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STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Adoption of Cleanup and
Abatement Order No. R6A-2011-0005A1,
WDID No. 6B369107001, by the Lahontan
Regional Water Quality Control Board for the
Cleanup and Abatement of Waste Discharges of
Total and Hexavalent Chromium to the
Groundwaters of the Mojave Hydraulic Unit.

**PETITION REQUESTING REVIEW OF
CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD ORDER NO.
R6A-2011-0005A1**

Daron Banks, Carmela Spasojevich and Roberta Chavira-Walker, ("Petitioners") hereby files the petition for review and request for a hearing by the State Water Resources Control Board("State Board") of that certain Cleanup and Abatement Order No. R6A-2011-0005A1 ("Order") issued October 11, 2011, by the Executive Officer of the California Regional Water Quality Control Board, Lahontan Region ("Regional Board"). This petition for review is filled pursuant to the Water Code §13320 and 23 CCR §§ 2050 et. seq. A copy of the Order is attached hereto as Exhibit A.

**1. NAME, ADDRESS, TELEPHONE AND EMAIL ADDRESS OF THE
PETITIONERS:**

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2. THE SPECIFIC ACTION OF THE REGIONAL BOARD WHICH THE STATE BOARD IS REQUESTED TO REVIEW AND A COPY OF ANY ORDER OR RESOLUTION OF THE REGIONAL BOARD WHICH IS REFERRED TO IN THE PETITION:

Lahontan Regional Water Quality Control Board's failure to act and enforce Cleanup and Abatement Order No. R6A-2011-0005A1. A copy of the Order is attached hereto as Exhibit A.

Lahontan Regional Water Quality Control Board's counsel has cited State Water Resources Control Board Order WQ 2005-0007 as her reason for failing to act. A copy of the Order is attached hereto as Exhibit B.

3. THE DATE ON WHICH THE REGIONAL BOARD ACTED OR REFUSED TO ACT OR ON WHICH THE REGIONAL BOARD WAS REQUESTED TO ACT:

July 18, 2014, correspondence from Patty Z. Kouyoumdjian, Executive Officer to Petitioners. A copy of the correspondence is attached hereto as Exhibit C.

4. A FULL AND COMPLETE STATEMENT OF REASONS THE ACTION OR FAILURE TO ACT WAS INAPPROPRIATE OR IMPROPER:

The Lahontan Regional Water Quality Control Board's failure to enforce Cleanup and Abatement Order No. R6A-2011-0005A1 is a violation of Water Code section 13304.

Water Code section 13304 was amended in 2004 to clarify the authority of regional water quality control boards to require alternative water supplies pursuant to a cleanup. The statute provides that a regional water board may require a provision of "uninterrupted replacement water service, which may include wellhead treatment, to each affected public water supplier or private well owner." Replacement water provided pursuant to subdivision (a) shall meet all federal, state, and local drinking water standards, and shall have comparable quality to that pumped by the public water system or private well owner prior to the discharge of waste.

The initial question for the State Water Resources Control Board to consider is what is included or excluded when defining all federal, state, and local drinking water standards?

Petitioners believe Cleanup and Abatement Order No. R6A-2011-0005A1, ordered by then Executive Officer Harold J. Singer, was clear and appropriate. Mr. Singer's implementation of the Olin Order (p.8) "The State Water Board recognized that although the PHG is not a legally enforceable standard, it is appropriate to use the public health goal as the applicable level for determining wells requiring replacement drinking water."

There are a multitude of standards applied to regulated and unregulated drinking water including various levels of required actions to be taken by as many various types of entities for exceeding said standards. On the federal level there are myriad of standard categories found in both the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA), all with different definitions and enforcement authorities. California has equivalent law as well many more progressive regulations which are intended to be increasingly more protective of human health; and locally, cities like Glendale, California have passed local standards, an example would be for Hexavalent Chromium at 5 µg/L.

To keep drinking water safe, the California Legislature passed the Calderon-Sher Safe Drinking Water Act of 1996. This law required the, then Department of Health Services (DHS) – now Division of Safe Drinking Water (DSDW), to regularly test drinking water supplies and set standards for contaminants. The Act also required Office of Environmental Health Hazard Assessment (OEHHA) to develop Public Health Goals (PHG) for contaminants in California's publicly supplied drinking water. The process for establishing a PHG for a chemical that is not expected to cause any contaminant in drinking water is very rigorous.

OEHHA scientists first compile all relevant scientific information available, which includes studies of the chemical's effect on laboratory animals and studies of humans who have been exposed to the chemical. The scientists use data from these studies to perform a health risk assessment, in which they determine the levels of the contaminant in drinking water that could be associated with various adverse health effects. Even if a PHG is not immediately achievable, it still represents an important long-term goal for California drinking water. The PHG helps give researchers an incentive to develop new or improved cost-effective water-treatment technologies that can feasibly reduce contaminants to PHG levels. The PHG for Hexavalent Chromium took over ten years to develop, a protracted violation of state law.

In State Water Resources Control Board Order WQ 2005-0007, the responsible party contended that the Central Coast Water Board abused its discretion by requiring continued water replacement service for wells with perchlorate detections based upon a 4 µg/L trigger level rather than the final PHG of 6 µg/L adopted by OEHHA. The State Water Resources Control Board correctly opined, "This approach ignores the expertise of OEHHA and, in the case of contaminants for which Maximum Contaminant Levels (MCL) have been developed, DHS. By contrast, cleanup levels for groundwater are a separate issue and are more appropriately within the expertise and professional purview of the water boards.

Based upon this contention, the State Water Resources Control Board did not find an abuse of discretion in the Central Coast Water Board's determinations. However, they did

find that OEHHA is the agency charged with public health risk assessments of the nature presented here. The Water Boards should defer to OEHHA and DHS in determining the appropriate level of contamination requiring replacement drinking water service requirements.

The Central Coast Water Board argued on its behalf that State Board Resolution 92-49 generally authorizes regional boards to require cleanup to background levels, which it believed supports requiring a more stringent water replacement level than is set forth in the PHG.

The State Water Resources Control Board's conclusion states that the Regional Water Board inappropriately failed to accord the deference due to OEHHA in determinations involving safe drinking water contaminant levels. The Regional Water Board has not shown why the OEHHA PHG is insufficiently protective in this case.

Nowhere in the State Water Resources Control Board conclusion does it state a PHG standard is later trumped by an MCL standard. The MCL standard process is a completely different process. The State Water Resources Control Board and Regional Boards have a more direct responsibility to protect Human Health which is more in line with a PHG standard. A publically regulated drinking water system MCL standard is an economic, technical, political process which runs counter the PHG process. Drinking water MCL enforcement is metered out to regulated utilities based upon politically negotiated schedules and utility population served often taking many more years to protect public health.

MCLs are regulatory standards for regulated drinking water utilities. The State Water Resources Control Board and Regional Boards do not regulate Drinking Water Utilities. According to state law MCLs should be set as close to the PHG as is technically and economically feasible to protect public health to protect a regulated public utility from unrealistically achievable standards at prohibitive cost. MCLs are not standards set to protect illegal waste discharge polluters like PG&E.

The second question for the State Water Resources Control Board to consider is the requirement; "and" shall have comparable quality to that pumped by the public water system or private well owner prior to the discharge of waste, from Water Code section 13304.

Do the State Water Resources Control Board and Regional Boards have the authority to require alternative water supplies pursuant to a cleanup for private well owners prior to the discharge of waste?

5. THE MANNER IN WHICH THE PETITIONER IS AGGRIEVED:

The Lahontan Regional Water Quality Control Board's failure to enforce Cleanup and Abatement Order No. R6A-2011-0005A1 is a violation of Water Code section 13304 and will, according to the scientifically based evidence presented by the scientist at OEHHA, cause human exposure to Hexavalent Chromium levels magnitudes greater than those published in the Human Health Risk Assessment studies. These chemicals have been found to have been illegal waste discharges.

6. THE SPECIFIC ACTION BY THE STATE OR REGIONAL BOARD WHICH PETITIONER REQUESTS:

Enforcement of the Lahontan Regional Water Quality Control Board's failure to enforce Cleanup and Abatement Order No. R6A-2011-0005A1 in accordance with Water Code section 13304.

7. A STATEMENT OF POINTS AND AUTHORITIES IN SUPPORT OF LEGAL ISSUES RAISED IN THE PETITION:

§ 13320. Review by state board of regional board action:

Within 30 days of any action or failure to act by a regional board under subdivision (c) of Section 13225, Article 4 (commencing with Section 13260) of Chapter 4, Chapter 5 (commencing with Section 13300), Chapter 5.5 (commencing with Section 13370), Chapter 5.9 (commencing with Section 13399.25), or Chapter 7 (commencing with Section 13500), any aggrieved person may petition the state board to review that action or failure to act. In case of a failure to act, the 30-day period shall commence upon the refusal of the regional board to act, or 60 days after request has been made to the regional board to act. The state board may, on its own motion, at any time, review the regional board's action or failure to act and also any failure to act under Article 3 (commencing with Section 13240) of Chapter 4.

