic or long-term exposure to water contaminated with hexavalent chromium may result in liver toxicity, gastrointestinal tumors, and liver cancer.

Where does hexavalent chromium come from?

Much of the hexavalent chromium found in drinking water occurs naturally throughout California from the erosion of chromium deposits. Contamination also can arise from a variety of industrial activities, including the manufacturing of textile dyes, wood preservation, leather tanning, and anticorrosion coatings, where hexavalent chromium contaminated waste has migrated into the groundwater. Hexavalent chromium pollution can occur when an industrial site fails to follow safe waste disposal methods. Counties with the highest number of water sources that currently exceed the maximum contaminant level (MCL) are San Bernardino, Los Angeles, and Fresno counties.

What is the State Water Board doing to help smaller, disadvantaged communities comply with the new MCL?

The State Water Board has several programs that help smaller, disadvantaged communities achieve compliance with MCLs. These programs include the [Drinking Water State Revolving Fund \(DWSRF\)](#), principal forgiveness programs, state grants, and the [Safe and Affordable Funding for Equity and Resilience \(SAFER\)](#), which is designed to ensure Californians who lack safe, adequate, and affordable drinking water receive it as quickly as possible, and that the water systems serving them establish sustainable solutions.

What treatment technologies have been identified as best available technology for addressing hexavalent chromium?

Three treatment technologies have been identified as best available technology (BAT): ion exchange, reduction-coagulation-filtration (RCF), and reverse osmosis. A technology being identified as BAT means that it is a technology that is generally expected to be able to reliably remove the chemical (in this case, hexavalent chromium) from the water to levels below the MCL. Public water systems are not limited to using only those technologies identified as BAT, but they will have to pilot or demonstrate the effectiveness of the treatment.

Current and Future Regulation

How is hexavalent chromium regulated in California drinking water?

In California, hexavalent chromium in drinking water is regulated under the total chromium state MCL of 50 parts per billion (ppb) and the newly-adopted hexavalent chromium MCL of 10 ppb. A maximum contaminant level (MCL) is the highest concentration of chemicals permitted in drinking water systems. The total chromium MCL was established in 1977 and regulates both the less-toxic trivalent form and the hexavalent form. California is the only state to have set its own total chromium MCL; other states use the total chromium federal MCL of 100 ppb to regulate chromium. The newly-adopted MCL regulates hexavalent chromium separately.

Is there a point at which MCLs are re-evaluated?

Yes. Each chemical with an MCL above the corresponding PHG is reviewed every five years in a comprehensive MCL review, which is required under Health and Safety Code section 116365(g). The MCL review helps determine which chemicals need MCL or DLR revisions. Once it is determined that greater protection of public health is technologically and economically feasible for a specific chemical, the chemical is added to the regulation priority list for an MCL revision.

Details of 2023-24 Regulation

Who does this regulation apply to?

This regulation applies to public water systems (PWS), not private or domestic wells. Private or domestic well owners can also find more information on testing at the [Groundwater Ambient Monitoring and Assessment \(GAMA\) Program](#), and information on how to reduce exposure to hexavalent chromium in the answer to *“How can a person decrease exposure to any hexavalent chromium in their household water?”*

What is the hexavalent chromium MCL and DLR?

The hexavalent chromium MCL is 10 ppb, and the DLR (detection limit for purposes of reporting) is 0.1 ppb. The DLR is the designated minimum levels at or above which any analytical finding of a contaminant in drinking water from monitoring must be reported to the State Water Board.

How did State Water Board staff arrive at the hexavalent chromium MCL?

The State Water Board is required to set MCLs as close to the public health goal (PHG) as is technologically and economically feasible, while primarily considering public health. It is not always feasible to treat or even measure at the very low concentrations that PHGs can be set at. Currently, only a few laboratories have confirmed that they are able to test hexavalent chromium in water as low as the PHG (0.02 ppb), and treatment technologies have not been studied below levels of about 1 ppb. This means that an MCL set at the PHG would not be feasible. In addition, the State Water Board considers the economic impacts of an MCL. The economic analysis for the hexavalent chromium MCL included monthly household costs, unit cost analysis, cost-effectiveness, and considered future regulations that may also have a widespread cost impact.

When and how often will water systems be required to test for hexavalent chromium?

Water systems are required to take an initial sample for hexavalent chromium by April 1, 2025. How often systems are required to test for hexavalent chromium after that depends on whether the water source is surface water or groundwater and whether the source

exceeds the MCL. Water that is being treated to comply with the MCL must be tested monthly.

Why do small water systems have a later timeline for complying with the hexavalent chromium MCL?

Many small public water systems already have numerous challenges, from compliance to routine maintenance, and more than half of California's water systems have fewer than 100 households over which to spread the costs of any improvements to comply with new standards. Larger water systems usually have more resources (money, staff, etc.) with which to comply with the MCL, and may be able to mobilize and implement treatment more quickly than smaller water systems. An additional benefit of larger systems implementing treatment first is that technologies can be refined and savings discovered before smaller systems are required to comply, which could reduce costs to water systems with the smallest ratepayer bases over which to distribute costs and least able to realize any economies of scale. In addition to considerations of system size, the overall compliance schedule was also designed to allow for lengthier timelines for design and pilot studies, and to allow time for any supply chain delays for treatment equipment.

Therefore, the State Water Board is using the following phased approach for complying with the MCL to give water systems more time:

- Systems with more than 10,000 service connections are required to comply with the MCL by October 1, 2026 (within two years).
- Systems with 1,000 to 10,000 service connections are required to comply with the MCL by October 1, 2027 (within three years).
- Systems with less than 1,000 service connections are required to comply with the MCL by October 1, 2028 (within four years).

What environmental review did the State Water Board conduct in connection with this rulemaking?

When adopting a rule or regulation requiring installation of pollution control equipment, establishing a performance standard, or establishing a treatment requirement, the State Water Board must perform an environmental analysis of the reasonably foreseeable methods by which compliance with that regulation will be achieved (Pub. Resources Code, § 21159; Cal. Code Regs., tit. 14, § 15187). To meet this requirement, the State Water Board prepared a programmatic Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act. Environmental impacts may occur from infrastructure projects that public water systems undertake locally to comply with an MCL for hexavalent chromium, such as the installation of centralized treatment or obtaining new sources of supply. Because the location and technical nature of these local compliance projects are not yet known, the EIR takes a conservative approach to evaluating environmental impacts and finds potentially significant impacts related to a number of environmental resources, and identifies possible mitigation measures for those agencies to consider to reduce environmental impacts to less than significant. It is likely that many of the local projects

implemented to comply with the MCL will not have significant environmental impacts; however, if there are potentially significant impacts, the agencies undertaking or approving the site-specific projects are able to prepare a focused analysis of the project-specific, potentially significant effects that were not discussed in the State Water Board's EIR on the regulation (See Cal. Code Regs., tit., § 15188). The EIR and appendices are available on the State Water Board's website.

