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Attorney for Petitioner Center for Biological Diversity

BEFORE THE STATE WATER RESOURCES CONTROL BOARD

In the Matter of Center for Biological Diversity's Petition for Review of Central Valley Regional Water Quality Control Board's Action and Failure to Act in Issuing Resolution R5-2018-0015	SWRCB/OCC File ____ PETITION FOR REVIEW AND REQUEST FOR RECONSIDERATION [Wat. Code § 13320; 23 Cal. Code Regs. §§ 2050 and 3867]

INTRODUCTION

Pursuant to Water Code section 13320 and Title 23 of the California Code of Regulations, sections 2050 and 3867, the Center for Biological Diversity (the "Center" or "Petitioner") hereby petitions the State Water Resources Control Board ("State Board") to review and reconsider the Central Valley Regional Water Quality Control Board's ("Regional Board") adoption of Resolution R5-2018-0015, which improperly allows Valley Water Management Company ("Valley Water" or the "Discharger") to indefinitely continue discharging harmful oil industry waste fluid into unlined pits at its McKittrick 1 and 1-3 facility in Kern County near the community of Buttonwillow.

After an analysis of the waste discharge and the groundwater, the Regional Board's own staff report has confirmed that Valley Water's discharges into these unlined pits have migrated through the soil and have caused documented, significant contamination in multiple groundwater resources. The groundwater pollution has spread past the alluvium and into deeper aquifers. Nearby water supply wells used for agriculture have already been polluted. The plume of contaminants has also migrated laterally for miles, past even the outermost monitoring well. Despite the documented contamination and clear evidence that the source is Valley Water's McKittrick facility, the Regional Board chose not to take any meaningful action toward stopping or even mitigating this ongoing emergency. Rather than call for an immediate halt to Valley Water's discharge activity, the Regional Board instead adopted an open-ended resolution that directed the staff to "determine whether Valley Water's discharge may be regulated under [existing waste discharge orders] or whether Valley Water should be … regulated under an updated set of individual waste discharge requirements."

The Regional Board's unwillingness to meaningfully address the ongoing contamination will have drastic and long lasting consequences. Each day the Regional Board fails to act, Valley Water continues to discharge an average of 2.8 million of gallons of wastewater per day, containing benzene and other harmful constituents used in oil and gas operations into the McKittrick unlined pits. The Regional Board has so far failed to adequately monitor and track the extent of the groundwater degradation, making the true severity of harm to the area's groundwater unknowable.

Petitioner respectfully requests that the State Board rectify the failure of the Regional Board to adequately protect groundwater by (1) overturning the Regional Board Resolution R5-2018-0015; (2) remanding the matter to the Regional Board with specific direction to remedy each of its violations of

law as described herein; (3) issuing, or ordering the Regional Board to issue, a cease and desist order to Valley Water to immediately halt discharges into the McKittrick facility's unlined pits; and (4) mandating that the Regional Board begin proceedings for remediation, mitigation, and restoration measures for the affected groundwater.

I. Name and Address of the Petitioner

Center for Biological Diversity
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Oakland California
Email: hkretzmann@biologicaldiversity.org
Tel: (510) 844-7133

II. The Action or Inaction of the Regional Board Being Petitioned Including a Copy of the Action Being Challenged and of Any Document Issuing Certification that Is Referred to in the Petition

Petitioner seeks review of the Regional Board's April 5, 2018 adoption of Resolution R5-2018-0015, which allows continued pollution and contamination of state waters in violation of, *inter alia*, the state's Anti-degradation Policy and the state's Anti-pollution policy. The Regional Board neither set a timeline for addressing the ongoing contamination, nor standards for compliance. A copy of the Regional Board's final Resolution is attached as Attachment 1.

III. The Date on which the Regional Board Acted.

April 5, 2018. The Petitioner also seeks review of the Regional Board's *inaction*, which has been continuous and ongoing.

IV. A Statement of Reasons the Action Was Inappropriate or Improper and Points and Authorities in Support Thereof

A. Project Description

Valley Water receives waste fluid from oil and gas companies and discharges the wastewater into a series of unlined pits at two adjoining facilities called McKittrick 1 and 1-3. In total, the facilities are made up of roughly 80 pits, including cleaning, passthrough, evaporation, and percolation pits that occupy about 150 acres. Valley Water discharges as much as 4.83 million gallons of wastewater into these pits in a single day; on average, Valley Water disposes 2.8 million gallons per day.

The oil industry waste fluid discharged into the ponds is extremely toxic. Samples taken from

discharged wastewater found benzene, a known human carcinogen, at concentrations as high as 400 micrograms per liter—400 times the legal limit for drinking water.[1] Benzene concentrations in oil industry wastewater can be as high as 18,000 micrograms per liter. Discharges into McKittrick pits also greatly exceed MCLs electrical conductivity, chloride, boron, and toluene.[2]

B. Staff Report Confirms Contamination Originating from Valley Water's Facility

The Regional Board's Staff Report confirms that discharged oil industry waste fluid from Valley Water's McKittrick 1 and 1-3 unlined pits has migrated into groundwater. The presence of toxic chemicals in groundwater beneath the McKittrick facility has been known since at least 2003, when groundwater samples showed elevated levels of electrical conductivity, total dissolved solids ("TDS"), chloride, and boron. Valley Water's discharges have now resulted in groundwater contamination in multiple groundwater resources, including the alluvium currently used for water supply wells. (Staff Report at pp. 3-4.) The contamination has migrated downward to the Upper Tulare sand, which currently supplies water supply wells. (*Id*. at p. 4.) and to the deeper Tulare regional aquifer, which also serves water supply wells. (*Id*. at p. 4.) The contaminants have migrated at least 2.2 miles away from the Facility (*Id.* at p. 13), and may have spread "far beyond" the last monitoring well capable of detecting contaminants. (*Id*. at pp. 13, 18.)

C. The Regional Board's Resolution Allows Continued Degradation of Groundwater

The Regional Board held a hearing on April 5, 2018 to determine its response to Valley Water's discharges. The Staff Report presented several options for addressing the situation. The first would be to deem that one of three pre-existing general orders related to waste discharges applies. Staff noted that none of the general orders for oil industry wastewater discharges to land is applicable to Valley Water's Facility due to the high quality of proximate groundwater. The second option would be to require a detailed time schedule for compliance with WDR 69-199 and/or issue an order to cease and desist. (Wat. Code, §§ 13300 & 13301.) The third and final option was to require Valley Water to submit a report of waste discharge for individual waste discharge requirements. The Regional Board chose none of these

[1] Central Valley Regional Water Quality Board Staff Report, Valley Water Management Company, McKittrick 1 & 1-3 Facility, Kern County (2018) ("Staff Report"), 2, Table 1.
[2] Id. at pp. 2-3.

options.

Instead, it adopted Resolution 2018-0015, which instructs the staff to "determine whether Valley Water's discharge may be regulated under General Order Number Two, General Order Number Three, or whether Valley Water should be directed submit for the Board's consideration a report of waste discharge to be regulated under an updated set of individual waste discharge requirements." (Resolution 2018-0015 at p. 4.) The resolution does not contain any provision that would stop, lessen, mitigate, or prevent further pollution from occurring, nor does it propose to remediate or otherwise address the current pollution. It does not set a detailed time schedule for Valley Water to comply with water protection laws or fine the discharger for past violations. Moreover, it does not require the staff to make the described determinations by a certain date. In short, the Regional Board's resolution fails to take any meaningful action and leaves unanswered the question of how and when these illegal discharges will be addressed, if at all.

D. The Regional Board's Resolution Is Improper

Resolution No. 2018-0015, which allows indefinite and continued discharges to occur at Valley Water's McKittrick 1 and 1-3 facilities, is unlawful.

1. The Regional Board's Resolution Violates the State's Anti-Degradation Policy

The State's Anti-Degradation Policy, Resolution No. 68-16, states,

> "Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."

Where, as here, the Regional Board is permitting an activity that may produce waste that will discharge into existing high quality waters, it may permit such activity only if it makes certain findings. The Regional Board must find that the activity (1) is consistent with the maximum benefit to the people of the state, (2) will not unreasonably affect beneficial uses, and (3) will not violate water quality standards. (See *Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Bd.* (2012) 210 Cal.App.4th 1255, 1260.) "It must also find that any discharge into high quality water will be required to undergo the best practicable treatment or control of the discharge necessary to

assure that no pollution or nuisance will occur, and the highest water quality consistent with the maximum benefit to the people of the state will be maintained." (*Ibid.*) The Resolution is not supported by such findings.

Valley Water's wastewater discharge has caused pollution and a nuisance by degrading groundwater resources for miles. These aquifers are used for water supply wells and have beneficial uses that have been harmed significantly. These aquifers should be protected so that the groundwater may serve a maximum benefit to the public. The Regional Board has violated the Anti-Degradation Policy by adopting a resolution that allows these discharges to continue indefinitely.

2. The Regional Board's Resolution Violates Waste Discharge Requirements

Waste Discharge Requirements Resolution No. 69-199 states unequivocally that "discharge [into pits] shall not cause a pollution of ground or surface waters."[3] Valley Water is in direct violation of Waste Discharge Requirements Order No. 69-199. The Regional Board's Resolution does not incorporate any provision that requires compliance with this WDR or otherwise restrict Valley Water's discharges.

3. The Regional Board's Resolution Is Inconsistent with the Tulare Lake Basin Plan

The Water Quality Control Plan for the Tulare Lake Basin, Second Edition (2016) ("Tulare Lake Basin Plan") requires that "[w]aters shall not contain chemical constituents in concentrations that adversely affect beneficial uses." (*Id.* at p. III-3.) The water affected by Valley Water's discharges are designated MUN – water that may serve as drinking water or other beneficial uses requiring high quality water. Specifically, "waters designated MUN shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in [designated] provisions of Title 22 of the California Code of Regulations…." (*Ibid.*) Valley Water's waste discharges contain high concentrations of contaminants well in excess of the state's regulatory limits. Unsurprisingly, after discharging these fluids into unlined pits for decades, Valley Water's discharges have caused groundwater designated as MUN to now contain those same chemicals in excess of legal limits.

[3] The three Waste Discharge Requirements General Orders for Oil Field Discharges to Land adopted by the Regional Board on April 6, 2017 apply only to narrow circumstances not found here.

4. The Regional Board's Resolution Omits a Detailed Time Schedule to Address the Pollution

The Resolution does not change the volume or the content of discharges affecting the underlying groundwater. An action that has no timeline for compliance leaves the public with no assurances that the discharges will be addressed. Though the staff proposed further monitoring of the contamination, a monitoring program by itself is "inadequate to ensure that no further groundwater degradation will occur." (*Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Bd.* (2012) 210 Cal.App.4th 1255, 1274.) The anti-degradation policy is intended to *prevent* groundwater contamination, not simply track where it has occurred. Allowing discharges to continue indefinitely is improper and unlawful.

5. The Regional Board Added a Finding without Supporting Evidence and without Proper Notice and Opportunity for Public Comment

The Regional Board provided inadequate notice and opportunity for public comment regarding the changes it made to its proposed resolution and concurrently released documents in violation of California Code of Regulations, title 23, section 647.3.

On the afternoon of April 4, 2018, the day before the hearing on the matter, the Regional Board informed the public for the first time that the Regional Board had drafted (1) a revised monitoring and reporting program, (2) a revised tentative resolution, and (3) a revised response to comments. A copy of the email is attached as Attachment 2.[4] The Regional Board did not explain what portions of those documents had changed, nor did it provide a redline version of the new documents to allow interested parties to discern which portions had been altered.

On the morning of April 5, at 8:32 a.m., *after* the start of the public hearing, Regional Board staff emailed interested parties and stated that the staff had added a finding to the draft resolution. A copy of the email is attached as Attachment 3. The Regional Board's final Resolution includes a new finding that was not previously included in the draft resolution. A copy of the Regional Board's final Resolution is attached as Attachment 1. The new finding No. 11 states:

[4] Electronics attachments sent concurrently with the April 4, 2018 email also included as Attachments 2A, 2B, and 2C.

> Groundwater directly under the Valley Water Facility is of poor quality, and could potentially have the MUN beneficial use de-designated consistent with State Water Board Resolution 88-63, the Sources of Drinking Water Policy.

The newly added finding is not supported by evidence that prerequisites for de-designation have been met. Conversely, there is ample evidence that the Valley Water discharges already violate State Water Board Resolution 88-63.

Moreover, this finding was added without "fair, timely, and equal" opportunity for the public to question or comment on the basis for the finding. (Wat. Code, § 13292.) These last-minute changes undermine the very purpose of public participation.

6. **The Regional Board's Resolution Requires Environmental Review**

The Regional Board's decision to authorize further degradation of protected groundwater was a discretionary action or project that is likely to result in significant environmental impacts. Consequently, the Regional Board's action is subject to the California Environmental Quality Act ("CEQA") (Pub. Resources Code, §§ 21000 et seq.) The Regional Board should have complied with CEQA by conducting a full environmental impact report on the decision to allow further degradation of groundwater in the area.

7. **The Regional Board's Inaction Will Allow the Pollution to Spread**

The Regional Board's failure to take any meaningful action to prevent the further spread and degradation of contamination caused by Valley Water's discharges directly conflicts with its duty to protect the region's surface and groundwater. The "primary duty of the Regional Board is to protect the quality of the waters within the Region for all beneficial uses."[5] Yet, when presented with clear evidence of ongoing and worsening groundwater degradation, the Regional Board failed to act. It rejected calls for a halt to the discharge activity known to be the cause of the contamination. Valley Water continues to discharge enormous quantities of wastewater directly unlined pits—as much as 4.83 million gallons a day[6], with no deadline for stopping these noncompliant discharges.

V. How the Petitioner Is Aggrieved

[5] California Water Boards: Central Valley – R5, *About Us* <https://www.waterboards.ca.gov/centralvalley/about_us/ > (as of May 1, 2018.)

[6] Staff Report at p. 3

Petitioner Center for Biological Diversity is a national nonprofit environmental organization dedicated to protecting the air, water, habitat, and climate through science, policy, education and environmental law. The Center and its members, including numerous members who reside, work, or recreate in Kern County, have an interest in protecting California's groundwater resources, including aquifers affected by Valley Water's discharge activity.