8. THE STATEMENT THAT THE PETITION HAS BEEN SENT TO THE APPROPRIATE REGIONAL BOARD:

A copy of this petition has been transmitted to the Executive Office of the Regional Board on August XX, 2014.

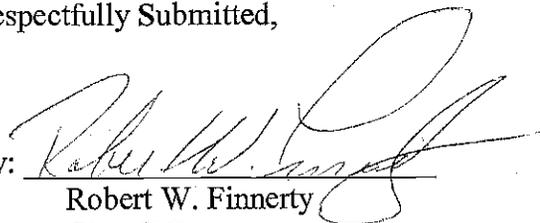
9. A STATEMENT THAT THE SUBSTANTIVE ISSUES OR OBJECTIONS RAISED IN THE PETITION WERE RAISED BEFORE THE REGIONAL BOARD:

Petitioner, Daron Banks, an active member of the Regional Board's Citizens Advisory Group, has requested clarification and enforcement of the Cleanup and Abatement Order and the issues have been discussed without clarification. Clearly, Petitioners' letter from mid-June 2014 established sufficient record of said request for continued enforcement of the Cleanup and Abatement Order requiring Replacement Water Service.

Respectfully Submitted,

Date: Aug 7, 2014

By:



Robert W. Finnerty
Girardi Keese
Attorney for Petitioners

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

AMENDED CLEANUP AND ABATEMENT ORDER NO. R6V-2011-0005A1

WDID NO. 6B369107001

**REQUIRING PACIFIC GAS AND ELECTRIC COMPANY
TO CLEAN UP AND ABATE WASTE DISCHARGES OF
TOTAL AND HEXAVALENT CHROMIUM TO THE
GROUNDWATERS OF THE MOJAVE HYDROLOGIC UNIT**

San Bernardino County

The California Regional Water Quality Control Board, Lahontan Region (Water Board), finds:

Discharger

1. The Pacific Gas and Electric Company (PG&E) owns and operates the Hinkley Compressor Station (hereafter the "Facility") located southeast of the community of Hinkley in San Bernardino County. For the purposes of this Order, PG&E is referred to as the "Discharger."

Site History and Hydrogeology

2. The Facility is located at 35863 Fairview Road (APN 048S-112-52), one-half mile east of the community of Hinkley in San Bernardino County, in the Harper Valley Subarea of the Mojave Hydrologic Unit. The Facility began operating in 1952 and discharged untreated cooling tower water containing hexavalent chromium to unlined ponds until 1964. Wastewater then percolated through soil to the water table, approximately 80 feet below, creating a chromium plume. In general, the chromium plume extends north from the compressor station to at least Sonoma Road and from east of Summerset Road to west of Mountain View Road. This release of hexavalent chromium is the only known source of anthropogenic or human introduced chromium in the localized area.
3. The hydrogeology in the southern 75 percent and in the northeastern portion of the project area consists of an upper, unconfined aquifer and a lower, confined aquifer separated by a lacustrine clay that forms a regional aquitard. The hydrogeology in the northwestern portion of the project area consists of just the upper, unconfined aquifer, as the lower aquifer and clay aquitard pinch out (terminate against the upward sloping bedrock). In general, groundwater flow is primarily to the north-northwest towards the Harper Dry Lake; with an average gradient of 0.004 feet per foot. The Mojave River contributes more than 80 percent of the natural groundwater recharge to the Hinkley Valley.
4. The soils underlying the Facility are comprised of interbedded sands, gravels, silts, and clays. The depth to bedrock ranges from about 300 feet below ground surface in the southern project area to cropping out (bedrock comes to the ground surface) in the northern portion of the project area. The closest surface water is an unnamed

ephemeral stream, located about 4,000 feet northwest of the plume's northern boundary. In addition, the Mojave River is located less than one mile to the southeast of the Facility.

Chromium Plume

5. The groundwater in the upper aquifer below the Facility contains hexavalent chromium that was discharged from the PG&E compressor station and naturally occurring constituents. The plume is considered to be that portion of the aquifer affected by the discharge. Chromium concentrations in groundwater are highest at the compressor station and become less concentrated towards the north. According to the *Second Quarter 2011 Groundwater Monitoring Report*, the highest level of hexavalent chromium detected in groundwater was 7,800 micrograms per liter ($\mu\text{g/L}$) at monitoring well SA-MW-05D. A hazardous waste is defined as any waste that contains hexavalent chromium at concentrations that exceed 5,000 $\mu\text{g/L}$. The plume contains total chromium greater than the state Maximum Contaminant Levels (MCL), or drinking water standard of 50 $\mu\text{g/L}$ in the area from the Facility to Santa Fe Avenue, almost two miles north. Concentrations of hexavalent chromium are present above background levels for at least the next mile north. The chromium plume resides primarily in floodplain sediments originating from the Mojave River and alluvial sediments eroded from local mountains.
6. Hexavalent and total chromium occur naturally in groundwater at variable concentrations, according to the February 27, 2007, document, *Groundwater Background Chromium Study Report, Hinkley Compressor Station*. The mean (or average) background concentrations detected in groundwater are 1.19 $\mu\text{g/L}$ for hexavalent chromium and 1.52 $\mu\text{g/L}$ for total chromium. The work plan for the Study recommended that maximum background concentrations should be expressed as the 95% upper tolerance limits. The 95% upper tolerance limit is the value that is estimated to include 95 percent of the possible detections of natural occurring chromium with a 95 percent confidence level. The 95% upper tolerance limits are 3.09 $\mu\text{g/L}$ for hexavalent chromium and 3.23 $\mu\text{g/L}$ for total chromium.
7. On July 28, 2010, Water Board staff received information from PG&E that hexavalent and total chromium concentrations exceeded 3.1 $\mu\text{g/L}$ at three residential wells and four shallow monitoring wells along Summerset Road, and to the east of Summerset Road, north of Santa Fe Avenue. Three of these wells contained hexavalent chromium ranging from 4 $\mu\text{g/L}$ to 5.5 $\mu\text{g/L}$.
8. Testing results from the Second Quarter 2011 provided an approximate concentration contour, or outline of hexavalent chromium levels above 3.1 $\mu\text{g/L}$ and total chromium above 3.2 $\mu\text{g/L}$ based on chromium results from the upper aquifer groundwater monitoring wells and short-screen extraction wells. These data indicate that the chromium plume had migrated to locations where the hexavalent chromium levels had previously been detected at levels below 3.1 $\mu\text{g/L}$.

Regulatory History

9. On August 6, 2008, the Water Board issued Cleanup and Abatement Order (CAO) No. R6V-2008-0002 to the Discharger to clean up and abate the effects of waste discharges and threatened discharges containing hexavalent chromium and total chromium to waters of the State. The CAO, in part, required the Discharger to prevent the chromium plume from migrating to locations where hexavalent chromium is below the background levels.
10. At the November 12-13, 2008 Water Board meeting, the Water Board considered the 2007 *Background Chromium Study*, along with comments and recommendations by interested persons and staff.
11. Following the meeting, the Water Board Executive Officer issued Amended CAO No. R6V-2008-0002A1 (2008 Amended CAO) to establish background concentrations for chromium in Hinkley Valley groundwater as follows:
 - Maximum background hexavalent chromium = 3.1 µg/L
 - Maximum background total chromium = 3.2 µg/L
 - Average background hexavalent chromium = 1.2 µg/L
 - Average background total chromium = 1.5 µg/L
12. The 2007 *Background Chromium Study* results described in Finding No. 6 have not been subject to an independent third-party review to comment on its accuracy. The study is currently undergoing peer-review through Cal/EPA's scientific peer review program. These background concentrations were set for the purposes of evaluating and eventually setting clean up requirements.
13. On January 7, 2011, the Water Board issued Cleanup and Abatement Order R6V-2011-0005 to PG&E in response to detections of hexavalent chromium above background levels in Hinkley domestic wells. This order required that PG&E provide interim uninterrupted replacement water, such as bottled water, to residences and businesses whose private or community wells were found to contain hexavalent chromium at concentrations exceeding 3.1 µg/L, or total chromium had been detected at 3.2 µg/L. This decision was based on 1) the 2010 testing results that showed concentrations of hexavalent chromium exceeded background levels, and 2) the background levels of chromium memorialized in the 2008 Amended Cleanup and Abatement Order (R6V-2008-0002A1).