Health Concerns

What are the anticipated health benefits of the hexavalent chromium MCL?

At an MCL of 10 ppb, the health risk from hexavalent chromium in drinking water is limited to a one-in-two-thousand chance of developing cancer during a lifetime (70 years) of exposure.

How can a person go about testing their water for hexavalent chromium?

Persons wishing to test their household water for hexavalent chromium may find information about laboratories accredited by the State Water Board's Environmental Laboratory Accreditation Program (ELAP) to test for hexavalent chromium on the [ELAP website](#). More information regarding domestic well testing can also be found at the [Groundwater Ambient Monitoring and Assessment \(GAMA\) Program](#).

How can a person decrease exposure to any hexavalent chromium in their household water?

Residential point-of-use (POU) and point-of-entry (POE) devices can be purchased by individuals to reduce exposure to contaminants in their household water. POU devices (often pitcher filters) are much more common than POE devices for hexavalent chromium treatment. A list of certified residential POU and POE devices capable of treating hexavalent chromium is available on the [State Water Board's website](#). Check with the manufacturer and the POU device's hexavalent chromium reduction claims as percent removal may vary by device. Because bottled water is not tested for hexavalent chromium, it is not a recommended means of decreasing exposure to hexavalent chromium.

How can I find out how much hexavalent chromium is in my water?

Hexavalent chromium detections are required to be reported to consumers in annual Consumer Confidence Reports (CCRs). Water system CCRs and any hexavalent chromium testing information may also be available on [California's Drinking Water Watch](#).

Details for Water Systems

When and how should initial sampling for the hexavalent chromium MCL occur?

Consistent with existing monitoring requirements for inorganic chemicals, each community and non-transient non-community (NTNC) water system, such as schools, must sample their sources for hexavalent chromium by April 1, 2025, unless they are using previously obtained data to satisfy initial monitoring requirements (see next question for details) [[22 CCR 64432\(b\)](#)].

If the initial sample is above 10 ppb, the water system must inform DDW within 48 hours. If a water system wants to confirm that the original result is over the MCL, the water system must inform DDW within 7 days and may take a confirmation sample within 14 days of laboratory notification. The initial sample and the confirmation sample are then averaged to determine whether the source exceeds 10 ppb.

How can previously obtained data be used to satisfy initial monitoring requirements?

A groundwater sample taken within two years of the effective date (after October 1, 2022) of the regulation may be able to be used to satisfy initial monitoring requirements. Previously obtained data cannot be used to satisfy initial monitoring requirements for surface water sources.

What ongoing monitoring is required?

Sources with an initial (or previous qualifying) sample at or below the MCL will be required to sample once every three years (groundwater) or once every year (surface water) [[22 CCR 64432\(c\)](#)].

Sources with an initial sample above the MCL will be required to sample quarterly [[22 CCR 64432\(g\)\(1\)](#)]. Sources monitoring quarterly may request a decrease in sampling frequency after systems have completed two (for groundwater) or four (for surface water) consecutive quarters of sampling showing results below the MCL [[22 CCR 64432\(j\)](#)].

Any treated water must be sampled monthly [[22 CCR 64432.8\(a\)](#)].

What monitoring is required for standby sources?

Standby sources are required to monitor once per compliance cycle [[22 CCR 64414](#)]. All standby sources must sample once by December 31, 2028 (the end of the current compliance cycle), and once in each following nine-year compliance cycle.

According to the compliance schedule, when would PWS first be required to comply with (supply water with hexavalent chromium levels below) the MCL?

PWS will be required to comply with the MCL based on the schedule below, such that the first sample used to determine compliance (based on quarterly sampling) would be taken in the first quarter after the applicable date below. For example, since the effective date is October 1, 2024, a system with 15,000 connections would calculate the first annual average for purposes of compliance using sampling from the last quarter of 2026 and the first three quarters of 2027, and a system with 5,000 connections would use the last quarter of 2027 and the first three quarters of 2028. However, if any one sample would cause the annual average to exceed the MCL, the system would immediately be in violation.

Table 1. Compliance Schedule for the Hexavalent Chromium MCL

System Size (as of regulation's effective date)	Compliance Schedule	Compliance Monitoring Begins
10,000 service connections or more	2 years from regulation's effective date	October 1, 2026
1,000 to 9,999 service connections	3 years from regulation's effective date	October 1, 2027
Less than 1,000 service connections	4 years from regulation's effective date	October 1, 2028

How is compliance with the hexavalent chromium MCL assessed after the compliance deadlines?

Compliance with the hexavalent chromium MCL is assessed the same way as the MCLs of other inorganic chemicals: using "a running annual average; if any one sample would cause the annual average to exceed the MCL, the system is immediately in violation. If a system takes more than one sample in a quarter, the average of all the results for that quarter shall be used when calculating the running annual average. If a system fails to complete four consecutive quarters of monitoring, the running annual average shall be based on an average of the available data" [[22 CCR 64432\(i\)](#)].

If a system exceeds the MCL before their applicable compliance date, they will not be in violation of the MCL, but they will be required to submit a Hexavalent Chromium Compliance Plan. If a system exceeds the MCL after the applicable compliance date, they would be in violation of the MCL, but do not have to submit a Hexavalent Chromium Compliance Plan [[22 CCR 64432\(q\)](#)].

What is the Hexavalent Chromium Compliance Plan?

The Hexavalent Chromium MCL Compliance Plan is a description from any system with a source exceeding the MCL before their applicable compliance date in Table 1 explaining how they will come into compliance with the MCL [\[22 CCR 64432\(q\)\]](#). These plans are required to include the proposed method for compliance with the MCL, the date by which the system plans to submit the final plans and specifications for any construction, the dates by which the system plans to start and complete any construction, and the date by which the system plans to complete a treatment operations plan. Dates do not need to be included if they are not applicable (for example, if no construction is planned).

While these plans can be amended as needed, the approved plans and the dates within are enforceable.

When is the Compliance Plan due?

The compliance plan must be submitted no later than 90 days after a system was notified of the laboratory result that caused a hexavalent chromium MCL exceedance (calculated as described in the above question: “According to the compliance schedule, when would PWS first be required to comply with (supply water with hexavalent chromium levels below) the MCL?”) [\[22 CCR 64432\(q\)\]](#).

How is the Compliance Plan approved?

A compliance plan will be approved if it contains all applicable elements (detailed in the question above: “What is the Hexavalent Chromium Compliance Plan?”) and is sufficient to demonstrate how the system will comply with the hexavalent chromium MCL.

What is the Hexavalent Chromium Operations Plan?