VI. The Action Petitioner Requests the State Board to Take

Petitioner requests that the State Board issue an Order that:

1) Rescinds Resolution R5-2018-0015;
2) Remands the matter to the Regional Water Board with specific instructions to remedy the violations of law described above;
3) Issues, or mandates that the Regional Board issue, an immediate cease and desist order to Valley Water that halts any future discharges unless and until such discharges are compliant with all applicable law;
4) Mandates that the Regional Board begin proceedings for containment of the pollution plume and remediation, mitigation, and restoration of the affected groundwater and soil.

VII. A Statement of Points and Authorities for Any Legal Issues Raised in the Petition, Including Citations to Documents that Are Referred to:

The statement of points and authorities is incorporated in Petitioners' statement of reasons. See section IV, *supra*.

VIII. List of Other Interested Persons

Clean Water Action
350 Frank H. Ogawa Plaza, Suite 200
Oakland, California 94612
Tel: (415) 369-9160

IX. Statement of Copies Sent to the Regional Board and the Discharger (Valley Water)

Copies of this Petition are being sent to:

Central Valley Regional Water Quality Control Board
Central Valley Region
1685 E Street, Suite 200
Fresno, CA 93706

Valley Water Management Company
7500 Meany Ave.
Bakersfield, CA 93308

X. A copy of a request to the executive director or appropriate executive officer for preparation of the state board or regional board staff record, if applicable and available, which will include a tape recording or transcript of any pertinent regional board or staff hearing.

A copy of the request to the Executive Officer of the Regional Board to prepare the staff record is included as Attachment 4.

XI. A summary of the manner in which and to what extent the petitioner participated in any process (e.g., public hearing testimony, discussion with agency personnel, correspondence), if available, leading to the action or failure to act in question. If a process for participation was available, but the applicant did not participate, the petition shall include an explanation for the petitioner's failure to participate.

Petitioner submitted a timely comment letter via email and overnight delivery along with references during the public comment period. Petitioner's comment letter, which raised the substantive issues and objections put forth in this petition, explained that a resolution allowing continued discharges would be improper. Additionally, a representative attempted to provide oral testimony at the April 5, 2018 Regional Board hearing in Fresno, California. Petitioner's representative arrived on the first possible train to Fresno that day; however, the Regional Board had already discussed the agenda item by the time he arrived at the hearing. Furthermore, the Regional Board's last-minute changes to the Resolution and concurrently released documents precluded meaningful review and opportunity to comment on those revisions.

CONCLUSION

For the foregoing reasons, the Center's Petition and Request for Reconsideration should be granted.

Dated: May 7, 2018

CENTER FOR BIOLOGICAL DIVERSITY

By: _____

Hollin Kretzmann
Senior Attorney, Center for Biological Diversity
1212 Broadway, Suite 800
Oakland, CA 94612

ATTACHMENT 1

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION R5-2018-0015

DIRECTING STAFF TO PREPARE AN APPROPRIATE ORDER
FOR
VALLEY WATER MANAGEMENT COMPANY'S MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

WHEREAS, the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) finds that:

1. Valley Water Management Company (Valley Water) owns and operates an oil field produced wastewater disposal pond system named the McKittrick 1 & 1-3 Facility (Facility) approximately 8.7 miles west of the community of Buttonwillow.

2. Valley Water has been accepting up to 115,000 barrels (bbls) per day of produced wastewater at the Facility for disposal by evaporation and percolation since the 1950s. Reported rates since 2015 have varied from 105,000 to 42,000 bbls per day. The produced wastewater in the ponds is saline, with historic total dissolved solids (TDS) concentrations from 7,772 milligrams per liter (mg/L) to 26,000 mg/L, chloride concentrations from 4,100 mg/L to 16,000 mg/L and boron concentrations from 42.5 mg/L to 130 mg/L.

3. Valley Water's discharges to the produced wastewater disposal ponds are regulated under Waste Discharge Requirements Resolution No. 69-199 (Resolution), adopted by the Central Valley Water Board (Board) on 14 February 1969. The Resolution prohibits the discharges from creating pollution and nuisance. The Resolution issued to Valley Water states in relevant part:

    1. The discharge shall not cause a pollution of ground or surface waters.

4. The *Water Quality Control Plan for the Tulare Lake Basin* (Revised 2016) (Basin Plan) designations of beneficial uses of groundwater for the Cymric Area include: Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), and Industrial Service Supply (IND).

5. There is agricultural land 1,500 feet north of the Facility and several miles to the east of the Facility. Agricultural wells in the vicinity that are downgradient of the Facility have TDS concentrations ranging from 2,300 mg/L to 6,800 mg/L. Starrh Family Farms LP owns and operates these wells, and they are reportedly important for operations when surface water deliveries are in short supply. The existence and use of these wells indicates that the groundwater, designated as supporting the AGR beneficial use, is currently being used for that purpose downgradient from the Facility.

6. Valley Water installed a groundwater monitoring well network in 2002 to investigate whether wastewater discharged to its ponds was migrating down-structure to the northeast. Two wells (CYM-19H1 and CYM-17N1) were installed in what is referred to in Valley Water documents as the upper Tulare sand, and one well (CYM-21D1) was installed in what is referred to as the deeper Tulare sand or aquifer. The deeper Tulare sand appears to be the regional aquifer. The upper Tulare and deeper Tulare sequences

are separated by a silt/clay layer referred to as the upper Tulare clay layer. The network was expanded in 2006 with the addition of three wells (CYM-17K1, CYM-17M1, CYM-17Q1) completed in the upper Tulare sand downgradient of the original wells. These three wells were positioned to be sentinel wells and were dry at the time of installation.

7. From 2002 to 2017, the TDS concentrations in CYM-21D1 have increased from about 1,200 mg/L to 8,500 mg/L, and the chloride concentrations have increased from 334 mg/L to 2,400 mg/L. The TDS and chloride concentrations now exceed State drinking water Secondary MCLs and water quality objectives associated with the AGR beneficial use.

8. Clean Harbors Buttonwillow LP (Clean Harbors) operates a Class I hazardous waste disposal facility approximately 1.8 miles to the north-northeast and down-structure and downgradient of the Facility. At least two of Clean Harbors' upgradient groundwater monitoring wells have been showing increasing concentrations of TDS and chloride for several years. TDS concentrations in MW-148I have increased from 2,340 mg/L to 5,400 mg/L from 2011 to 2017. Chloride concentrations in MW-148I have increased from about 246 mg/L to 1,200 mg/L from 2009 to 2017. TDS concentrations in MW-102RL have increased from about 3,040 mg/L to 3,900 mg/L from 2013 to 2017. Chloride concentrations in MW-102RL have increased from about 450 mg/L to 740 mg/L from 2007 to 2017. Given that Clean Harbors is directly downgradient of the McKittrick Facility, the McKittrick Facility is a potential source of the observed TDS and chloride concentrations in the Clean Harbors' groundwater monitoring wells.

9. The information in Findings 2 through 8 indicate that:

   a. There is a plume of produced wastewater migrating from the Facility ponds toward the northeast and east-northeast;

   b. The plume has moved beyond the Facility groundwater monitoring network and may have affected TDS and chloride levels in CYM-21D1, which appears to be connected to the regional aquifer that is used for agricultural purposes; and

   c. The plume may have affected at least two of Clean Harbors' upgradient groundwater monitoring wells and increased TDS and chloride levels in MW-148I, but may not have affected MW-143U. Additional work is needed determine the lateral and vertical extent of the plume.

10. The Central Valley Water Board adopted three Waste Discharge Requirements General Orders for Oil Field Discharges to Land (General Orders) on 6 April 2017. The General Orders address three specific scenarios:

    a. General Order Number One – The discharge meets the Basin Plan effluent limits for TDS, chloride, and boron of 1000 umhos/cm, 200 mg/L, and 1 mg/L, respectively.

    b. General Order Number Two – The discharge exceeds the Basin Plan effluent limits, but will not substantially affect water quality nor cause a violation of water quality objectives; it must meet the requirements of the State Antidegradation Policy.

c. General Order Number Three – The discharge must be to an area where the first encountered groundwater is of poor quality or there is no first encountered groundwater, or the first encountered groundwater does not support the following beneficial uses identified in the Basin Plan: MUN, ARG, IND, and PRO.

11. Groundwater directly under the Valley Water Facility is of poor quality, and could potentially have the MUN beneficial use de-designated consistent with State Water Board Resolution 88-63, the Sources of Drinking Water Policy.

12. Valley Water has informally requested that discharges from the Facility be regulated under General Order Number Three. General Order Number Three does not require groundwater monitoring, which generally reduces a discharger's monitoring costs.

13. Regulation of the Facility's discharges under the General Orders may be inappropriate for the following reasons:

    a. General Order Number One requires discharges to comply with the Basin Plan effluent limits for EC, chloride, and boron. Valley Water's discharges exceed these limits and, therefore, cannot comply with them.

    b. General Order Number Two requires discharges to comply with the State Antidegradation Policy. Valley Water's high salinity discharge comingles with better quality groundwater down gradient, and likely will cause degradation of groundwater. Discharges at the Facility have been occurring since the 1950s and may have affected water in CYM-21D1 and MW-148I. Though groundwater beneath the Facility may not be high quality groundwater, the lateral spread of high-salinity produced water is likely impacting higher-quality water. Therefore, in order to be regulated under General Order Number Two, Valley Water may be required to closely monitor impacts caused by its discharge and employ best practicable treatment and control technology to minimize degradation, consistent with the State Antidegradation Policy.

    c. General Order Number Three requires dischargers to either demonstrate that there is no groundwater beneath their discharge areas or demonstrate that the current Basin Plan-designated groundwater beneficial uses may be de-designated consistent with applicable policies.

       Groundwater underlying the Facility may not support the MUN and AGR beneficial uses. However, discharges from the Facility may be causing impacts to downgradient groundwater that currently supports, at a minimum, the AGR beneficial use (CYM-21D1). It is unlikely that the beneficial uses of this groundwater are eligible for de-designation under existing policies. In order for the Facility to be regulated under General Order Number Three, Valley Water would be required to demonstrate that the impacts of its discharges are contained to portions of the aquifer eligible for de-designation. Existing technical data is insufficient to make this demonstration.

THEREFORE BE IT RESOLVED that:

The Central Valley Water Board directs staff to take appropriate action to determine whether Valley Water's discharge may be regulated under General Order Number Two, General Order Number Three, or whether Valley Water should be directed submit for the Board's consideration a report of waste discharge to be regulated under an updated set of individual waste discharge requirements. Compliance options may include a consideration of the policies currently under development through the CV-SALTS initiative.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 5 April 2018.

_____
PAMELA C. CREEDON, Executive Officer

ATTACHMENT 2

Hollin Kretzmann

From: Holcomb, Ronald@Waterboards <Ronald.Holcomb@waterboards.ca.gov>
Sent: Wednesday, April 4, 2018 4:16 PM
To: A M Affuant ('amauffant@chevron.com'); Andrew Grinberg ('agrinberg@cleanwater.org'); Gordus, Andy@Wildlife; Bill Allayaud ('bill@ewg.org'); Bartling, Bill@DOC; Bob Gore ('bob_gore@gualcogroup.com'); Chapin DC (David) at Aera (DCChapin@aeraenergy.com); Chris Reedy (creedy@valleywatermanagement.org); Christine Zimmerman ('clllz@me.com'); Gustavo Aguirre ('gaguirre@crpe-ej.org'); Hollin Kretzmann ('hkretzmann@biologicaldiversity.org'); Holly Pearen ('hpearen@edf.org'); Jennifer Clary ('jclary@cleanwater.org'); Jhon Arbelaez ('jarbelaez@earthworksaction.org'); Borkovich, John@Waterboards; Juan Flores ('jflores@crpe-ej.org'); Kathryn Phillips ('kathryn.phillips@sierraclub.org'); Keith Nakatani (knakatani@cleanwater.org); kyle.jones (kyle.jones@sierraclub.org); Mary Kay Benson ('mkbe.sparkles3@gmail.com'); Melissa Thorme (mthorme@DowneyBrand.com); Mike Glavin ('mike.glavin@crc.com'); Miriam Gordon ('mgordon@cleanwater.org'); Pulupa, Patrick@Waterboards; rock (rock@cipa.org); Roseanna Esparza ('resparza@cleanwater.org'); Yu, Stephanie@Waterboards; Suzanne Noble (snoble@wspa.org); Vern Goehring ('vern@cal.net')
Cc: Harvey, Dale@Waterboards
Subject: Revised Documents for RWQCB April Meeting, Agenda Item 13, VWMC McKittrick 1 & 1-3 Facility
Attachments: 14_valleywater_mckittrick113_resolution_180404.pdf; 14_valleywater_mckittrick113_rtc_180404.pdf; 14_valleywater_mckittrick113_Order_R5-2018-0808.pdf

Please find attached the following documents:

Revised and signed Monitoring and Reporting Program
Revised Tentative Resolution
Revised Response to Comments

The Monitoring and Reporting Program for Valley Water Management Company's McKittrick 1 & 1-3 facility was issued by the Executive Officer on 4 April 2018. The tentative Resolution and the Response to Comments were updated on 4 April 2018.

These documents are for Agenda Item 13 for the April 5/6 2018 meeting of the Central Valley Regional Water Quality Control Board, titled *Consideration of a Monitoring and Reporting Program and consideration of a Resolution Directing Staff to Prepare an Appropriate Order for Valley Water Management Company's McKittrick 1 & 1-3 Facility*. The Agenda may be viewed at this link:

https://www.waterboards.ca.gov/centralvalley/board_decisions/tentative_orders/1804/

If you have any questions, please contact Ron Holcomb by telephone at 559-445-6050, or by email at ronald.holcomb@waterboards.ca.gov.

Thank you.

ATTACHMENT 2A

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2018-0808
FOR
VALLEY WATER MANAGEMENT COMPANY
MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to Water Code section 13267. This MRP is for the discharge to land of produced wastewater (wastewater) from the Cymric, McKittrick, and South Belridge Oil Fields at the McKittrick 1 & 1-3 unlined disposal pond systems. The systems are interconnected, regulated as one facility, and are collectively referred to as the McKittrick 1 & 1-3 Facility or Facility. Valley Water Management Company (hereafter Discharger or Valley Water) owns and operates the Facility.

