

## Lahontan Regional Water Quality Control Board

October 6, 2016

Lahontan Water Board Advisory Team and Desert View Dairy CAO Interested Parties

### **PROSECUTION TEAM RESPONSE TO ADVISORY TEAM'S SEPTEMBER 8, 2016 REQUEST FOR INFORMATION – PROPOSED DESERT VIEW DAIRY CLEANUP AND ABATEMENT ORDER (CAO) R6V-2008-0034A4**

The Regional Water Quality Control Board's Prosecution Team (Prosecution Team) has prepared this memo to provide responses to questions posed by the Advisory Team on proposed revisions to the subject line CAO (the Advisory Team's questions are repeated in *italic text* below). The Advisory Team requested answers from both the Prosecution Team and "the parties" (i.e., the CAO responsible parties). The Prosecution Team has prepared responses to Advisory Team questions numbered 1 - 4 and 7 - 9. The responsible parties have indicated that they are submitting responses to questions numbered 5 and 6 under separate cover.

1. *Please provide specific references to a figure/cross section/conceptual site model depicting the lateral and vertical extent of the TDS, chloride, and sulfate plumes in groundwater that extend from the Desert View Dairy (DVD) property downgradient into the existing "affected area" and into the "Proposed Expansion of Affected Area" that support the proposed revisions in the amended CAO.*

**Prosecution Team Response:** The original "affected area" in the initial and amended CAOs for the DVD was principally based upon residents' complaints of "bad" well water and domestic well sampling results beginning in 2007.<sup>1</sup> The sampling results were provided in technical reports by PG&E and Mr. Ryken's consultant, Conestoga-Rover & Associates (CRA) and samples collected by the Water Board, and are cited in Finding 4 of CAO R6V-2008-0034A2 (dated March 9, 2010).

The references that support the site conceptual model are 2011 technical reports submitted by PG&E and CRA containing domestic well and groundwater sampling data. Specifically, Figures 3-1, 4-2 through 4-6 in PG&E's June 30, 2011 technical report<sup>2</sup> show contaminant isoconcentration maps and cross-sections depicting the lateral and vertical extent of contamination to Thompson Road. Nitrate isoconcentration lines seen in Figure 4-2 increased from less than 25 milligrams per liter (mg/L) on the upgradient flow boundary line of the Desert View Dairy to greater than 100 mg/L as groundwater migrates beneath the Dairy, especially below the manure/wastewater center pivot/field immediately south of well DW-03. The TDS data shown on the figure were interpreted to provide similar significant increases as groundwater

<sup>1</sup> See file WDID #6B360409002 in the Board's Victorville office, these complaints are not available on Geotracker.

<sup>2</sup> *Groundwater Investigation and Characterization Report for Former Nelson-Diaz Dairy and Field Crop Parcel* (CH2M Hill, 2011). Available at [http://geotracker.waterboards.ca.gov/esi/uploads/geo\\_report/9745538294/SL0607111288.PDF](http://geotracker.waterboards.ca.gov/esi/uploads/geo_report/9745538294/SL0607111288.PDF). See PDF pages 48-54 for the cited figures.

migrated beneath the DVD. The same interpretive method was applied using the chloride and sulfate data from the tables of groundwater sampling results. The obvious increases in concentrations of dairy constituents pointed to the Desert View Dairy as being the greatest source of impacts to groundwater affecting beneficial use of the drinking water aquifer compared to other sources in the upgradient flow direction.

Information in CRA's June 30, 2011 technical report, *Groundwater Investigation and Characterization Report*<sup>3</sup> supplemented PG&E's site conceptual model from Thompson Road to Sonoma Street in the north. The maps and figures in CRA's report also contain contaminant isoconcentration maps and cross-sections depicting the lateral and vertical extent of contamination in groundwater for nitrate and TDS. Chloride and sulfate data from the tables of groundwater sampling results were interpreted to evaluate lateral and vertical extent of contamination in groundwater. Overall, data provided in this report indicated the extent of dairy constituents in groundwater was adequately defined from Thompson Road to Salinas Road.

To support the extension of the affected area north to Sonoma Street, Finding 13 of the proposed amended CAO R6V-2008-0034 A4 cites data contained in PG&E's Agricultural Treatment Unit (ATU) monitoring reports from 2012 to 2015. In the most recent report<sup>4</sup>, Figure 6-2 shows locations of domestic wells in the expanded affected area (from Salinas Road to Sonoma Road). Table H-3 in the same monitoring report shows concentrations of TDS in these domestic wells collected from 2012-2015, summarized below (citations to this information are contained in footnote 3 of the proposed amended CAO). These data show that domestic wells in the expanded area contain TDS concentrations greater than SMCLs.

**Table 1.** Domestic Wells in Expanded Affected Area with TDS data, 2012-2015.

Domestic Well #	TDS range (mg/L)
15-05	500-600
15-06	600-680
15-08	460-580
15-12	1,600

Monitoring well data at the northern boundary of the current affected area (near Salinas Road) also support the expansion of the affected area. Data from monitoring wells in this area are contained in PG&E's Figure B3 of its June 30, 2015 *Agricultural Treatment Byproducts Investigation Report for Environmental Impact Report Mitigation Measure WTR-MM-5* and are summarized below (a citation to this report is contained in footnote 4 of the proposed amended CAO). These data show that monitoring wells in and directly upgradient of the proposed expanded affected area have concentrations of TDS greater than SMCLs, causing or threatening to cause a condition of pollution in domestic wells in the expanded affected area.

**Table 2.** Monitoring Wells in or near upgradient of the Expanded Affected Area with TDS data, 2011-2014.

Monitoring Well #	TDS (mg/L)
MW-156S	904
MW-157S	562
MW-123S2	1,170

<sup>3</sup> [http://geotracker.waterboards.ca.gov/esi/uploads/geo\\_report/3617713689/SL0607171020.PDF](http://geotracker.waterboards.ca.gov/esi/uploads/geo_report/3617713689/SL0607171020.PDF).

<sup>4</sup> [http://geotracker.waterboards.ca.gov/esi/uploads/geo\\_report/8347464203/SL0607111288.PDF](http://geotracker.waterboards.ca.gov/esi/uploads/geo_report/8347464203/SL0607111288.PDF)

Chloride and sulfate data are more limited in the expanded affected area. Data submitted as part of PG&E's April 4, 2016 *Desert View Dairy Amended CAO Comments*, includes figures 2 and 3<sup>5</sup>, showing water quality results for chloride and sulfate from monitoring and domestic wells upgradient, beneath, and downgradient of the DVD. Data from monitoring wells in the expanded affected area for chloride and sulfate from these figures are summarized below. These data show that monitoring wells in and directly upgradient of the proposed expanded affected area have concentrations of either chloride or sulfate greater than SMCLs, causing or threatening to cause a condition of pollution in domestic wells in the expanded affected area.

**Table 3.** Monitoring Wells in or near upgradient of the Expanded Affected Area with chloride and sulfate data.

Monitoring Well #	Sulfate (mg/L)	Chloride (mg/L)
MW-156S	152	275
MW-123S1	253	350

2. *Has a background study/historical practices impact evaluation been conducted as part of previous groundwater investigations in the vicinity of Desert View Dairy for the constituents of concern? If so, please provide specific references.*

**Prosecution Team Response:** CRA provided a background study/historical practices report to the Water Board in 2008 that included satellite photos showing land use in Hinkley since the 1950s. This report is part of the case file in the Board's Victorville office and pre-dates Geotracker submittals. CRA provided a subsequent report, dated July 30, 2008, titled, "Water Storage/Application Practices" describing dairy operations at the site since 1991. Specifically, this report described manure/wastewater handling, storage, and application practices up to 2008. The above information was used to describe the site and land use history in the finding section of the first cleanup and abatement order, CAO R6V-2008-0034.

Furthermore, in compliance with a December 13, 2013, request by the Water Board, PG&E submitted the document "Hinkley Area Nitrate Data Summary and Distribution through Fourth Quarter 2013." The report provided existing groundwater nitrate data over a larger area in the Hinkley Valley beyond the DVD. Additionally, the report included aerial photographs that show agricultural activities in the Hinkley Valley since the 1940s. PG&E provided discussions and interpretations of historical agricultural activities over time that may have contributed to nitrate and TDS concentrations in groundwater. This report was not uploaded to Geotracker due to the large document size of the aerial photos. A copy of the report however is on the PG&E Hinkley shelf in the tech staff area of the Board's South Lake Tahoe office.

In summary, the above reports describing the historical practices in the Hinkley Valley indicated that dairy activities provided far more impacts to groundwater quality than did crop fields. The reports also indicated that, with one exception, other dairies in the Hinkley Valley were too great a distance from the DVD to significantly affect background water quality. The exception was the Nelson-Diaz Dairy, located nearly 3,000 feet to the south and owned by PG&E beginning in the mid-1990s. As seen in attachment 1 to this memo, "Hinkley Satellite Image, 2003", the Nelson Diaz Dairy was several times smaller compared to the DVD. By the time impacted groundwater from the Nelson-Diaz Dairy migrated to the DVD, after being extracted at the private field crops

<sup>5</sup> [http://www.waterboards.ca.gov/lahontan/water\\_issues/programs/enforcement/docs/desert\\_view\\_cao/pge.pdf](http://www.waterboards.ca.gov/lahontan/water_issues/programs/enforcement/docs/desert_view_cao/pge.pdf). See PDF pages 12 and 13 of that document.

between the two dairies, dairy constituents in groundwater were many times lower in concentrations than those detected beneath the DVD.

3. *Have the three (sic) technical submittals, dated June 30, 2011, Groundwater Investigation and Characterization Report for Former Nelson-Diaz Dairy and Field Crop Parcels, Hinkley, California, been evaluated in the context of the adequacy of the lateral and vertical extent of the constituents of concern? If so, please provide the staff comment letter.*

**Prosecution Team Response:** Water Board staff evaluated the two June 30, 2011 technical reports from PG&E<sup>6</sup> and CRA<sup>7</sup> and found the data and information satisfactory to comply with requirements in Amended CAO R6V-2008-0034A3 for defining the extent of contaminants in groundwater. The two reports contained data for nitrate, TDS, chloride, and sulfate collected from domestic wells, monitoring wells, and temporary borings in the current and proposed expanded areas. Information in the separate reports when incorporated together indicated that no additional residents beyond the “affected area” were being exposed to constituents exceeding primary and secondary MCLs in well water and were in need of replacement water. This conclusion was reported verbally to the dischargers at a technical meeting in 2011.

In compliance with the Water Board’s December 13, 2013 requirement, PG&E followed up with the document “Hinkley Area Data Nitrate Summary and Distribution through Fourth Quarter 2013.” The report provides the nitrate distribution in groundwater in the Hinkley Valley using data collected between 2010 and 2013. In Figure 3-3, nitrate isoconcentration contours are drawn over a satellite photo of the valley and showing various dairies suspected of being nitrate sources. The report was forwarded to Victorville staff, where it was used to implement an expanded domestic well sampling program to evaluate domestic wells potentially affected by nitrate and other constituents from current and former dairies.

4. *Please provide explanation/justification regarding the statistical validity of the site specific revision of the secondary MCLs, and provide justification/precedence/examples of revision of secondary MCLs based on site specific data.*

**Prosecution Team Response:** It is important to note that the Prosecution Team is not proposing to revise secondary MCLs but rather are proposing to revise thresholds at which the dischargers are required to provide replacement water for affected well users. The following response is broken into two parts to address each separate issue posed in the question.

- I. **Statistical justification for site-specific thresholds based on SMCLs for TDS, chloride and sulfate.**

In the response part 2, below, we provide examples of CAOs where adjustments to replacement water thresholds based on SMCLs or MCLs have been made. Note that in most of the examples, the standard deviation of data representing a single population (domestic wells in an affected area of the respective dairies) was used as the adjustment factor. In general, the stated purpose of calculating and applying an adjustment factor was to provide a margin of safety to well owners while allowing dischargers to reduce sampling frequency of the domestic wells.

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<sup>6</sup> *Groundwater Investigation and Characterization Report for Former Nelson-Diaz Dairy and Field Crop Parcel (CH2M Hill, 2011)*

<sup>7</sup> *Groundwater Investigation and Characterization Report, Desert View Dairy (CRA, 2011)*

For the Desert View Dairy amended CAO, the situation is different: We are comparing data from two separate populations<sup>8</sup> (monitoring well data from upgradient and downgradient of the DVD, representing different pollutant sources or areas). So using the standard deviation as an adjustment factor would not be useful, as we are attempting to distinguish relative contributions of contaminants from different source areas.

To understand the relative contribution of upgradient sources, a measure of the central tendency of each separate population was used. The central tendency is a common and familiar way to summarize data for analysis and comparison. The central tendency can be characterized using the average value (also known as the mean value), the median (middle value) or the mode (most frequently occurring value). The mode was not chosen because it is only appropriate to use with nominal data (such as categories or descriptions, without any quantitative values). The median is the middle value of a dataset, and is not influenced by data "outliers" that is, data which may not be representative of the population being sampled (e.g., an extremely large or small data point compared to other observations). We used the average value to characterize upgradient versus downgradient data, but the median is also a valid statistic to consider.

Table 4 shows a comparison of results using the median and the average values of upgradient versus downgradient data. If we used the median to characterize the central tendency, then the contribution of upgradient sources compared to downgradient would be somewhat lower for TDS, and higher for sulfate. Note that the calculation provided for the average value of downgradient chloride of 1,048 milligrams per liter (mg/L) in the proposed revised CAO is incorrect; the correct value is 840 mg/L. This changes the average upgradient chloride contribution from 34 percent to 42 percent, making the chloride upgradient concentration virtually the same no matter which statistic is used (41 versus 42 percent).

**Table 4.** Comparison of results using the median value versus the average value for DVD data, all results are in milligrams per liter (mg/L).

	TDS Upgradient	TDS Downgradient	Cl Upgradient	Cl Downgradient	SO <sub>4</sub> Upgradient	SO <sub>4</sub> Downgradient
Average	1,459	3,679	352	840	506	1,297
Median	1,210	3,600	360	875	627	1,305
Percent contribution of upgradient using <b>median</b>	34 (TDS)		41 (Cl)		48 (SO <sub>4</sub> )	
Percent contribution of upgradient using <b>average</b>	40% (TDS)		42% (Cl)		39% (SO <sub>4</sub> )	

Abbreviations: TDS - total dissolved solids; Cl - chloride; SO<sub>4</sub> – sulfate.

In the interest of simplicity, a single adjustment variable for all three constituents is favored. Considering that the average of median values for all three constituents is 41 and the average of average values is 40, the 40 percent adjustment factor in the proposed revised CAO is

<sup>8</sup> See attachment 7 for a discussion and results of statistical t-test analysis conducted on up and downgradient data to test whether the means of such populations were actually significant different. The t-test data verify statistically significant differences in up versus downgradient data.

reasonable based either the median or average values of upgradient versus downgradient contributions.