The Hexavalent Chromium Operations Plan is a treatment operations plan to help ensure that hexavalent chromium treatment is operating as intended. These plans are required to include the following elements [\[22 CCR 64432\(r\)\]](#):

- A performance monitoring program that sets out how and when treatment will be monitored to ensure compliance with the MCL.
- A program for maintenance of treatment process equipment that describes how and when equipment will be maintained and when equipment replacement is needed to ensure treatment is operating as designed.
- How and when each treatment unit process is operated.
- Procedures to determine chemical dose rates sufficient to ensure the treatment process is operating as designed.
- Information on reliability features incorporated into the treatment process to ensure operation as designed.

- A treatment media inspection program sufficient to ensure the media is inspected at intervals and for conditions necessary to ensure compliance with the MCL.

If any of these elements do not apply to specific treatment, those elements do not need to be included in the operations plan (for example, a media inspection program is not needed if media is not used).

When is the Operations Plan due?

The operations plan must be submitted and approved by the date in the approved Compliance Plan and before treated water may be served to the public [[22 CCR 64432\(r\)](#) and [22 CCR 64556](#)].

How is the Operations Plan approved?

An operations plan will be approved if it contains the applicable elements listed above and is sufficient to ensure that treated water reliably and continuously meets the hexavalent chromium MCL.

Are there any public notification requirements for exceeding the MCL, even during the initial compliance period?

Yes. Any system with a source that exceeds the hexavalent chromium MCL will be required to provide Tier 2 Public Notice, even for exceedances that occur before the applicable compliance date in Table 1 [[22 CCR 64463.4\(a\)](#)].

In addition, the notification requirements for Consumer Confidence Reports are below.

What are the Consumer Confidence Report requirements for the hexavalent chromium MCL?

As with other chemicals subject to an MCL, detections of hexavalent chromium and the associated typical origins language must be included in annual Consumer Confidence Reports, even if the detections occur before the applicable compliance date in Table 1 [[22 CCR 64481\(c\)](#)].

If a system exceeds the MCL before the applicable compliance date in **Table 1**, the following language must be included in the Consumer Confidence Report [[22 CCR 64481\(p\)](#)]:

Chromium (hexavalent) was detected at levels that exceed the chromium (hexavalent) MCL. While a water system of our size is not considered in violation of the chromium (hexavalent) MCL until after [INSERT APPLICABLE TABLE 64432-B COMPLIANCE DATE], we are working to address this exceedance and comply with

the MCL. Specifically, we are [INSERT ACTIONS TAKEN AND PLAN TO COMPLY WITH THE APPLICABLE COMPLIANCE DATE IN TABLE 64432-B].

If a system exceeds the MCL after the applicable date in Table 1, the above language would not be required. Instead, the Consumer Confidence Report shall clearly identify any data indicating MCL violations and “give information on each violation including the length of the violation, potential adverse health effects, and actions taken by the system to address the violation. To describe the potential health effects, the system shall use the relevant language pursuant to appendices 64465-A through H....” [22 CCR 64481(d)(3)].

Additional Resources

Public Health Goal:

<https://oehha.ca.gov/water/chemicals/chromium-hexavalent> (bit.ly/oehha-phg)

Rulemaking Status and Information:

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/SWRCBDDW-21-003_hexavalent_chromium.html (bit.ly/cr6-rulemaking)

DDW Announcements and Information on Hexavalent Chromium:

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Chromium6.html (bit.ly/cr6-regs)

State Water Resources Control Board

Proposed Hexavalent Chromium MCL

Staff Report

In 2001, the California Legislature required the Department of Health Services to develop a primary drinking water standard for hexavalent chromium by 2003.¹ Health and Safety Code (HSC) sections 116365(a) and 116365(b)² require the State Water Resources Control Board (State Water Board) to adopt primary drinking water standards at a level as close as feasible to the corresponding public health goal (PHG), placing primary emphasis on the protection of public health, and avoiding, to the extent technologically and economically feasible, any significant risk to public health. In 2011, the Office of Environmental Health Hazard Assessment (OEHHA) published the hexavalent chromium PHG at 0.02 micrograms per liter (µg/L).³

State Water Board staff is considering a hexavalent chromium maximum contaminant level (MCL) of 10 µg/L or 0.010 milligrams per liter (mg/L), and an associated detection limit for purposes of reporting (DLR) of 0.05 µg/L or 0.00005 mg/L.⁴ In addition, State Water Board staff proposes a compliance schedule based on system size:

- Systems with more than 10,000 service connections would be required to comply with the MCL within two years of rule adoption.
- Systems with 1,000 to 10,000 service connections would be required to comply with the MCL within three years of rule adoption.
- Systems with less than 1,000 service connections would be required to comply with the MCL within four years of rule adoption.

¹ Health and Saf. Code, § 116365.5. The Department of Health Services became the Department of Public Health (CDPH) in 2007, and its Drinking Water Program was transferred to the State Water Board in 2014. Prior to the transfer, CDPH issued a primary drinking water standard for hexavalent chromium, which was overturned by the Sacramento Superior Court in 2017.

² All references are to the Health and Safety Code, unless otherwise indicated.

³ Pursuant to HSC section 116365(c), OEHHA prepares and publishes an assessment of public health risks posed by each contaminant for which the State Water Board proposes a primary drinking water standard. The risk assessment includes an estimate, the PHG, of the drinking water contaminant level that is not anticipated to cause or contribute to adverse health effects, or that does not pose any significant health risk.

⁴ DLRs are the designated minimum levels at or above which any analytical finding of a contaminant in drinking water resulting from monitoring must be reported to the State Water Board.

Consistent with HSC section 116370, State Water Board staff is proposing findings of reduction/coagulation/filtration, ion exchange, and reverse osmosis as best available technologies (BAT) for the removal of hexavalent chromium from drinking water to concentrations at or below the proposed MCL.

Proposal Background

State Water Board staff reviewed analytical method availability, evaluated efficacy of various treatment technologies, and prepared cost estimates using water quality monitoring data in the State Water Board's Water Quality Information Replacement (WQIR) database to evaluate 17 possible MCLs (1 to 15, 20, and 25 µg/L). It was assumed laboratories would use United States Environmental Protection Agency's (U.S. EPA) Methods 218.6 or 218.7 for sample analysis and that public water systems (PWS) would rely on centralized treatment using strong base anion exchange to meet the MCL.

Technological Feasibility

A primary drinking water standard must be set at a level that is technologically feasible. (Health & Saf. Code, § 116365, subd. (a).) Technological feasibility requires an analytical method capable of detecting hexavalent chromium at or below the proposed level and a method of treatment that can produce water at or below that level.

Detection Limit for Purposes of Reporting

Two analytical methods, U.S. EPA Methods 218.6 and 218.7, are capable of reporting concentrations at or below the proposed DLR of 0.05 µg/L. Establishing a DLR of 0.05 µg/L will maximize current technological feasibility.