The Discharger shall not implement any changes to this MRP unless and until the Central Valley Regional Water Quality Control Board (Central Valley Water Board) adopts, or the Executive Officer issues, a revised MRP. Changes to sample location(s) shall be established with concurrence of Central Valley Water Board staff, and a description of the revised stations shall be submitted for approval by the Executive Officer.

This MRP includes monitoring, record-keeping, reporting, and further hydrogeological investigation requirements. Monitoring requirements include monitoring of groundwater, discharges of produced wastewater, solid wastes, chemicals associated with petroleum exploration, and the application of recycled materials (wastewater and solids); to determine if the Discharger is complying with Waste Discharge Requirements Resolution No. 69-199.

BACKGROUND

Oil field produced wastewater has been discharged to the Facility since the late 1950s.

The Facility consists of two side-by-side, interconnected pond systems used for the disposal of produced wastewater via evaporation and percolation. The McKittrick 1 pond system occupies the west side of the Facility and is slightly higher in elevation than the McKittrick 1-3 pond system that occupies the east side of the Facility. At the McKittrick 1 pond system, incoming wastewater is discharged into six netted oil/water cleaning ponds, eight pass-through ponds, and 14 evaporation/percolation ponds. Pipelines that discharge into the cleaning ponds are owned and operated by California Resources Corporation (CRC) and Sentinel Peak Resources California LLC (SPR). At the McKittrick 1-3 pond system, incoming wastewater is discharged into three netted oil/water cleaning ponds, 23 pass-through ponds, and 29 evaporation/percolation ponds. A pipeline that discharges into the McKittrick 1-3 cleaning ponds is owned and operated by SPR.

The two pond systems are partially interconnected. Wastewater can gravity flow from the first two McKittrick 1 evaporation/percolation ponds to 11 evaporation/percolation ponds in the McKittrick 1-3 system. For both pond systems, wastewater usually flows through their respective evaporation/ percolation ponds in parallel. However, the pass-through ponds adjacent to the larger evaporation/ percolation ponds can control the flow into the evaporation/percolation ponds. Therefore, each evaporation/percolation pond in each pond system can be operated independently or jointly in series.

Pond information follows:

Facility	Pond	Pond dimensions LxWxLxW or LxW in feet (depths were not provided)	Pass through pond LxW in feet	Contains visible oil	Active	2nd Semi-annual 2017 discharge
McKittrick 1 (west side)	CP-1	147x70	-	Yes	Yes	58,000 barrels/day
	CP-2	85x69	-			
	CP-3	109x69	-			
	CP-4	128x68	-			
	CP-5	101x63	-			
	CP-6	100x60	-			
	P-1	1540x117x1598x94	-	No	Yes	
	P-2	1608x123x1625x118	-			
	P-3	1575x88x1593x90	88x52			
	P-4	1600x86x1671x89	86x52			
	P-5	1625x100x1647x82	100x52			
	P-6	1649x87x1673x96	87x52			
	P-7	1669x89x1689x92	89x52			
	P-8	1357x93x1375x91	93x52			
	P-9	1380x83x1401x91	83x52			
	P-10	1399x83x1419x91	83x52			
	P-11	1496x87x1509x89	-			
	P-12	240x96	-			
	P-13	63x61	-			
	P-14	72x61	-			
McKittrick 1-3 (east side)	CP-1	93x74	-	Yes	Yes	
	CP-2	99x77	-			
	CP-3	97x76	-			
	P-1	1574x175x1706x102	-	No	Yes	
	P-2	1615x80x1636x88	276x92x251x96			
	P-3	1854x83x1872x96	96x48			
	P-4	1872x86x1877x90	90x48			
	P-5	1878x79x1871x92	92x48			
	P-6	1874x81x1873x91	91x48			
	P-7	1866x86x1873x92	92x48			
	P-8	1870c80x1875x89	89x48			
	P-9	1863x82x1867x89	89x48			
	P-10	1857x87x1864x91	91x48			
	P-11	1862x84x1864x92	92x48			
	P-12	1860x80x1869x89	89x48			
	P-13	1859x86x1862x90	89x48			
	P-14	1853x84x1843x101	101x48			
	P-15	1836x80x1845x85	95x48			
	P-16	1830x82x1830x94	94x48			
	P-17	1828x82x1829x92	92x48			
	P-18	1826x79x1827x91	91x48			
	P-19	1829x86x1828x92	91x48			
	P-20	1824x81x1815x91	91x48			
	P-21	1623x83x1590x96	96x48			
	P-22	1587x96x1555x91	91x48			
	P-23	1535x87x1502x91	91x48			
	P-24	1483x91x1453x86	86x48			
	P-25	1477x85x1435x93	-			
	P-26	119x118	-			
	P-27	225x119	-			
	P-28	156x84	-			
	P-29	204x84	-			

The Facility has an existing groundwater monitoring network comprised of five shallow monitoring wells and one deep monitoring well.

The following shows the Facility groundwater monitoring network well information:

Well ID	Installed	Ground elevation (ft-amsl)	Top of casing (ft-amsl)	Total Depth (ft-bgs)	Screen Interval (ft-bgs)	Screen Interval (ft-amsl)
CYM-17N1	Nov 2002	451.5	452.9	240	105-165	347-287
CYM-19H1	Nov 2002	469.2	471.2	245	115-155	354-314
CYM-21D1	Nov 2002	427.1	429.1	300	274-294	153-133
CYM-17K1	Aug 2006	427.9	430.9	210	150-200	278-228
CYM-17M1	Sep 2006	446.5	449.5	197	155-185	292-262
CYM-17Q1	Aug 2006	437.6	440.6	208	160-200	278-238

Valley Water owns the Facility and is responsible for the discharge from the McKittrick 1 & 1-3 Facility ponds. The monitoring requirements contained in the MRP are necessary to fully characterize the discharge and the lateral and vertical extent of the groundwater plume emanating from the Facility and inform an effective strategy to protect water quality. The related costs are reasonable considering the magnitude of potential impacts to water quality.

MONITORING

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. All analyses shall be performed in accordance with ***Standard Provisions and Reporting Requirements for Waste Discharge Requirements***, dated 1 March 1991 (Standard Provisions).

Field test instruments (such as a pH meter) may be used provided that the operator is trained in the proper use of the instrument and each instrument is serviced and/or calibrated at the recommended frequency by the manufacturer or in accordance with manufacturer instructions.

Analytical procedures shall comply with the methods and holding times specified in the following: *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA); *Test Methods for Evaluating Solid Waste* (EPA); *Methods for Chemical Analysis of Water and Wastes* (EPA); *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA); *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125). Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the State Water Board's Environmental Laboratory Accreditation Program. The Discharger may propose alternative methods for approval by the Executive Officer.

A complete list of substances that are tested for and reported on by the testing laboratory shall be provided to the Central Valley Water Board. All peaks must be reported. In addition, both the method detection limit (MDL) and the practical quantification limit (PQL) shall be reported. Detection limits shall be equal to or more precise than USEPA methodologies. Analysis with an

MDL greater than the most stringent drinking water standard that results in non-detection needs to be reanalyzed with the MDL set lower than the drinking water standard, if possible, or at the lowest level achievable by the laboratory. If the regulatory limit for a given constituent is less than the reporting limit (RL) or practical quantification limit (PQL), then any analytical results for that constituent below the RL (or PQL), but above the method detection limit (MDL), shall be reported and flagged as estimated. In addition, both the MDL and the PQL shall be reported. All quality assurance/quality control (QA/QC) samples must be run on the same dates as when samples were actually analyzed. Proper chain of custody procedures must be followed and a copy of the completed chain of custody form shall be submitted with the report. All analyses must be performed by an Environmental Laboratory Accreditation Program (ELAP) certified laboratory.

The MRP can be modified if the Discharger provides sufficient data to support the proposed changes. If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after a statistically significant number of sampling events, the Discharger may request this MRP be revised by the Executive Officer to reduce monitoring frequency or minimize the list of constituents. The proposal must include adequate technical justification for reduction in monitoring frequency.

Monitoring requirements include the periodic visual inspection of the facility to ensure continued compliance with the Order. The MRP also requires submittal of information regarding the use of all chemicals used during well drilling, installation, operation, and maintenance activities associated with each well generating waste materials (liquids and solids) that are discharged to land and regulated under this Order.

This MRP requires the Discharger to keep and maintain records for five years from the date the monitoring activities occurred and to prepare and submit reports containing the results of monitoring specified below. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Central Valley Water Board.

PRODUCED WASTEWATER MONITORING

Produced wastewater (also referred to as effluent) samples shall be representative of the volume and nature of the discharges. The Discharger shall maintain all sampling and analytical results: date, exact place, and time of sampling; dates analyses were performed; analyst's name; analytical techniques used; and results of all analyses.

The Discharger shall label all pipelines discharging production wastewater into the Facility. Identifying labels shall be located within five feet of the pipeline and shall include at least the following: Operator, source Oil Field, and corresponding generating leases and facilities.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed below, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge.

DISCHARGE 001

The Discharger shall monitor the volume and quality of produced wastewater discharged to the disposal ponds from all sources. Produced wastewater samples shall be collected downstream from the treatment system and prior to discharge to land (roads, ponds, etc.) (Discharge 001). Produced wastewater monitoring for Discharge 001 shall be collected from the sample points described below and from all additional discharge points not included below and shall include at least the following:

Discharge ID	Facility	Sample point location
001a	McKittrick 1	Pipeline 1 discharge from Sentinel Peak Resources California LLC
001b		Pipeline 2 discharge from California Resources Corporation
001c		Pipeline 3 discharge from California Resources Corporation
001d	McKittrick 1-3	Pipeline 1 discharge from Sentinel Peak Resources California LLC
001x[1]	Name	Description

[1] Discharger shall label, add, monitor, and sample all existing discharge points not described in the table above which have the potential to discharge to the Facility's disposal ponds.

Constituent/Parameter	Units	Sample Type	Frequency
Flow	MGD	Metered[1]	Continuous
Table I – Effluent Monitoring	Varies	Grab	Varies

[1] Flow may be measured with an appropriate engineered alternative if approved in writing by the Central Valley Regional Board Executive Officer.

DISCHARGE 002

Disposal pond produced wastewater samples shall be collected in the pond at the distal end of the system (Discharge 002), or if ponds are operated in parallel, in the pond that has contained produced wastewater for the longest period of time (i.e., longest retention time and the greatest evaporation and concentration of salts) (Discharge 002). Produced wastewater monitoring for Discharge 002 shall include at least the following:

Discharge ID	Facility	Sample point location
002a	McKittrick 1	Wastewater from the pond with the longest residence time
002b	McKittrick 1-3	Wastewater from the pond with the longest residence time

Constituent/Parameter	Units	Sample Type	Frequency
Table I – Effluent monitoring	Varies	Grab	Varies

CHEMICAL AND ADDITIVE MONITORING

To adequately characterize discharges into, and ultimately from, the Facility, the Discharger is responsible for reporting all chemicals and additives, including those that may have entered the produced wastewater stream prior to being discharged to each pond system at the Facility. The Discharger shall obtain from oil field operators that discharge to the Facility and shall provide to the Central Valley Water Board the following for all chemicals and additives[1] used during each year at all leases and facilities that discharge produced wastewater to land:

Requirement	Frequency
A list of all chemicals and additives used.	Annually
The volume of each liquid chemical and additive used in gallons.	Annually
The mass of each solid chemical and additive used in grams or kilograms. (if dissolved into a solution, provide resulting solution concentration or ratio).	Annually
A list of the leases and facilities where the chemicals and additives are being used.	Annually
Safety Data Sheets (SDSs) or Material Safety Data Sheets (MSDSs) for each chemical and/or additive used during the year	Annually

[1] Chemicals that are a part of trade secrets shall be kept confidential at the Central Valley Water Board. Documents containing trade secrets shall be properly marked on the cover, by the Discharger, prior to submitting the document to the Central Valley Water Board. Individuals that present proper credentials, or that have received permission by the Discharger, shall be granted access to view the files at the office.

Monitoring and reporting of chemical additives may be reduced to annual reports at the discretion of the Assistant Executive Officer.

SOLID WASTE MONITORING

The Discharger shall monitor the generation and use of solid wastes, including sludges generated at the Facility from activities, such as tank, pipe, or pond maintenance. Solid waste volumes, disposal methods, disposal facilities, and analytical results from waste characterization shall be reported in the subsequent semi-annual and annual monitoring reports.

Solid waste generated at the Facility from production related activities, such as tank or pond maintenance, shall be characterized for disposal. In accordance with an approved Solid Waste Management Plan, non-hazardous solid wastes may be disposed on-site, as road or berm construction material, for instance, if such disposal does not pose a threat to water quality.

Hazardous waste (as defined in California Code of Regulations, title 22, section 66261.1) and designated wastes (as defined in Wat. Code, § 13173) shall be properly disposed at a Facility permitted to accept the waste.

Solid wastes disposed off-site shall be transported to an appropriately permitted facility.

The disposal of solid waste on-site requires the submittal of a Solid Waste Management Plan for review and approval by the Central Valley Water Board Executive Officer. At a minimum, the Solid Waste Management Plan shall include the following:

1. Sampling frequencies,
2. Average volume of solid waste generated annually,
3. Solid wastes criteria for on-site disposal (e.g., non-hazardous and not within 100 feet of surface waterways),
4. Disposal method(s) and procedures,
5. Disposal location(s), and
6. Reporting requirements.

Prior to the disposal of solid wastes on-site, the Solid Waste Management Plan must be approved, in writing, by the Central Valley Water Board Executive Officer. Modifications to the Solid Waste Management Plan need to be submitted in an addendum report that requires written approval by the Central Valley Water Board Executive Officer prior to implementation. On-site solid waste monitoring shall consist of the reporting requirements specified in the approved Solid Waste Management Plan.

The Discharger shall provide the volumes and locations of all solid wastes disposed on-site and include in the semi-annual reports a demonstration that the applications comply with an approved solid waste management plan.

FACILITY MONITORING

Permanent markers in ponds shall be in place with calibrations indicating the pond water level at design capacity and available operational freeboard (two feet minimum required). The freeboard shall be monitored on all ponds to the nearest tenth of a foot **monthly** and results included in the **semi-annual** report.