## II. Examples of setting replacement water thresholds based on site-specific data.

Threshold levels for providing replacement water have been specified at concentrations different than MCL or SMCL endpoints based on site-specific data in several Lahontan Water Board Orders for replacement water in the Mojave Groundwater Basin: CAO R6V-2011-0058A1 issued to Harmsen Dairy; CAO R6V-2011-0057A1 issued to Ryken/DVD Heifer Ranch; CAOs R6V-2011-0055A1 and R6V-2013-0103 issued to N&M Dairy; and CAO R6V-2007-0017 issued to the City of Barstow.

- In CAOs R6V-2011-0058A1, R6V-2011-0057A1, and R6V-2011-0055A1, the nitrate threshold for providing replacement water was adjusted downward from the MCL of 10 mg/L. The adjustment was based on the MCL minus the statistical standard deviation for nitrate in samples collected from domestic wells over a limited period (less than 1 year). This was done to accommodate dischargers' requests to sample domestic wells less frequently, but still provide a margin of safety to well owners that they would get replacement water at a more stringent (lower) level. The standard deviations for the datasets ranged from 3 to 4, resulting in nitrate replacement water thresholds from 6 to 7 mg/L.
  - In CAO R6V-2011-0055A1, the TDS replacement water threshold was changed from 500 mg/L (in CAO R6V-2011-0055) upwards to 700 mg/L. Finding C. d) in the amended CAO stated that the "TDS concentration value allows for variation in the background data". No statistical basis for the adjustment was provided.
  - In CAO R6V-2013-0103, the TDS threshold level was adjusted based on site-specific data. The threshold was set at 815 mg/L for TDS, and was based on the 1,000 mg/L upper limit MCL minus the standard deviation of TDS data (the standard deviation was 185).
  - In CAO R6V-2007-0017, the nitrate threshold for requiring replacement water was adjusted downward to 5 mg/L from the MCL of 10 mg/L. The adjustment intended to provide a safety factor to residents to ensure water at or over the MCL was not consumed, and was based on the standard deviation of data collected from domestic wells, plus the observed average increase from 2006-2007 of nitrate concentrations in those wells. The standard deviation was 4, and the average 2006-2007 increase was 1 mg/L, for a downward adjustment factor of 5 mg/L.
7. *Have there been any documented reports from within the affected or proposed expansion area of household appliances, laundry, pipes, water heaters, etc. being affected, and if so, what are the dates of those reports?*

**Prosecution Team Response:** Yes. See response to question 1 regarding resident complaints of water quality in their wells and footnote 1 for location of those documents. Finding 4 of CAO R6V-2008-0034A2 (dated March 9, 2010) documents complaints received from residents within the affected area on Thompson Road regarding foul odors, skin irritation, residues on clothes and dishes, and appliance deterioration. These complaints were the basis for requiring whole-house replacement water in that amended CAO, rather than just bottled water which was previously required. This information is contained in Finding 6 of the proposed revised amended CAO R6V-2008-0034A4.

8. *Are you aware of any other regional board requiring replacement water for impacts to appliances, laundry, pipes, water heaters, etc.?*

**Prosecution Team Response:** Yes. In CAO R5-2004-0722 issued to Hilmar Cheese Company, the Central Valley Water Board required replacement water to be provided to affected domestic well users if "the use of the private well supply of any person has been unreasonably affected or may potentially be unreasonably affected by the discharge, including taste and odor". (Order 2a, page 9 of CAO R5-2004-0722; see attachment 2 to this memo). In a Central Valley Water Board letter dated June 23, 2009 (see attachment 3 to this memo), the discharger was notified that water in two domestic wells had been unreasonably affected by discoloration and odors due to high levels of sodium, iron, manganese and TDS. Concentrations of iron, manganese and TDS were above SMCLs. The letter notes that during a site visit to the residences, the occupants stated that the water could not be used for clothes washing because it would stain clothes yellow, and that the water tasted poorly and was not acceptable for bathing due to the dirty appearance (see second page, third paragraph of attachment 3).

The discharger proposed to install water softeners at the residences, but the Central Valley Water Board did not find that proposal acceptable because it would not address (and would likely make worse) the concentrations of TDS and sodium. Ultimately, the discharger's proposal to install water softeners and under-sink reverse osmosis units was accepted by the Central Valley Water Board.

9. *Are you aware of any other regional board that has required replacement water for exceedances of Secondary MCLs? If so, at what level did the regional board require replacement water?*

**Prosecution Team Response:** Yes. The Central Valley Water Board has issued three CAOs requiring replacement water for exceedances of SMCLs. The specific threshold levels for replacement water were not ordered in the CAOs, but in follow-up correspondence (discussed for each CAO where available) it appears that SMCLs for manganese (0.05 mg/L), iron (0.3 mg/L), and the recommended or upper limit TDS SMCLs of 500 or 1,000 mg/L were the applicable threshold levels.

- CAO R5-2005-0141 (attachment 4 to this memo) required the dischargers to conduct a water well survey within one-half mile of the subject site, the Dixon Business Park (a former meat processing plant), to determine if any wells had been polluted or threatened by discharges from the site (Orders 2 and 3 at page 9). Constituents of concern for that CAO included nitrate and TDS. Order 4 at page 9 required that:

"Within 30 days of Regional Board staff notifying the Discharger that an alternate water supply is necessary, submit a work plan and schedule to provide an in-kind replacement for the specified water supply. The Discharger shall implement the work plan in accordance with an approved time schedule, which shall become part of this Order."

The CAO does not specify at what level replacement water will be required, but cites the TDS SMCL of 500 mg/L as an applicable water quality objective for protecting the MUN beneficial use. Region 5 staff currently overseeing the case indicated that replacement water has not been required as a result of the CAO.

- In CAO R5-2004-0722 (attachment 2 to this memo), issued to Hilmar Cheese Company (HCC), the dischargers are required to initiate a program to identify and mitigate impacts on private domestic water supplies. Order 2 at page 9 requires:

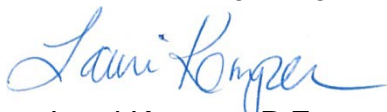


"Within 30 days of written notification from the Executive Officer that use of the private well supply of any person has been unreasonably affected or may potentially be unreasonably affected by the discharge, including taste and odor (emphasis added), submit a work plan and schedule to provide the person at HCC expense an in-kind replacement of the specified water supply. The Discharger shall implement the work plan in accordance with the schedule approved by the Executive Officer, which shall become part of this Order. HCC shall continue to supply alternative water to each affected public water supplier or private well owner until HCC receives written notification from the Executive Officer that such action is no longer necessary."

As discussed above in response to question 8 above, in 2009 two domestic wells were deemed unreasonably affected due to discoloration, poor taste and odor and levels of TDS, iron and manganese above SMCLs. TDS in the domestic wells ranged from 1,200 - 1,300 mg/L, greater than both the recommended and upper limit TDS SMCLs of 500 and 1,000 mg/L. In 2011, the discharger was notified of two additional domestic wells deemed unreasonably affected by discharges from Hilmar Cheese Company (see attachment 5 to this memo). In these wells, TDS ranged from 1,100 - 1,300 mg/L, and manganese concentrations from 0.034 - 0.53 mg/L, both above secondary MCLs (the upper limit TDS SMCL of 1,000 mg/L was used for comparison), and significant increases since 2005 of other salts were also noted.

- In CAO R5-2015-0757 (attachment 6 to this memo), the Central Valley Water Board required replacement water be provided to all residences served by private wells in an affected area near where a dairy wastewater lagoon embankment had failed and inundated nearby properties. Constituents of concern in that CAO are TDS, nitrates, and coliform bacteria. TDS concentrations in affected domestic wells were up to 2,786 mg/L, exceeding the recommended, upper, and short term SMCLs. Finding 12 of the CAO cites the recommended level of 500 mg/L TDS, but no replacement water threshold for TDS is defined in the CAO (replacement water is required in a defined geographic area based on results of initial sampling). Order 5 of the CAO states replacement water may cease once nitrate, fecal coliform and E. coliform levels reach their respective MCLs in three sequential monitoring events, but is silent on what TDS levels must be met to cease replacement water service.

The Prosecution Team appreciates the opportunity to provide additional information and clarification regarding the proposed amended CAO.



Lauri Kemper, P.E.  
Assistant Executive Officer

Attachments:

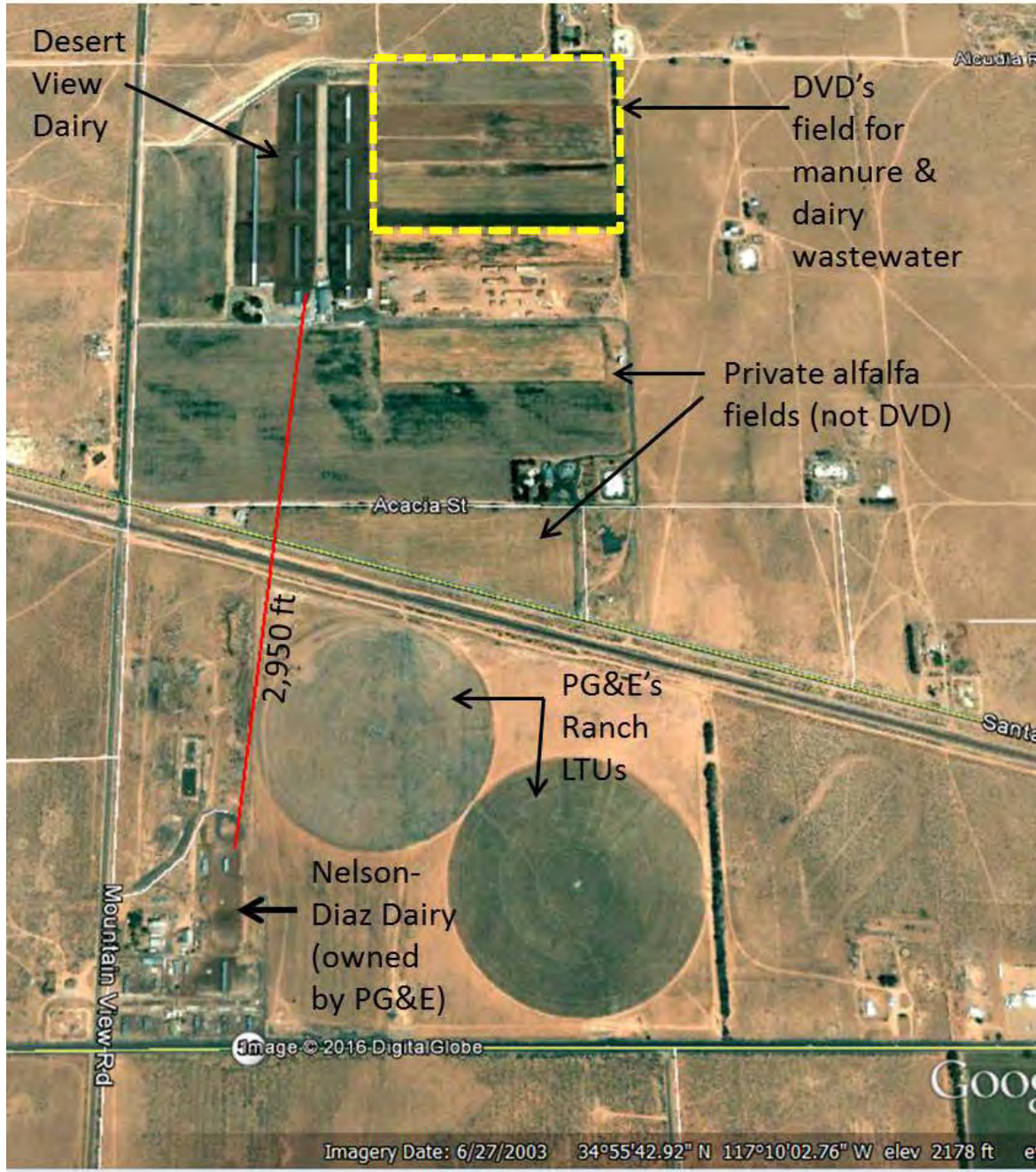
- 1) Hinkley Valley Satellite Photo of Dairies, 2003
- 2) CAO R5-2004-0722, issued to Hilmar Cheese Company
- 3) Central Valley Water Board letter to Hilmar Cheese Company, requiring replacement water for domestic wells, dated June 23, 2009
- 4) CAO R5-2005-0141, issued to Dixon Business Park
- 5) Central Valley Water Board letter to Hilmar Cheese Company, requiring replacement water for domestic wells, dated March 18, 2011
- 6) CAO R5-2015-0757, issued to CMC Land Holdings, LLC
- 7) Discussion and results of T-test analysis



# Attachment 1

Attachment 1

### Hinkley Satellite Image, 2003



## Attachment 2

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

CLEANUP AND ABATEMENT ORDER NO. R5-2004-0722

FOR  
HILMAR CHEESE COMPANY, INC  
HILMAR WHEY, INC  
AND  
KATHY AND DELTON NYMAN  
CHEESE PROCESSING PLANT  
MERCED COUNTY

The Order is issued to the above-named parties based on provisions of California Water Code (CWC) Section 13304 that authorize the Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) to issue cleanup or abatement orders.

The Regional Board finds that:

**INTRODUCTION AND BACKGROUND**

1. Facility Location: The Hilmar Cheese Company (HCC) Cheese Processing Plant (hereafter Plant or Facility) and waste disposal areas are one-half mile north of the unincorporated community of Hilmar on Lander Avenue in Merced County.
2. Land Uses: Land uses in the vicinity of the Plant are primarily rural residential and agricultural, including several confined animal feeding operations (dairies). Isolated houses on agricultural parcels that rim the perimeter of the Facility rely upon private domestic supply wells. In 2001 HCC reported 97 private domestic and irrigation supply wells within 2,500 feet of the Plant. Crops grown within five miles of the Plant include alfalfa, corn (forage), peaches, almonds, sweet potatoes, and vineyards according to 1995 land use data published by the California Department of Water Resources.
3. Responsible Parties: Waste Discharge Requirements (WDRs) Order No. 97-206 regulates waste discharge from the Plant and it identifies Hilmar Cheese Company, Inc.; Hilmar Whey, Inc.; Hilmar Cheese Company Properties Partnership; Alvin and Devona Wickstrom; Kathy and Delton Nyman, dba Delton Nyman's Farm; and Jose G. and Marie Silveira, a privately held California corporation; collectively as the discharger. Order No. 97-206 identifies Hilmar Cheese Company, Inc.; Hilmar Whey, Inc.; and Kathy and Delton Nyman as operators and remaining persons as property owners. Alvin and Devona Wickstrom, identified as owners of a portion of the Primary Lands (as identified in Order No. 97-206), subsequently sold the property to Kathy and Delton Nyman. This action names only the identified operators and collectively refers to them as "HCC" and "Discharger." The identification of Dischargers under this Order may be amended in future actions, as information justifies.
4. Waste Discharge Requirements: WDRs Order No. 97-206 authorizes a monthly average daily wastewater flow of up to 0.75 million gallons per day (mgd) to fields identified as "Primary Lands." Hilmar Cheese Company Properties Partnership and the Nymans acquired adjoining acreage in 2000 now included with the Primary Lands identified in Order No. 97-206. WDRs Order No. 97-206 states, in part, the following:

Discharge Specification B.3: Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and reclamation area.