Treatment Techniques

The following three treatment technologies are proposed as best available technologies for the removal of hexavalent chromium from drinking water to concentrations at or below the proposed MCL of 10 µg/L:

- Reduction coagulation filtration (RCF) treatment reduces hexavalent chromium to trivalent chromium. Trivalent chromium has a very low solubility, which results in the formation of a precipitate that can be removed by filtration to result in hexavalent chromium concentrations less than 5 µg/L in finished water.
- Ion exchange uses strong base resins to which the hexavalent chromium anion can adsorb, decreasing hexavalent chromium concentrations to less than 1 µg/L in finished water.
- Reverse osmosis can filter hexavalent chromium through membranes to less than 1 µg/L.

Treatment technology capabilities may differ in non-ideal circumstances. While RCF has been shown to treat hexavalent chromium down to 5 µg/L, the data is limited to one treatment plant. Source water quality impacts the treatment efficacy of ion exchange and RCF. High sulfates can reduce the efficiency of strong base ion exchange

treatment, and pH has a significant impact on RCF's reduction efficiencies. State Water Board staff considers the proposed MCL of 10 µg/L to be technologically feasible because multiple mature, full-scale treatment technologies have been demonstrated capable of treating to concentrations at or below this level.

Estimated Costs

Statutory Requirements

A primary drinking water standard must be set at a level that is economically feasible. (Health & Saf. Code, § 116365, subd. (a).) HSC section 116365(b) requires the State Water Board to consider as part of its economic feasibility determination "the costs of compliance to public water systems, customers, and other affected parties with the proposed primary drinking water standard, including the cost per customer and aggregate cost of compliance, using best available technology."

Estimated Costs

PWS cost estimates were evaluated using the following service connection categories:

- 1) systems with less than 100 connections⁵;
- 2) systems with at least 100 connections, but less than 200 connections;
- 3) systems with at least 200 connections, but less than 1,000 connections;
- 4) systems with at least 1,000 connections, but less than 5,000 connections;
- 5) systems with at least 5,000 connections, but less than 10,000 connections; and
- 6) systems with over 10,000 connections.⁶

Estimated costs include statewide costs and not actual cost to a particular water system. Actual costs for any particular water system will vary depending on many site-specific parameters, such as the concentration of hexavalent chromium in the source, the physical and chemical characteristics of the water to be treated, the need to provide treatment for other contaminants, the type and method of resin and brine disposal, the availability of land, the future cost of construction, and the cost of water treatment plant operating staff.⁷

⁵ The general lack of information regarding very small, centralized treatment system costs (less than 10 gpm) makes estimating treatment costs for the small water systems difficult. Therefore, alternate cost estimates for systems with less than 100 connections are included in the form of POU cost estimates in the following section.

⁶ Although half of California's community water systems serve fewer than 100 connections, these small systems serve only 6.6% of consumers served by public water systems. By contrast, systems with more than 10,000 service connections serve more than 74.5% of the population served by public water systems.

⁷ Although PWS may select from various means of compliance, State Water Board staff is basing costs on strong base anion ion exchange because it is anticipated that this will be the most commonly used treatment for hexavalent chromium.

1. Estimated Total Costs of Monitoring and Treatment

The estimated total annualized monitoring and treatment costs for water sources with concentrations of hexavalent chromium greater than the proposed MCL of 10 µg/L, by water system size, are shown in Tables 6A and 6B in Attachment 1 for community water systems (CWS) and nontransient noncommunity water systems (NTNCWS), respectively. For the proposed MCL of 10 µg/L, the total annualized costs are approximately \$157,406,603 and \$5,528,796 for CWS and NTNCWS, respectively. Tables 17C and 17D show the total and annualized monitoring and treatment costs for transient noncommunity water systems (TNCWS) and wholesalers, respectively. For the proposed MCL of 10 µg/L, the total annualized costs are approximately \$555,166 and \$47,596,797 for TNCWS and wholesalers, respectively.

2. Estimated Total Costs Per System

The estimated number of systems requiring treatment can be found in Tables 7.1A and 7.1B for CWS and NTNCWS, respectively. The average estimated annual cost per system, by water system size, is shown in Tables 7.2A and 7.2B for CWS and NTNCWS, respectively. For the proposed MCL of 10 µg/L, the average annual cost per system for CWS ranges from \$104,738 (systems with less than 100 service connections) to \$4,984,385 (systems with more than 10,000 service connections) depending on the system size. The average annual costs per system for NTNCWS are generally smaller due to their sizes, ranging from \$82,711 to \$174,941. Larger water system costs are generally greater due to the need to treat greater flows to serve more people.

For the proposed MCL of 10 µg/L, the average annual cost per system is \$92,528 for TNCWS and \$15,865,599 for wholesalers. The cost is much higher for wholesaler systems than other system types because wholesalers usually produce very large amounts of water.

Note that for systems with less than 200 connections, State Water Board staff looked at the capital and O&M costs for point-of-use (POU) treatment, instead of costs of centralized treatment. Costs were estimated using U.S. EPA's POU cost estimating tool.⁸ Costs for residential reverse osmosis (RO) devices registered for sale in California were collected from manufacturer or online retail websites and averaged to determine the RO device, replacement filter, and membrane cartridge costs based on the device's ability to treat hexavalent chromium. As of June 2021, no POU device using RO and registered for sale in California could treat to below 3 µg/L.⁹ Based on U.S. EPA case

⁸ U.S. EPA. (2007). Cost Evaluation of Point-of-Use and Point-of-Entry Treatment Units for Small Systems: Cost Estimating Tool and User Guide (EPA 815-B-07-001). United States Environmental Protection Agency, Office of Ground Water and Drinking Water.

⁹ SWRCB. (2021d). Residential Water Treatment Devices. State Water Resources Control Boards. Accessed June 2021.
https://www.waterboards.ca.gov/drinking_water/certlic/device/watertreatmentdevices.html

studies and vendor information, given regular maintenance (e.g., filter cartridge replacement), the POU devices are expected to continue functioning for 10 years before the entire device needs to be replaced. The estimated POU monthly costs per connection based on MCL level and water system size are shown in Table 1.

Table 1. Monthly cost per connection of POU treatment based on MCL and system size. (Attachment 1, Table 14).

MCL (µg/L)	Less than 100 service connections	Between 101 and 200 service connections
4, 5	\$52	\$51
6, 7	\$47	\$47
8	\$46	\$44
9	\$41	\$40
10 to 25	\$38	\$37

3. Estimated Annual Costs per Source

The estimated average annual cost per source, by water system size, is shown in Tables 8A and 8B for CWS and NTNCWS, respectively. For the proposed MCL of 10 µg/L, the average cost per source for CWS ranges from \$88,625 (systems with less than 100 service connections) to \$842,431 (systems with more than 10,000 service connections). The average annual cost per source for NTNCWS ranges from \$81,618 to \$147,613. On average, systems with fewer than 100 service connections treat much less water per source (6 million gallons per year) than systems with more than 10,000 service connections (451 million gallons per year), which accounts for the large range of costs. Again, larger water system costs are generally greater due to need to treat greater flows.