Annually, prior to the anticipated rainy season, but **no later than 30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess repair and maintenance needed for: drainage control systems; slope failure; groundwater monitoring wells, oil booms, pond netting, or any change in site conditions that could impair the integrity of the waste management unit or precipitation and drainage control structures; and shall assess preparedness for winter conditions including, but not limited to, erosion and sedimentation control. The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be **completed by 31 October**. Annual facility inspection reporting shall be **submitted by 30 November**.

The Discharger shall inspect all precipitation diversion and drainage facilities for damage **within 7 days** following major storm events (e.g., a storm that causes continual runoff for at least one hour) capable of causing flooding, damage, or significant erosion. The Discharger shall take photos of any problem areas before and after repairs. Necessary repairs shall be commenced **within 30 days** of the inspection. Notification and reporting requirements for major storm events

shall be conducted as required in Reporting Requirements of this MRP and shall be reported in the semi-annual monitoring report following the major storm event.

The Discharger shall monitor and record on-site rainfall data using an automated rainfall gauge or an acceptable alternative. Data shall be used in establishing the severity of storm events and wet seasons for comparison with design parameters used for waste management unit design and conveyance and drainage design. Daily data and on-site observation shall be used for establishing the need for inspection and repairs after major storm events. Rainfall data shall be reported in the semi-annual monitoring reports, as required by this MRP.

GROUNDWATER WELL SURVEY

Within 60 days of the signature date of this MRP, the Discharger shall conduct a well survey to identify all water supply wells within two and one half (2 ½) miles of the ponds that receive produced wastewater or other authorized discharges. **Within 90 days** of the signature date of this MRP, the Discharger shall sample the identified domestic water supply wells within one mile of the ponds that receive produced wastewater or other authorized discharges and analyze the samples for the waste constituents listed in Table II of this MRP. Groundwater well survey results and analytical results shall be reported in the semi-annual report following the groundwater sample collection date. If access to private property is requested and denied, evidence of that denial is required.

GROUNDWATER MONITORING

The Discharger shall operate and maintain a groundwater monitoring system approved by the Executive Officer that may include groundwater wells available around and downgradient of the Facility and within a reasonable distance from the produced wastewater disposal ponds. At a minimum, the monitoring system needs to include three groundwater wells, with at least two wells located downgradient from the ponds' location that monitor first-encountered groundwater to identify any release at the earliest possible time.

After measuring water levels and prior to collecting samples, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 volumes of the standing water within the well casing and screen, or additionally the filter pack pore volume.

The Discharger shall monitor groundwater wells for the following:

Constituent/Parameter	Units	Sample Type	Frequency
Depth to groundwater	Feet[1]	Measured	**Quarterly**
Groundwater elevation	Feet[1]	Calculated	**Quarterly**
Table II – Groundwater Monitoring	Varies	Grab	**Varies**

[1] Recorded to one hundredth of a foot

Within 30 days of notification that permission to locate or sample a well(s) is not granted or is revoked, the Discharger shall submit for review and approval by Central Valley Water staff a report that either: (1) demonstrates that a reduction in the number of monitoring well(s) will not impair the ability to clearly and accurately assess potential groundwater impacts, or (2) proposes the installation of a new monitoring well(s) to offset the well(s) that is no longer able to be sampled.

GROUNDWATER MONITORING WELL NETWORK INSTALLATION

The existing groundwater monitoring system has not fully delineated the lateral and vertical extent of the produced wastewater plume. A Monitoring Well Installation and Sampling Plan (MWISP) shall be submitted **within 60 days** of the signature date of this MRP. The MWISP shall provide for the installation of an appropriate number of upgradient/up-structure dip groundwater monitoring wells to identify background water quality and an appropriate number of downgradient/down-structure wells to delineate the plume of produced wastewater emanating from the Facility ponds.

At a minimum, the MWISP must contain all of the information listed below.

1. General Information:
    a. Topographic map showing any existing nearby (about 2.5 mile) domestic, irrigation, and municipal supply wells and monitoring wells known to the Discharger, utilities, surface water bodies, drainage courses and their tributaries/destinations, and other major physical and man-made features, as appropriate.
    b. Site plan showing proposed well locations, other existing wells, unused and/or abandoned wells, major physical site structures, any waste handling facilities, irrigated cropland and pasture, and on-site surface water features.
    c. Rationale for the number of proposed monitoring wells, their locations and depths, and identification of anticipated depth to groundwater.
    d. If, proposing to use existing groundwater wells as part of the MWISP, include well screen intervals in relation to groundwater levels, current well use, and rationale for well selection.
    e. Local permitting information (as required for drilling, well seals, boring/well abandonment).
    f. Drilling details, including methods and types of equipment for drilling and logging activities. Equipment decontamination procedures (as appropriate) should be described.
    g. Health and Safety Plan.

2. Proposed Drilling Details:
    a. Drilling techniques.
    b. Well logging method.
    c. Proposed Monitoring Well Design - all proposed well construction information must be displayed on a construction diagram or schematic to accurately identify the following:
    d. Well depth.

e. Borehole depth and diameter.
f. Well construction materials.
g. Casing material and diameter – include conductor casing, if appropriate.
h. Location and length of perforation interval, size of perforations, and rationale.
i. Location and thickness of filter pack, type and size of filter pack material, and rationale.
j. Location and thickness of bentonite seal.
k. Location, thickness, and type of annular seal.
l. Surface seal depth and material.
m. Type of well cap(s).
n. Type of well surface completion.
o. Well protection devices (such as below-grade water tight-vaults, locking steel monument, bollards, etc.).

3. Proposed Monitoring Well Development:
   a. Schedule for development (not less than 48 hours or more than 10 days after well completion).
   b. Method of development.
   c. Method of determining when development is complete.
   d. Parameters to be monitored during development.
   e. Method for storage and disposal of development water.

4. Proposed Surveying:
   a. How horizontal and vertical position of each monitoring well will be determined.
   b. The accuracy of horizontal and vertical measurements to be obtained.
   c. The California licensed professional (licensed land surveyor or civil engineer) to perform the survey.

5. Proposed Groundwater Monitoring:
   a. Schedule (at least 48 hours after well development).
   b. Depth to groundwater measuring equipment (e.g., electric sounder or chalked tape capable of ±0.01-foot measurements).
   c. Well purging method, equipment, and amount of purge water.
   d. Sample collection (e.g., bottles and preservation methods), handling procedures, and holding times.
   e. Quality assurance/quality control (QA/QC) procedures (as appropriate).
   f. Analytical procedures.
   g. Equipment decontamination procedures (as appropriate).

6. Proposed Schedule:
   a. Fieldwork.
   b. Laboratory analyses.
   c. Report submittal.

MONITORING WELL INSTALLATION COMPLETION REPORT

Within **90 days** of installation of a groundwater monitoring well(s), a Monitoring Well Installation Completion Report (MWICR) shall be submitted. At a minimum, the MWICR shall summarize the field activities as described below.

1. General Information:
   a. Brief overview of field activities including well installation summary (such as number, depths), and description and resolution of difficulties encountered during field program.
   b. Topographic map showing any existing nearby domestic, irrigation, and municipal supply wells and monitoring wells, utilities, surface water bodies, drainage courses and their tributaries/destinations, and other major physical and man-made features.
   c. Site plan showing monitoring well locations, other existing wells, unused and/or abandoned wells, major physical site structures, any waste handling facilities, and on-site surface water features.
   d. Period of field activities and milestone events (e.g., distinguish between dates of well installation, development, and sampling).

2. Monitoring Well Construction:
   a. Number and depths of monitoring wells installed.
   b. Monitoring well identification (i.e., numbers).
   c. Date(s) of drilling and well installation.
   d. Description of monitoring well locations including field-implemented changes (from proposed locations) due to physical obstacles or safety hazards.
   e. Description of drilling and construction, including equipment, methods, and difficulties encountered (such as hole collapse, lost circulation, need for fishing).
   f. Name of drilling company, driller, and logger (site geologist to be identified).
   g. As-builts for each monitoring well with the following details:
      i. Well identification.
      ii. Total borehole and well depth.
      iii. Date of installation.
      iv. Boring diameter.
      v. Casing material and diameter (include conductor casing, if appropriate).
      vi. Location and thickness of slotted casing, perforation size.
      vii. Location, thickness, type, and size of filter pack.
      viii. Location and thickness of bentonite seal.
      ix. Location, thickness, and type of annular seal.
      x. Depth of surface seal.
      xi. Type of well cap.
      xii. Type of surface completion.
      xiii. Depth to water (note any rises in water level from initial measurement) and date of measurement.
      xiv. Well protection device (such as below-grade water tight vaults, stovepipe, bollards, etc.).

h. All depth to groundwater measurements during field program.
i. Field notes from drilling and installation activities (e.g., all subcontractor dailies, as appropriate).
j. Construction summary table of pertinent information such as date of installation, well depth, casing diameter, screen interval, bentonite seal interval, and well elevation.
k. Detailed geologic log of subsurface materials encountered.
l. Complete geophysical logs and corresponding interpretations.

3. Monitoring Well Development:
   a. Date(s) and time of development.
   b. Name of developer.
   c. Method of development.
   d. Methods used to identify completion of development.
   e. Development log: volume of water purged and measurements of temperature, pH and electrical conductivity during and after development.
   f. Disposition of development water.
   g. Field notes (such a bailing to dryness, recovery time, number of development cycles).

4. Monitoring Well Survey:
   a. Identify coordinate system or reference points used.
   b. Description of measuring points (i.e. ground surface, top of casing, etc.).
   c. Horizontal and vertical coordinates of well casing with cap removed.
   d. Name, license number, and signature of California licensed professional who conducted survey.
   e. Surveyor's field notes.
   f. Tabulated survey data.

REPORTING REQUIREMENTS

All Quarterly monitoring results shall be combined and reported in **Semi-Annual Monitoring Reports**, which are due as follows:

First-Semiannual Monitoring Report:	**1 August**
First Quarter results (January - March)	
Second Quarter results (April – June)	
Second-Semiannual Monitoring Report:	**1 February**
Third Quarter results (July – September)	
Fourth Quarter results (October – December)	
Facility Inspection Report (Completed by 30 October):	**30 November**

A transmittal letter shall accompany each monitoring report. The transmittal letter shall discuss any exceedances of applicable effluent or groundwater limitations or other instances of non-compliance that occurred during the reporting period and all corrective actions taken or planned, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions or a time schedule for implementing the corrective actions, reference to the previous correspondence is satisfactory. **Reports shall be submitted whether or not there is a discharge.**

The Discharger shall **submit electronic copies** of all work plans, reports, analytical results, and groundwater elevation data via electronic mail to CentralValleyFresno@waterboards.ca.gov and over the Internet to the State Water Board Geographic Environmental Information Management System database (GeoTracker) at http://www.waterboards.ca.gov/ust/electronic_submittal/index.shtml

A frequently asked question document for GeoTracker can be found at: http://www.waterboards.ca.gov/ust/electronic_submittal/docs/faq.pdf

Electronic submittals to GeoTracker shall comply with GeoTracker standards and procedures, as specified on the State Water Board's web site. All submittals including uploads to GeoTracker shall be completed on or prior to the due date.

In addition, a hardcopy of each document shall be submitted to:

California Regional Water Quality Control Board
Central Valley Region
1685 E Street, Suite 200
Fresno, CA 93706
Attn: Ronald E. Holcomb

GeoTracker Site Global ID: **L10007494132**
CIWQS Place ID: **209130** for **BELGIAN ANTICLINE, MCKITTRICK 1 & 1-3 FACILITY**

The following information is to be included on all monitoring reports, as well as report transmittal letters:

Valley Water Management Company
Belgian Anticline, McKittrick 1 & 1-3
Waste Discharge Requirements 69-19901
Monitoring and Reporting Program R5-2018-0XXX
GeoTracker Site Global ID: L10007494132
CIWQS Place ID: 209130

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible for all historical and current data. The data shall be summarized in such a manner that illustrates clearly, whether the Discharger complies with waste discharge requirements.

If the Discharger monitors any constituent at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the semi-annual monitoring reports. Such increased frequency shall be indicated on the semi-annual monitoring reports.

All monitoring reports shall comply with the signatory requirements in Standard Provision B.3. All monitoring reports that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be

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.

A. **All Semi-Annual Monitoring Reports shall include the following**:

Produced Wastewater reporting:

1. Tabular summary of current and historical results of effluent discharges as specified on page 5.
2. For each month of the quarter, calculation of monthly effluent flow and the historical monthly effluent flow for the last 12-months. Historical annual effluent flow data in tabular summary.
3. For each quarter, include a current and historical table of **sampling data** for each wastewater sample point. In addition, each quarter, include a data table for current and historical wastewater sample data for all electrical conductivity (EC), total dissolved solids (TDS), boron, dissolved sodium, potassium, dissolved calcium, dissolved magnesium, chloride, alkalinity as CaCO3, dissolved sulfate, isotopes for oxygen (^{18}O), and deuterium (Hydrogen 2, ^{2}H, or D) concentrations.

Facility reporting:

1. Monthly freeboard results as specified on MRP page 7.
2. The results of Facility inspections conducted during each quarter as specified on MRP page 7 and 8.
3. Rainfall data as specified on MRP page 8.

Chemical and Additive reporting:

1. Tabular summary of current and historical data required as specified on MRP page 6.
2. Safety Data Sheets for all chemicals and additives that are identified in semi-annual monitoring reports for that respective calendar year.
3. Tabular summary of current and historical annual volume and mass for all chemicals and additives.
4. Summary that identifies if any chemicals and additives were detected in produced wastewater discharge to the Facility ponds or groundwater.

Solid Waste reporting:

1. The results of solid Waste monitoring specified on MRP pages 6 and 7, including the nature, volume, and weight in dry tons of solid waste produced during each quarter.
2. Tabular summary of current and historical analytical results characterizing the solid waste, and particularly, whether the waste is hazardous as defined in California Code of Regulations, title 22, section 66261.
3. The method of disposal and disposal locations of the solid wastes.
4. If wastes are hauled to a disposal facility, evidence that the disposal facility is properly permitted.