Standard Provision A.11: Creation of a condition of nuisance or of pollution by the treatment and disposal of waste is prohibited.

### WATER QUALITY OBJECTIVES

5. Basin Plan Designated Beneficial Uses: WDRs Order No. 97-206 implements the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, 4<sup>th</sup> Edition*, (hereafter Basin Plan). The Basin Plan establishes water quality objectives (WQOs) that set the threshold necessary to protect the beneficial uses identified in WDRs Order No. 97-206 (e.g., MUN and AGR) and it establishes policies for implementation of WQOs.
6. Basin Plan Water Quality Objectives: The Basin Plan includes numeric and narrative WQOs for constituents in, and toxicity and tastes and odors of, groundwater. For example, waters designated for use as a municipal and domestic supply cannot contain chemical constituents in concentrations that exceed the numeric maximum contaminant levels (MCLs) specified in Title 22, California Code of Regulations (CCR). In contrast, the narrative WQO for chemical constituents states groundwaters shall not contain chemical constituents in concentrations that adversely affect any designated beneficial use. The Basin Plan (pages IV-16 through IV-18) establishes procedures for establishing maximum numerical water quality limitations from narrative and numeric WQOs. The concentration of each constituent that effectively ensures the protection of the beneficial use most sensitive to the constituent becomes the controlling concentration.
7. Numeric Water Quality Objectives: The WQOs specified in the Basin Plan for certain salt constituents that protect and maintain MUN beneficial use of groundwater are listed below:

<u>Constituent</u>	<u>Units</u>	<u>WQO</u>
Electrical Conductivity at 25°C (EC)	µmhos/cm	900
Iron	mg/L	0.3
Manganese	mg/L	0.05
Total Dissolved Solids (TDS)	mg/L	500

8. Narrative Water Quality Objectives: Major constituents affecting suitability of water for crop application include chloride and sodium. Elevated concentrations can reduce crop growth by causing foliar damage or reducing the ability of plant roots to absorb water. *Water Quality for Agriculture* by Ayers and Westcot provides general salt tolerance guidelines for many common field, vegetable, forage, and tree crops. Several possible concentration thresholds exist for irrigation use dependent upon crop and irrigation method, and thresholds are considered flexible in that adverse impacts can sometimes be avoided with up to 20% variance in specific applications. The range of concentrations of certain waste constituents potentially affecting MUN and AGR beneficial uses of groundwater are listed below as the range of concentrations as developed following Basin Plan procedures for implementation of a narrative WQO. The greatest concentration in the range allows continued use but may cause some impairment, and

therefore is the maximum concentration projected in this action as still potentially consistent with the Basin Plan.

<u>Constituent</u>	<u>Units</u>	<u>AGR</u>	<u>MUN</u>
Ammonia-N	mg/L		1.5 - 10 <sup>1</sup>
Chloride	mg/L	106-175 <sup>2</sup>	
Sodium	mg/L	69-115 <sup>3</sup>	

<sup>1</sup> Upper Limit assumes complete nitrification to nitrate (as N), and reflects the MCL for nitrate.

<sup>2</sup> Lower limit reflects sensitivity of certain crops as reported in Ayers, R. S. and D. W. Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985). Upper limit reflects sensitivity of certain crops as reported in *Agricultural Salinity Assessment and Management. American Society of Civil Engineers Manuals and Reports on Engineering Practice No. 71*, New York (1996).

<sup>3</sup> *Ibid*

### FACILITY MODIFICATIONS

9. 2000 Report of Waste Discharge: In 2000, the Discharger submitted a Report of Waste Discharge (RWD) for an increase in discharge to 1.25 mgd, enlargement of wastewater disposal area, use of Vibratory Shear Enhanced Processing (VSEP™) for insoluble solids removal, and use of reverse osmosis (RO) treatment technology for dissolved solids removal. The RO treatment produces a low salinity effluent (RO permeate) and a concentrated wastestream (RO concentrate). In December 2000, the Discharger began discharging to other than the Primary Lands by discharging RO permeate to two clay-lined ponds. In February 2001, it began to deliver RO permeate to irrigate fodder crops planted in nearby farmland called the “Secondary Lands.”
10. Treatment Technology Failure: Though effective in pilot trials, the VSEP™ treatment system subsequently proved ineffective at full-scale operation. Beginning in spring 2003, treatment changed to dissolved air flotation followed by sand filtration then RO. HCC has discharged about 0.6 mgd of RO Permeate to the Secondary Lands and about 0.7 mgd of untreated wastewater to the Primary Lands using these treatment methods.
11. 2004 RWD: In August 2004, the Discharger submitted an RWD proposing a phased increase in discharge to 2 mgd; expansion of discharge area; a new wastewater treatment facility (WWTF) that reflects a change in treatment technology; and groundwater limitations. The RWD contains an analysis of the proposed discharge with respect to State Water Resources Control Board (State Board) Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality Waters in California*. The change in technology is necessary to consistently comply with the effluent quality requirements prescribed by WDRs Order No. 97-206. The Discharger reports the new WWTF will be fully operational by the end of December 2004. Regional Board staff is preparing draft revised WDRs, and will propose that the Regional Board action consider consistency with State Board Resolution 68-16 and establishment of groundwater limitations.



**WASTE CHARACTERIZATION**

12. Discharger self-monitoring reports (SMRs) characterize the trend of discharge to the Primary Lands over the last six years as follows<sup>1</sup>:

<u>Constituent</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>
Flow (mgd)	0.86	1.2	0.69	0.84	0.74	0.68
EC (µmhos/cm)	1,900	2,100	3,900	2,500	2,800	2,700
BOD <sup>2</sup> (mg/L)	3,300	3,400	5,300	3,900	4,300	4,100
<u>Total Nitrogen<sup>3</sup> (mg/L)</u>	170	260	270	290	330	150

<sup>1</sup> Yearly averages calculated from data submitted in SMRs from 1999 to June 2004 rounded to two significant figures.

<sup>2</sup> 5-day biochemical oxygen demand at 20°C

<sup>3</sup> Total nitrogen calculated by adding the nitrate (as N) and total Kjeldahl nitrogen (TKN) concentrations reported in the SMRs or as directly reported in the August 2004 RWD. Total nitrogen results for 1999 were calculated using reported nitrate (as NO<sub>3</sub>) and converting it to nitrate as N, then adding TKN.

Three recent SMRs (June through August 2004) characterize the concentrations of selected waste constituents discharged to the Primary Lands as follows:

<u>Constituent (mg/L)</u>	<u>Average</u>	<u>Range</u>
TDS	5,280	2,000 - 12,000
Fixed TDS	1,900	800 - 3,500
Sodium	310	160 - 490
Chloride	310	160 - 510
Iron	0.29	0.16 - 0.63
Manganese	0.01	< 0.01 - 0.02

**ODORS AND FLIES**

13. Citizen Complaints: Northwest winds prevail in the Plant vicinity, but at times may blow south-southeast toward the community of Hilmar. Since HCC increased waste discharge to the Primary Lands in 2000, local residents have complained to the Regional Board of both odors and flies at an increasing frequency, blaming the conditions on HCC and claiming an adverse effect on their free use of property (e.g., unable to open windows, enjoy outdoor activities, etc.). Some complainants also expressed concern over fly-borne diseases. As characterized by these complaints, the objectionable odor and vector (primarily flies) conditions occur year-round, typically peak during the summer months, and are most intense during the early morning or late evening hours. Some Regional Board staff inspections (e.g., March 2000) have verified offensive odors offsite that staff attributed to HCC. Other staff inspections found no offensive odors that could be attributed to HCC. A recent inspection documented a large number of flies (e.g., June 2004) in the Primary Lands, but no on-site fly breeding.
14. Citizen Complaints filed with Others: Local residents have also filed complaints that HCC causes objectionable odor and vector conditions with the Merced County Environmental Health Department and the San Joaquin Valley Air Pollution Control District. In September 2004, the

Governor of California received a petition signed by 43 local residents that alleged HCC to be the source of ongoing foul odors and pollution.

15. Discharger Nuisance Controls: In 2002, the Discharger began cultivating checks within a few days of wastewater application to break the fly breeding cycle. It also has service contracts for fly control in and around the Plant. The Discharger does not monitor flies within and along the perimeter of the Primary Lands.

**GROUNDWATER**

16. Groundwater Monitoring: The Discharger monitors groundwater in a network of 20 wells (MW-1 through MW-20). Most wells are within or along the perimeter of the Primary Lands. First-encountered groundwater is monitored by MW-1 through MW-17 and by MW-20. Two shallow-deep well pairs (MW-11/MW-18 and MW-12/MW-19) provide data from the uppermost and lower portions of the upper aquifer. Wells MW-12, MW-14, MW-16, and MW-17 monitor shallow groundwater beyond the perimeter of the Primary Lands.
17. Background Quality: Only MW-20 appears unaffected by the HCC discharge, other waste sources, and freshwater sources. For purposes of this Order, it is considered reflective of background quality.
18. Groundwater Characterization: Data from January 1999 through February 2004 SMRs for wells downgradient of the Primary Lands yielded the following averages<sup>1</sup>:

Constituent	Background <sup>2</sup>	Monitoring Wells at Points of Compliance				
		MW-4	MW-7	MW-8	MW-10	MW-15
BOD	1	5	42	23	17	42
EC	510	1,800	2,700	1,500	1,700	1,800
TDS	450	1,100	1,900	950	1,100	1,200
Sodium	13	240	410	210	250	120
Chloride	11	190	230	130	160	140
Ammonia-N	< 1	9.0	10	13	11	2.0
Iron	0.6	9.6	15	20	15	10
Manganese	0.08	3.0	18	5.9	5.1	5.3

<sup>1</sup> Values rounded to two significant figures. For all results reported as less than or non-detect, half the detected limit was used.

<sup>2</sup> MW-20 data, representing ambient water quality.

**NUISANCE**

19. Section 13050(m) of the CWC defines “nuisance” as:

anything which meets all of the following requirements: (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property. (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal. (3) Occurs during, or as a result of, the treatment or disposal of wastes.

The off-site offensive odors verified by staff violated Discharge Specification B.3 of WDRs Order No. 97-206 and indicate a nuisance or a threat thereof. Reports from local residents that indecent or offensive odors have interfered with comfortable enjoyment of life or property indicate a nuisance or threat of nuisance. Until HCC can fully oxidize all of its industrial wastewater in all circumstances, the threat will continue.

**POLLUTION**

20. Section 13050(1)(1) of the CWC defines pollution as:

an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following: (A) The waters for beneficial uses. (B) Facilities which serve these beneficial uses.

21. Comparison of well data against the background data from MW-20 (Finding 18) demonstrates degradation of groundwater by waste constituents discharged by HCC, with the exception of iron and manganese. The elevated concentrations of these two constituents in groundwater impacted by the discharge are due to the excessive loading of organic waste constituents to the Primary Lands. Organic overloading in a soil treatment system creates reducing conditions that cause denitrification, which reduces nitrate in soil pore solution to nitrogen gas, but reduces insoluble manganese and iron oxide compounds in soil to soluble forms that leach to groundwater.

22. Comparison of average well data against numeric WQOs (Finding 7) and background quality, as background quality supersedes the numeric WQO for iron and manganese, indicates that waste constituents discharged by HCC have created a condition of pollution for these constituents:

Monitoring Wells at Points of Compliance

<u>Constituent</u>	<u>Background</u>	<u>WQO</u>	<u>MW-4</u>	<u>MW-7</u>	<u>MW-8</u>	<u>MW-10</u>	<u>MW-15</u>
EC	N/A	900	1,800	2,700	1,500	1,700	1,800
TDS	N/A	500	1,100	1,900	950	1,100	1,200
Iron	0.6	N/A	9.6	15	20	15	10
Manganese	0.08	N/A	3.0	18	5.9	5.1	5.3

23. Comparison of average well data against the maximum groundwater limits that can be projected from narrative WQOs (Finding 8) indicates that waste constituents discharged by HCC threaten to create a condition of pollution:

Monitoring Wells at Points of Compliance

<u>Constituent</u>	<u>WQO</u>	<u>MW-4</u>	<u>MW-7</u>	<u>MW-8</u>	<u>MW-10</u>	<u>MW-15</u>
Sodium	115	240	410	210	250	120
Chloride	175	190	230	130	160	140
Ammonia-N	10	9.0	10	13	11	2.0

### SITE ASSESSMENT

24. In September 2004, the Discharger submitted a *Groundwater Characterization Report* that concluded the horizontal extent of impacts to the shallow groundwater beneath the Primary Lands is confined to an area that extends beyond the Primary Lands, and that private wells sampled beyond this area showed no evidence of impact. The Report recommends, among other things, that HCC cease applying untreated or partially treated wastewater to the Primary Lands as soon as the new WWTF is commissioned.
25. Review of the *Groundwater Characterization Report* indicates the following: the horizontal and vertical extent of degradation and pollution need to be defined; private wells not sampled within the affected area need to be sampled and evaluated; accountability needs to be established for providing alternate water supplies; a conceptual model needs to be provided that identifies and evaluates components of the aquifer system affecting gradient and quality of groundwater within influence of the discharge.

### REGULATORY CONSIDERATIONS

26. State Board Resolution No. 92-49 establishes *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*. Resolution 92-49 requires clean up to background or, if that is not reasonable, to an alternative level no greater than WQOs that is the most stringent level economically and technologically feasible. Any cleanup level alternative to background must (a) be consistent with the maximum benefit to the people of the state, (b) not unreasonably affect present and anticipated beneficial uses of such water, and (c) not result in water quality less than that prescribed in the Basin Plan and applicable Water Quality Control Plans and Policies of the State Board.
27. The State Board *Water Quality Enforcement Policy* states, in part:
- At a minimum, cleanup levels must be sufficiently stringent to fully support beneficial uses, unless the RWQCB allows a containment zone. In the interim, and if restoration of background water quality cannot be achieved, the CAO should require the discharger(s) to abate the effects of the discharge. Abatement activities may include the provision of alternate water supplies. (Enforcement Policy, p. 19.)
28. Section 13304(a) of the CWC provides that:
- Any person who has discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board, or 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 into the 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 the waste or abate the effects of the waste, or, 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 affected public water supplier or private well owner. Upon failure of any person to comply with the cleanup or abatement order, the Attorney General, at the request of the board, shall petition the superior court for that county for the issuance of an injunction requiring the person to comply with the order. In the suit, the court shall have jurisdiction to grant a prohibitory or mandatory injunction, either preliminary or permanent, as the facts may warrant.