For the proposed MCL of 10 µg/L, the average annual cost per source is \$92,528 for TNCWS and \$3,966,400 for wholesalers. The per source wholesaler costs are higher than other system types because on average, each source produces more water.

4. Estimated Costs per Service Connection

The estimated number of service connections in each water system size category can be found in Tables 9.1A and 9.1B for CWS and NTNCWS, respectively. The estimated average annual cost per service connection, by system size, is shown in Tables 9.2A and 9.2B for CWS and NTNCWS, respectively. For the proposed MCL of 10 µg/L, the average annual cost per service connection for CWS ranges from \$133 (systems with more than 10,000 service connections) to \$2,440 (for systems with less than 100 service connections). These costs are higher for smaller water systems due to a lack of economies of scale – meaning that there are fewer households (service connections) among which the cost of the treatment can be shared. However, these are cost estimates for centralized treatment, and systems with less than 100 service connections are expected to use POU treatment, which would have annual costs of \$456 per service connection.

For the proposed MCL of 10 µg/L, the average annual cost per service connection for NTNCWS ranges from \$3,482 (systems with at least 100 but less than 200 people) to \$47,610 (systems with less than 50 people). While these costs are large, they are not reflective of costs a family would be asked to pay because NTNCWS do not serve yearlong residents. Instead, these systems consist of agricultural and industrial facilities, schools, churches, prisons, recreational areas, restaurants, and any other public water system that regularly serves 25 or more of the same persons more than 6 months per year. NTNCWS also have very few service connections on average; one third of all NTNCWS in the state have only one service connection. For these reasons, NTNCWS costs are better understood on a per person basis, as discussed in the next section.

For the proposed MCL of 10 µg/L, the average annual cost per service connection is \$1,934 for TNCWS. Wholesaler costs cannot be broken down to the service connection level because wholesalers do not directly serve residents and do not consistently report service connections in the SDWIS database (some report the number of connections through which water is delivered to other systems, some report an estimate of the number of service connections that will eventually be served by their water, and some report the total number of service connections of all the systems to which they sell).

5. Estimated Costs Per Person

The estimated number of people served by the systems in each water system size category can be found in Tables 10.1A and 10.1B for CWS and NTNCWS, respectively. The estimated average annual cost per person, by system size, is shown in Tables 10.2A and 10.2B for CWS and NTNCWS, respectively. For the proposed MCL of 10 µg/L, the average annual cost per person for CWS ranges from \$34 (systems with more than 10,000 service connections) to \$686 (systems with less than 100 service connections) for centralized treatment. For comparison, the annual POU costs are approximately \$128 per person. For the proposed MCL of 10 µg/L, the annual average cost per person for NTNCWS ranges from \$131 (systems with 1,000 or more people) to \$2,657 (systems with less than 51 people). However, NTNCWS are not community systems and do not directly charge households or individuals for the cost of water. Instead, the 51 NTNCWS that were identified as potentially exceeding the MCL of 10 µg/L consist of 29 industrial/agricultural businesses (packing companies, farms, etc.), 10 schools, three restaurants, three “other transit areas” (Christian center, wedding event property, and county hauling), one medical facility, one church, one winery, one regional park, one Cal Fire conservation camp, and one migrant center.

For the proposed MCL of 10 µg/L, the average annual cost per person is approximately \$622 for TNCWS and \$257 for wholesalers.¹⁰ The six TNCWS are a raceway, a campground, two churches, a spa, and a packing company, none of which charge households or individuals for the cost of water.

¹⁰ The number of people served by each system is available in the DDW SDWIS data. This information can be accessed at this webpage:
https://www.waterboards.ca.gov/resources/data_databases/drinking_water.html.

6. Understanding Cost Trends

Some cost tables in Attachment 1, such as the estimated annual cost per service connection (Tables 9.2A and 9.2B) and the estimated annual cost per person (Tables 10.2A and 10.2B), show costs decreasing for lower potential MCLs or increasing for higher potential MCLs. The purpose of this section is to explain those cost trends.

The average monthly costs per household are shown below in Figure 1 in black for all systems, red for systems with less than 100 service connections, and in green for systems with more than 100 service connections. Treatment costs are very expensive for systems with less than 100 service connections because they have fewer customers to pay for centralized treatment (lack of economies of scale, as previously discussed).