Groundwater reporting:

1. The results of groundwater monitoring specified on page 8.

2. For each monitoring well, a table showing constituent concentrations for current and historical concentrations. In addition, for each quarter, include a data table for current and historical groundwater sample data for all electrical conductivity (EC), total dissolved solids (TDS), boron, dissolved sodium, potassium, dissolved calcium, dissolved magnesium, chloride, alkalinity as CaCO3, dissolved sulfate, isotopes for oxygen (18O), and deuterium (Hydrogen 2, 2H, or D) concentrations.
3. A groundwater contour map based on groundwater elevations for each quarter. The map shall show the gradient and direction of groundwater flow under/around the facility and/or effluent disposal area(s). The map shall also include the locations of monitoring wells and wastewater storage and discharge areas.
4. Provide a current isoconcentration map of groundwater data for EC, chloride, and boron concentrations.

Laboratory Reports:

1. Laboratory reports submitted in compliance with this MRP shall be accompanied by an **Excel file** that includes the analytical data found in the laboratory report. Excel files need to be generated by the laboratory, or compiled by the Discharger. At a minimum, the Excel file shall include the constituent name, sample location, sample name, sample date, analysis date, analytical method, result, unit, MDL, RL, and dilution factor. Excel files shall either be mailed to the Central Valley Water Board Office in an electronic storage device, or sent via electronic mail to CentralValleyFresno@waterboards.ca.gov. Either method of delivery needs to include, at a minimum, a copy of the transmittal letter.

B. **Second-Semiannual Monitoring Reports**, in addition to the above, by **1 February** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

Facility information:

1. The names and general responsibilities of all persons employed to operate the produced wastewater treatment systems.
2. The names and telephone numbers of persons to contact regarding the Facility for emergency and routine situations.
3. A statement certifying when the flow meters and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.4).
4. A summary of all spills/releases, if any, that occurred during the year at the production facility, tasks undertaken in response to the spills, and the results of the tasks undertaken.
5. A summary of the chemical and additive data collected under the Chemical and Additive Monitoring section, the required Material Safety Data Sheets (MDSs) / Safety Data Sheets (SDSs) sheets, and a discussion of whether any of the chemicals or additives were found in effluent discharges.
6. A flow chart (i.e. diagram that clearly illustrates all processes that produced wastewater undergoes within the Facility up to discharge to the ponds) and map of the following:
    - Facility within the oil field,

- Facility/Lease boundaries
- Facility produced wastewater distribution network with all discharge points to the ponds or land.
- Wastewater flow direction within the Facility's ponds.

Requesting Administrative Review by the State Water Board. Any person aggrieved by an action of the Central Valley Water Board that is subject to review as set forth in Water Code section 13320(a), may petition the 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 thirty (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, or state holiday, then the State Water Board must receive the petition by 5:00 p.m. on the next business day. Copies of the laws and regulations applicable to filing petitions may be found on the internet at
http://www.waterboards.ca.gov/public_notices/petitions/water_quality/index.shtml
or will be provided upon request.

Modifications. Any modification to this Monitoring and Reporting Program shall be in writing and approved by the Executive Officer, including any extensions. Any written extension request by the Discharger shall include justification for the delay.

This monitoring and reporting program shall be effective on the signature date below.

Ordered by: _____
PATRICK PULUPA, Incoming Executive Officer for
PAMELA C. CREEDON, Executive Officer

April 4, 2018
(Date)

Table I – Effluent Monitoring

Parameters	Units	Monitoring Frequency	US EPA or other Method[9]	Reporting Frequency
Field Parameters				
Temperature	°F[1]	Quarterly	Meter	Quarterly
Electrical Conductivity	µmhos/cm[2]	Quarterly	Meter	Quarterly
pH	pH units	Quarterly	Meter	Quarterly
Monitoring Parameters				
Total Dissolved Solids (TDS)	mg/L[3]	Quarterly	160.1	Quarterly
Total Suspended Solids (TSS)	mg/L	Quarterly	160.2	Quarterly
Total Organic Carbon (TOC)	mg/L	Quarterly	415.3	Quarterly
Electrical Conductivity	µmhos/cm	Quarterly	2510B	Quarterly
Boron, dissolved	mg/L	Quarterly	6010B	Quarterly
Standard Minerals				
Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Bicarbonate Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Carbonate Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Hydroxide Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Sulfate, dissolved	mg/L	Quarterly	300.0	Quarterly
Total Kjeldahl Nitrogen	mg/L	Quarterly	351.3	Quarterly
Nitrate as NO3	mg/L	Quarterly	353.2	Quarterly
Nitrite as NO2	mg/L	Quarterly	300.0	Quarterly
Ammonia NH3	mg/L	Quarterly	350.1	Quarterly
Ammonium NH4	mg/L	Quarterly	350.2	Quarterly
Nitrate-N, dissolved	mg/L	Quarterly	300.0	Quarterly
Calcium, dissolved	mg/L	Quarterly	6010B	Quarterly
Magnesium, dissolved	mg/L	Quarterly	6010B	Quarterly
Sodium, dissolved	mg/L	Quarterly	6010B	Quarterly
Potassium	mg/L	Quarterly	6010B	Quarterly
Chloride	mg/L	Quarterly	300.0	Quarterly
PAHs[4]	µg/L[5]	Quarterly	8270	Quarterly
Total Petroleum Hydrocarbons (TPH)	µg/L	Quarterly	418.1	Quarterly

Table I – Effluent Monitoring

Parameters	Units	Monitoring Frequency	US EPA or other Method[9]	Reporting Frequency
Volatile Organic Compounds				
Full Scan	µg/L	Quarterly	8260B	Quarterly
Oil and Grease	mg/L	Quarterly	1664A	Quarterly
Stable Isotopes				
Oxygen (^{18}O)	pCi/L[6]	Quarterly	900.0	Annually
Deuterium (Hydrogen 2, ^{2}H, or D)	pCi/L	Quarterly	900.0	Annually
Radionuclides				
Radium-226	pCi/L	Quarterly	SM[7] 7500-Ra	Quarterly
Radium-228	pCi/L	Quarterly	SM 7500-Ra	Quarterly
Gross Alpha particle (excluding radon and uranium)	pCi/L	Quarterly	SM 7110	Quarterly
Other Constituents				
Lithium	mg/L	Quarterly	200.7	Quarterly
Strontium	mg/L	Quarterly	200.7	Quarterly
Iron	mg/L	Quarterly	200.8	Quarterly
Manganese	mg/L	Quarterly	200.8	Quarterly
Antimony	mg/L	Quarterly	200.8	Quarterly
Arsenic	mg/L	Quarterly	200.8	Quarterly
Barium	mg/L	Quarterly	200.8	Quarterly
Beryllium	mg/L	Quarterly	200.8	Quarterly
Cadmium	mg/L	Quarterly	200.8	Quarterly
Chromium (total)	mg/L	Quarterly	200.8	Quarterly
Chromium (hexavalent)	mg/L	Quarterly	7196A	Quarterly
Cobalt	mg/L	Quarterly	200.8	Quarterly
Copper	mg/L	Quarterly	200.8	Quarterly
Lead	mg/L	Quarterly	200.8	Quarterly
Mercury	mg/L	Quarterly	7470A	Quarterly
Molybdenum	mg/L	Quarterly	200.8	Quarterly
Nickel	mg/L	Quarterly	200.8	Quarterly
Selenium	mg/L	Quarterly	200.8	Quarterly
Silver	mg/L	Quarterly	200.8	Quarterly

Table I – Effluent Monitoring

Parameters	Units	Monitoring Frequency	US EPA or other Method[9]	Reporting Frequency
Thallium	mg/L	Quarterly	200.8	Quarterly
Vanadium	mg/L	Quarterly	200.8	Quarterly
Zinc	mg/L	Quarterly	200.8	Quarterly
Oil Production and Process Chemicals and Additives[8]	µg/L	Quarterly	As Appropriate[9]	Annually

[1] Degrees Fahrenheit
[2] Micromhos per centimeter
[3] Milligrams per liter
[4] Polycyclic aromatic hydrocarbons
[5] Micrograms per liter
[6] Picocuries per liter
[7] Standard Methods
[8] The Discharger shall provide analytical results for all chemicals and additives used in the exploration, production, and/or processing of all oil and the treatment of produced wastewater discharged to land (e.g., ponds, roads, etc.) as described under the Chemical and Additive Monitoring section of the MRP for which there are ELAP approved analyses. For those constituents for which there are not ELAP approved analytical methods, the Discharger shall submit a technical report describing how it intends to address this issue.
[9] Alternative analytical methods may be proposed by the Discharger, but are subject to the approval of the Assistant Executive Officer

Table II – Groundwater Monitoring

Parameters	Units	Monitoring Frequency	US EPA or other Method	Reporting Frequency
Groundwater Elevation	feet & hundredths, MSL[1]	Quarterly		Quarterly
Field Parameters				
Temperature	°F[2]	Quarterly	Meter	Quarterly
Electrical Conductivity	µmhos/cm[3]	Quarterly	Meter	Quarterly
pH	pH units	Quarterly	Meter	Quarterly
Monitoring Parameters				
Total Dissolved Solids (TDS)	mg/L[4]	Quarterly	160.1	Quarterly
Electrical Conductivity	µmhos/cm	Quarterly	2510B	Quarterly
Total Organic Carbon (TOC)	mg/L	Quarterly	415.3	Quarterly
Boron, dissolved	mg/L	Quarterly	6010B	Quarterly
Standard Minerals				
Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Bicarbonate Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Carbonate Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Hydroxide Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Sulfate, dissolved	mg/L	Quarterly	300.0	Quarterly
Total Kjeldahl Nitrogen	mg/L	Quarterly	351.3	Quarterly
Nitrate as NO3	mg/L	Quarterly	353.2	Quarterly
Nitrite as NO2	mg/L	Quarterly	300.0	Quarterly
Ammonia NH3	mg/L	Quarterly	350.1	Quarterly
Ammonium NH4	mg/L	Quarterly	350.2	Quarterly
Nitrate-N, dissolved	mg/L	Quarterly	300.0	Quarterly
Calcium, dissolved	mg/L	Quarterly	6010B	Quarterly
Magnesium, dissolved	mg/L	Quarterly	6010B	Quarterly
Sodium, dissolved	mg/L	Quarterly	6010B	Quarterly
Potassium	mg/L	Quarterly	6010B	Quarterly
Chloride	mg/L	Quarterly	300.0	Quarterly
PAHs[5]	µg/L[6]	Quarterly	8270	Quarterly

Table II – Groundwater Monitoring

Parameters	Units	Monitoring Frequency	US EPA or other Method	Reporting Frequency
Total Petroleum Hydrocarbons (TPH)	µg/L	Quarterly	418.1	Quarterly
Volatile Organic Compounds				
Full Scan	µg/L	Quarterly	8260B	Quarterly
Oil and Grease	mg/L	Quarterly	1664A	Quarterly
Stable Isotopes				
Oxygen (^{18}O)	pCi/L[7]	Quarterly	900.0	Quarterly
Deuterium (Hydrogen 2, ^{2}H, or D)	pCi/L	Quarterly	900.0	Quarterly
Radionuclides				
Radium-226	pCi/L	Quarterly	SM[8] 7500-Ra	Quarterly
Radium-228	pCi/L	Quarterly	SM 7500-Ra	Quarterly
Gross Alpha particle (excluding radon and uranium)	pCi/L	Quarterly	SM 7110	Quarterly
Other Constituents				
Lithium	mg/L	Quarterly	200.7	Quarterly
Strontium	mg/L	Quarterly	200.7	Quarterly
Iron	mg/L	Quarterly	200.8	Quarterly
Manganese	mg/L	Quarterly	200.8	Quarterly
Antimony	mg/L	Quarterly	200.8	Quarterly
Arsenic	mg/L	Quarterly	200.8	Quarterly
Barium	mg/L	Quarterly	200.8	Quarterly
Beryllium	mg/L	Quarterly	200.8	Quarterly
Cadmium	mg/L	Quarterly	200.8	Quarterly
Chromium (total)	mg/L	Quarterly	200.8	Quarterly
Chromium (hexavalent)	mg/L	Quarterly	7196A	Quarterly
Cobalt	mg/L	Quarterly	200.8	Quarterly
Copper	mg/L	Quarterly	200.8	Quarterly
Lead	mg/L	Quarterly	200.8	Quarterly
Mercury	mg/L	Quarterly	7470A	Quarterly
Molybdenum	mg/L	Quarterly	200.8	Quarterly

Table II – Groundwater Monitoring

Parameters	Units	Monitoring Frequency	US EPA or other Method	Reporting Frequency
Nickel	mg/L	Quarterly	200.8	Quarterly
Selenium	mg/L	Quarterly	200.8	Quarterly
Silver	mg/L	Quarterly	200.8	Quarterly
Thallium	mg/L	Quarterly	200.8	Quarterly
Vanadium	mg/L	Quarterly	200.8	Quarterly
Zinc	mg/L	Quarterly	200.8	Quarterly
Oil Production and Process Chemicals and Additives[9]	µg/L	Quarterly	As Appropriate[10]	Annually

[1] Mean Sea Level
[2] Degrees Fahrenheit
[3] Micromhos per centimeter
[4] Milligrams per liter
[5] Polycyclic aromatic hydrocarbons
[6] Micrograms per liter
[7] Picocuries per liter
[8] Standard Methods
[9] The Discharger shall provide analytical results for all chemicals and additives used in the exploration, production, and/or processing of all oil and the treatment of produced wastewater discharged to land (e.g., ponds, roads, etc.) as described under the Chemical and Additive Monitoring section of the MRP for which there are ELAP approved analyses. For those constituents for which there are not ELAP approved analytical methods, the Discharger shall submit a technical report describing how it intends to address this issue.
[10] Appropriate analytical methods may be proposed by the Discharger but are subject to the approval of the Executive Officer

ATTACHMENT 2B

Updated 4 April 2018

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION R5-2018-XXXX

DIRECTING STAFF TO PREPARE AN APPROPRIATE ORDER
FOR
VALLEY WATER MANAGEMENT COMPANY'S MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

WHEREAS, the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) finds that:

1. Valley Water Management Company (Valley Water) owns and operates an oil field produced wastewater disposal pond system named the McKittrick 1 & 1-3 Facility (Facility) approximately 8.7 miles west of the community of Buttonwillow.