29. Section 13267(b) of the CWC states:

(1) In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

Technical reports required by this Order are necessary to assure compliance with Section 13304 of the CWC and to ensure the protection of the public health and safety.

30. Section 13304(c)(1) of the CWC provides that:

. . . the person or persons who discharged the waste, discharges the waste, or threatened to cause or permit the discharge of the waste within the meaning of subdivision (a), are liable to that government agency to the extent of the reasonable costs actually incurred in cleaning up the waste, abating the effects of the waste, supervising cleanup or abatement activities, or taking other remedial actions. . .

31. The Discharger has violated waste discharge requirements established by WDRs Order No. 97-206 and it has caused or permitted, causes or permits, or threatens to cause or permit waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance. A cleanup or abatement order pursuant to CWC Section 13304 that requires nuisance abatement and investigation and cleanup as required by Resolution 92-49 is necessary and appropriate. To the extent that the Discharger's actions have affected public water supplies or private wells, the Regional Board is authorized to require that it provide uninterrupted replacement water service to each affected public water supplier or private well owner. The Regional Board is authorized to require the Discharger to reimburse the Regional Board for oversight and supervision of cleanup and abatement activities. As the WWTF will be fully operational by the end of December 2004, impacts on groundwater should begin to be addressed and offensive odors should be abated by 1 January 2005.
32. If the Discharger fails to comply with this Order, the Executive Officer may request the Attorney General to petition the superior court for the issuance of an injunction and may issue a complaint pursuant to CWC Section 13268 or 13323 that proposes to assess administrative civil liability in a monetary amount authorized by CWC Sections 13268 or 13350
33. The issuance of this Order is an enforcement action by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.), pursuant to Title 14, CCR, Section 15321(a)(2). The implementation of this Order is also an action to assure the restoration of the environment and is exempt from the provisions of the California Environmental Quality Act in accordance with Title 14, CCR, Sections 15308 and 15330.

34. Any person affected by this action of the Regional Board may petition the State Board to review the action in accordance with CWC Section 13330 and Title 23, CCR, Sections 2050-2068. The State Board must receive the petition within 30 days of the date of this Order. Copies of the law and regulations applicable to filing petitions are available at [www.waterboards.ca.gov](http://www.waterboards.ca.gov), but will be provided on request.

**IT IS HEREBY ORDERED** that, pursuant to CWC Sections 13304 and 13267, Hilmar Cheese Company, Inc.; Hilmar Whey, Inc; and Kathy and Delton Nyman; their agents, successors, and assigns; shall cleanup and abate as specified below:

1. Effective **1 January 2005**, abate offensive odors and nuisance caused by the conveyance, treatment, storage, and disposal of Plant waste and wastewater.
2. In accordance with the following schedule, initiate a program to identify and mitigate impacts on private domestic water supplies:
  - a. **Within 30 days of written notification from the Executive Officer** that use of the private well supply of any person has been unreasonably affected or may potentially be unreasonably affected by the discharge, including taste and odor, submit a work plan and schedule to provide the person at HCC expense an in-kind replacement of the specified water supply. The Discharger shall implement the work plan in accordance with the schedule approved by the Executive Officer, which shall become part of this Order. HCC shall continue to supply alternative water to each affected public water supplier or private well owner until HCC receives written notification from the Executive Officer that such action is no longer necessary.
  - b. **By 1 February 2005**, submit a technical report containing protocol for conducting a comprehensive survey of all water supply wells within one-half mile of the Primary Lands potentially threatened by waste constituents originating from the Plant, including a plan for sampling all water supply well(s). The sampling plan shall include specific actions and a commitment by the Discharger to complete the sampling plan within 90 days of approval by the Executive Officer, including obtaining all necessary access agreements.
  - c. **Within 30 days of written approval from the Executive Officer of the water supply well sampling plan**, implement the sampling plan and, **within 90 days of written approval of the plan from the Executive Officer**, submit a written technical report describing conditions encountered during the survey. The technical report shall include a map depicting the location of all wells, well ownership information (i.e., contact name and address), an explanation for all unmonitored wells, a tabulated summary of analytical results from monitored wells, analytical laboratory reports, and chain-of-custody forms.
3. As the first phase in a process to conform with State Board Resolution 92-49 and the Basin Plan (in particular the Policies and Plans listed within the Control Action Considerations portion of Chapter IV), comply with the following tasks:



- a. Submit a technical report **by 15 March 2005** that describes a work plan to determine the lateral and vertical extent of waste constituents in groundwater that exceed background quality if the exceedance is potentially caused by HCC. The investigative area shall include groundwater influenced by HCC's discharge beneath and beyond the Plant and Primary Lands. The work plan shall satisfy the information requirements set forth in *Attachment A* of this Order.

Well design, construction, and destruction shall comply with appropriate standards as described in California Well Standards Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 94 81 (December 1981), and any more stringent standards adopted by Merced County pursuant to CWC Section 13801.

- b. Submit a technical report **by 15 April 2006** that describes the results of the first phase of *Site Assessment* and that satisfies *Attachment B* of this Order. The technical report shall describe the distribution of waste constituents in groundwater, identify groundwater gradients, and include graphs and contours where beneficial for interpretation and understanding of the situation. Where degradation is reported to be in part or whole from other sources, the technical report shall provide reasoning and evidence that supports such a conclusion. The technical report shall include a recommendation for additional investigation and ongoing monitoring, as appropriate.
- c. Upon a determination by the Executive Officer that the investigation of lateral and vertical extent of waste constituents in groundwater to be complete, submit a technical report by a date to be specified by the Executive Officer that evaluates remedial action and cleanup alternatives and proposes an appropriate cleanup system.
- d. Continue investigation, cleanup and abatement activities under this Order until such time as the Executive Officer determines that the Discharger has complied with the Order.

4. Provide only technical reports that are:

- a. Prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, Sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, Sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
- b. Submitted with a cover letter from the Discharger that includes a statement signed by the authorized representative certifying under penalty of law that the representative has examined and is familiar with the report and that to his knowledge, the report is true, complete, and accurate.
- c. Submitted in triplicate, with two bound and one unbound. When requested by Regional Board staff, the Discharger shall provide technical reports and supporting data in

electronic format. This requirement is necessary for Regional Board staff to effectively and efficiently review and comment on submitted technical reports.

5. Reimburse the Regional Board in a timely manner for reasonable costs associated with oversight of the investigation and cleanup that are billed in accordance with State Board procedures. Failure to do so shall be considered a violation of this Order.
6. Conduct new work only after the work plan for the work has been approved in writing by the Executive Officer.

If, for any reason, the Discharger is unable to perform any activity or submit any document in compliance with the schedule set forth herein, or in compliance with any work schedule submitted pursuant to this Order and approved by the Executive Officer, it may request in writing an extension of the time. The extension request shall include justification for the delay.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement or may issue a complaint for administrative civil liability. This Order does not preclude the possible assessment of civil liability pursuant to CWC Sections 13261, 13265, 13268, 13350, or other applicable authority for violations that predate this Order.

This Order is effective upon the date of signature.

\_\_\_\_\_  
ORIGINAL SIGNED

THOMAS R. PINKOS, Executive Officer

\_\_\_\_\_  
2 DECEMBER 2004

(Date)

Attachments

- A Information Requirements for Site Assessment Work Plan
- B Information Requirements for a Site Assessment Report

ARP/jlk 12/2/04

## Attachment 3



# California Regional Water Quality Control Board Central Valley Region

Karl E. Longley, ScD, P.E., Chair

1685 E Street, Fresno, California 93706  
(559) 445-5116 • Fax (559) 445-5910  
<http://www.waterboards.ca.gov/centralvalley>



Arnold  
Schwarzenegger  
Governor

Linda S. Adams  
Secretary for  
Environmental  
Protection

FILE

23 June 2009

Mr. Burton Fleischer  
Hilmar Cheese Company  
P.O. Box 910  
Hilmar, CA 95324

## DEGRADED OFFSITE WATER SUPPLIES, HILMAR CHEESE COMPANY, HILMAR, MERCED COUNTY

The water in Wells 35 and 35B at 20295 August Road has been unreasonably affected. The water is discolored yellow to brown to black, has an odor, and has high concentrations of sodium, iron, manganese, and total dissolved solids (TDS). The concentrations of iron, manganese, and TDS in the water are above California Code of Regulations, Title 22 consumer acceptance levels (secondary maximum contaminant levels).

In your letter, you say you will install a water softener to the residences. Water softeners will reduce the iron and manganese some, but will not remove sodium and, in fact, will likely increase the concentrations of sodium and TDS. Therefore, we do not find your proposal to soften the water for these wells acceptable.

**By 17 July 2009**, submit a workplan proposing a replacement water supply for the residences at 20295 August Road. The enclosed memorandum contains additional detail on the affected offsite water supplies and our evaluation of your proposal.

If you should have any questions regarding this matter, please call Jan Alfson at (559) 488-4345 or Russell Walls at (559) 488-4392.

*Pamela C. Creedon*  
for Pamela C. Creedon  
Executive Officer

- cc: Director of Environmental Health, Merced County, 385 East 13<sup>th</sup> Street,  
Merced, CA 95340-1350
- Mr. Terry James, Jacobson/James and Associates, 4231 Pacific St., Suite 1,  
Rocklin, CA 95677
- Ms. Maria Chavarin, 6160 Bond Rd., Oakdale, CA 95361



California Environmental Protection Agency



Linda S. Adams  
Secretary for  
Environmental  
Protection

# California Regional Water Quality Control Board Central Valley Region

Karl E. Longley, ScD, P.E., Chair

1685 E Street, Fresno, California 93706  
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<http://www.waterboards.ca.gov/centralvalley>



Arnold  
Schwarzenegger  
Governor

**TO:** Russell W. Walls  
Senior Engineer  
RCE No. 43140

**FROM:** Jan Alfson  
Engineering Geologist  
CHG No. 205

**SIGNATURE:** 

**DATE:** 23 June 2009

**SUBJECT: DEGRADED OFFSITE WATER SUPPLIES, HILMAR CHEESE COMPANY,  
MERCED COUNTY**

We requested that Hilmar Cheese Company (HCC) provide replacement water supplies for two residences served by Wells 35 and 35B at 20295 August Road, Hilmar. Cleanup and Abatement Order No. R5-2004-0722 (CAO) states that **"Within 30 days of written notification from the Executive Officer** that use of the private well supply of any person has been unreasonably affected or may potentially be unreasonably affected by the discharge, including taste and odor, submit a work plan and schedule to provide the person at HCC expense an in-kind replacement of the specified water supply."

Hilmar Cheese responded that it does not believe the wells at this location are unreasonably affected, but will install water softeners at each of the residences. In this memorandum, I will first address whether the wells have been unreasonably affected, then evaluate Hilmar Cheese's proposal to provide a water softener to each residence.

### Site Visit

I visited the site and talked with each of the residents. The residents stated that the water can appear yellow to brown to black. They stated that the water stains clothes a yellowish color and that they do not like to take showers or give their kids baths with the dirty appearing water. They say that the water tastes terrible and they do not drink it. Samples collected from the well head of each well had a yellow tint on the day I visited the site. A white shirt that the residents said had been washed in the water appeared to have a slight yellow tint. The residents say they generally have to go to a laundromat to wash their clothes to avoid having them stained.

### Water Quality for Wells 35, 35B, and Background

Wells 35 and 35B have been sampled twice by Hilmar Cheese consultants. In addition, Hilmar Cheese's consultant sampled existing domestic wells upgradient of the Hilmar Cheese facility. The consultant also collected water samples from eight temporary borings installed upgradient of Hilmar Cheese. The results of these samplings are summarized in the reports *Well Evaluation Technical Report* dated 15 August 2008 and *Phase II Investigation Data Deliverable and Summary Report* dated 23 June 2008, both prepared by Jacobson, James and Associates.

The *Well Evaluation Technical Report* states that Hilmar Cheese's wastewater disposal is the source of impact to the water supplies at 20295 and 20819 August Road. The table below includes selected analytical results for the two wells at 20295 August Road (Wells 35 and 35B). All results are in milligrams per liter (mg/L) and are for samples collected in 2008.

Well	TDS	Chloride	Bicarbonate	Sodium	Manganese	Iron
Well 35	1300	250	700	300	2.5	0.38
Well 35B	1200	210	830	220	0.47	0.4

Sodium – The sodium concentration of 300 mg/L in Well 35 is twice the highest sodium concentration detected in groundwater samples collected upgradient of the site.

Iron – The wells have relatively high concentrations of iron which can cause water to appear yellow to red and stain clothes and surfaces it comes in contact with (this correlates with the resident's complaints).

Manganese – Manganese concentrations for Wells 35 and 35B (2.5 and 0.47 mg/L, respectively) are greater than the maximum concentration found in samples from wells upgradient of Hilmar Cheese. The concentration of manganese in Well 35 is more than six times higher than the maximum upgradient concentration. Water high in manganese can appear yellow to black and may stain clothes and surfaces it comes in contact with (this correlates with the resident's complaints). Samples collected upgradient of Hilmar Cheese had manganese concentrations ranging from <0.01 to 0.42 mg/L.

TDS - The TDS concentrations for Wells 35 and 35B (1300 and 1200 mg/L, respectively) are greater than the calculated background concentration of 570 mg/L and are also 33 percent higher than the highest TDS concentration in samples collected upgradient of the site during the assessment activities (the mineral constituents causing the high TDS are likely what is causing the water to taste bad).

Chloride – The subject wells have chloride concentrations 50 to 75 percent higher than the maximum chloride concentration of groundwater samples collected upgradient of Hilmar Cheese.

Bicarbonate – The bicarbonate concentrations of the subject wells (700 and 830 mg/L) are 70 and 100 percent higher than the highest bicarbonate concentration in samples collected upgradient of Hilmar.

Title 22, section 64449 of the California Code of Regulations contains Secondary Maximum Contaminant Levels (Consumer Acceptance Contaminant Levels) for chemicals which may affect consumer acceptance of water but do not pose a health risk. The water supplied by Wells 35 and 35B exceeds the secondary standards for iron, manganese, and the upper level limit for total dissolved solids.