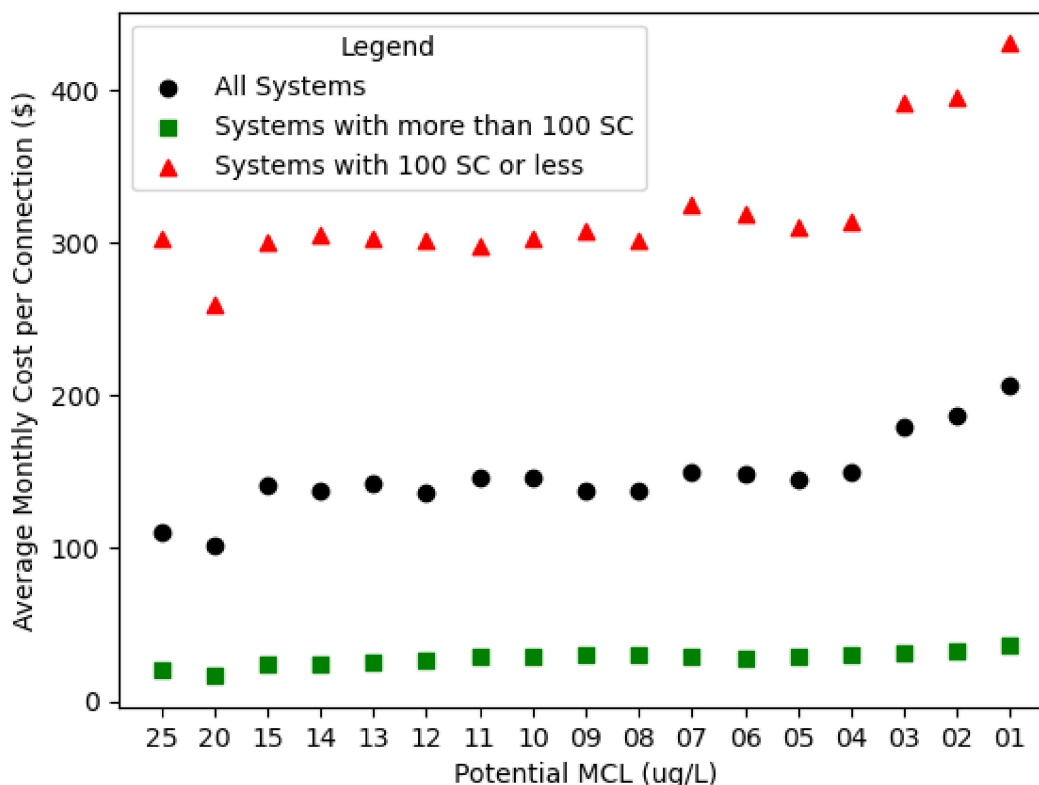


Figure 1. The average monthly cost per service connection

The average monthly costs for systems with more than 100 service connections in Figure 1 do not grow much as the potential MCL decreases (becomes more stringent), and in some cases the average monthly costs even decrease. This phenomenon is a result of new, much less contaminated sources being added at each MCL, such that the average contamination of all water being treated decreases as the potential MCL decreases. Therefore, the average costs stay the same or decrease even as costs are increasing for each individual system that has already been treating.

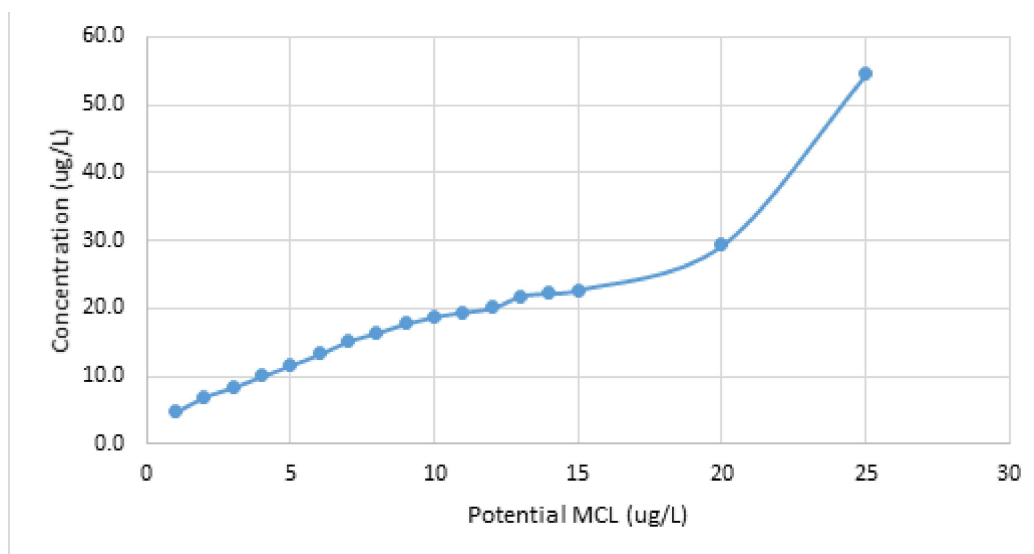


Figure 2. Average Hexavalent Chromium Concentration in Treating Sources

Figure 2 shows the extent to which the average concentration of hexavalent chromium in water sources to be treated changes with each potential MCL. The source concentration of all sources to be treated decreases with decreasing MCLs because added sources are much less contaminated than the previously included sources. These less contaminated sources cost less to treat, which lowers the average cost of treatment, even as individual costs increase for each source already treating.

Economic Feasibility

HSC section 116365 sets forth criteria to consider in determining the economic feasibility of a proposed MCL. State Water Board staff took a multi-faceted approach, considering a number of factors, including the household affordability of the rates public water systems may need to establish to fund compliance and meet ongoing operation and maintenance costs.

To determine economic feasibility, the State Water Board took a conservative approach by estimating centralized treatment costs for all PWS.¹¹ However, due to the high centralized treatment costs for CWS with less than 100 service connections, it is assumed that this subset of PWS will use POU treatment to comply with the MCL.

As noted above, at the proposed MCL of 10 µg/L, the majority of Californians would pay less than an additional \$20 per month. Some of the smallest systems, however, would have rate increases closer to \$40 per month.¹² The minimum and maximum monthly household costs for each system size category are shown in Table 16A in Attachment 1. A large cost jump in the maximum costs occurs at MCLs lower than 10 ug/L for

¹¹ There are additional and likely less expensive ways many systems may use to comply with the MCL, such as blending, drilling new wells, and purchasing uncontaminated water from other system(s).

¹² Note that for systems with fewer than 100 connections, costs are based on installation of POU treatment, as set out in Table 1 above, rather than the costs for centralized treatment set out in Table 9.2, attached.

systems between 100 and 200 service connections. Water systems with less than 100 service connections using POU devices in lieu of centralized treatment would have cost increases of \$38 per household per month instead of the costs shown in this table.

Some categories in Table 16A show that the minimum cost decreases with lower MCLs. This is because less contaminated sources are more likely to be included at lower MCLs, some of which would require minimal hexavalent chromium removal, leading to very low minimum costs. It will, however, always cost more for any given system to treat its water to a lower MCL.

Considering water affordability principles from U.S. EPA¹³, State Water Board staff estimated the number of customers required to spend more than 2.5% of median household income (MHI) on their water bills. Each of these estimates excludes potential financial and technical assistance that the State Water Board might provide to small systems serving disadvantaged communities through various funding programs. At the proposed MCL of 10 µg/L, 16 systems with more than 100 service connections would potentially have total water bills that exceed that threshold. Fourteen of these systems are severely disadvantaged communities with MHIs below \$45,000 (three systems have water bills that already exceed the 2.5% threshold, even before estimated compliance costs for hexavalent chromium are added to their water bill).

Although the State Water Board cannot guarantee funding for any one system, as the individual circumstances of each system would have to be analyzed, the State Water Board has funding programs available to alleviate financial strain experienced by small PWS customers.

As Close as Feasible to PHG, and Avoiding Significant Risk to Public Health

With respect to carcinogens, such as hexavalent chromium, HSC section 116365 requires that to the extent technologically and economically feasible the MCL be set at a level that is not only as close to the PHG as feasible, but also avoids any significant risk to public health.

Ingesting hexavalent chromium has been shown to cause both cancer and kidney toxicity. Although this regulation is expected to reduce the number of cancer and kidney toxicity cases, at the proposed MCL of 10 µg/L, the cancer risk is 500 times greater than at the PHG.¹⁴ This equates to a lifetime risk for individuals that 1 person out of 2,000 exposed to drinking water at 10 µg/L for 70 years may experience cancer. Of the 69 MCLs adopted in California, the proposed MCL of 10 µg/L would place hexavalent chromium as the seventh least protective MCL, with 6 current MCLs less protective and 63 more protective of human health.