Regulation of Hexavalent Chromium

14. On July 27, 2011, the California Office of Environmental Health Hazard Assessment (OEHHA) established a Public Health Goal (PHG) for hexavalent chromium at 0.02 µg/L. This is the first PHG specific to hexavalent chromium. PHGs are based on a risk assessment that identifies a level of exposure at which no known or anticipated adverse effects on health will occur, with an adequate margin of safety (Cal. Health & Safety Code §116365). The PHG is used by the California Department of Public Health (CDPH) to develop the MCL (California Health & Safety Code §116365(a)).

15. Currently, the MCL for total chromium in drinking water is 50 µg/L , which includes all forms of chromium. This MCL was established in 1977. There is no MCL specific to hexavalent chromium.

Authority – Legal Requirements

16. California Water Code section 13304, subdivision (a) states in part:

Any person . . . who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged to waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the regional board clean up or abate the effects of the waste...

...in the case of threatened pollution or nuisance, take other necessary remedial action, including but not limited to, overseeing cleanup and abatement efforts. A cleanup and abatement order issued by the state board or a regional board may require the provision of, or payment for, uninterrupted replacement water service, which may include wellhead treatment, to each owner.

17. Pursuant to Water Code section 13304, subdivision (f):

Replacement water provided pursuant to subdivision (a) shall meet all applicable federal, state, and local drinking water standards, and shall have comparable quality to that pumped by the public water system or private well owner prior to the discharge of waste.

18. Water Code section 13307.6, subdivisions (a) (4) and (7) state in part:

(a) In addition to the requirements of Section 13307.5, the regional board may develop and use any of the following procedures ...if the regional board determines there is expressed community interest in the site...

(4) Formation and facilitation of an advisory group.

(7) Preparation of a public participation plan.

19. Water Code section 13267, subdivision (b) states in part:

In conducting an investigation [of the quality of any waters of the state within its region] the regional board may require any person who has discharged waste within its region...[to] furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires.

This Order requires the submittal of workplans, monitoring data, and reports, mainly to document that the replacement water service meets all regulatory requirements. Workplans and technical reports have been required by previous Water Board Orders and are necessary to develop an accurate assessment of the plume of anthropogenic hexavalent chromium in the Hinkley upper aquifer.

20. Section 13304 of the Water Code allows a regional board to hold persons accountable who "cause or permit" any waste discharged in a water of the State. The burden to remediate the impacts of waste falls on the party who is responsible for the discharge, even if their actions alone are not the only source of pollution (*City of Modesto Redevelopment Agency v. Superior Court*, 19 Cal.App.4th 28 (2004)). Likewise, in cases of hazardous waste discharges, the burden to remediate impacts of waste falls on the discharger even if they are not the sole cause of the costs (*Browning-Ferris Industries of Illinois, Inc. v. Ter Maat*, 195 F.3d 953, 49 Env't. Rep. Cas. (BNA) 1449, 30 Env't. L. Rep. 20135 (7th Cir. 1999)). The Discharger is currently the only known source of anthropogenic chromium in the Hinkley upper aquifer. It is the Discharger's responsibility to remediate the effects of its discharge or to demonstrate that it is not responsible for the contamination or only a legally divisible portion of the contamination.

Replacement Water Service

21. The State Water Resources Control Board (State Water Board) issued precedential Order WQ 2005-0007, In the Matter of the Petition of Olin Corporation and Standard Fusee, Incorporated (referred to as the "Olin Order"). The Olin Order was issued in response to a petition brought by the Olin Corporation and Standard Fusee to provide replacement water service to owners of private domestic wells affected by the discharge of potassium perchlorate from a facility. Because there was no enforceable state or federal standard for perchlorate in drinking water for use in determining when a well is affected such that the user should be entitled to replacement water, the regional board had relied on the notification level for perchlorate of 4 µg/L. After the issuance of a final public health goal issued by the OEHHA of 6 µg/L several years later, The Olin Corporation sought approval to raise the level of contamination requiring replacement water service to 6 µg/L to match the PHG, and the regional board denied the request. The State Water Board determined that "*where no federal, state or local standard yet exists, it is appropriate to use goals developed by agencies with expertise for public health determinations in deciding whether replacement water service is necessary,*" and concluded that the regional board should defer to OEHHA and DHS (now CDPH) in determining the appropriate level of contamination requiring replacement drinking water service. (Olin Order at p. 6-7.) The State Water Board recognized that although the PHG is not a legally enforceable standard, it is appropriate to use the public health goal as the applicable level for determining wells requiring replacement drinking water. (Olin Order at p. 8).
22. The situation facing the Water Board is analogous to that described in the Olin Order in that a drinking water standard specific to hexavalent chromium does not exist but an established PHG exists. Therefore, consistent with the State Water Board's

direction in the Olin Order, it is appropriate for the Water Board to rely on the PHG of 0.02 µg/L for hexavalent chromium as the appropriate level for determining wells requiring replacement water service. This is also consistent with a comment from the CDPH advising the Water Board not to rely on a *draft* PHG. This comment was received during the comment period on this draft Order at which time the OEHHA had not yet established the final PHG for hexavalent chromium. However, since the end of the comment period, the OEHHA has established a final PHG for hexavalent chromium. Once CDPH establishes an MCL for hexavalent chromium, the Water Board may amend this Order to use the MCL as the appropriate level for determining wells requiring replacement water service.

- 23.** In setting the PHG, OEHHA evaluated health risks from hexavalent chromium in domestic water based on a variety of typical household uses of tap water, including drinking, preparing foods and beverages, bathing or showering, flushing toilets, and other household uses resulting in potential dermal and inhalation exposures. Toxicity studies from routes of exposure were categorized according to ingestion, inhalation and dermal contact. Inhalation risks were determined based on studies of the impacts of inhaling hexavalent chromium-contaminated water vaporized in the shower ("shower studies") and were found to be very low.

Many homes in the Hinkley area rely on swamp coolers to provide cooling. These swamp coolers typically use domestic water. The exposure risk associated with the use of water containing hexavalent chromium in swamp coolers was not evaluated as part of the development of the PHG for hexavalent chromium. As such, the Water Board needed independent input on this concern. In a memorandum dated August 17, 2011, the OEHHA advised the Water Board that swamp coolers do not pose any additional exposure risk due to the fact that chromium in water is not converted to the vapor phase in these units.

- 24.** As defined in the Olin Order, wells are "affected" by a discharge of waste when they do not meet federal, state, or local drinking water standards; or where no standards exist, when the discharge does not meet goals developed by agencies with expertise for public health determinations. However, where the naturally occurring background levels of the constituent may exceed the PHG, the Water Board must also consider naturally occurring background levels when considering whether a well is affected. The Water Board can only require replacement water service if the presence and level of the constituent is due to the discharge of waste.

- 25.** The Water Board has established maximum and average background levels of total and hexavalent chromium for the Hinkley area (see Finding Nos. 6, 10, 11 and 12). These levels were established to provide a basis for evaluating cleanup alternatives and were set at levels which had a high probability that any values in excess of these levels were likely caused by the discharge (see Finding No. 6). This criterion, while instructive, is not necessarily appropriate for establishing levels above which replacement water service should be provided. Because these background levels are 50 to 150 times greater than the PHG for hexavalent chromium, it is more appropriate to provide criteria for determining when replacement water service is necessary that is more conservative and protective of public health. Because the 3.1

µg/L hexavalent chromium and 3.2 µg/L total chromium values represent *maximum* background levels, hexavalent chromium levels in domestic wells that are below the maximum background levels may have been caused by PG&E's discharge. It is therefore necessary to establish a process to evaluate and determine if hexavalent chromium levels in domestic wells above the PHG, but below the established maximum background level are due to the discharge.