### Proposal for Water Softeners

Hilmar has proposed installing water softeners at the residences. These will exchange sodium (or potassium) for calcium and magnesium in the water and will not lower the salt concentration of the water. Depending on the type of salt used to recharge the water softener, the concentration of sodium and chloride may actually increase in the supplied water. Water softeners may remove a portion of the iron and manganese in the water being treated. This is not an acceptable method of providing replacement water to the affected residences.

California Water Code section 13304 (c)(2)(f) states "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."

### **Conclusion**

The water in Wells 35 and 35B at 20295 August Road has been unreasonably affected. The water is discolored yellow to brown to black, has an odor, and has high concentrations of sodium, iron, manganese, and total dissolved solids (TDS). The concentrations of iron, manganese, and TDS in the water are above California Code of Regulations, Title 22 consumer acceptance levels (secondary maximum contaminant levels).

## Attachment 4

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION  
CLEANUP AND ABATEMENT ORDER NO. R5-2005-0141  
FOR

DIXON COMMERCIAL PROPERTIES, MONFORT, INC. (f/k/a MONFORT OF COLORADO,  
INC.), CONAGRA FOODS, INC., GREYNOM, INC. (f/k/a ARMOUR FOOD COMPANY)  
DIXON BUSINESS PARK  
SOLANO COUNTY

This Order is issued to Dixon Commercial Properties, Monfort, Inc. (f/k/a Monfort of Colorado, Inc.), ConAgra Foods, Inc., and Greynom, Inc. (f/k/a Armour Food Company), (hereafter collectively referred to as Discharger) based on provisions of California Water Code Section 13304, which authorizes the California Regional Water Quality Control Board, Central Valley Region (hereafter Regional Board) to issue a Cleanup and Abatement Order (Order).

The Regional Board finds, with respect to the Dischargers' acts or failure to act, the following:

**PROPERTY OWNERSHIP AND OPERATIONS**

1. Dixon Commercial Properties currently owns the Dixon Business Park (Site) as shown in Attachment 1, which is made part of this Order. The Dixon Business Park is located at North 1<sup>st</sup> Street in Dixon, California and occupies approximately 50 acres. The Dixon Business Park consists of 10 lots of which three have been developed and have tilt-up concrete buildings. Dixon Commercial Properties is a California general partnership.
2. The Site was used for meat processing from the mid 1930's to the late 1980's. Meat processing operations at the Site were primarily for cattle and sheep. The meat processing operation closed in 1988 and all facilities were demolished between 1989 and 1990. Ownership of this property changed significantly between 1958 and 1989 and is outlined in the following findings and Attachment 2.
3. Mace Meat Company was the original owner of the facility and operated the Site from the 1930's until 1958 when Armour and Company (IL) acquired the Site. In 1960, Armour and Company (IL) merged with Armour and Company Delaware. The company name was changed during this merger and became Armour and Company. Armour and Company continued to use the Site during this time for meat processing operations. In 1982, the Site was acquired by The Greyhound Corporation in a stock merger between Armour and Company and The Greyhound Corporation. However, all assets and liabilities from Armour and Company were transferred to G. Armour Arizona Company by assignment. The Mace Meat Company deed was never transferred to The Greyhound Corporation during this transaction.
4. In 1983, all assets and liabilities of G. Armour Arizona Company (which meanwhile had in 1982 changed its name to Armour and Company and then transferred all assets and liabilities to the Armour Food Company) were purchased by CAG Subsidiary, Inc. and ConAgra, Inc. CAG Subsidiary, Inc. was operated as a subsidiary of ConAgra Inc. The transfer of assets from the Armour Food Company to CAG Subsidiary, Inc. and ConAgra, Inc. included the Site. Armour Food Company changed names in 1983 and became known as Greynom, Inc. Greynom Inc. was dissolved in 1985. Later, in 1990, the Greyhound Corporation changed its name to Greyhound Dial

Corporation. After another name change in 1991, from the Greyhound Dial Corporation to the Dial Corporation, the Dial Corporation merged with Armour and Company in 1992. In 1996, the Dial Corporation changed its name to the Viad Corporation.

5. From 1983 to 1989, CAG Subsidiary, Inc. and ConAgra Foods, Inc. (f/n/a ConAgra, Inc.) continued to operate the business of Armour Foods and use the Armour brand name. As part of this business, the Site continued to operate as a meat packing and slaughtering house. Monfort, Inc. (f/k/a/ Monfort of Colorado, Inc.) acquired the site during a reorganization and merger with ConAgra, Inc. and CAG Subsidiary, Inc. in 1987. During its ownership of the property (from 1987 to 1989), Monfort, Inc. continued meat packing and slaughtering operations at the Site.
6. The Site was purchased from Monfort, Inc. (f/k/a Monfort of Colorado, Inc., a Delaware Corporation) by William H. MacLaughlin on May 1, 1989. Monfort, Inc. and William H. MacLaughlin entered into a sales agreement for the purchase of the site. Dixon Commercial Properties took title directly from Monfort, Inc. in 1989 under an assignment from William H. MacLaughlin.
7. Dixon Commercial Properties, as current owner of the site, has knowledge of the discharge, which is continuing, and the ability to control it and, therefore, caused or permitted, causes or permits, or threatens to cause or permit, a discharge of waste at the Site where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance.
8. ConAgra Foods, Inc. (ConAgra Foods) is the successor to Armour Food Company. "Armour" is currently a brand name of ConAgra. Operations conducted at the Site by Armour Food Company, ConAgra Foods, and Monfort, Inc. allowed discharge of animal slaughterhouse waste, which is high in nitrates. Analytical testing of the sediment from the wastewater ponds, used for the disposal of processing water from the slaughterhouse, detected elevated concentrations of nitrate. Groundwater analytical testing has detected nitrate (as NO<sub>3</sub>) concentrations in groundwater beneath the site, which exceed the maximum contaminant level (MCL) of 45 mg/L (milligrams per liter) and are greater than background nitrate concentrations (i.e. nitrate concentrations upgradient of the site). Armour Food Company and Monfort, Inc. have caused or permitted waste to be discharged to waters of the state where it has created and threatens to create a condition of pollution or nuisance. ConAgra Foods, as successor to Armour Food Company, acquired the liability of Armour Food Company for causing or permitting this discharge. Con Agra Foods and Monfort Inc. are also the former owners of this property and are therefore subject to this Order because, as former owners of the property, they caused or permitted waste to create a condition of pollution or nuisance and they had knowledge of the discharge and the ability to control it.
9. Armour Food Company was formed on December 20, 1982 and received the assets and liabilities of Armour and Company (formerly G. Armour Arizona Company) in 1983. Later in that same year, Armour Food Company subsequently changed its name to Greynom, Inc. and the corporation was dissolved in 1985. Armour Food Company was subject to waste discharge requirements at the Site (WDRs No. 85-017). Consequently, because Greynom, Inc. (f/k/a Armour Food Company) had knowledge of the discharge and the ability to control it, Greynom, Inc. is subject to this Order. Furthermore, Greynom, Inc. (f/k/a Armour Food Company) is subject to this Order because a dissolved corporation may be named in a cleanup and abatement order.

10. Mace Meat Company owned the Site in 1958 and used the Site as a meat packing and slaughtering house. Industrial waste from the Site consisted of wash waters, paunch materials and other liquid wastes, from the processing of approximately 125 cattle and 1200 sheep daily and the rendering of scrap materials. Waste discharge requirements were adopted and issued to Mace Meat Company in 1958. Consequently, as a former owner and operator of the property, Mace Meat Company caused or permitted waste to be discharged to waters of the state where it has created and threatens to create a condition of pollution or nuisance because they had knowledge of the discharge and the ability to control it. Mace Meat Company will not be named in this Order, but are a responsible party, and if located, will be added to this Order.

### **BACKGROUND**

11. Meat processing operations at the Site occurred from the mid 1930s until the late 1980s. The meat packing and rendering plant was constructed and began operating about 1935. Facility operations included the generation of wastewater, which was disposed in seven ponds (aerobic and anaerobic) for treatment, storage, and disposal. These ponds were constructed between 1953 and 1956. Overflow water was diverted to a leachfield or was used for on-site irrigation at the Site. Historical activities indicate the existence of a rail access livestock receiving facility, truck access livestock receiving facilities, feed storage building, hide salting facilities and a drainage collection basin located south of the wastewater ponds.
12. The ponds were operated under permits issued by the Regional Board from 1958 until 1993. Resolutions and WDRs for the Site were issued to Mace Meat Company (Resolution No. 58-304), Armour and Company (Resolution No. 69-280) and Armour Food Company/Con Agra Corporation (Waste Discharge Requirements-WDRs No. 85-017. A brief summary of the WDRs for the site from 1958 to 1993 follows.

Generally, the purpose of these WDRs was to “govern the nature of the waste discharge”, which was discharged to the ponds for biological destruction prior to disposal by evaporation, percolation, and irrigation of adjacent land. WDRs underwent several modifications during this time period but are consistent with their intent and broad application of the Water Code. Resolution 58-304 prescribed that the waste discharge: a) shall not cause a public nuisance as defined in Section 13005 of the State Water Code; b) shall not cause pollution of groundwaters underlying the disposal area; c) which may overflow onto lands other than those owned or controlled by the discharger 1) shall have received adequate disinfection and, 2) shall have been oxidized sufficiently to prevent nuisance or pollution conditions in the overflow area. Similarly, Resolution 69-280 prescribed that the waste discharge shall: a) not cause pollution of ground or surface waters; b) not cause a nuisance by reason of odors or unsightliness; c) not cause objectionable taste or odor in any domestic waste supply, and; d) not contain any materials in concentrations deleterious to human, plant, animal or aquatic life. Order No. 85-017 was developed with discharge prohibitions and specifications, which required consistency with the Regional Board’s Basin Plan and water quality objectives. Of note is that this Order also required that the present owners (or those in control of the waste discharge facilities) notify any succeeding owner or operator of the existence of this Order by letter and the Regional Board be notified of any ownership changes.

In 1993, Waste Discharge Requirements issued to Armour Food Company/Con Agra Corporation (Order No. 93-052) for the waste ponds were rescinded. Sediments from the ponds were spread in a thin layer across portions of the property and mixed into surface soils with concurrence by Regional Board Staff.

13. Beginning in the late 1980s, the Regional Board began requesting a groundwater investigation of the site. The Regional Board began requesting a groundwater investigation in 1987, which included installation of upgradient and downgradient monitoring wells and a well inventory within a half-mile radius from the facility. The Regional Board made a second request for a groundwater investigation in September 1988. A site inspection by the Regional Board was conducted in April 1989 to determine the status of the waste disposal ponds. The letter discussing the findings of this inspection made several important points. The Regional Board noted that if the site was sold, the discharger would be required to notify the Regional Board of the new owners. Second, the Regional Board requested that the Discharger provide information on the status of the waste disposal ponds and, if the waste disposal ponds were to be closed that the discharger provide to the Regional Board a closure plan for this action. The letter also stated that the need for groundwater investigations at the site would be reevaluated following receipt of analytical data of sludge from the waste disposal ponds.

The Discharger provided a proposal for the closure of the waste disposal ponds and after review of this proposal the Regional Board made another request for groundwater investigations in September 1989. The Regional Board requested that the Discharger submit a workplan and time schedule for groundwater sampling.

The Discharger finally provided one groundwater sample downgradient of the waste water ponds later in 1989. The groundwater grab sample indicated the presence of nitrate above the Primary Maximum Contaminant Level (MCL) and total dissolved solids (TDS) above the Secondary MCL. Nitrate (as  $\text{NO}_3$ ) was detected at 170 mg/l and TDS was detected at 1300 mg/l in the groundwater sample. In 1990 the Regional Board requested additional investigations after several site inspections that revealed other potential source areas for groundwater pollution existed at the site.

In 1990, the Discharger provided a Site Investigation Report, which included additional groundwater data. Four hydropunch samples located cross-gradient of the site detected nitrate concentrations ranging from 100 to 200 mg/l. Correspondence by the Regional Board, dated 10 September 1990, noted that the concentrations of nitrate exceeding the Primary MCL in groundwater may have been caused by the animal waste from the sheep and cattle barn. It was concluded by the Regional Board that the possible source of the nitrates was gone and that the Regional Board would “not pursue the high nitrate problem at this time”.

14. The Discharger began demolishing the site in 1990. Regional Board involvement between 1990 and 1993 included several site inspections and focused on other environmental problems, which included petroleum hydrocarbon contamination from several on-site USTs. The Discharger also during this time period removed sludge from the wastewater ponds and spread the sludge over a 20 acre adjacent off-site area with the Regional Board’s concurrence. The Regional Board’s involvement with the site ended after the WDRs for the waste ponds were rescinded in 1993. However, several environmental assessments were conducted as the property was developed and Dixon Commercial Properties sold portions of the property. In 1999, the sale of one portion of the site required additional soil and groundwater testing as part of the transaction requirements. Groundwater sampling activities revealed elevated concentrations of nickel. A nickel detection of 230  $\mu\text{g/L}$ , which is above the primary MCL of 100  $\mu\text{g/L}$ , led to further investigation to determine the extent of nickel in groundwater. The Regional Board was informed of the findings of this investigation. At the



Regional Board's request, additional characterization of nickel contamination also included additional testing for nitrate because of past operations. It was concluded by the Regional Board, based on further investigation of the site, that the high detection of nickel is limited in extent and no additional characterization of nickel was performed. However, this investigation revealed the presence of nitrates and TDS that exceeded water quality objectives. At the request of the Regional Board, Dixon Commercial Properties installed four monitoring wells at the site in 2001.