¹³ U.S. EPA (1998). Variance Technology Findings for Contaminants Regulated Before 1996. (EPA 815-R-98-003). United States Environmental Protection Agency, Office of Ground Water and Drinking Water.

¹⁴ The PHG of 0.02 µg/L represents a risk that is considered negligible (e.g., one excess cancer case in one million people).



City of Banning

Office of the City Manager

May 15, 2020

Ms. Jeanine Townsend
Clerk of the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812

Sent via: commentletters@waterboards.ca.gov

**Re: COMMENTS – White Paper on Economic Feasibility Analysis in
Consideration of a Hexavalent Chromium MCL**

On behalf of the City of Banning, I would like to submit comments regarding the State Water Resources Control Board's *White Paper on Economic Feasibility Analysis in Consideration of a Hexavalent Chromium MCL*, as the implications of the White Paper will directly affect the City and its residents.

The City of Banning's highest priority is to deliver safe, clean and affordable water to the community. The City's water utility has 10,648 water service connections, providing water to 31,253 residents. With a median household income (MHI) of \$40,627, the Department of Water Resources Disadvantaged Communities Mapping tool designates the entire City as a Disadvantaged Community. As such, the City of Banning does not have the ability to increase water rates to fund system improvements without disproportionately affecting its disadvantaged customers. Therefore, the City depends upon grant funding and other cost-effective strategies to help fund necessary system upgrades and treatment measures to comply with regulatory requirements.

Therefore, it is imperative that a thorough economic feasibility and affordability analysis be conducted to determine the hexavalent chromium (Cr6) maximum contaminant level (MCL). The White Paper acknowledges the competing needs of "protecting public health and keeping water affordable"; the Board's approach to the evaluation of economic feasibility must be designed to address both needs equitably. The City believes that the White Paper properly identifies the problem but falls short in some significant ways.

The primary basis for the Sacramento Superior Court's May 2017 decision to remand the prior Cr6 MCL was that the Department of Public Health (DPH) failed to determine that the proposed standard was economically feasible for affected systems. The Court order includes several findings that either are not addressed or are directly contradicted in the White Paper:

- The Superior Court determined that DPH did not demonstrate that the range of strategies and funding sources available for agencies to achieve compliance and offset costs of new regulations (including grant funding, low or no-interest loans, point of use or point of entry treatment, water blending, variances, exemptions, and consolidations) actually render the Cr6 MCL economically feasible, especially for small water utilities and rate

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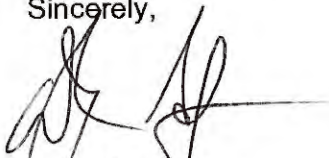
payers. The same range of strategies and funding sources are listed in the White Paper, but without an indication that the Board intends to demonstrate their effectiveness. All options must be evaluated in their ability to support the economic feasibility of a new MCL.

- Additionally, the White Paper asserts “there has been no funding available for ongoing operation & maintenance costs and the State has not yet been able to create a statewide low-income rate assistance program.” Such programs if implemented in the future, may benefit disadvantaged communities like the City of Banning; however, the White Paper does not indicate the Board plans to evaluate the potential for such programs to help solve the Cr6 MCL economic feasibility problem.
- The White Paper’s conclusion that affordability is beyond the scope of an economic feasibility evaluation is inconsistent with the Court’s view that “it is difficult to conceive of a definition (of economic feasibility) that does not at least *consider* affordability.”
- Lastly, the White Paper proposes to either eliminate consideration of small system costs, or to average total costs across all affected systems. This approach would have the effect of obscuring costs for the most impacted systems, which is inconsistent with the Court’s findings that evaluation of economic feasibility: (1) should not average costs across all systems; and (2) should address the disproportionate burdens on small systems.

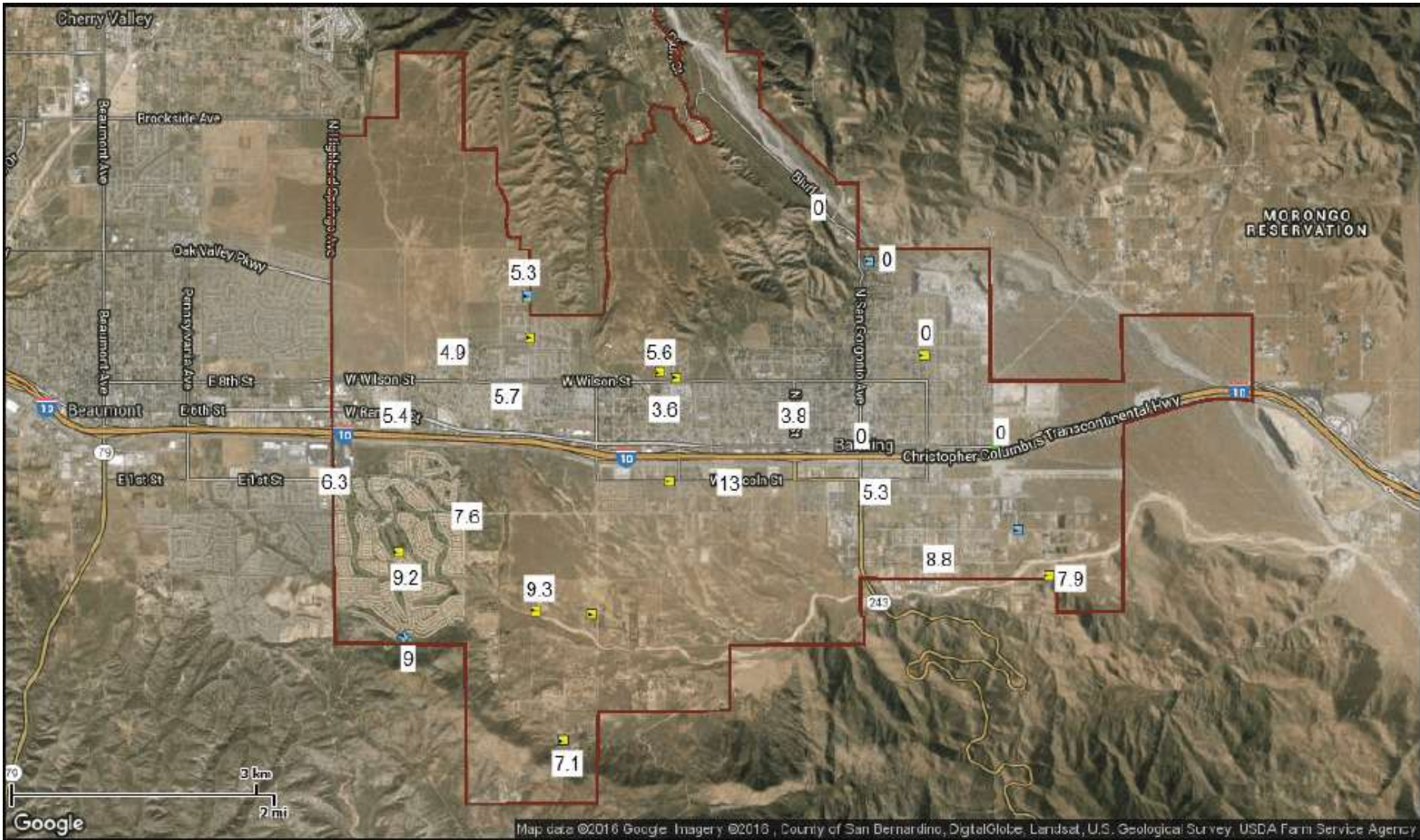
An additional item of concern neither identified in the court’s decision nor in the White Paper is the fact that DPH’s previous assessment of the number of affected facilities (i.e., wells) used to determine the potential financial impact per MCL was inaccurate (underreported) for some agencies and must be corrected prior to commencement of any new economic feasibility analysis.