26. Background levels of hexavalent chromium in the Hinkley are variable given the geochemical processes that contribute to the formation of hexavalent chromium in groundwater. Additionally, hexavalent chromium concentrations that are considered background levels in any one well may vary over time. Therefore, because it will be necessary to evaluate each well separately, it is not practicable in this Order to set the hexavalent chromium background values for each domestic well that has been or could be affected by the plume. Rather, to determine whether hexavalent chromium levels in domestic or community wells are due to naturally occurring background or PG&E's discharge, PG&E must evaluate the hexavalent chromium values in each domestic well in the affected area (see Finding No. 30) separately, considering a number of factors, including, but not limited to: changes in hexavalent chromium levels over time, location of well in relationship to the plume and groundwater flow direction, isotopic analysis of hexavalent chromium, and statistical analysis described in Title 27, section 20415(e)(8).
27. The release from the Discharger's facility is the only known source of anthropogenic chromium in the groundwater of the upper Hinkley aquifer. All anthropogenic chromium in this area is considered to be the result of the Discharger's activities.
28. The Discharger is required to abate the effects of its discharge in accordance with Water Code 13304. This includes providing uninterrupted replacement water service to all impacted domestic or community wells. Replacement water service shall have comparable quality to the water pumped prior to the well being affected by the discharge of the waste. There are various methods to provide this replacement water service. Bottled water is not guaranteed to contain hexavalent chromium at levels needed to comply with the Water Code requirement that the replacement water service be comparable to that pumped by the well owner prior to it being affected by the discharge. Similarly, certified treatment systems are also not guaranteed to reduce hexavalent chromium to levels needed to meet the Water Code requirement cited above. Therefore, this Order requires the Discharger to demonstrate that bottled water or the water provided by treatment systems designed to provide replacement water service are of a quality comparable to that which was pumped prior to being affected by the discharge.
29. **Impacted wells** are defined as domestic or community wells in the affected area (see next finding) containing chromium in concentrations (measured at any time) that are above 3.1 µg/L hexavalent chromium or 3.2 µg/L total chromium. Additionally, impacted wells also include those domestic or community wells in the affected area containing hexavalent chromium in concentrations greater than 0.02 µg/L when the analysis performed by the Discharger, in compliance with the approved methods as specified in Paragraph 3.a. of this Order, determines that the

hexavalent chromium is more likely than not, partially or completely, due to the discharge of waste by the Discharger. The Water Board believes this should be a well-by-well comparison and does not intend for any individual hexavalent chromium values to be compared to the average background level.

- 30.** The **affected area** is defined as all domestic wells located laterally within one mile downgradient or cross-gradient from the 3.1 µg/L hexavalent chromium or 3.2 µg/L total chromium plume boundaries based upon monitoring well data drawn in the most current quarterly site-wide groundwater monitoring report submitted by the Discharger. The affected area may change based on new data collected and evaluated each quarter.

Other Findings

- 31.** The Water Board recognizes the significant community interest in this site. It further acknowledges the recent formation of a Community Advisory Group and the challenges that this Group and members of the community may have in evaluating the technical aspects of this site. The Hinkley community is a rural community that includes many different income levels and ethnicities. Therefore, it is important that environmental justice is promoted by ensuring that the cleanup and abatement of the contamination of this area promotes equity and affords fair treatment, accessibility and protection for all members of the community, regardless of their race, age, culture, income or geographic location. In order to effectively participate in these matters, the Water Board believes it is essential that the community have access to independent technical consultants. The cost of this effort should be borne by the Discharger pursuant to Water Code sections 13304 and 13307.6.
- 32.** The Water Board acknowledges that providing bottled water to residences or businesses currently served by affected wells would, on its face, satisfy the requirement for uninterrupted replacement water service, specifically since the beneficial use affected is water for consumptive purpose and bottled water could meet this need. However, environmental justice requires that bottled water not be the permanent solution for this community. In more urban communities, long-term replacement water service would likely consist of replacing the source water, thereby allowing community members total and unrestricted use of all household taps for consumptive use. Relying on long-term use of bottled water for all consumptive uses for residences that previously had the ability to consume water from any household tap interferes with the free use of their property and deprives those persons of prior quality of life expectations. In those situations where the Discharger's actions require replacement water service, it is appropriate to require that not only the quality, but also the long-term replacement water service, be comparable to that which it was prior to the adverse effect to the water supply, even if bottled water must be the source of replacement water service on an interim basis. The fact that replacement water service will likely be in place for many years increases the necessity that there be a requirement in this Order for long-term replacement water service that enables the residents of the community to use their household taps.

33. Pursuant to Water Code section 13304, the Water Board is entitled to, and may seek, reimbursement for all reasonable costs actually incurred by the Water Board to investigate unauthorized discharges of wastes or to oversee cleanup of such waste, abatement of the effect thereof, or other remedial action pursuant to this Order.
34. This Order requires workplans, monitoring, and reports pursuant to Water Code section 13267, subdivision (b). Workplans and technical reports required are essential to design a long-term water replacement plan and implementation schedule to verify compliance with this Order. Monitoring is required to verify that the interim and long-term replacement water service option(s) implemented provides water that meets the quality requirements of the Water Code and this Order.
35. The issuance of this Order is an enforcement action taken by a regulatory agency and is exempt from the provision of the California Environmental Quality Act (CEQA) (Public Resources Code section 21000 et seq.), pursuant to California Code of Regulations (CCR), title 14, section 15321, subdivision (a)(2). In addition, CEQA includes a "common sense exemption" in CCR title 14, section 15061, subdivision (b)(3), which states that where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.
36. In this case, the Discharger may comply with the requirement to provide replacement water service by providing interim bottled water service and developing a permanent replacement water supply by installing wellhead treatment, establishing deeper domestic wells, or installing above-ground tanks (to store hauled water). There is no possibility that these activities would have a significant effect on the environment. Should a community water system be selected as a means of providing long-term replacement water service, the Water Board, if it is the lead agency under CEQA, will address CEQA requirements.

IT IS HEREBY ORDERED, pursuant to Water Code sections 13267 and 13304, the Discharger must:

1. **Interim replacement water supply**
 - a. **Within five (5) days from the date of this issuance of this Order, and within five (5) days of the submittal of each quarterly report delineating a revised affected area,** supply interim uninterrupted replacement water service (i.e., bottled water or equivalent), to all those served by domestic and community wells in the affected area where those wells are determined to be "impacted" as defined in Finding No. 30 of this Order and as determined pursuant to Paragraphs 3.a. and 3.b. below. This requirement is suspended once the Discharger provides a permanent replacement water supply or the well meets the conditions specified in Paragraphs 3c or 3.d. below.
 - b. **Within 14 days from the date of issuance of this Order, and within 14 days of the submittal of each quarterly report delineating a revised affected area** provide a report to the Water Board listing all properties that

have been provided interim uninterrupted water service. The report must include addresses and well numbers. The report must list the bottled water service being used and the water volume being provided. The report must include documentation to show that interim water supply meets state primary and secondary drinking water standards and hexavalent chromium levels of less than $0.02 \mu\text{g/L}$ ¹ or the final MCL, once that standard is adopted by CDPH. The Discharger may propose a higher standard if it can demonstrate that the hexavalent chromium levels in the affected well prior to being impacted by the discharge was higher than $0.02 \mu\text{g/L}$. If interim water supply is denied by a property owner or occupant, provide proof or evidence of such refusal.

- c. **Within 30 days of the issuance of this Order**, provide a report to the Water Board that is acceptable to the Executive Officer describing how the Discharger intends to provide interim replacement water that achieves the quality limits described in 1.b. above. This report must address the following: source(s) of the replacement water, available information on the variability of the quality of the supply water, supply chain management considerations, proposed testing frequency based on any variability information and supply chain management plans, and a contingency plan. Additionally, the Discharger must provide a report to the Water Board at least 15 days prior to changing any aspect of the method for providing interim replacement water service. However, in the case where the Discharger must change its method due to unplanned or unanticipated quality issues or availability, the Discharger may change its method without first notifying the Water Board if needed to maintain compliance with this Order. In this situation, the Discharger must submit a report to the Water Board within five (5) days of making the change that describes the changes and addresses each of the topics required in the original report.
- d. **Quarterly** (as part of its quarterly reports), provide monitoring information on the quality of the replacement water service consistent with the monitoring plan submitted in 1c above or as modified by the Water Board.

2. Permanent replacement water supply

- a. **By no later than 30 days from the date of this signed Order**, submit a work plan to prepare the feasibility study required in Paragraph 2.c. below. The Workplan must include a conceptual outline of the analysis of each alternative and a project management schedule for completing each major task in the feasibility study.
- b. **By not later than 110 days from the date of this signed Order**, submit a status report on the progress to prepare the feasibility study which should include a

¹ For purposes of this standard, drinking water must test below the reporting limit of $0.06 \mu\text{g/L}$ due to the limitation of laboratory analysis of low levels of chromium.

summary of results through the first three months and any indications that alternatives may or may not be viable.