15. Dixon Commercial Properties performed groundwater sampling of the four on-site monitoring wells over a one and half-year period from April 2001 to August 2002. Groundwater sampling activities indicated nitrates (as N) ranging from 1.4 to 49 mg/L, nitrates (as NO<sub>3</sub>) ranging from 6.2 to 220 mg/L, and TDS, ranging from 660 to 6000 mg/L. Groundwater elevation data were also collected from these monitoring wells showing that the groundwater flow direction beneath the site was at that time to the southeast. Groundwater elevation measurements indicated monitoring well MW-1 is upgradient and monitoring wells MW-2, MW-3 and MW-4 are downgradient of the former plant operations. Analytical testing of monitoring well MW-1 detected the lowest concentrations of nitrates (as NO<sub>3</sub>), ranging from 6.2 to <23 mg/L. Analytical testing of monitoring wells MW2, MW-3 and MW-4 detected nitrates (as NO<sub>3</sub>) ranging from 62 mg/L to 220 mg/L. The upgradient monitoring well MW-1, indicates that background nitrate concentrations are below primary MCLs.
16. In April 2001, foundation investigations performed at Lot 6 at the Dixon Business Park discovered loose fill material at a depth of 11 feet below ground surface. Dixon Commercial Properties reports that Lot 6 is located near a former pond that was separate from the main ponds used for storage of the meat processing wastewater. Filling of this pond apparently occurred sometime before closure of the seven wastewater ponds. Excavation of the fill material was necessary because this material could not support a proposed building on Lot 6. Approximately 6000 yards of fill material were removed and were placed in a waste pile on Lots 4 and 9 in June 2002. The fill material included concrete, tires, metal objects, burn debris, wood, and miscellaneous metallic objects. Some of the larger objects, including the aforementioned objects, were segregated from the excavated materials and were removed from the property. Analytical testing of the fill material indicated that this material poses no threat to groundwater. This fill material was spread in Lot 1 and will be used as a foundation layer for planned parking areas and structures in this area.
17. An additional characterization was performed jointly by Dixon Commercial Properties and Monfort, Inc. in 2004. The purpose of this investigation, as stated in the characterization report, was to collect additional data to further characterize the lateral and vertical extent of elevated concentrations of nitrates and TDS in groundwater beneath the site and downgradient of the property. Additional data collected included soil and groundwater grab samples. The scope of the work also included the collection of soil samples from the vicinity of the former processing structures to determine if any residual nitrates are present in soils. This investigation occurred without prior concurrence or oversight by the Board. The groundwater samples detected nitrates (as NO<sub>3</sub>) ranging from 99 mg/L to 251 mg/L and TDS ranging from 890 mg/L to 11,000 mg/L. The vertical profile of groundwater samples collected indicates higher nitrate concentrations in the shallow groundwater (18 to 20 feet below ground surface (bgs)) and decreasing concentrations with depth (40 to 70 feet bgs). The vertical profile samples indicate high TDS at depth (66 to 70 feet bgs) and generally lower TDS in the shallow groundwater samples (18 to 20 feet bgs). Samples exceeded the secondary MCL for TDS in the shallow sample (2500 mg/L) and the deepest sample (11,000 mg/L). The vertical profile data were collected immediately downgradient of the suspected

location of the former water supply wells. Soil samples collected from 5.5 feet to 20 feet bgs detected nitrate concentrations ranging from 18.1 to 183 mg/kg.

18. The groundwater analytical data from 2004 correlates with the groundwater data collected between April 2001 to August 2002 from the on-site monitoring wells and groundwater grab samples collected during previous sampling activities. The groundwater data suggest that other operations at the plant, in addition to the former wastewater ponds, have contributed to the nitrate and TDS problem at this site. The Dischargers believe that the groundwater data collected from one sample location, at the western edge of the facility detected nitrate concentrations of 251 mg/L, suggests that other off-site sources have contributed to nitrate groundwater pollution. The Dischargers also point out that nitrate groundwater contamination is pervasive in the Dixon area. However, data collected by Dixon Commercial Properties, discussed in Finding 15, appear to conflict with this assessment and indicate that the background concentrations for nitrate are below MCLs. Further investigation and evaluation of the background nitrate concentrations would clarify this issue. Groundwater remediation activities have not been conducted at this Site.

### AUTHORITY – LEGAL REQUIREMENTS

19. The Regional Board’s *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, 4<sup>th</sup> Edition* (hereafter Basin Plan) designates beneficial uses of the waters of the State, establishes water quality objectives (WQOs) to protect these uses, and establishes implementation policies to attain WQOs. The beneficial uses of the groundwater beneath the site are domestic, municipal, industrial, and agricultural supply.
20. The constituents listed in Finding No. 8 are wastes, as defined in Water Code, section 13050(d).
21. Pollution of groundwater with nitrate and TDS impairs the beneficial uses of the groundwater. The wastes detected at this Site are above at concentrations that exceed the Site’s background concentrations.
22. WQOs listed in the Basin Plan include numeric WQOs, e.g., state drinking water maximum contaminant levels (MCL) that are incorporated by reference, and narrative WQOs, including the narrative toxicity objective and the narrative tastes and odors objective for surface and groundwater. The numeric limits for the constituents of concern listed in the following table implement the Basin Plan WQOs.

Constituent	Limits	WQO	Reference
Nitrate (as NO <sub>3</sub> )	45 mg/L <sup>1</sup>	California Primary Maximum Contaminant Level	California Public Health Goal in Drinking Water – California Department of Health Services.
TDS	500 mg/L	California Secondary Maximum Contaminant Level	California Public Health Goal in Drinking Water – California Department of Health Services.
TDS	450 mg/L	Agricultural Water Quality Limits	Food and Agriculture Organization of the United Nations (1985)

mg/L Milligrams per liter

<sup>1</sup> California MCL for total nitrate plus nitrite = 10mg/L (as N)

23. The groundwater exceeds the WQOs for the constituents listed in Finding No. 8. The exceedance of applicable WQOs in the Basin Plan constitutes pollution as defined in California Water Code Section 13050. The Discharger has caused or permitted waste to be discharged or deposited where it has discharged to waters of the state and has created, and continues to threaten to create, a condition of pollution or nuisance.
24. The State Water Resources Control Board (hereafter State Board) has adopted Resolution No. 92-49, the *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*. This Policy sets forth the policies and procedures to be used during an investigation or cleanup of a polluted site and requires that cleanup levels be consistent with State Board Resolution 68-16, the *Statement of Policy With Respect to Maintaining High Quality of Waters in California*. Resolution No. 92-49 and the Basin Plan establish the cleanup levels to be achieved. Resolution No. 92-49 requires the waste to be cleaned up to background, or if that is not reasonable, to an alternative level that is the most stringent level that is economically and technologically feasible in accordance with Title 23, California Code of Regulations (CCR) Section 2550.4. Any alternative cleanup level to background must (1) be consistent with the maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less than that prescribed in the Basin Plan and applicable Water Quality Control Plans and Policies of the State Board.
25. Chapter IV of the Basin Plan contains the *Policy for Investigation and Cleanup of Contaminated Sites*, which describes the Regional Board's strategy for managing contaminated sites. This strategy is based on Water Code Sections 13000 and 13304, the Title 27, Division 2, Subdivision 1 regulations, and State Water Board Resolution Nos. 68-16 and 92-49. The strategy includes site investigation, source removal or containment, information required to be submitted for consideration in establishing cleanup levels, and the bases for establishment of soil and groundwater cleanup levels.
26. The State Board adopted the *Water Quality Enforcement Policy*, which states in part: "At a minimum, cleanup levels must be sufficiently stringent to fully support beneficial uses, unless the RWQCB allows a containment zone. In the interim, and if restoration of background water quality cannot be achieved, the CAO should require the discharger(s) to abate the effects of the discharge. Abatement activities may include the provision of alternate water supplies." (Enforcement Policy, p. 19.)
27. Section 13304(a) of the California Water Code provides that:

Any person who has discharged or discharges waste into waters of the state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board, or 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 into the 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 the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including but not limited to, overseeing cleanup and abatement efforts. . . . Upon failure of any person to comply with the cleanup or abatement order, the Attorney General, at the request of the board, shall petition the superior court for that county for the issuance of an injunction requiring the person to

comply with the order. In the suit, the court shall have jurisdiction to grant a prohibitory or mandatory injunction, either preliminary or permanent, as the facts may warrant.

28. Section 13267(b)(1) of the California Water Code provides that:

In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The technical reports required by this Order are necessary to assure compliance with this Order issued under California Water Code section 13304 and to determine the areal and vertical extent of waste and cleanup strategies necessary to restore and protect the beneficial uses of waters of the state. Existing data and information about the site indicates that waste has been discharged and is discharging at the property, which is owned or operated, or formerly owned and operated by, the Dischargers named in this Order.

29. Section 13304(c)(1) of the California Water Code provides that:

. . . the person or persons who discharged the waste, discharges the waste, or threatened to cause or permit the discharge of the waste within the meaning of subdivision (a), are liable to that government agency to the extent of the reasonable costs actually incurred in cleaning up the waste, abating the effects of the waste, supervising cleanup or abatement activities, or taking other remedial action. . . .

30. If the Dischargers, or any one of them, fail to comply with this Cleanup and Abatement Order, the Executive Officer may request the Attorney General to petition the superior court for the issuance of an injunction
31. If the Dischargers, or any one of them, intentionally or negligently violate this Cleanup and Abatement Order, the Dischargers may be liable civilly in a monetary amount provided by the California Water Code.
32. The issuance of this Order is an enforcement action taken by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.), pursuant to Title 14 CCR Section 15321(a)(2). The implementation of this Order is also an action to assure the restoration of the environment and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.), in accordance with Title 14 CCR, Sections 15308 and 15330.

33. Any person affected by this action of the Regional Board may petition the State Board to review the action in accordance with Title 23 CCR Sections 2050-2068. The State Board must receive the petition within 30 days of the date of this Order. Copies of the law and regulations applicable to filing petitions will be provided upon request and are available at [www.swrcb.ca.gov](http://www.swrcb.ca.gov)

### REQUIRED ACTIONS

**IT IS HEREBY ORDERED** that, pursuant to California Water Code Section 13304 and Section 13267, Dixon Commercial Properties, , Monfort, Inc. (f/k/a Monfort of Colorado, Inc.), ConAgra Foods, Inc. and Greynom. Inc. (f/k/a Armour Food Company) shall:

1. Investigate the discharges of waste, clean up the waste, and abate the effects of the waste, forthwith, resulting from activities at the Dixon Business Park, in conformance with State Board Resolution No. 92-49 *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304* and with the Regional Board's *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (in particular the Policies and Plans listed within the Control Action Considerations portion of Chapter IV). "Forthwith" means as soon as is reasonably possible. Compliance with this requirement shall include, but not be limited to, completing the tasks listed below.

### WATER SUPPLY WELL SURVEY

2. By 1 December 2005, submit the results of a water supply well survey within one-half mile of the site and a sampling plan to sample any water supply well(s) threatened to be polluted by waste originating from the site. The sampling plan shall include specific actions and a commitment by the Discharger to implement the sampling plan, including obtaining any necessary agreements.
3. Within **30 days** of Regional Board staff concurrence with the water supply well sampling plan, but no later than 1 February 2006, implement the sampling plan and submit the sampling results in accordance with the approved time schedule, which shall become part of this Order.
4. Within **30 days** of Regional Board staff notifying the Discharger that an alternate water supply is necessary, submit a work plan and schedule to provide an in-kind replacement for the specified water supply. The Discharger shall implement the work plan in accordance with an approved time schedule, which shall become part of this Order.

### SITE ASSESSMENT

5. By **1 December 2005**, submit a *Site Assessment Work Plan* to collect a sufficient number of soil and groundwater samples to determine the lateral and vertical extent of pollutants for a complete site characterization. Also, the *Site Assessment Work Plan* should include the investigation of two former on-site water supply wells to determine if they were properly abandoned. The work plan shall contain the information in Attachment 3, which is made part of this Order.
6. Within **30 days** of staff concurrence with the *Site Assessment Work Plan*, implement the work plan in accordance with the approved time schedule, which shall become part of this Order.

7. Submit a *Site Assessment Report* for soil and groundwater in accordance with the approved time schedule, but no later than **1 April 2006**. The *Site Assessment Report* shall contain the information in Attachment 4, which is made part of this Order, and include recommendations and a work plan for additional investigation, if needed. The work plan for additional investigation shall contain information in Attachment 3, including a sufficient number of sampling points and wells to determine the vertical and lateral extent of pollutants and information to evaluate if the former on-site supply wells were properly abandoned. If Board Staff concur that no additional investigation is necessary after the first phase of investigation, the *Site Assessment Report* can be considered the *Final Site Assessment Report*.
8. If additional investigation is required, within **60 days** of staff concurrence with the work plan for additional site assessment, implement the work plan and submit a *Final Site Assessment Report*, which contains the information in Attachment 4, in accordance with the approved time schedule, which shall become part of this Order.

### **PUBLIC PARTICIPATION**

9. By 1 December 2005, submit a *Public Participation Plan*. The *Public Participation Plan* shall include, but not be limited to, a community profile, the formation of a public interest group, public meetings at appropriate milestones in the cleanup (as required by Regional Board staff), public notification of field activities, regular mailing of fact sheets to interested parties, and maintaining a public library repository of all documents associated with the site.

### **HEALTH RISK ASSESSMENT**

10. By 1 June 2006, submit a work plan and time schedule to prepare a *Health Risk Assessment* (HRA). The work plan for the HRA and the HRA shall be prepared in accordance with the Department of Toxic Substances Control and U.S. EPA guidance and contain the detail and clarity necessary for a lay person from the general public to follow the process and duplicate calculations.
11. Within **30 days** of Regional Board concurrence with the work plan for the HRA, but no later than 1 February 2007 implement the work plan and submit a draft HRA in accordance with the approved time schedule, which shall become part of this Order.
12. Within **45 days** of receiving comments from Regional Board staff on the draft HRA, append Agency comments and the Discharger's responses to these comments to a revised draft HRA, submit to the Regional Board and distribute to interested persons the *Draft for Public Comment HRA*. The public comment period shall extend for 45 days.
13. Within **30 days** of the end of the public comment period, submit and distribute to interested parties a final HRA with an appendix that contains responses to all public comments.

### **FEASIBILITY STUDY AND CLEANUP**

14. Within **120 days** of staff concurrence with the *Final Site Assessment Report*, and no later than 1 October 2006 submit a *Feasibility Study/Remedial Options Evaluation Report* for soil and groundwater remediation. The report shall contain the information in Attachment 5, which is

made part of this Order. The proposed preferred alternative for cleanup of groundwater must meet the range of cleanup levels as described in the Basin Plan and Resolution No. 92-49. The Discharger shall attempt to clean up each constituent to background concentrations, or to the level that is technically and economically feasible and at least achieves the WQOs of the Basin Plan.

15. Within **60 days** of staff concurrence with the *Feasibility Study/Remedial Options Evaluation Report* for soil and groundwater cleanup, submit a *Cleanup Plan*, which describes the preferred alternative(s) for cleanup and includes a time schedule to conduct the cleanup activities. The approved time schedule to implement the cleanup shall become a part of this Order.
16. Within **60 days** of Executive Officer approval of the *Cleanup Plan* for soil and groundwater, and no later than April 2007 commence cleanup or installation of the cleanup system.
17. Within **120 days** of Executive Officer approval of the *Cleanup Plan*, submit a report describing the status and results of the cleanup work (*Cleanup Implementation Report*). The report shall clearly show whether the installation of any cleanup system is complete, and if not, give a schedule and proposed work plan for installation of the remaining cleanup activities, including a proposed monitoring plan.

### **GROUNDWATER MONITORING**

18. The Executive Officer may issue a Monitoring and Reporting Program (MRP) for the Site after review of the Site Assessment Report .