2. Valley Water has been accepting up to 115,000 barrels (bbls) per day of produced wastewater at the Facility for disposal by evaporation and percolation since the 1950s. Reported rates since 2015 have varied from 105,000 to 42,000 bbls per day. The produced wastewater in the ponds is saline, with historic total dissolved solids (TDS) concentrations from 7,772 milligrams per liter (mg/L) to 26,000 mg/L, chloride concentrations from 4,100 mg/L to 16,000 mg/L and boron concentrations from 42.5 mg/L to 130 mg/L.

3. Valley Water's discharges to the produced wastewater disposal ponds are regulated under Waste Discharge Requirements Resolution No. 69-199 (Resolution), adopted by the Central Valley Water Board (Board) on 14 February 1969. The Resolution prohibits the discharges from creating pollution and nuisance. The Resolution issued to Valley Water states in relevant part:

    1. The discharge shall not cause a pollution of ground or surface waters.

4. The *Water Quality Control Plan for the Tulare Lake Basin* (Revised 2016) (Basin Plan) designations of beneficial uses of groundwater for the Cymric Area include: Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), and Industrial Service Supply (IND).

5. There is agricultural land 1,500 feet north of the Facility and several miles to the east of the Facility. Agricultural wells in the vicinity that are downgradient of the Facility have total dissolved solids (TDS) concentrations ranging from 2,300 mg/L to 6,800 mg/L. Starrh Family Farms LP owns and operates these wells, and they are reportedly important for operations when surface water deliveries are in short supply. The existence and use of these wells indicates that the groundwater, designated as supporting the AGR beneficial use, is currently being used for that purpose downgradient from the Facility.

6. Valley Water installed a groundwater monitoring well network in 2002 to investigate whether wastewater discharged to its ponds was migrating down-structure to the northeast. Two wells (CYM-19H1 and CYM-17N1) were installed in what is referred to in Valley Water documents as the upper Tulare sand, and one well (CYM-21D1) was installed in what is referred to as the deeper Tulare sand or aquifer. The deeper Tulare sand appears to be the regional aquifer. The upper Tulare and deeper Tulare sequences

are separated by a silt/clay layer referred to as the upper Tulare clay layer. The network was expanded in 2006 with the addition of three wells (CYM-17K1, CYM-17M1, CYM-17Q1) completed in the upper Tulare sand downgradient of the original wells. These three wells were positioned to be sentinel wells and were dry at the time of installation.

7. From 2002 to 2017, the TDS concentrations in CYM-21D1 have increased from about 1,200 mg/L to 8,500 mg/L, and the chloride concentrations have increased from 334 mg/L to 2,400 mg/L. The TDS and chloride concentrations now exceed State drinking water Secondary MCLs and water quality objectives associated with the AGR beneficial use.

8. Clean Harbors Buttonwillow LP (Clean Harbors) operates a Class I hazardous waste disposal facility approximately 1.8 miles to the north-northeast and down-structure and downgradient of the Facility. At least two of Clean Harbors' upgradient groundwater monitoring wells have been showing increasing concentrations of TDS and chloride for several years. TDS concentrations in MW-148I have increased from 2,340 mg/L to 5,400 mg/L from 2011 to 2017. Chloride concentrations in MW-148I have increased from about 246 mg/L to 1,200 mg/L from 2009 to 2017. TDS concentrations in MW-102RL have increased from about 3,040 mg/L to 3,900 mg/L from 2013 to 2017. Chloride concentrations in MW-102RL have increased from about 450 mg/L to 740 mg/L from 2007 to 2017. Given that Clean Harbors is directly downgradient of the McKittrick Facility, the McKittrick Facility is a potential source of the observed TDS and chloride concentrations in the Clean Harbors' groundwater monitoring wells.

9. The information in Findings 2 through 8 indicate that:

   a. There is a plume of produced wastewater migrating from the Facility ponds toward the northeast and east-northeast;

   b. The plume has moved beyond the Facility groundwater monitoring network and may have affected TDS and chloride levels in CYM-21D1, which appears to be connected to the regional aquifer that is used for agricultural purposes; and

   c. The plume may have affected at least two of Clean Harbors' upgradient groundwater monitoring wells and increased TDS and chloride levels in MW-148I, but may not have affected MW-143U. Additional work is needed determine the lateral and vertical extent of the plume.

10. The Central Valley Water Board adopted three Waste Discharge Requirements General Orders for Oil Field Discharges to Land (General Orders) on 6 April 2017. The General Orders address three specific scenarios:

    a. General Order Number One – The discharge meets the Basin Plan effluent limits for TDS, chloride, and boron of 1000 umhos/cm, 200 mg/L, and 1 mg/L, respectively.

b. General Order Number Two – The discharge exceeds the Basin Plan effluent limits, but will not substantially affect water quality nor cause a violation of water quality objectives; it must meet the requirements of the State Antidegradation Policy.

c. General Order Number Three – The discharge must be to an area where the first encountered groundwater is of poor quality or there is no first encountered groundwater, or the first encountered groundwater does not support the following beneficial uses identified in the Basin Plan: MUN, ARG, IND, and PRO.

11. Groundwater directly under the Valley Water Facility is of poor quality, and could potentially have the MUN beneficial use de-designated consistent with State Water Board Resolution 88-63, the Sources of Drinking Water Policy.

12. Valley Water has informally requested that discharges from the Facility be regulated under General Order Number Three. General Order Number Three does not require groundwater monitoring, which generally reduces a discharger's monitoring costs.

13. Regulation of the Facility's discharges under the General Orders may be inappropriate for the following reasons:

    a. General Order Number One requires discharges to comply with the Basin Plan effluent limits for EC, chloride, and boron. Valley Water's discharges exceed these limits and, therefore, cannot comply with them.

    b. General Order Number Two requires discharges to comply with the State Antidegradation Policy. Valley Water's high salinity discharge comingles with better quality groundwater down gradient, and likely will cause degradation of groundwater. Discharges at the Facility have been occurring since the 1950s and may have affected water in CYM-21D1 and MW-148I. Though groundwater beneath the Facility may not be high quality groundwater, the lateral spread of high-salinity produced water is likely impacting higher-quality water. Therefore, in order to be regulated under General Order Number Two, Valley Water may be required to closely monitor impacts caused by its discharge and employ best practicable treatment and control technology to minimize degradation, consistent with the State Antidegradation Policy.

    c. General Order Number Three requires dischargers to either demonstrate that there is no groundwater beneath their discharge areas or demonstrate that the current Basin Plan-designated groundwater beneficial uses may be de-designated consistent with applicable policies.

    Groundwater underlying the Facility may not support the MUN and AGR beneficial uses. However, discharges from the Facility may be causing impacts to downgradient groundwater that currently supports, at a minimum, the AGR beneficial use (CYM-21D1). It is unlikely that the beneficial uses of this groundwater are eligible for de-designation under existing policies. In order for the Facility to be regulated under

General Order Number Three, Valley Water would be required to demonstrate that the impacts of its discharges are contained to portions of the aquifer eligible for de-designation. Existing technical data is insufficient to make this demonstration.

THEREFORE BE IT RESOLVED that:

The Central Valley Water Board directs staff to take appropriate action to determine whether Valley Water's discharge may be regulated under General Order Number Two, General Order Number Three, or whether Valley Water should be directed submit for the Board's consideration a report of waste discharge to be regulated under an updated set of individual waste discharge requirements. Compliance options may include a consideration of the policies currently under development through the CV-SALTS initiative.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on __ April 2018.

_____
PAMELA C. CREEDON, Executive Officer

Updated 4 April 2018

Regional Water Quality Control Board
Central Valley Region
Board Meeting – 5/6 April 2018

Response to Written Comments Submitted in Response to Tentative Monitoring And Reporting Program And Tentative Resolution Providing Staff Direction Valley Water Management Company McKittrick 1 & 1-3 Facility Kern County

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At a public hearing scheduled for 5/6 April 2018, the Regional Water Quality Control Board, Central Valley Region, (Central Valley Water Board) had calendared for consideration adoption of a Monitoring and Reporting Program (MRP) and a Resolution Providing Staff Direction, for Valley Water Management Company (Valley Water), McKittrick 1 & 1-3 Facility (Facility), Kern County, to Comply With Resolution 69-199 (Resolution).

After discussions with Valley Water, Valley Water consented to all of the substantive terms of the proposed MRP. MRP Order R5-2018-0808 was therefore issued by the Incoming Executive Officer under delegated authority on 4 April 2018.

This document contains updated responses to written comments on the tentative Resolution. Comment letters were received by the deadline from:

1. Valley Water Management Company, 13 February 2018;
2. Valley Water Management Company, 26 February 2018;
3. Clean Water Action et al., 26 February 2018; and
4. Center for Biological Diversity, 26 February 2018.

Valley Water's 13 February letter requested that the Board delay consideration of the proposed MRP and Resolution. Board staff responded to the request by letter dated 1 March 2018, informing Valley Water that the matter would be kept on calendar for the April meeting.

Written comments from the above interested persons are summarized in the appropriate sections below, followed by responses from Central Valley Water Board staff. Based on the comments, Central Valley Water Board staff has made some minor changes to the tentative Monitoring and Reporting Program and tentative Resolution. Where specific changes are presented below, additions are underlined and deletions are in strikeout. The last section of the response to written comments includes Central Valley Water Board staff revisions/corrections to the tentative Monitoring and Reporting Program and to the tentative Resolution.

VALLEY WATER MANAGEMENT COMPANY

On 13 February, 26 February, and 9 March 2018, Central Valley Water Board staff (Water Board staff) received letters from Valley Water. The content of the letters are in many ways similar, and therefore, they are referred to herein as "Letters." The Letters state that the tentative MRP and the tentative Resolution providing staff direction are premature and that the Central Valley Water Board should not consider the MRP or Resolution for adoption at this time.

The Letters state that Valley Water would like to collaborate with Central Valley Water Board staff on a number of issues before the tentative MRP or Resolution is considered for adoption.

The Letters state Valley Water has been voluntarily monitoring for many years, and that Valley Water is an active member of the Central Valley Salinity Alternatives for Long-term Sustainability Coalition (CV-SALTS). Valley Water also states that it would like to have agreement on technical issues before the MRP and Resolution are presented to the Central Valley Water Board. Salient comments and Board staff responses are described below.

COMMENT No. 1: Valley Water states that one of the issues it seeks to resolve is a shared understanding of the stratigraphy in the area and how it affects fate and transport of produced wastewater and irrigation water. Valley Water states that Resolution Finding 6 contains errors. For example, the Corcoran Clay Equivalent (CCE) does not separate the upper and deeper Tulare Formations at Valley Water's facility, as suggested in Finding 6. And, this finding mistakenly claims that perched water at Valley Water's facility may be equivalent to perched water at the Clean Harbors Class 1 Landfill (Clean Harbors). Further, Valley Water states that a correct understanding of the stratigraphy makes it clear that it is not possible for produced water from McKittrick to travel upwards and be found above the CCE at Clean Harbors. The downgradient flow to the Upper Zone at Clean Harbors is a central concern of the Resolution, but the facts (already agreed to by Valley Water and Regional Board staff) belie this conclusion.

> **RESPONSE:** Staff does not necessarily disagree with the two dimensional representation of the area's general stratigraphy provided by Valley Water in its Letters. However, given the depositional environment of the site, staff does not believe that the two dimensional view of the site adequately characterizes site hydrogeology. Additional site assessment, performed under MRP Order 2018-0808, will provide a better three-dimensional view of the site.

COMMENT No. 2: Valley Water states that proposed Resolution Findings 8 and 9 only rely on total dissolved solids (TDS) and chloride concentrations to conclude that produced water from Valley Water has affected Upper Perched Zone and Intermediate perched Zone groundwater beneath Clean Harbors. Valley Water also contends that the staff report incorrectly concludes that boron (which is relatively abundant in produced water) is not a conservative tracer.

> **RESPONSE:** Closer examination of the available data show an upward trend in boron concentrations in Clean Harbors' monitoring well MW-102RL, and Clean Harbors' MW-148I had been decreasing until about the end of 2015, after which it has been increasing. See Attachment A to this response to comments. These increases merit additional investigation, which will be performed pursuant to MRP Order 2018-0808.
>
> It is Board staff's opinion that existing data does not support Valley Water's contention that its discharges cannot affect the Upper Perched Zone at Clean Harbors. Pursuant to MRP Order 2018-0808, Valley Water will be submitting a Monitoring Well Installation and Sampling Plan (MWISP) within 60 days, which will allow for a more through

consideration of Valley Water's contention that its discharges cannot affect the Upper Perched Zone at Clean Harbors

COMMENT No. 3: Valley Water contends that perched water at Clean Harbors contains relatively high concentrations of nitrogen compounds and relatively low concentrations of boron that, taken together, would indicate that the limited area of perched water at Clean Harbors is not impacted by produced water, but rather irrigation in adjacent agricultural fields just to the north. In its 9 March 2018 letter, Valley Water asks, "How can a fairly high concentration of nitrate showing up downgradient beneath Clean Harbors, when nitrate is not found at detectible levels in the produced water, and not found beneath the McKittrick facility or in groundwater monitoring wells at significant concentrations?"

RESPONSE: Nitrogen data for the Facility are limited. Valley Water does not sample its discharge for the various forms of nitrogen; it only samples for nitrate. However, significant concentrations of nitrogen are known to occur in produced water in the organic and ammonia forms. MRP Order 2018-0808 requires additional nitrogen characterization to define Valley Water's potential contribution to the changes in the Clean Harbor's monitoring well chemistry.

COMMENT No. 4: Valley Water asks, given the proximity of the Clean Harbors site to two sections of irrigated land to the north, how can irrigated agriculture not be explored as the cause and effect of the water under Clean Harbors?

RESPONSE: Board staff has not stated that irrigated agriculture cannot be explored as contributing, at least to some degree, to constituent increases in Clean Harbors' groundwater monitoring wells. However, for the reasons described above, Board staff believes that Valley Water's discharges could be contributing to increases in TDS, chloride, and boron in groundwater upgradient of the Clean Harbors site. Additional investigation required by MRP Order 2018-0808 will help resolve this issue.

COMMENT No. 5: Valley Water states that the tentative Resolution does not consider these key facts: the timing of the occurrence of perched water at Clean Harbors, which was found at times when three sentinel wells in Section 17 indicated that produced water was still a mile away from Clean Harbors; the presence of perched water at Clean Harbors in a formation above that affected at McKittrick; and the agricultural character of the water beneath Clean Harbors.