- c. **By no later than 180 days from the date of this signed Order**, submit to the Water Board a feasibility study on method(s) to provide permanent replacement water supply for all indoor domestic uses for all impacted wells in the affected area. Permanent replacement water must meet all California primary and secondary drinking water standards and hexavalent chromium levels of less than $0.02 \mu\text{g}/\text{L}^2$ or the final MCL, once that standard is adopted by CDPH. The Discharger may propose a higher standard if it can demonstrate that the hexavalent chromium levels in the affected well prior to being impacted by the discharge was higher than $0.02 \mu\text{g}/\text{L}$. The feasibility study must include the following:
- 1) evaluate various methods to provide replacement water supply including, but not limited to: replacing individual wells with deeper individual wells, storage tanks and hauling water, providing point of entry treatment systems (evaluate at least three systems that use at least two different technologies), and an area wide or community water system by either consolidation with an existing public or private water purveyor, forming a new system (either public or private) or developing a system for two or more residences that may not involve a regulated water purveyor.
 - 2) Discussion of the feasibility and timing to implement each method including the need and timing for permits, approvals and environmental analysis.
 - 3) Results of pilot studies of each treatment method that is not certified to reduce hexavalent chromium to levels needed to achieve compliance with this Order.
 - 4) An evaluation of the quantity of water (gallons per minute) that can be provided by each method and a comparison with typical household supply needs.
 - 5) An evaluation of the quality of water that can be provided by each method in comparison with California primary and secondary drinking water standards and with levels of hexavalent chromium of less than $0.02 \mu\text{g}/\text{L}^3$.
 - 6) An analysis of by-products or wastes that may be generated by each method and disposal options and costs.
 - 7) An operations, maintenance and, if appropriate, replacement plan.
 - 8) A water quality monitoring and reporting plan to verify quality and performance of each method.
 - 9) A complete cost analysis including construction, operations, maintenance and replacement.
 - 10) A contingency plan to ensure uninterrupted replacement water service.
- d. The Discharger must present this feasibility study to the community and determine the acceptability of each method on a community-wide and specifically

² For purposes of this standard, drinking water must test below the reporting limit of $0.06 \mu\text{g}/\text{L}$ due to the limitation of laboratory analysis of low levels of chromium.

³ For purposes of this standard, drinking water must test below the reporting limit of $0.06 \mu\text{g}/\text{L}$ due to the limitation of laboratory analysis of low levels of chromium.

from those currently being provided interim replacement water service and, if different, the owners of the impacted wells.

- e. **Within 90 days of acceptance of the plan by the Water Board**, the Discharger must implement permanent replacement water service for all impacted wells. This schedule may be extended by the Water Board if it accepts a plan that requires more time to implement as demonstrated by the feasibility study.
- f. **Within 120 days from the date the Water Board accepts the plan to provide permanent replacement water service**, provide a report to the Water Board listing all properties that have been provided permanent uninterrupted replacement water service. The report must include addresses and well numbers. State the method used to provide permanent uninterrupted replacement water service and provide evidence to prove that provided water meets state primary and secondary drinking water standards and contains hexavalent chromium in concentrations no greater than 0.02 µg/L⁴ or the final MCL, once that standard is adopted by CDPH. The Discharger may propose a higher standard if it can demonstrate that the hexavalent chromium levels in the affected well prior to being impacted by the discharge was higher than 0.02 µg/L. If storage tanks or transportation vehicles are used to store or transport water, provide evidence of state or local government certification. If permanent replacement water supply is denied by a resident or business, provide proof or evidence of such refusal.
- g. **Quarterly** (as part of its quarterly reports), provide monitoring information on the quality of the replacement water service consistent with the monitoring plan submitted in Paragraph 2.c.8 above or as modified by the Water Board.

3. Determination of impacted wells

- a. **Within 45 days of issuance of this Order**, the Discharger shall propose a method or methods to perform an initial and quarterly evaluation of every domestic or community well in the affected area to determine if detectable levels of hexavalent chromium between the maximum background level and the PHG represent background conditions, or are more likely than not, partially or completely, caused by the discharge of waste by the Discharger. The proposed method or methods should take into consideration the factors listed in Finding No. 26 of this Order.
- b. **Within 10 days of acceptance** by the Water Board Executive Officer of the proposal in 3.a. above and as part of all quarterly submittals providing new groundwater and domestic well sampling results, the Discharger shall submit an evaluation of domestic and community wells in the affected area and the results of its determination of whether or not the well is impacted.

⁴ For purposes of this standard, drinking water must test below the reporting limit of 0.06 µg/L due to the limitation of laboratory analysis of low levels of chromium.

- c. The Discharger may remove a well that was determined to be impacted due to total chromium levels above 3.2 µg/L or hexavalent chromium levels above 3.1 µg/L from impacted status if analytical results from four (4) consecutive quarters are below the above levels and the well does not meet the criteria for being designated as impacted by the accepted methods in 3.a. above.
- d. The Discharger may remove a well that was determined to be impacted due to an evaluation using the accepted methods in 3.a. above from impacted status if the results of hexavalent chromium from four (4) consecutive quarters demonstrate that the well is no longer impacted based on the approved methods described in 3.a. above.
- e. The Discharger may also provide evidence that the concentration of hexavalent chromium that is above 3.1 µg/L in a domestic or community well within the affected area is not due to its discharge and therefore be relieved of the requirement to provide replacement water service.

4. Independent Consultants

- a. The Discharger must develop a process to fund an independent consultant(s) that can advise the community on matters subject to regulation by the Water Board. The independent consultant(s) selected by the community must not be involved in any aspect of this site (consulting for PG&E or involved in any litigation) and be acceptable to PG&E and the Water Board.
- b. **Within 60 days of issuance of this Order**, the Discharger must develop a formal agreement with the community to implement this requirement. The Community Advisory Committee is the only existing group that may currently be viewed as representing the community. This Committee, a subset of the Committee or a totally different group would be acceptable as representing the community. It is also acknowledged that there are likely many divergent views in the community and that one group may not fully represent the spectrum of these views. The Water Board will monitor the Discharger's progress to implement this requirement and will modify this schedule if it determines that additional time is needed to develop an agreement acceptable to the community and will eliminate this requirement if the community rejects the need for independent consultants.

Order No. R6V-2011-0005

This Order amends Orders 1 and 2 in CAO R6V-2011-0005 for providing replacement water supply and submitting reports to the Water Board. All other Orders in CAO R6V-2011-0005 remain in effect unless later modified by the Water Board, the Water Board's Executive Officer, or his/her designated representative.

Laboratory Analysis

All future analysis of water samples must utilize the most recent testing methods. Testing for Total Chromium analysis must be done using US EPA Methods SW 6010B or 6020A to a reporting limit of 1 ppb. Testing for Hexavalent Chromium must be conducted in accordance with a modified version of EPA Method SW 218.6 with a reporting limit of 0.06 ppb.

The EPA has recently determined that detection limits of 0.02 ppb for hexavalent chromium are possible using a modified version of Method SW 218.6. These modifications allow for improved low concentration measurement and are outlined in Dionex Corp. Application Update 144 "Determination of Hexavalent Chromium in Drinking Water by Ion Chromatography" found at www.dionex.com/en-us/webdocs/4242-AU144_V18.pdf. The EPA determined that these modifications allow laboratories to attain a detection limit as low as 0.02 µg/L and can support a reporting limit of 0.06 µg/L (ppb). Information about the modified version of Method SW 218.6 is available at: <http://water.epa.gov/drink/info/chromium/guidance.cfm>.

The laboratory used must be certified by the California Environmental Laboratory Accreditation Program (ELAP) for hexavalent chromium analysis in drinking water. A list of certified labs is maintained by ELAP and is available at: (<http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Chromium6.aspx>)

Liability for Oversight Costs Incurred by Water Board

The Discharger shall be liable, pursuant to Water Code section 13304, to the Water Board for all reasonable costs incurred by the Water Board to investigate unauthorized discharges of waste, or to oversee clean up of such waste, abatement of the effects thereof, or other remedial action, pursuant to this Order. The Discharger shall reimburse the Water Board for all reasonable costs associated with site investigation, oversight, and cleanup. Failure to pay any invoice for the Water Board's investigation and oversight costs within the time stated in the invoice (or within thirty days after the date of invoice, if the invoice does not set forth a due date) shall be considered a violation of this Order. If the Property is enrolled in a State Water Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program.

Certifications for All Plans and Reports

All technical and monitoring plans and reports required in conjunction with this Order are required pursuant to Water Code section 13267 and shall include a statement by the Discharger, or an authorized representative of the Discharger, certifying (under penalty of perjury in conformance with the laws of the State of California) that the workplan and/or report is true, complete, and accurate. Hydrogeologic reports and plans shall be prepared or directly supervised by, and signed and stamped by a Professional Geologist or Professional Civil Engineer registered in California.

No Limitation of Water Board Authority

This Order in no way limits the authority of this Water Board to institute additional enforcement actions or to require additional investigation and cleanup of the site consistent with the Water Code. This Order may be revised by the Executive Officer as additional information becomes available.

Enforcement Options for Noncompliance with the Order

Failure to comply with the terms or conditions of this Cleanup and Abatement Order may result in additional enforcement action, which may include the imposition of administrative civil liability pursuant to Water Code sections 13350 and 13268 or referral to the Attorney General of the State of California for such legal action as he or she may deem appropriate.