### **GENERAL REQUIREMENTS**

19. Reimburse the Regional Board for reasonable costs associated with oversight of the cleanup of this site. Failure to do so shall be considered a violation of this Order.
20. Conduct work only after work plans are concurred with by Regional Board staff.
21. Submit all reports with a cover letter from the Discharger.
22. Fourteen days prior to conducting any field work, submit a Health and Safety Plan that is adequate to ensure worker and public safety during the field activities in accordance with CCR Title 8, Section 5192.
23. As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, have all reports prepared by, or under the supervision of, a registered professional engineer or geologist and signed by the registered professional. All technical reports submitted by the Discharger shall include a statement signed by the authorized representative certifying under penalty of law that the representative has examined and is familiar with the report and that to his knowledge, the report is true, complete, and accurate.
24. Upon startup of any remediation system(s), operate the remediation system(s) continuously, except for periodic and required maintenance or unpreventable equipment failure. The Discharger shall

notify the Regional Board within 24 hours of any unscheduled shutdown of the remediation system(s) that lasts longer than 48 hours. This notification shall include the cause of the shutdown and the corrective action taken (or proposed to be taken) to restart the system. Any interruptions in the operation of the remediation system(s), other than for maintenance, emergencies, or equipment failure, without prior approval from Regional Board staff or without notifying the Regional Board within the specified time is a violation of this Order.

25. Periodically optimize remedial systems and report on the effectiveness of the optimization in the Annual Report.
26. Notify Regional Board staff at least three working days prior to any fieldwork, testing, or sampling that pertains to environmental remediation and investigation.
27. Obtain all local and state permits and access agreements necessary to fulfill the requirements of this Order prior to beginning the work.
28. Continue any remediation or monitoring activities until such time as the Executive Officer determines that sufficient cleanup has been accomplished and this Order has been rescinded.
29. If, for any reason, the Discharger is unable to perform any activity or submit any document in compliance with the schedule set forth herein, or in compliance with any work schedule submitted pursuant to this Order and approved by the Executive Officer, the Discharger may request, in writing, an extension of the time specified. The extension request shall include justification for the delay. An extension may be granted only by revision of this Order.
30. If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement or may issue a complaint for administrative civil liability.

This Order is effective upon the date of signature.

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THOMAS R. PINKOS, Executive Officer

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(Date)



## Attachment 5



California Regional Water Quality Control Board  
Central Valley Region  
Katherine Hart, Chair



Linda S. Adams  
Acting Secretary for  
Environmental Protection

1685 E Street, Fresno, California 93706  
(559) 445-5116 • FAX (559) 445-5910  
<http://www.waterboards.ca.gov/centralvalley>

Edmund G. Brown Jr.  
Governor

18 March 2011

Mr. Burton Fleischer  
Hilmar Cheese Company  
P.O. Box 910  
Hilmar, CA 95324

**DEGRADED OFFSITE WATER SUPPLIES, HILMAR CHEESE COMPANY, HILMAR,  
MERCED COUNTY**

Hilmar Cheese Company (Hilmar Cheese) submitted the report *2010 Annual Supply Well Sampling Data Transmittal* dated 9 February 2011 and prepared by Jacobson/James and Associates, Inc. Data included in the report indicates that water produced from well DW-29, 20936 August Avenue, Hilmar, and well DW-31, 20832 August Avenue, Hilmar, have been unreasonably affected. Data available to the Central Valley Regional Water Quality Control Board indicates the majority of impact to these wells is from Hilmar Cheese wastewater disposal practices on the "Primary Lands", located just east of these wells. An evaluation of data relating to the wells is included in the enclosed memorandum.

Item 2a of Cleanup and Abatement Order No. R5-2004-0722 (CAO) requires that Hilmar Cheese provide in-kind replacement of water supplies for wells that have been unreasonably affected by discharge of wastes from Hilmar Cheese operations. In accordance with item 2a of the CAO, Hilmar Cheese needs to submit a workplan and schedule to provide a replacement water supply for 20936 August Avenue and 20832 August Avenue. **By 17 April 2011**, please submit the required workplan.

If you should have any questions regarding this matter, please call Jan Alfson at (559) 488-4345 or Russell Walls at (559) 488-4392.

*Clay I. Rodgers*

*for* Pamela C. Creedon  
Executive Officer

cc: Director of Environmental Health, Merced County, 385 East 13<sup>th</sup> Street, Merced, CA 95340-1350  
Terry James, Jacobson/James and Associates, 9083 Foothills Blvd., Suite 370, Roseville, CA 95747  
John and Rita Sanders, 20832 August Avenue, Hilmar, CA 95324  
Leith and Denise Bergman, 20936 August Avenue, Hilmar, CA 95324

California Environmental Protection Agency



# California Regional Water Quality Control Board

## Central Valley Region

Katherine Hart, Chair



Linda S. Adams  
Acting Secretary for  
Environmental Protection

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Edmund G. Brown Jr.  
Governor

TO: Lonnie M. Wass  
Supervising Engineer  
  
Clay L. Rodgers  
Assistant Executive Officer

FROM: Jan Alfson  
Engineering Geologist  
P.G. No. 4435

SIGNATURE: 

Russell W. Walls  
Senior Engineer  
RCE No. 43140

DATE: 18 March 2011

SIGNATURE: 

SUBJECT: **DEGRADED OFFSITE WATER SUPPLIES, HILMAR CHEESE COMPANY,  
HILMAR, MERCED COUNTY**

Hilmar Cheese Company (Hilmar Cheese) submitted the report *2010 Annual Supply Well Sampling Data Transmittal* dated 9 February 2011 and prepared by Jacobson/James and Associates, Inc. The report summarizes the sampling of domestic and irrigation wells in the vicinity of Hilmar Cheese. The data submitted indicates that the quality of several domestic wells has been significantly degraded.

Well No. DW-31, owned by John and Rita Sanders, is approximately 500 feet west of Hilmar Cheese Primary Lands. The address is 20832 August Avenue. Well No. DW-29, owned by Leith and Denise Bergman, is west of DW-31 and approximately 1,000 feet west of the Primary Lands. The address for this well is 20936 August Avenue. Water quality data collected by Hilmar Cheese for the two wells is summarized below. Concentrations are in milligrams per liter (mg/L).

Well Constituent	DW-31		DW-29	
	2005	2010	2005	2010
Total dissolved solids (mg/L)	640	1300	570	1100
Chloride (mg/L)	37	210	20	150
Sodium (mg/L)	37	93	52	96
Bicarbonate (mg/L)	400	890	260	410
Manganese (mg/L)	<0.01	0.034	0.06	0.53

These data above indicate that the water quality of both wells has been degraded significantly since 2005. Total dissolved solids in both wells have approximately doubled since 2005 and are above the State of California secondary drinking water standard upper level of 1,000 mg/L. Chloride concentrations in the wells have increased five to seven fold while sodium concentrations have approximately doubled. The manganese concentration in well DW-29 is over the California consumer acceptance secondary standard of 0.05 mg/L by a factor of ten. Well No. DW-29a is at the same address as well DW-29 and was not sampled in 2010. Well DW-29a needs to be sampled if it still exists.

The groundwater gradient in the vicinity of the subject wells is to the west to southwest. The Hilmar Cheese "Primary Lands" are upgradient and in close proximity to these wells. Hilmar Cheese discharged high salt concentration wastewater to the Primary Lands and assessments by Hilmar Cheese have indicated groundwater beneath those lands has been impacted by high concentrations of constituents including sodium, chloride, bicarbonate, and total dissolved solids. Hilmar Cheese wastewater discharge practices have caused reducing conditions in groundwater, resulting in higher solubility of manganese and increased concentrations of manganese in groundwater. Due to the close proximity of the subject wells to the Primary Lands and the lack of other significant sources of impact between the wells and the Primary Lands, former Hilmar Cheese wastewater disposal practices appear to be the major cause, if not the sole cause, of impact.

Item 2a of Cleanup and Abatement Order No. R5-2004-0722, issued to Hilmar Cheese on 2 December 2004, states that "within 30 days of written notification from the Executive Officer that use of the private well supply of any person has been unreasonably affected or may be unreasonably affected by the discharge, including taste and odor, submit a work plan and schedule to provide the person at HCC expense an in-kind replacement of the specified water supply".

### **Conclusion**

The well data presented above clearly indicates that the two well supplies cited above have been unreasonably affected. Hilmar Cheese needs to provide an in-kind replacement water supply for each location.

## Attachment 6

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION**

**CLEANUP AND ABATEMENT ORDER NO. R5-2015-0757**

**WDID NO. 5B50NC00250**

**REQUIRING CMC LAND HOLDINGS LLC TO CLEAN UP AND ABATE THE EFFECTS  
OF DISCHARGING WASTEWATER TO GROUNDWATERS OF THE TURLOCK AREA,  
EAST VALLEY FLOOR SUBAREA, LOWER SAN JOAQUIN RIVER HYDROLOGIC  
UNIT**

The California Regional Water Quality Control Board, Central Valley Region (hereinafter Central Valley Water Board) finds that:

**FINDINGS**

1. CMC Land Holdings LLC ("Discharger") owns and operates the facility located at 4207 W Linwood Avenue, Turlock, in Stanislaus County. The facility is located at Stanislaus County Assessor's parcel number 044-004-028-000.
2. The facility located at 4207 W Linwood Avenue, Turlock, was placed under the Reissued Waste Discharge Requirements General Order for Existing Milk Cow Dairies, Order No. R5-2013-0122 (Dairy General Order) by letter dated 29 June 2007. The facility is authorized to house a maximum of 536 mature dairy cows. The facility is not currently being used as a dairy but is housing support stock (heifers).
3. The Dairy General Order regulates waste discharges from the CMC Land Holdings LLC facility. This Order, in part requires the following:
  - a. Prohibition A.4 states:

"The collection, treatment, storage, discharge or disposal of wastes at an existing milk cow dairy shall not result in the creation of a condition of pollution or nuisance."
  - b. General Specification B.1 states:

"The existing milk cow dairy shall have facilities that are designed, constructed, operated, and maintained to retain all facility process wastewater generated during the storage period..."
  - c. General Specification B.5 states:

"If groundwater monitoring demonstrates that discharge(s) from a dairy have caused an exceedance of the groundwater limitations set forth in this Order, the Executive Officer may issue an order to the owner/operator of the monitored dairy to identify and implement management practices that are protective of groundwater quality on a schedule that is as short as practicable."

d. General Specification B.7 states:

“Manure and process wastewater shall not be applied closer than 100 feet to any down gradient surface waters, open tile line intake structures, sinkholes, agricultural or domestic well heads, or other conduits to surface waters, unless a 35-foot wide vegetated buffer or physical barrier is substituted for the 100-foot setback or alternative conservation practices or field-specific conditions will provide pollutant reductions equivalent or better than the reductions achieved by the 100-foot setback.”

e. Groundwater Limitation F.1 states:

“Discharge of waste at existing milk cow dairies shall not cause the underlying groundwater to exceed water quality objectives, unreasonably affect beneficial uses, or cause a condition of pollution or nuisance.”

4. On 20 November 2015, Water Board staff was notified by the California Office of Emergency Services that a lagoon embankment at the CMC Land Holdings LLC facility at 4207 W Linwood Avenue in Turlock had ruptured, flooding the front yards and driveways of neighboring homes and entering an irrigation canal. Based on the dimensions of the lagoon reported in the Waste Management Plan and the observed change in water level, staff estimates that 3.7 million gallons of wastewater were released. Water Board staff investigated and determined that wastewater released from the lagoon had surrounded at least two domestic wells serving houses located south of W Linwood Avenue, at 4030 W Linwood Avenue and 4406 W Linwood Avenue.
5. On 20 November 2015, Water Board staff collected samples from the two domestic wells located on nearby properties that were surrounded by wastewater from the lagoon. The wells were also sampled by a consultant working for CMC Land Holdings LLC.
6. The results of the two sets of samples indicate concentrations of nitrate-nitrogen in excess of the Maximum Contaminant Level (MCL) and concentrations of total dissolved solids in excess of the recommended, upper, and short term Secondary Maximum Contaminant Level (Secondary MCL). The sample from the well located at 4030 W Linwood Avenue also contained E. coli bacteria.

Location	Total dissolved solids (TDS) mg/l	Secondary MCL for TDS	Nitrate – N (mg/l)	MCL for Nitrate- N	E. coli bacteria	MCL for E. coli
4030 W Linwood	2246	500	21.3	10	present	0
4406 W Linwood	2786	500	13	10	absent	0

## RECENT GROUNDWATER MONITORING RESULTS

7. Recent testing of groundwater from domestic wells south of the facility indicate concentrations of nitrate-nitrogen and E.coli in excess of the MCL and of total dissolved solids in excess of the Secondary MCLs. Based on the inundation of the area surrounding these wells with wastewater, there is a reasonable assumption that the wastewater is the cause of these exceedances.
8. The Discharger allowed wastewater containing high concentrations of nitrogen, total dissolved solids, and bacteria to be discharged to waters of the State underlying and adjacent to the CMC Land Holdings LLC facility.
9. California Water Code section 13050(l) defines "pollution" as: *an alteration of the water quality to a degree that unreasonably affects either beneficial uses or facilities that serve these beneficial uses.*

## AFFECTED BENEFICIAL USES

10. Pursuant to Chapter II of the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan), groundwater in the Lower San Joaquin River Subarea underlying the CMC Land Holdings LLC facility and surrounding areas include the following present and potential beneficial uses: domestic and municipal water supply, agricultural water supply, industrial service supply, and industrial process supply. Residences at and adjacent to the facility rely on the groundwater for private domestic drinking supply wells for water supply.
11. The Basin Plan established water quality objectives (WQOs) for the protection of beneficial uses. Ground waters designated as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the maximum contaminant level (MCL) or secondary maximum contaminant level (Secondary MCL) based upon drinking water standards specified in Title 22 of the California Code of Regulations (Basin Plan III-10.00)

WQOs include the following MCLs established by the California Department of Public Health as a safe level to protect public drinking water supplies:

Nitrate as N	10 mg/L
E. coli and fecal coliform bacteria	0

The following Secondary MCL is established by the California Department of Public Health (Title 22, section 64449 (a)):



Constituent	Recommended	Upper	Short Term
Total Dissolved Solids (mg/L)	500	1000	1500

12. Wastewater discharged from the CMC Land Holdings LLC lagoon inundated nearby domestic wells and appears to have caused groundwater south of the facility to exceed the MCL drinking water standards for nitrate as N (10 mg/L) and E. coli (0), and the Secondary MCL for total dissolved solids (500 mg/L). The MCLs and Secondary MCLs were established by the California Department of Health Services pursuant to the California Safe Drinking Water Act and are found in title 22 of the California Code of Regulations (CCR), Division 4, Chapter 15, Domestic Water Quality Monitoring.
  