The *White Paper on Economic Feasibility Analysis in Consideration of a Hexavalent Chromium MCL* was drafted as a response to the May 31, 2017 Sacramento Superior Court judgment invalidating the Cr6 10µg/L MCL and to address the concern that DPH had not properly considered the economic feasibility of complying with the MCL. The City of Banning does not believe that the White Paper is complete in its response to the Court’s order which invalidated the previous MCL and urges the Board to consider the points expressed above. The Board must adopt formal guidance and policy in determining economic feasibility in the adoption of all future safe drinking water standards in order to protect public health, but also accommodate the needs of small water systems and disadvantaged communities.

Sincerely,



Doug Schulze
City Manager



IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Este informe contiene información muy importante sobre su agua potable.

Tradúzcalo o hable con alguien que lo entienda bien.

[System] Has Levels of Hexavalent Chromium Above the Drinking Water Standard

This is not an emergency. As our customers, you have a right to know what you should do, what happened, and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Water sample results received on [date] showed hexavalent chromium levels of [level and units]. This is above the standard, or maximum contaminant level (MCL), of 0.010 milligrams per liter (10 ppb). We are working with the State Water Resources Control Board to address this exceedance and comply with the MCL within a compliance timeline.

What should I do?

- **You do not need to use an alternative water supply (e.g., bottled water).**
- This is not an emergency. If it had been, you would have been notified immediately. However, *some people who drink water containing hexavalent chromium in excess of the MCL over many years may have an increased risk of getting cancer.*
- If you have other health issues concerning the consumption of this water, you may wish to consult your doctor.

What happened? What is being done?

- A new Hexavalent Chromium MCL of 10 ppb became effective October 1, 2024.
- Hexavalent chromium was detected at levels that exceed the MCL. However, a water system of our size is not considered in violation of the Hexavalent Chromium MCL until after [INSERT APPLICABLE TABLE 64432-B COMPLIANCE DATE].
- We [are working to complete / have completed] a Hexavalent Chromium Compliance Plan that [will be reviewed / is being reviewed / has been approved] by the State Water Resources Control Board.
- We are working with the State Water Resources Control Board to address this exceedance and comply with the MCL. Specifically, we are [Describe actions taken (may include pilot studies, environmental review, funding applications, etc.) and planned actions (may include treatment, source changes, etc.)] [Optional: discuss approved compliance plan if already approved by DDW].
- We anticipate resolving the problem by [estimated time frame (Compliance plan finalization date, if applicable)].

For more information, please contact [name of contact] at [phone number] or [mailing address].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this public notice in a public place or distributing copies by hand or mail.

If you are a school or school system, the owner or operator of residential rental property, or the owner or operator of a business property, then you are legally required to notify the following people of the information in this notice within ten days of your receipt of this notice:

- SCHOOLS: You must notify school employees, students, and parents (if the students are minors).
- RESIDENTIAL RENTAL PROPERTY OWNERS OR MANAGERS (including nursing homes and care facilities): You must notify tenants.
- BUSINESS PROPERTY OWNERS, MANAGERS, OR OPERATORS: You must notify employees of businesses located on the property.
- If you fail to notify the above people, you shall be civilly liable up to \$1,000 per day for each day that you fail to notify them. (Health & Saf. Code, §§ 116450, subd. (g); 116650, subd. (e).)

This notice is being sent to you by [system].

State Water System Number: [Insert water system number].

Date distributed: [Insert date the notice is distributed].

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Este informe contiene información muy importante sobre su agua potable.

Tradúzcalo o hable con alguien que lo entienda bien.

[System] Has Levels of Hexavalent Chromium Above the Drinking Water Standard

Our water system recently violated a drinking water standard. Although this is not an emergency, as our customers, you have a right to know what you should do, what happened, and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Water sample results received on [date] showed hexavalent chromium levels of [level and units]. This is above the standard, or maximum contaminant level (MCL), of 0.010 milligrams per liter (10 ppb).

What should I do?

- **You do not need to use an alternative water supply (e.g., bottled water).**
- This is not an emergency. If it had been, you would have been notified immediately. However, *some people who drink water containing hexavalent chromium in excess of the MCL over many years may have an increased risk of getting cancer.*
- If you have other health issues concerning the consumption of this water, you may wish to consult your doctor.

What happened? What is being done?

- A new Hexavalent Chromium MCL of 10 ppb became effective October 1, 2024.
- Hexavalent chromium was detected at levels that exceed the MCL.
- [If applicable] We have completed a Hexavalent Chromium Compliance Plan that [is being reviewed / has been approved] by the Division of Drinking Water.
- We are working with the Division of Drinking Water to address this violation and comply with the MCL. Specifically, we are [Describe actions taken (may include pilot studies, environmental review, funding applications, etc.) and planned actions (may include treatment, source changes, etc.)] [Optional: discuss approved compliance plan if already approved by DDW and if applicable].
- We anticipate resolving the problem by [estimated time frame].

For more information, please contact [name of contact] at [phone number] or [mailing address].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in

apartments, nursing homes, schools, and businesses). You can do this by posting this public notice in a public place or distributing copies by hand or mail.

Secondary Notification Requirements

Upon receipt of notification from a person operating a public water system, the following notification must be given within 10 days [Health and Safety Code sections 116450(g) and 116650(e)]:

- SCHOOLS: Must notify school employees, students, and parents (if the students are minors).
- RESIDENTIAL RENTAL PROPERTY OWNERS OR MANAGERS (including nursing homes and care facilities): Must notify tenants.
- BUSINESS PROPERTY OWNERS, MANAGERS, OR OPERATORS: Must notify employees of businesses located on the property.

This notice is being sent to you by [\[system\]](#).

State Water System Number: [\[Insert water system number\]](#).

Date distributed: [\[Insert date the notice is distributed\]](#).