Right to Petition: Any person aggrieved by this action of the Lahontan Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must *receive* the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, of state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

Ordered by: Harold J. Singer Dated: Oct 11, 2011

HAROLD J. SINGER
EXECUTIVE OFFICER

Exhibit B

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
ORDER WQ 2005 - 0007

In the Matter of the Petitions of

OLIN CORPORATION AND STANDARD FUSEE, INCORPORATED

For Review of Cleanup And Abatement Order No. R3-2004-0101

Issued by the

California Regional Water Quality Control Board,
Central Coast Region

SWRCB/OCC FILES A-1654 and A-1654(a)

BY THE BOARD:

On July 6, 2004, the Executive Officer of the Central Coast Regional Water Quality Control Board (Central Coast Water Board) issued Cleanup and Abatement Order No. R3-2004-0101 (Cleanup Order)¹, which required Olin Corporation (Olin) and Standard Fusee, Incorporated (Standard Fusee), to provide replacement water service to owners of private domestic wells affected by discharges of potassium perchlorate (perchlorate) from the facility at 425 Tennant Avenue, Morgan Hill, in Santa Clara County (hereinafter referred to as "Facility"). Olin and Standard Fusee (Petitioners) filed petitions asking the State Water Resources Control Board (State Water Board) to review the requirement to provide replacement water service for wells with perchlorate detections below the current California public health goal and notification

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¹ The Cleanup Order was incorrectly numbered R4-2004-0101.

level for drinking water.² In this Order the State Water Board addresses the significant issues raised in the petition and revises the Cleanup Order.³ The remaining issues are dismissed.⁴

I BACKGROUND

Olin manufactured signal flares at the Facility from approximately 1956 to 1988. From 1988 to 1995, Standard Fusee leased the Facility and also manufactured signal flares.⁵ Perchlorate, used in the manufacture of signal flares, was detected in water samples at the site in August 2000. In 2001, Olin undertook further investigation of the contamination with the Central Coast Water Board's oversight. Perchlorate has been detected in numerous groundwater wells located downgradient of the Facility (up to a distance of approximately ten miles) with

² Olin also requested a stay of the Cleanup Order. The State Water Board's Executive Director denied the stay request by letter dated September 22, 2004.

³ This order is based upon the record before the Central Coast Water Board and upon the following documents, of which the State Water Board takes administrative notice: *Public Health Goal for Perchlorate in Drinking Water*, prepared by Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, March 2004; National Academy of Sciences, *Health Implications of Perchlorate Ingestion*, 2005; Memorandum from Joan E. Denton, Director, Office of Environmental Health Hazard Assessment, to Alan C. Lloyd, Agency Secretary, California Environmental Protection Agency, 4/1/05, Responses to Recent Comments on the Perchlorate PHG. Petitioners as well as the Central Coast Water Board sought to supplement the record with additional information documenting ongoing state and national efforts to establish a reliable drinking water standard for perchlorate. With the exception of the OEHHA document named above, these requests are denied. In addition, Petitioners requested leave to reply to contentions set forth in the Central Coast Water Board response to the petition. That request is also denied. Olin submitted documents as attachments to its comment letters dated March 29, 2005, and May 16, 2005, but did not comply with California Code of Regulations, Title 23, section 2050.6(a) for admission of new evidence. Of those documents, the following are excluded: U.S. Environmental Protection Agency, Analytical Methods Developed by the Office of Ground Water and Drinking Water; and Air Force Center for Environmental Excellence, Monitoring and Remediation Optimization System (MAROS) Software User's Guide, Version 2.1, November 2004. All other attachments submitted by Olin are either already in the record or are hereby made a part of the record.

⁴ See *People v. Barry* (1987) 184 Cal.App.3d 158; Cal. Code Regs. (CCR) tit. 23, § 2052(a)(1). Dismissed issues have either been addressed in previous State Water Board orders or are not sufficiently substantial to warrant review.

⁵ Standard Fusee's brief petition joins in Olin's petition and request for relief, as well as Olin's reasons for contending that the Central Coast Water Board action was improper. On March 30, 2005, Standard Fusee submitted comments on a draft of this Order that had been circulated for public comment. That submission included a request to present additional evidence on claims not previously raised in Standard Fusee's or Olin's petitions. The State Water Board's regulations governing petitions of regional water quality control board actions provide that petitioners must raise substantive issues or objections before the regional water board or, in the alternative, provide an explanation of why these issues could not have been raised before the regional water board. Cal. Code Regs., Tit. 23, § 2050(a)(9). Moreover, any request to present additional evidence not provided to the regional board shall be made at the time the petition was filed, or as soon as possible thereafter. Cal. Code Regs., Tit. 23, § 2050.6(a)(1). If evidence was not presented to the regional water board, the proponent must provide a detailed explanation of the reasons why the evidence could not have been submitted. Cal. Code Regs., Tit. 23, § 2050.6(a)(2). Because Standard Fusee failed to raise the new claim in its petition or in earlier submissions and has not satisfactorily explained why this claim or evidence could not have been submitted previously, comments presenting new claims not properly before the State Water Board are excluded from the administrative record. The request to present supplemental evidence is denied.

concentrations ranging from non-detect to 100 micrograms per liter ($\mu\text{g/L}$). Since 2002, Olin has been providing alternative water to owners of domestic water wells in which perchlorate concentrations exceed 4 $\mu\text{g/L}$.

Water Code section 13304 was amended in 2004 to clarify the authority of regional water quality control boards to require alternative water supplies pursuant to a cleanup.⁶ The statute provides that a regional water board may require provision of “uninterrupted replacement water service, which may include wellhead treatment, to each affected public water supplier or private well owner.”⁷ Replacement water provided “shall meet all federal, state, and local drinking water standards and shall have comparable quality to that pumped by the public water system or private well owner prior to the discharge of waste.”⁸ The statute does not define what constitutes an “affected” well.

There is currently no enforceable state or federal standard for perchlorate in drinking water for use in determining when a well is affected such that the user should be entitled to replacement water service. In March 2004, the California Office of Environmental Health Hazard Assessment (OEHHA) issued a final Public Health Goal (PHG) of 6 $\mu\text{g/L}$ for perchlorate.⁹ OEHHA’s PHG must be based upon a risk assessment to identify a level at which no known or anticipated adverse effects on health will occur, with an adequate margin of safety.¹⁰ PHG’s are used by the California Department of Health Services (DHS) in establishing drinking water standards or Maximum Contaminant Levels (MCLs).¹¹

⁶ Cal. Water Code, § 13304(a), (f). SB 1004, approved 9/29/03, effective 01/01/04.

⁷ Cal. Water Code, § 13304(a).

⁸ *Id.* Water Code § 13304(f). The cited provision refers to the quality of replacement water provided, and not to the groundwater affected by a discharge. The intent of this Order is to clarify the condition of an affected well in order to determine when replacement water is appropriately required. This Order is not intended to address requirements as to the quality of water served as replacement water when such service is otherwise found warranted.

⁹ California Health & Safety Code, section 116293 requires OEHHA to perform a risk assessment and adopt a public health goal for perchlorate based exclusively on public health consideration. Criteria for this determination are set forth at Health & Safety Code, section 116365.

¹⁰ Cal. Health & Saf. Code, § 116365(c)(1).

¹¹ Cal Health & Safety Code, § 116365(a). The primary drinking water standard “shall be set at a level that is as close as feasible to the corresponding public health goal placing primary emphasis on the protection of public health” *Id.*

DHS has not yet completed an MCL for perchlorate. However, DHS has established a notification level¹² for certain contaminants, which requires timely notification of local governing bodies by drinking water systems whenever the relevant level is exceeded in a drinking water source.¹³ Before March of 2004, the notification level for perchlorate was 4 µg/L, having been revised downward from 18 µg/L in 2002. The notification level was later revised to 6 µg/L based on the final PHG. While the state continues to develop regulatory standards for this contaminant, the issue remains in flux on a national level.¹⁴

Olin commenced replacement water service in late 2002, when the notification level for perchlorate was 4 µg/L. In April 2004, following publication of OEHHA's final PHG of 6 µg/L, Olin sought approval from the Central Coast Water Board to raise the level of contamination requiring replacement water service to 6 µg/L to match the PHG. The Board declined Olin's request and later issued the Cleanup Order to implement its determination that Olin must continue providing replacement water for wells testing at or above 4 µg/L.¹⁵ Olin filed its petition with the State Water Board, objecting to the 4 µg/L "trigger" level.

II. CONTENTIONS AND FINDINGS

Contention: Olin contends that the Central Coast Water Board abused its discretion by requiring continued water replacement service for wells with perchlorate detections based upon a 4 µg/L trigger level rather than the final PHG of 6 µg/L adopted by OEHHA.