13. CMC Land Holdings caused or permitted or threatened to cause or permit wastewater from the Discharger's lagoon to be discharged where it is, or probably will be, discharged into waters of the state and creates, or threatens to create, a condition of pollution or nuisance. The discharge of wastewater appears to have caused or contributed to groundwater adjacent the facility exceeding the drinking water standard for nitrate as N (10 mg/L), and has caused at least one well to contain E. coli bacteria. The affected ground water is no longer useable for drinking or domestic supply purposes. This alteration is unreasonable because the aquifer is currently used for drinking water must be protected for potential use as domestic water supply. The portion of the aquifer affected by the discharge is no longer suitable for this beneficial use. The discharges have, therefore, unreasonably affected the water for municipal and domestic supply beneficial use and caused a condition of pollution.

#### AUTHORITY - LEGAL REQUIREMENTS

14. Water Code section 13304, subdivision (a) states:

*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 into 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 the waste or abate the effects of the waste, or, 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 ... a regional board may require the provision of, or payment for, uninterrupted replacement water service, which may include wellhead treatment, to each affected public water supplier or private well owner. Upon failure of any person to comply with the cleanup and abatement order, the Attorney General, at the request of the board, shall petition the superior court for that county for the issuance of an injunction requiring the person to comply with the order. In the suit, the court shall*

*have jurisdiction to grant a prohibitory or mandatory injunction, either preliminary or permanent, as the facts may warrant.*

15. 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 before the discharge of waste.*

16. State drinking water standards promulgated in the California Code of Regulations (22 CCR § 64449 et. seq.) require community water systems to comply with both MCLs and Secondary MCLs. A Regional Board may order replacement water for private domestic wells that have been impacted by a discharger's pollution or nuisance. Discharges that exceed either the MCLs or Secondary MCLs constitute an alteration of the water quality to a degree that unreasonably affects either beneficial uses or facilities that serve these beneficial uses.

17. The conditions described in Findings 4 and 6 constitute violations of the Dairy General Order and the Basin Plan. The Discharger has caused or permitted waste to be discharged or deposited where it has or probably will discharge into waters of the state creating or threatening to create a condition of pollution or nuisance. The Discharger is therefore subject to the Water Boards' authority as described in Water Code section 13304.

18. Pursuant to Water Code section 13267, subdivision (b):

*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the reports, and shall identify the evidence that supports requiring that person to provide the reports.*

19. This Order requires monitoring and reports pursuant to Water Code section 13267(b). The monitoring required by this Order is necessary to identify impact to domestic wells from the discharge and to determine compliance with this Order. This Order also requires the submission of a technical report evaluating the impacts to all domestic wells sampled. Monitoring and reports required by this Order are

necessary for the protection of water quality in light of the recent lagoon rupture that flooded from the Discharger's facility.

**THEREFORE, IT IS HEREBY ORDERED**, pursuant to Water Code sections 13267 and 13304, the Discharger shall take action to abate the effects from the release of wastewater from the lagoon as follows:

**A. ORDERS:**

1. By **Friday, 4 December 2015**, supply interim uninterrupted replacement drinking water service (i.e., bottled water or equivalent) for consumption and cooking, to all residences served by private domestic wells and bordering W Linwood Avenue between S Washington Road and the area immediately south of the facility (red circled area on attached map). For residences where E. coli have been detected in domestic well water, supply interim uninterrupted replacement water for all domestic uses. The water shall be supplied to a residence until the Discharger can demonstrate to the satisfaction of the Board that the domestic well that services the residence does not show impacts from the discharged wastewater. The water shall be supplied in a way that is usable to the residents of the affected parcels. Provide information to residents on the potential health impacts from consumption of water contaminated by nitrates and fecal coliform/E. coli bacteria.
2. By **Friday, 4 December 2015**, sample all domestic wells at residences bordering W Linwood Avenue between S Washington Road and the area immediately south of the facility, including those wells sampled on 20 November 2015 (red circled area on attached map). The samples shall be analyzed by an appropriately certified laboratory for nitrate as N, total dissolved solids, and bacteria (E. coli and total coliform). The depth to groundwater from land surface shall be measured for each well. Samples shall be collected as close to the well as possible.
3. By **Tuesday, 8 December 2015**, submit a technical report to the Water Board listing all domestic wells that were sampled and the results of the sampling. If a domestic well was not sampled, the report must include the reason that the sampling was not conducted and the steps that will be taken to collect a sample. The report must identify which wells exceed the MCLs or Secondary MCLs described in this Order. If the Discharger believes that any domestic wells sampled do not show evidence of impacts from the discharged wastewater, the justification for that determination shall be presented in the report. The report shall also describe which residences have been provided with interim uninterrupted replacement drinking water service or domestic water service and the method used to provide the service. If the reason the Discharger has failed to provide interim uninterrupted replacement drinking water or domestic water service is the refusal of the occupants of the residence to accept such service, the report must include a statement from the occupants of this refusal. The report shall include a description of the outreach and education efforts conducted as required in A.1 above.

4. By **Tuesday 29 December 2015**, submit a plan for providing long-term replacement water for those residences whose domestic wells continue to show impacts from wastewater.
5. Uninterrupted replacement water service may cease if the Discharger demonstrates that drinking water from domestic wells in the area described in A.2 meets the MCL for nitrate as N, fecal coliform, and E. coli. In order to establish compliance with the MCL for these constituents, the Discharger shall submit documentation in the form of testing results that demonstrate that the affected well is below the 10 mg/L MCL for nitrogen and contains no detected E. coli or fecal coliform bacteria for three sequential monitoring events. The monitoring events shall be conducted at least one week apart from each other.
6. All technical, 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 work plan and/or report is true, complete, and accurate.
7. This Order does not limit the authority of the 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. Failure to comply with the terms or conditions of this Cleanup and Abatement Order will 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 civil enforcement.
8. This Order does not affect the Discharger's obligation to comply with the Dairy General Order. The requirements and legal enforceability of the Dairy General Order is not superseded or affected upon issuance of this Order.

**B. REPORTING REQUIREMENTS:**

1. **Signatory Requirements.** All reports required under this Cleanup and Abatement Order shall be signed and certified by the Discharger or by a duly authorized representative of the Discharger and submitted to the Central Valley Water Board staff. A person is a duly authorized representative of the Discharger only if: (1) the authorization is made in writing by the Discharger and (2) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility of activity. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).
2. **Certification.** Include the following signed certification with all reports submitted pursuant to this Order:

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."*

3. **Report Submittals.** All monitoring and technical reports required under this Order shall be submitted to:

Andrew Altevogt  
Assistant Executive Officer  
California Regional Water Quality Control Board  
Central Valley Region  
11020 Sun Center Drive, Suite 200  
Rancho Cordova, CA 95670

Attn: Charlene Herbst  
Email: charlene.herbst@waterboards.ca.gov  
Phone: (916) 464-4724

**C. NOTIFICATIONS:**

1. **Cost Recovery.** 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 and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action required by this Order.

2. **California Environmental Quality Act (CEQA) Compliance.** The issuance of this Order is an enforcement action taken by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, section 21000 et seq.) pursuant to California Code of Regulations (CCR), title 14, section 15321 subdivision (a)(2). The implementation of this Order is also an action to assure the restoration of the environment and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, section 21000 et seq.), in accordance with CCR title 14, sections 15061(b)(3), 15306, 15307, 15308, and 15321. This Order generally requires the Discharger to submit plans for approval prior to implementation of remedial activities at the facility and adjacent properties. Mere submittal of plans is exempt from CEQA as submittal will not cause a direct or indirect physical change in the environment and/or is an activity that cannot possibly have a significant effect on the environment. CEQA review at this time would be premature and speculative, as there is simply not enough information concerning the Discharger's proposed remedial activities and possible associated environmental impacts. If the Central Valley Water Board determines that implementation of any plan required by this Order will have a significant effect on

the environment, the Board will conduct the necessary and appropriate environmental review prior to the Executive Officer's approval of the applicable plan. The Discharger will bear the costs, including the Board's costs, of determining whether implementation of any plan required by this Order will have a significant effect on the environment and, if so, in preparing and handling any documents necessary for environmental review. If necessary, the Discharger and a consultant acceptable to the Central Valley Water Board shall enter into a memorandum of understanding with the Board regarding such costs prior to undertaking any environmental review.

3. **Requesting Administrative Review by the State Water Board.** Any person aggrieved by an action of the Water Board that is subject to review as set forth in Water Code section 13320, subdivision (a), may petition the State Water Resources Control Board (State Water Board) to review the action. Any petition must be made in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 and following. The State Water Board must receive the petition within 30 days of the date the action was taken, except that if the thirtieth day following the date the action was taken falls on a Saturday, Sunday, state holiday, or furlough day, then the State Water Board must receive the petition by 5:00 p.m. on the next business day. Copies of the law and regulation applicable to filing petitions may be found on the internet at: <http://www.waterboards.ca.gov/publicnotices/petitions/waterquality> or will be provided upon request.
4. **Request for Extension of Time.** If for any reason, the Discharger is unable to perform any activity or submit any document in compliance with the schedule set forth herein, or in compliance with any work schedule submitted pursuant to this Order and approved by the Assistant Executive Officer, the Discharger may request, in writing, an extension of the time specified. The extension request shall include justification for the delay. An extension may be granted only by revision of or amendment to this Order.
5. **Enforcement Notification.** 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 California Water Code section 13350 and/or section 13268, in an amount not to exceed \$5,000 for each day in which the violation occurs under Water Code section 13304 or 13350, or referral to the Attorney General of the State of California for injunctive relief or civil or criminal liability.

Ordered by: Andrew Altevogt Dated: 12/2/15

Andrew Altevogt  
Assistant Executive Officer

## Attachment 7

## Attachment 7: T-test Discussion and Analysis results

To determine if the difference in means between the upgradient and downgradient sample datasets were statistically significant, t-tests were conducted on the data. The t-test is the most commonly used method to evaluate the differences in means between two groups. The test answers the question, "Could these differences have occurred by random chance?" To determine whether the difference is statistically significant, the t-test calculates a t-value (the p-value is obtained directly from this t-value.). The greater the magnitude of t (it can be either positive or negative), the greater the evidence *against* the null hypothesis that there is no significant difference between the sample means. The closer t is to 0, the more likely there isn't a significant difference.

The p-value is the value used to determine if the difference between the means in your sample populations is significant. Here, a p-value  $\leq 0.05$  suggests a significant difference between the means of the sample population and we would reject the null hypothesis (meaning there is a difference between sample means). A p-value  $> 0.05$  suggests no significant difference between the means of the sample populations and we would not reject the null hypothesis (meaning there is no difference between sample means).

T-tests were run in Excel on upgradient and downgradient samples for TDS, chloride and sulfate data (see attachment 7 for t-test results for each constituent). The alpha level was set at 0.05<sup>1</sup>. For each constituent t-test, t-values were greater than zero and p values were much less than 0.05, indicating strong evidence of statistically significant differences between means of upgradient and downgradient samples.

Constituent	T-value	P-value (2-tailed)
TDS	7.49	0.0000003
Chloride	6.06	0.00004
Sulfate	7.15	0.0004

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<sup>1</sup> The alpha level is the probability of rejecting the null hypothesis when the null hypothesis is true. In other words, it's the probability of making a wrong decision. Here, the alpha level of 0.05 means there is a 5 percent chance of concluding a difference in sample means exists when there is no actual difference.



t-Test: Two-Sample Assuming Unequal Variances (based on F test)

Null hypothesis - no difference in sample means of TDS downgradient versus upgradient

	Variable 1 (downgradient TDS )	Variable 2 (upgradient TDS)
Mean	3679	1459
Variance	1068545	216683
Observations	15	13
Hypothesized Mean Difference	0	
df	20	
t Stat	7.487554238	
P(T<=t) one-tail	0.000000160	
t Critical one-tail	1.724718243	
P(T<=t) two-tail	0.000000319	
t Critical two-tail	2.085963447	

P significantly <0.01, so reject the null hypothesis

Therefore, strong evidence there is a difference in sample means

Dataset

TDS Downgradient

TDS Upgradient

2,830	1,090
2,530	1,670
3,100	2,070
3,600	2,480
3,500	1,170
3,809	2,090
3,300	1,100
6,900	1,135
3,900	1,210
4,300	1,160
3,900	1,170
4,100	1,240
3,700	1,386
2,800	
2,920	

t-Test: Two-Sample Assuming Unequal Variances (based on F test)

Null hypothesis - no difference in sample means of Chloride downgradient versus upgradient

	<i>Variable 1</i> (downgradient Cl)	<i>Variable 2</i> (upgradient Cl)
Mean	840	352
Variance	50361	7313
Observations	10	5
Hypothesized Mean Difference	0	
df	13	
t Stat	6.059711592	
P(T<=t) one-tail	0.0000202	
t Critical one-tail	1.770933396	
P(T<=t) two-tail	0.0000403	
t Critical two-tail	2.160368656	

P significantly <0.01, so reject the null hypothesis

Therefore, strong evidence there is a difference in sample means

Chloride Dataset

Downgradient

Chloride Upgradient Chloride

898	262
1,050	292
852	360
526	484
559	360
559	
814	
1,160	
983	
1,000	

t-Test: Two-Sample Assuming Unequal Variances (based on  $F > F$  critical statistic in F test)  
 Null hypothesis - no difference in sample means of Sulfate downgradient versus upgradient

	<i>Variable 1</i> (downgradient SO4)	<i>Variable 2</i> (upgradient SO4)
Mean	1297	506
Variance	20247	51223
Observations	10	5
Hypothesized Mean Difference	0	
df	6	
t Stat	7.146515163	
P(T<=t) one-tail	0.000189191	
t Critical one-tail	1.943180281	
P(T<=t) two-tail	0.000378383	
t Critical two-tail	2.446911851	

P significantly <0.01, so reject the null hypothesis

Therefore, strong evidence there is a difference in sample means

Dataset	
Downgradient SO4	Upgradient SO4
1,500	269
1,330	250
1,430	698
1310	684
1,280	627
1,280	
952	
1,260	
1,300	
1,330	

t-Test: Two-Sample Assuming Equal Variances (based on P value >0.05 in F test)  
 Null hypothesis - no difference in sample means of Sulfate downgradient versus upgradient

	Variable 1 (downgradient SO4)	Variable 2 (upgradient SO4)
Mean	1297	506
Variance	20247	51223
Observations	10	5
Pooled Variance	29778	
Hypothesized Mean Difference	0	
df	13	
t Stat	8.375190668	
P(T<=t) one-tail	0.000000675	
t Critical one-tail	1.770933396	
P(T<=t) two-tail	0.00000135	
t Critical two-tail	2.160368656	

P significantly <0.01, so reject the null hypothesis

Therefore, strong evidence there is a difference in sample means

Dataset	
Downgradient SO4	Upgradient SO4
1,500	269
1,330	250
1,430	698
1310	684
1,280	627
1,280	
952	
1,260	
1,300	
1,330	