RESPONSE: Valley Water's reliance on the sentinel wells to demonstrate the location of the plume front assumes that the plume is moving through uniform media; Staff does not believe this assumption is consistent with the way geologic materials have been laid down at the site. It is quite possible that the plume has moved faster and farther through preferential channels than indicated by the sentinel wells. Additional investigation required by MRP Order 2018-0808 will allow for a characterization of the extent of the plume.

COMMENT No. 6: Valley Water contends that the tentative Resolution incorrectly implies that an agricultural well with an 18,000 mg/L TDS concentration was affected by Valley Water's disposal ponds when in fact, this well was the subject of litigation between AERA Energy and Starrh Farms, and is located far from the Valley Water disposal ponds' area of influence. Valley Water states that the aquifers used by agricultural wells are deeper than the perched produced water present beneath the Facility and that the proposed Resolution implies a condition of imminent threat, which may not actually be the case.

> **RESPONSE:** The produced wastewater percolating from beneath the Facility ponds has formed a mound that radiates away from the Facility ponds. The shape of the mound and resulting plume is influenced by the recharge rates at the site, gravity, and the subsurface hydrogeology. Groundwater flow is generally to the northeast and this will cause the plume to extend further in a northeast direction. While Valley Water's plume is probably migrating faster to the northeast, the lateral and vertical extent of the plume has yet to be fully characterized in any direction. These concerns merit additional investigation, which will be required under Order 2018-0808.

COMMENT No. 7: Valley Water states that it has worked with Central Valley Water Board staff to develop a draft groundwater model, and presented the results on 10 January 2018. It also said that this area would benefit from quantification of the existing conditions as a basis to predict potential future conditions. Valley water went on to say that premature consideration of this proposed Resolution by the Central Valley Water Board would forestall development of a quantitative tool to support fact-based decisions.

> **RESPONSE:** Board staff appreciate the work Valley Water has done thus far to develop a groundwater model for the area downgradient of the Facility. The MRP that has been issued is intended to compel Valley Water to gather more usable data that will help inform the groundwater model being developed. The model presented to Board staff assumes uniform aquifer characteristics in a system that is not heterogonous and isotropic. However, additional hydrogeological data, which will be collected pursuant to MRP Order 2018-0808, will better inform the model being developed.
>
> The Resolution will provide Board direction to staff on how to manage and regulate the Facility and similar facilities going forward. There is not anything in the Resolution that would forestall the ongoing development of the draft groundwater model.

COMMENT No. 8: Valley Water states that the monitoring wells completed in the deeper Tulare sand (CYM-21D1, MW-102RL, and MW-170L) do not have a hydraulic connection because water levels, continue to increase in its monitoring well CYM-21D1, while water levels continue to decrease in Clean Harbors' wells MW-102RL and MW-170L.

> **RESPONSE:** Board staff is not aware of a geologic or hydrogeologic structure that would preclude discharges from the McKittrick 1 & 1-3 Facility from flowing downstructure and down gradient into the groundwater beneath the Clean Harbors

facility. Additional investigation required by MRP Order 2018-0808 will help resolve this issue.

COMMENT No. 9: Valley Water states that monitoring wells completed in the deeper Tulare sand (CYM-21D1and MW-102RL) lack a hydraulic connection because monitoring well CYM-21D1 has a pH of 7.4 and Clean Harbors' monitoring well MW-102RL has a pH of 8.27.

RESPONSE: The pH in CYM-21D1 has ranged from 7.39 to 10.7 pH units. The pH in the Clean Harbors wells historically ranged from 7.5 to 8.1 pH units. The pH range for CYM-21D1 overlaps the pH range reported for the Clean Harbors wells, which seems to contradict Valley Water's statement. Additional investigation of these issues is warranted.

COMMENT No. 10: Valley Water comments that the proposed MRP and Resolution are inconsistent with the intent of the Oil Field General Orders adopted by the Board in 2017. Valley Water also states that the proposed MRP and Resolution are inconsistent with the Salt and Nitrate Management Plan for the Central Valley. Valley Water comments that Board staff have pre-judged that Valley Water cannot meet the requirements of Oil Field General Order Number Three. Valley Water states that it does not believe the McKittrick 1 & 1-3 Facility poses an imminent threat to usable groundwater, and that under the Salt and Nitrogen Management Plan, it should be given more time to participate in a long term solution with other sources of salinity in the Valley. Valley Water does not believe it should be subjected to expensive monitoring during this time.

RESPONSE: For the reasons stated in the Staff Report Board staff believe that regulation of the discharges from the McKittrick 1 & 1-3 Facility under either of the General Orders may be inappropriate. Specifically, there is a plume of produced wastewater migrating from beneath the Facility ponds, the water quality of the plume exceeds applicable water quality objectives, there are several agricultural wells downgradient that are of suitable quality to be used for agricultural supply, and there is no known hydrogeologic barrier that would preclude the plume from reaching these wells. Additional assessment, as required by the MRP, is necessary to adequately address these issues.

Regarding the proposed Resolution, it was drafted to provide the Board the opportunity to consider the circumstances of Valley Water's discharge and provide guidance on how to regulate this specific Facility and facilities that are similarly situated.

COMMENT No. 11: Valley Water states that the proposed MRP will increase Valley Water's current monitoring costs from $25,000 per year to at least $100,000 per year for the McKittrick 1 & 1-3 site and that Valley Water has many sites. Valley Water asks that most metals, all polycyclic aromatic hydrocarbons (PAHs); benzene, toluene, ethylebenzene, and xylene (BTEX), all radionuclides, nitrate, carbonate, and trace elements be removed from the MRP as they are not present in significant amounts or have not been found in local groundwater. Valley

Water also asks that the monitoring frequency be reduced from quarterly to bi-annually or annually.

> **RESPONSE:** MRP Order 2018-0808 was issued to require quarterly sampling, but sampling could be reduced upon a showing that reducing monitoring is technically defensible. No changes were made in response to this comment.

CENTER FOR BIOLOGICAL DIVERSITY (CBD)

CBD COMMENT No. 1: The Center for Biological Diversity states that the Staff Report, generated by Central Valley Water Board staff, demonstrates groundwater contamination in multiple groundwater resources, including the upper Tulare sand and deeper Tulare regional aquifer, that serve water supply wells. The contamination has migrated at least 2.2 miles and may have extended beyond the furthest monitoring well. The Center for Biological Diversity states that the Central Valley Water Board needs to protect groundwater. The state of California experiences reoccurring periods of drought, making the preservation of groundwater as an emergency resource critical. The Center for Biological Diversity states that the Central Valley Water Board should issue a Cease and Desist Order for the McKittrick 1 & 1-3 facility (Facility), in lieu of the tentative MRP.

> **RESPONSE:** The Staff Report states that the discharges have affected groundwater downgradient of the Facility, but the extent and degree of degradation/pollution needs to be assessed further. The Staff Report also indicates that there are elevated concentrations of total dissolved solids, electrical conductivity, and chloride in groundwater at the Clean Harbors Buttonwillow, LLC, facility, located approximately 1.5 miles east-northeast. The tentative MRP, with minor changes, was issued on 4 April and compels Valley Water to expand its groundwater monitoring well network to determine the nature and extent of any degradation of water quality caused by the Facility. Valley Water is responsible for submitting monitoring reports that include analyses of produced wastewater and groundwater samples.
>
> A cease and desist order for the Facility is not proposed for consideration at the April Board Meeting. However, the tentative Resolution is intended to provide guidance to Central Valley Water Board staff on how to proceed with the regulation of the Facility going forward. As stated in the tentative Resolution, possible outcomes may include updated individual waste discharge requirements, which themselves could impose stringent requirements on Valley Water. The Board is not precluded from pursuing enforcement actions, and may still elect to exercise its enforcement authority in the future to address potential conditions of pollution caused by Valley Water's discharges.

CBD COMMENT No. 2: The Center for Biological Diversity cites four scenarios in which Valley Water submitted groundwater monitoring reports that were either incomplete, misleading, or included false information. The Center for Biological Diversity adds that the failure by Valley Water to accurately represent the Facility demonstrates a disregard for the law and public

safety. The Center for Biological Diversity requests that the Central Valley Water Board require the discharge of produced wastewater to the Facility to cease immediately.

> **RESPONSE:** Under Waste Discharge Requirements Order No. 69-19901, Valley Water is not required to submit groundwater monitoring data to the Central Valley Water Board. The groundwater monitoring program Valley Water initiated in 2003 is voluntary. To obtain accurate and representative monitoring and reporting information needed to fully assess potential impacts to water quality from the Facility, Central Valley Water Board staff issued the previously proposed MRP on 4 April 2018, IF Valley Water submits inaccurate or unrepresentative monitoring and reporting information, it will be subject to formal enforcement.

CBD COMMENT No. 3: The Center for Biological Diversity states that the Central Valley Water Board has taken a number of actions to benefit oil companies at the cost of the protecting groundwater. The Center for Biological Diversity cites the following actions that have occurred within the last year:

(1) The adoption of General Orders that permit the discharge of produced wastewater from stimulated wells,
(2) Extending the deadline of the cease and desist order for Valley Water's Fee 34 Facility and Race Track Hill Facility, and
(3) The adoption of waste discharge requirements that authorize the reuse of produced wastewater for the irrigation of crops for human consumption.

The Center for Biological Diversity states that authorizing the continued discharge of produced wastewater to the Facility is a fundamental opposition to the mission statement of the Board to protect water quality.

> **RESPONSE:** Orders that have been previously adopted by the Board and actions completed by Central Valley Water Board staff are outside the scope of the Resolution the Board will consider at the April Board Meeting and will not be addressed in this Response to Comments.

CBD COMMENT No. 4: The Center for Biological Diversity contends that the continued discharge is a violation of numerous state and federal laws and policies. In addition, Valley Water may be discharging produced wastewater from wells that have undergone well stimulation. The Center for Biological Diversity states that the discharge of produced wastewater to the Facility should cease immediately.

> **RESPONSE:** At this time, the discharge to the Facility's disposal ponds is regulated pursuant to Waste Discharge Requirements Resolution No. 69-199. Central Valley Water Board staff has prepared for Board consideration a proposed Resolution to obtain guidance from the Board regarding future regulatory actions for the Facility. Regulatory actions as an outcome of the Board's decision will comply with state and federal laws and policies that are applicable to the Facility.

CBD COMMENT No. 5: The Center for Biological Diversity states that although a MRP may be required to determine the extent of the plume beneath the Facility, a MRP by itself is woefully inadequate. Valley Water is still discharging an enormous volume of wastewater to land, as much as 4.8 million gallons a day. Monitoring the quality of produced wastewater and groundwater at the site will not cease the degradation occurring down gradient of the facility. The evidence included in the Staff Report describes a condition of contamination that warrants the elimination of the discharge. The Central Valley Water Board should require the continued monitoring of groundwater and require the discharge of produced wastewater to cease.

RESPONSE: See Response to CBD Comment No. 1.

CBD COMMENT No. 6: The Center for Biological Diversity states that the disposal of produced wastewater to unlined ponds can be dangerous. The Center for Biological Diversity cites an independent scientific study that states "this practice provides a direct pathway for the transport of produced water constituents, including returned stimulation fluids, into groundwater." [1] The Center for Biological Diversity also cites the study stating that "If the presence of hazardous concentrations of chemicals cannot be ruled out, [responsible agencies] should phase out the practice of discharging produced water into percolation pits." [2] The Central Valley Water Board should adhere to and implement the recommendations of California's independent scientific assessment.

RESPONSE: The MRP requires Valley Water to expand the groundwater monitoring well network at the Facility and to adequately characterize its discharge. Valley Water is required to submit monitoring reports to the Central Valley Water Board that will assist staff in preparing potential regulatory actions determined by the Board in its consideration of the proposed Resolution. As stated in Response to CBD Comment No. 1, if the proposed Resolution is adopted, possible regulatory outcomes may require Valley Water to either comply with more stringent regulatory requirements or seek alternate disposal options.

CBD COMMENT No. 7: The Center for Biological Diversity states that the 44 documents cited in the Staff Report were not available as attachments and precluded the public from making fully informed comments in response to the Notice of Public Hearing. The Center for Biological Diversity requests that these documents are posted to the Central Valley Water Board website. In addition, the Center for Biological Diversity states it reserves the right to supplement these public comments upon review of the omitted documents used to prepare the Staff Report.

RESPONSE: The documents used to prepare the Staff Report were and are available to the public for review. These documents can be viewed at the Central Valley Water Board

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[1] California Counsel of Science and Technology, An Independent Scientific Study of Well Stimulation in California, Vol. II, July 2015 ("CCST Report") at p. 110.

[2] California Counsel of Science and Technology, An Independent Scientific Study of Well Stimulation in California, Vol. II, July 2015 ("CCST Report") at p. 25.

office in Fresno during regular business hours. If available, electronic copies may be sent directly to an individual that submits a request. The Board is committed to providing access to all public records in an expeditious manner to allow full public participation in actions such as this one.

CLEAN WATER ACTION (CWA)

CWA COMMENT No. 1: Clean Water Action submitted a letter to the Central Valley Water Board stating that it supports the adoption of the tentative Resolution. In addition, Clean Water Action states that the tentative Resolution should result in a Cease and Desist Order, since Valley Water will not be able to comply with the current or updated waste discharge requirements. The following is a summary of items that Clean Water Action believes warrants the issuance of a cease and desist order for the Facility:

- Valley Water is not able to comply with current laws and policies for the disposal of produced wastewater to ponds;
- Valley Water is in violation of Waste Discharge Requirements Order No. 69-19901 (WDRs) for causing pollution to groundwater; and
- Oil Field General Orders are not appropriate for coverage due to the quality of the discharge, not able to comply with the Anti-Degradation Policy, and the discharge has impacted areas with designated beneficial uses.

Clean Water Action would support the issuance of the tentative MRP, if it includes a remediation plan for the closure and clean-up of the Facility. Clean Water Action is opposed to the continued discharge of produced wastewater at the Facility and believes that the issuance of a Cease and Desist Order is the most appropriate action for the facility based on the quality of the discharge.

RESPONSE: See Responses to CBD Comment Nos. 1 and 4.