¹² The DHS notification level was previously referred to as an action level. See, Cal. Health & Saf. Code, § 116455, effective 1/1/05.

¹³ Cal. Health & Saf. Code, §§ 116450, 116455. Notification levels are "nonregulatory, health-based advisory levels . . . for contaminants in drinking water for which maximum contaminant levels have not been established. Notification levels are established as precautionary measures . . ." Health & Saf. Code, § 116455(c)(3).

¹⁴ The United States Environmental Protection Agency (U.S. EPA) issued a Draft Toxicological Health Assessment for perchlorate in 2002. The draft document indicated a preliminary goal of 1 µg/L for perchlorate in drinking water. U.S. EPA, together with several other federal agencies, referred the draft health assessment document to the National Academy of Sciences (NAS) for further review. OEHHA has reviewed the resulting NAS report issued in January 2005 and concluded that "there does not appear to be any new scientific evidence for OEHHA to revise the perchlorate risk assessment, nor alter the estimated health-protective drinking water concentration of 6 ppb (6µg/L) that is stated in the final PHG document." Memorandum from Joan E. Denton to Alan C. Lloyd, 4/1/2005.

¹⁵ The Cleanup Order requires Olin and Standard Fusee to provide replacement water service for wells in which perchlorate has been detected at or above 4 µg/L at any time within the past four consecutive quarters. Cleanup Order, at Paragraph 1. The Cleanup Order also requires replacement water service for wells where perchlorate is detected below 4 µg/L, but Dischargers may cease supply with Central Coast Water Board Executive Officer concurrence if results remain below 4 µg/L for four consecutive quarters. *Id.*, at Paragraph 2.

Finding: We do not find abuse of discretion in the Central Coast Water Board's determinations. However, we do find that OEHHA is the agency charged with public health risk assessments of the nature presented here. The Water Boards should defer to OEHHA and DHS in determining the appropriate level of contamination requiring replacement drinking water service requirements.

The Central Coast Water Board's primary reason for refusing to revise the trigger level for replacement drinking water is its stated belief that a conservative approach is needed, given the prevailing uncertainty about safe level of perchlorate consumption. The Central Coast Water Board points to lack of scientific consensus as well as its desire to protect the most sensitive affected populations.¹⁶ The Central Coast Water Board also claims that variations in down-gradient water quality monitoring results justify using a more conservative trigger level, to ensure that a safe level is met in all cases. Finally, the Central Coast Water Board argues that State Board Resolution 92-49, generally authorizing regional boards to require cleanup to background levels, supports requiring a more stringent water replacement level than is set forth in the PHG.¹⁷

OEHHA is the state agency responsible for performing health risk assessments for drinking water under the Safe Drinking Water Act of 1996.¹⁸ The statute requires that the risk assessment be performed "using the most current principles, practices, and methods used by public health professionals who are experienced practitioners in the field of epidemiology, risk assessment, and toxicology."¹⁹ Although the PHG is not a legally enforceable standard,²⁰ OEHHA's expertise and conclusions are clearly key to later development of safe drinking water standards by DHS.

¹⁶ At unsafe levels, perchlorate interferes with thyroid function. The most sensitive populations include pregnant women and their developing fetuses, lactating women, infants, and individuals with thyroid problems. *Public Health Goal for Perchlorate in Drinking Water*, OEHHA, March 2004, at 1.

¹⁷ State Water Board Resolution 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code, section 13304, adopted June 18, 1992, and amended April 21, 1994 and October 2, 1996.

¹⁸ Health & Saf. Code, § 116365.

¹⁹ Health & Saf. Code, § 116365(c).

²⁰ "[OEHHA] and [DHS] are prohibited from imposing any mandate that requires a public water system to comply with a public health goal." Health & Saf. Code, § 116365(c)

Regional water boards have discretion to require replacement water to “affected” public water suppliers and private well owners that “meet[s] all applicable federal, state, and local drinking water standards and . . . [is of] comparable quality to that pumped by the public water system or private well owner prior to the discharge of waste.”²¹ Wells “affected” by a discharge of waste include those wells in which water does not meet the federal, state and local drinking water standards.²² Where no federal, state, or local standard yet exists, it is appropriate to use goals developed by agencies with expertise for public health determinations in deciding whether replacement drinking water is necessary. Any other approach would require regional water boards to make individual, possibly inconsistent public health and toxicological determinations or, in the alternative, to require replacement drinking water whenever there is any detection of a contaminant.²³ This approach ignores the expertise of OEHHA and, in the case of contaminants for which MCLs have been developed, DHS. By contrast, cleanup levels for groundwater are a separate issue and are more appropriately within the expertise and professional purview of the water boards.

While the Central Coast Water Board points to fluctuations in perchlorate detection as further justification for requiring water replacement at a lower level of contamination, reliability of data is a separate issue. Olin must meet the replacement water requirements at whatever level is determined appropriate, regardless of fluctuations. In order to ensure that any discontinuation of replacement drinking water service resulting from this Order is based upon accurate and current information, we will require that four prospective, consecutive quarters of monitoring data be provided to illustrate that a well consistently tests below the PHG. Therefore, well owners currently receiving replacement water service will not have such service discontinued as a result of the findings in this Order until four new consecutive quarters of

²¹ Wat. Code, § 13304(f).

²² As noted in footnote 8, this Order applies only to the quality of groundwater for which replacement drinking water service is required, not to the quality of replacement drinking water provided to well owners.

²³ The logical result of the Central Coast Water Board’s argument that the State Water Board Res. 92-49 requirement for cleanup to background contaminant levels justifies its water replacement levels would routinely require water replacement for groundwater constituent levels that may be many times lower than that determined safe by state and federal agencies. Simply put, while cleaning up to background may be required, that does not mean that replacement water is always necessary until the cleanup is complete, regardless of the amount of contamination.

monitoring are available to show that a well tests below the PHG. The Central Coast Water Board has discretion to act to shorten this time period.²⁴

Nothing in this Order should be read to require amendment of any pre-existing agreements by dischargers to provide replacement water at levels below PHGs. Nor does this Order prevent a public water supplier from deciding to stop service of water that is below these levels. The sole issue addressed is the determination by Regional Water Boards that wells have been “affected” and that replacement water must be ordered. Where new water replacement orders are considered, or where existing agreements or orders provide for reconsideration of replacement water levels, regional water boards should defer to OEHHA and DHS in determining safe drinking water levels. This Order applies only to requirements for water replacement and not to groundwater or soil cleanup levels required under State Water Board Resolution 92-49.²⁵ Further, this Order applies only to replacement drinking water and not to replacement water for other potentially affected beneficial uses.

Nothing in this Order shall be read to prevent a regional water board from issuing a water replacement order directing future actions preparatory to providing timely replacement water in the event that the appropriate standard is met or exceeded in the future. Regional water boards may also require that dischargers submit water replacement plans prior to documentation of contaminant levels exceeding the relevant standard. Where water quality data exhibit trends indicating the likelihood of future exceedances, it is prudent and appropriate for regional water boards to take such action before actual well exceedances occur.

III. CONCLUSION

The Regional Water Board inappropriately failed to accord the deference due to OEHHA in determinations involving safe drinking water contaminant levels. The Regional Water Board has not shown why the OEHHA PHG is insufficiently protective in this case.

IV. ORDER

²⁴ Olin and the Central Coast Water Board have jointly submitted monitoring requirements for wells subject to replacement water service. Our revision of the Cleanup Order will refer to and incorporate those requirements.

²⁵ “Affected” wells may include those subject to other measures for implementing cleanup. This Order only addresses how a regional water board must determine the trigger levels for requiring safe replacement drinking water pending completion of a cleanup in compliance with Resolution 92-49. The trigger levels at issue in this Order are based on the need to protect public health. This Order does not prevent a regional water board from requiring any action that is related directly to remediation of ground water or is necessary to prevent migration of waste through ground water.

IT IS HEREBY ORDERED THAT CLEANUP AND ABATEMENT Order No. R3-2004-0101 is amended as follows:

1. Delete Finding 10 and replace with the following: "The Office of Environmental Health Hazard Assessment [OEHHA] established its public health goal of 6 ppb based upon upon the level of perchlorate in drinking water that would pose no significant health risk to individuals consuming the water on a daily basis over a lifetime. OEHHA is required to base its public health goal exclusively on public health considerations, without regard to cost impacts. Because OEHHA is the state agency responsible for such health risk assessments, it is appropriate to use the public health goal as the applicable level for determining wells requiring replacement drinking water supply."

2. Delete Finding 11.

3. Revise Directive 1 to read as follows: "Effective immediately, Discharger shall supply interim uninterrupted replacement water service (i.e., bottled water or equivalent), in accordance with California Water Code Section 13304, to owners of private domestic wells in which perchlorate has been detected at concentrations greater than 6 ppb in the last twelve months regardless of past results. Discharger may stop supplying interim uninterrupted water service upon the Regional Board Executive Officer's concurrence that long term uninterrupted water service has been provided to individual well owners or there have been four consecutive quarters of equal to or less than 6 ppb results."

4. Delete Directive 2 and replace with the following: "Olin shall implement monitoring requirements for wells subject to replacement water. These requirements address conditions under which monitoring may be discontinued. The requirements are incorporated and included as Attachment A."

5. Add a new Directive 2a to read as follows: "Notwithstanding other requirements, for well owners currently receiving replacement water service, no discontinuation of that service shall occur, unless approved by the Central Coast Water Board, until four prospective quarters of monitoring show perchlorate concentrations equal to or less than 6 ppb."

6. Revise Directive 4 to read as follows: "Following Executive Officer concurrence with the detailed Alternative Water Supply Implementation Work Plan Discharger

shall implement the plan for wells with concentrations from 6 ppb to 9.9 ppb, according to a schedule approved by the Executive Officer.”

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 19, 2005.

AYE: Arthur G. Baggett, Jr.
Peter S. Silva
Richard Katz
Gerald D. Secundy
Tam M. Doduc

NO: None.

ABSENT: None.

ABSTAIN: None.


Debbie Irvin
Clerk to the Board

Attachment A

Range	Monitoring Approach
5.0 to < 6.0 ppb	Olin will sample bimonthly. After four data points, Olin shall evaluate the data using the Mann-Kendall variability analysis. ¹ If there is no trend (NT) or if the concentration trend is increasing (I) or probably increasing (PI), Olin shall continue to sample on a bimonthly basis. If the trend is stable (S), decreasing (D) or probably decreasing (PD), then Olin will sample at least twice per year for one year (monitoring should occur during wet and dry seasons or during periods of maximum concentration changes as determined by the Mann-Kendall trend analysis). If trend is still stable (S), decreasing (D) or probably decreasing (PD), Olin will sample once in the next year. If that concentration is < 6.0 and trend remains stable (S), decreasing (D) or probably decreasing (PD), Olin may stop sampling with Executive Officer concurrence.
4.0 to <5.0	Olin will sample at least twice per year (monitoring should occur during wet and dry seasons or during presumed periods of maximum concentration changes). After four data points, Olin shall evaluate the data using the Mann-Kendall variability analysis. If there is no trend (NT) or if the concentration trend is increasing (I) or probably increasing (PI), Olin shall continue to sample on a semiannual basis, or bimonthly if the concentration exceeds 5.0. If the trend is stable (S), decreasing (D) or probably decreasing (PD), then Olin will sample once in the next year. If that concentration is < 5.0 and the trend is stable (S), decreasing (D) or probably decreasing (PD), Olin may stop sampling with Executive Officer concurrence.
< 4.0 wells (other than wells that were previously in the sampling programs in the above two ranges) within 500 feet of wells that have had a 6 ppb result.	Olin shall sample semiannually for one year. If the perchlorate concentrations remain less than 4 ppb, then Olin shall sample once in the next year. If that concentration is less than 4 ppb, Olin may stop monitoring with Executive Officer concurrence.

¹ Olin shall submit the proposed statistical analysis for review and approval by Regional Board Staff.

Exhibit C



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Lahontan Regional Water Quality Control Board

July 18, 2014

Daron Banks
Roberta Chavira-Walker
Carmela Spasojevich
Via email

Dear Mr. Banks, Mrs. Chavira-Walker and Mrs. Spasojevich:

I wanted to respond to your mid-June 2014 inquiries regarding application of the Maximum Containment Level (MCL) recently adopted by the California Department of Public Health (now known as the Division of Safe Drinking Water or DSDW) and continuation of the whole house replacement water program for the Hinkley Compressor Station Site Cleanup.

On July 1, 2014 the MCL, or drinking water standard, became effective for hexavalent chromium (chrome-6). California is the first state in the nation to establish a MCL specifically for chrome-6, which underscores the state's commitment to protecting drinking. This new standard is one fifth the current total chromium standard of 50 ppb, which includes both trivalent chromium (chromium-3) and chrome-6. The federal MCL for total chromium is 100 ppb.

Because the MCL for chrome-6 is in effect, the Lahontan Regional Water Quality Control Board (Water Board) can no longer require replacement water for those domestic wells with levels of chrome-6 below 10 ppb. I realize this is frustrating because you believe the replacement water should be continued until the United States Geological Survey (USGS) background study is completed; unfortunately, we have to comply with existing law, and have no authority to continue requiring the current replacement water program.

Our legal counsel has previously explained that our ability to require Pacific Gas & Electric Company (PG&E) to provide replacement water is limited by a 2005 precedential decision issued by the State Water Board entitled "In the Matter of the Petition of Olin Corporation and Standard Fusee, Incorporated, Order WQ 2005-0007" (referred to as the "Olin Order"), which was discussed in depth in our Order R6V-2011-0005A1, requiring the issuance of whole house replacement water. In that Order, the State Board determined that for the purposes of determining whether a well is "affected" under Water Code section 13304, allowing the regional board to require the provision of replacement water, a well is only considered "affected" when the discharge causes the

water to exceed a drinking water standard. The State Board concluded, "Any other approach would require regional water boards to make individual, possibly inconsistent public health and toxicological determinations or, in the alternative, to require replacement drinking water whenever there is *any* detection of a contaminant." (Olin Order at p. 6, emphasis added.)

The State Board required that, "regional water boards should defer to OEHHA and CDPH in determining safe drinking water levels." This is in contrast to setting cleanup levels, which the State Board noted, "are more appropriately within the expertise and professional purview of the water boards." The State Board, therefore, made it clear that the regional boards could not require replacement water for any impairment of water quality. The impairment had to cause an increase in contamination above the drinking water standard before the regional board could require replacement drinking water.

Although you may feel that the drinking water standard for hexavalent chromium is too high, once the DSDW has made its determination, the other state agencies must accept that standard, and do not have the ability to second-guess that decision. Although it is higher than the public health goal (PHG), the MCL is still protective of health. Health & Safety Code §116365(a) requires CDPH to establish the MCL at a level as close to the contaminant's PHG as is technologically and economically feasible, placing primary emphasis on the protection of public health. Moreover, the DSDW performed a series of rigorous analyses that considered, among other things: the occurrence of hexavalent chromium in drinking water sources statewide; the methods, feasibility and costs of detection; and treatment and monitoring technology. The DSDW also considered over 18,000 public comments from public and private stakeholders during the regulatory process, including from public water systems. The chrome-6 MCL will be reviewed again in 2019.

Implementation of this MCL will be a major step in protection of public health, as there are over 128 water systems whose water exceeds the 10 ppb level established in the new requirement. It will, however, also result in increased costs for these communities whose water source contains levels of hexavalent chromium that currently exceeds that 10ppb level. In its "Notice of Proposed Rulemaking," CDPH estimated that the cost of compliance for local government could be \$16.5 million annually, \$1.8 million annually for state government, and \$1 million for privately owned water systems. (CAL. DEP'T PUB. HEALTH, Notice of Proposed Rulemaking, Subject: Hexavalent Chromium MCL (DPH-11-005), supra n. 11, at 10-11.)

Currently, all of the domestic wells within Hinkley contain hexavalent chromium below the MCL. I believe this new standard poses an opportunity for the Hinkley community to

reframe or revise the perceptions about the safety of drinking water in Hinkley because the levels of chrome-6 in current residential wells are much lower (better) than the state's drinking water standard. I am hopeful that the citizens of Hinkley can dispel health concerns about their community, not live in fear, and no longer be stigmatized by the past. Property values will hopefully increase, and reflect this reality, and banks should no longer have any concerns about loaning money to Hinkley citizens based upon concerns about the safety of the levels of chrome-6 in domestic wells.

The setting of the drinking water standard at 10 ppb does not, however, affect the Water Board's authorities requiring cleanup. Under current Water Board orders, PG&E must continue to clean up the discharges from the compressor station site. The Water Board has the authority to require clean up to background levels in accordance with State Board policy 92-49 and a new cleanup and abatement order will be updated with specific cleanup requirements and will be considered by the Water Board in 2015. In addition, the USGS background study will continue, and the results of that study will be incorporated into the Water Board's requirements, as necessary.

If you have any questions regarding this letter, please contact me at (530) 542-5412 or Lauri Kemper, Assistant Executive Officer, at (530) 542-5436.


Patty Z Kouyoumdjian
Executive Officer

Lyris list: PG&E

MLK/dk/T: EO Response-MCL Change Request 7-9-14