CENTRAL VALLEY WATER BOARD CHANGES

The following are some of the Central Valley Water Board staff revisions to the Staff Report not covered by the written comments received. Staff has also made a few minor changes to the Staff Report, Monitoring and Reporting Program, and proposed Resolution to improve clarity and fix typographical errors.

Staff Report, Page 12 (Now Page 13, Paragraph 4)

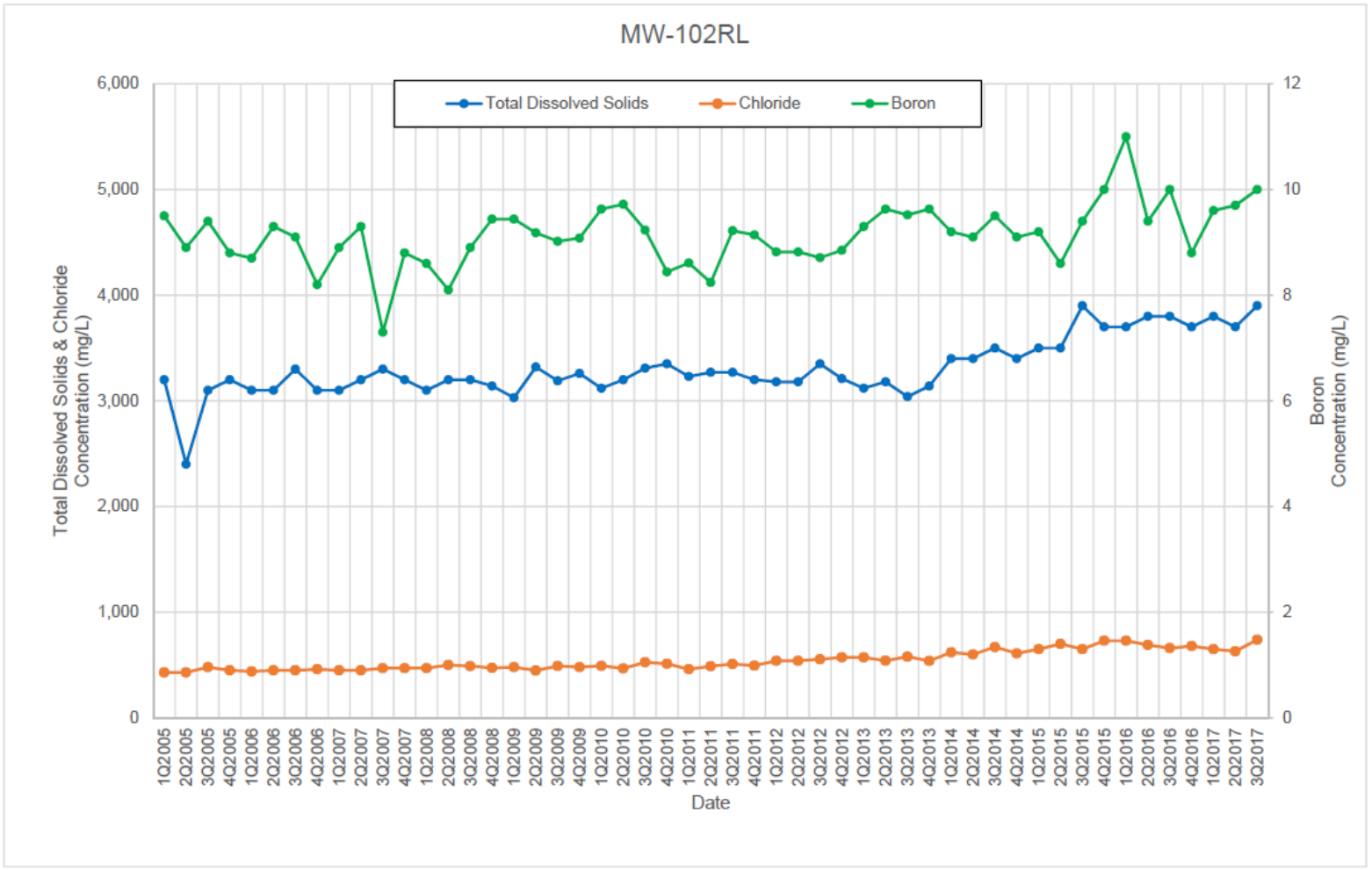
The paragraph was changed to read as follows:

In April 2016, Valley Water submitted a report prepared by South Valley Biological Consulting LLC., dated January 2016 and titled *Biological Report for the Valley Water Management Cymric Water Monitoring Well Projec*t (Biological Report). The Biological Report concluded that well 17H1 and well 17H2 could be installed but that the other

proposed wells were in endangered species habitat. It also stated that ~~it~~ there is enough room near a Clean Harbors monitoring well location for a drilling rig. ~~Further, the Biological Report stated,~~ An 11 April 2016 letter from Valley Water states, "As for the other monitoring wells that were proposed near the McKittrick pond facility, it appears that we will have to obtain a "take" permit prior to the installation of those wells. A "take" permit currently requires at least six months and more likely one year to obtain a permit."

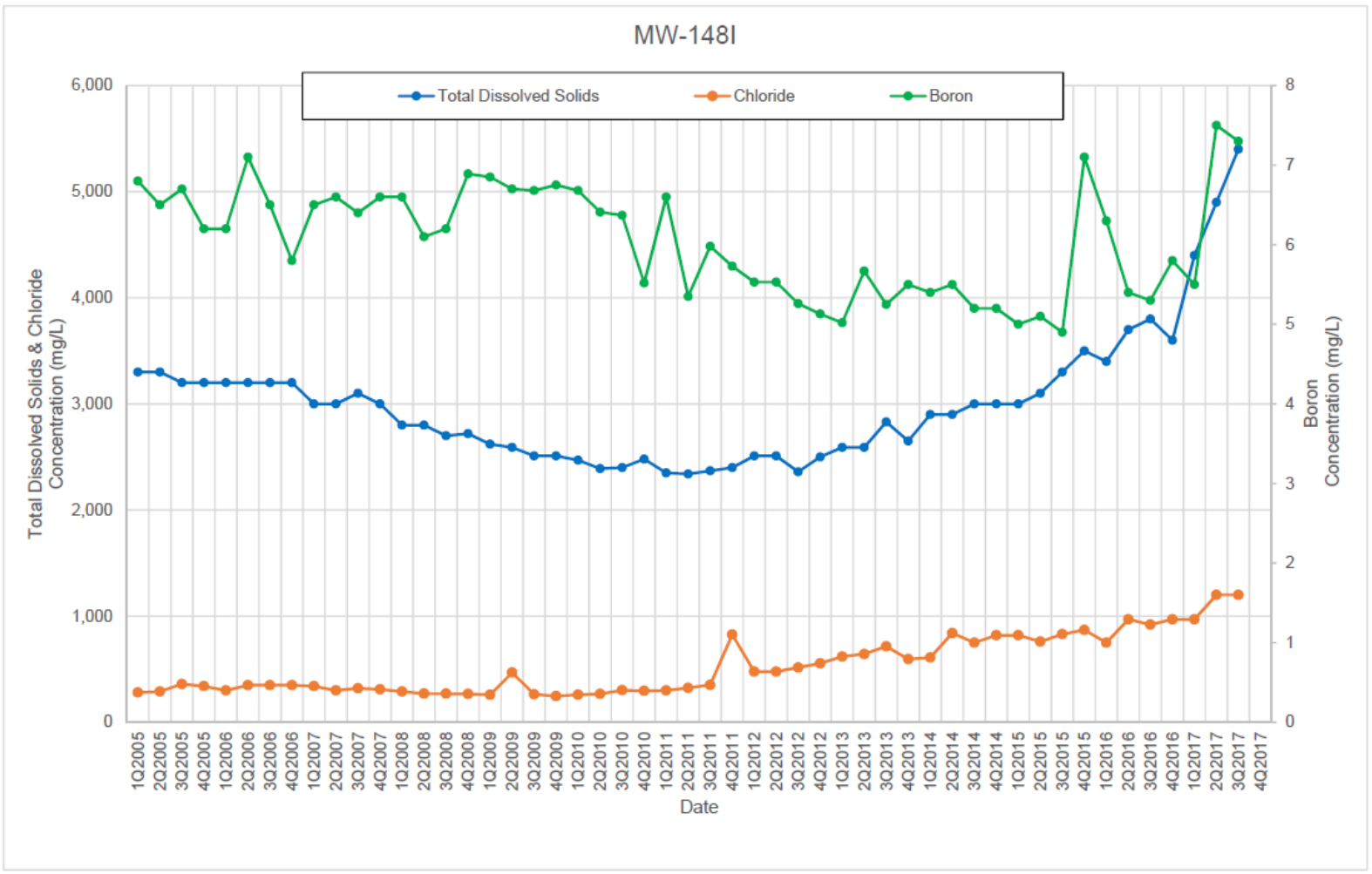
Monitoring and Reporting Program

Board Staff has removed much of the descriptive and/or technical information in the Monitoring and Reporting Program prior to issuance, as it is already contained in the Staff Report and is not necessary to support the enforceability of MRP Order R5-2018-0808.



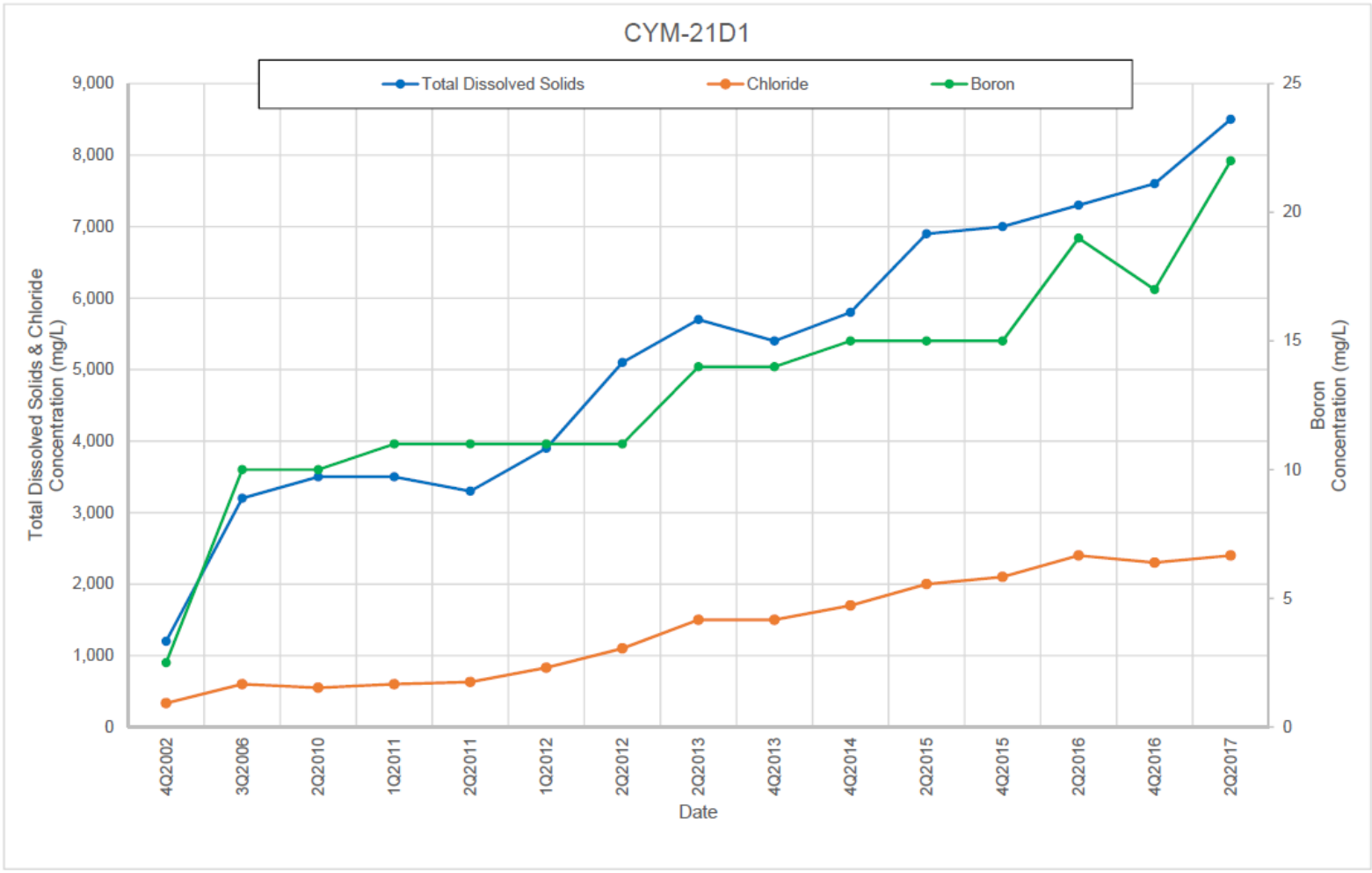
CONCENTRATION TRENDS FOR MW-102RL
RESPONSE TO COMMENTS
FOR
VALLEY WATER MANAGEMENT COMPANY
MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

ATTACHMENT A.1



CONCENTRATION TRENDS FOR MW-148I
RESPONSE TO COMMENTS
FOR
VALLEY WATER MANAGEMENT COMPANY
MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

ATTACHMENT A.2



CONCENTRATION TRENDS FOR CYM-21D1
RESPONSE TO COMMENTS
FOR
VALLEY WATER MANAGEMENT COMPANY
MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

ATTACHMENT A.3

Sample Source	Sample Date	Ammonia as NH3-N (mg/L [1])	Nitrate as NO3 (mg/L)
McKittrick 1 Perk Pond 1	4/27/2001	77	NS [2]
McKittrick 1 Perk Pond 8	4/27/2001	42	NS
McKittrick 1-3 Cleaning Pond 1	4/27/2001	21	NS
McKittrick 1-3 Perk Pond 11	4/27/2001	63	NS
McKittrick 1 Pass Through Pond 2	5/16/2014	NS	20
McKittrick 1-3 Last Pass Through Pond	5/16/2014	21	28

[1] Milligrams per liter
[2] Not Sampled

CONCENTRATION OF NITROGEN IN PRODUCED WASTEWATER
RESPONSE TO COMMENTS
FOR
VALLEY WATER MANAGEMENT COMPANY
MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

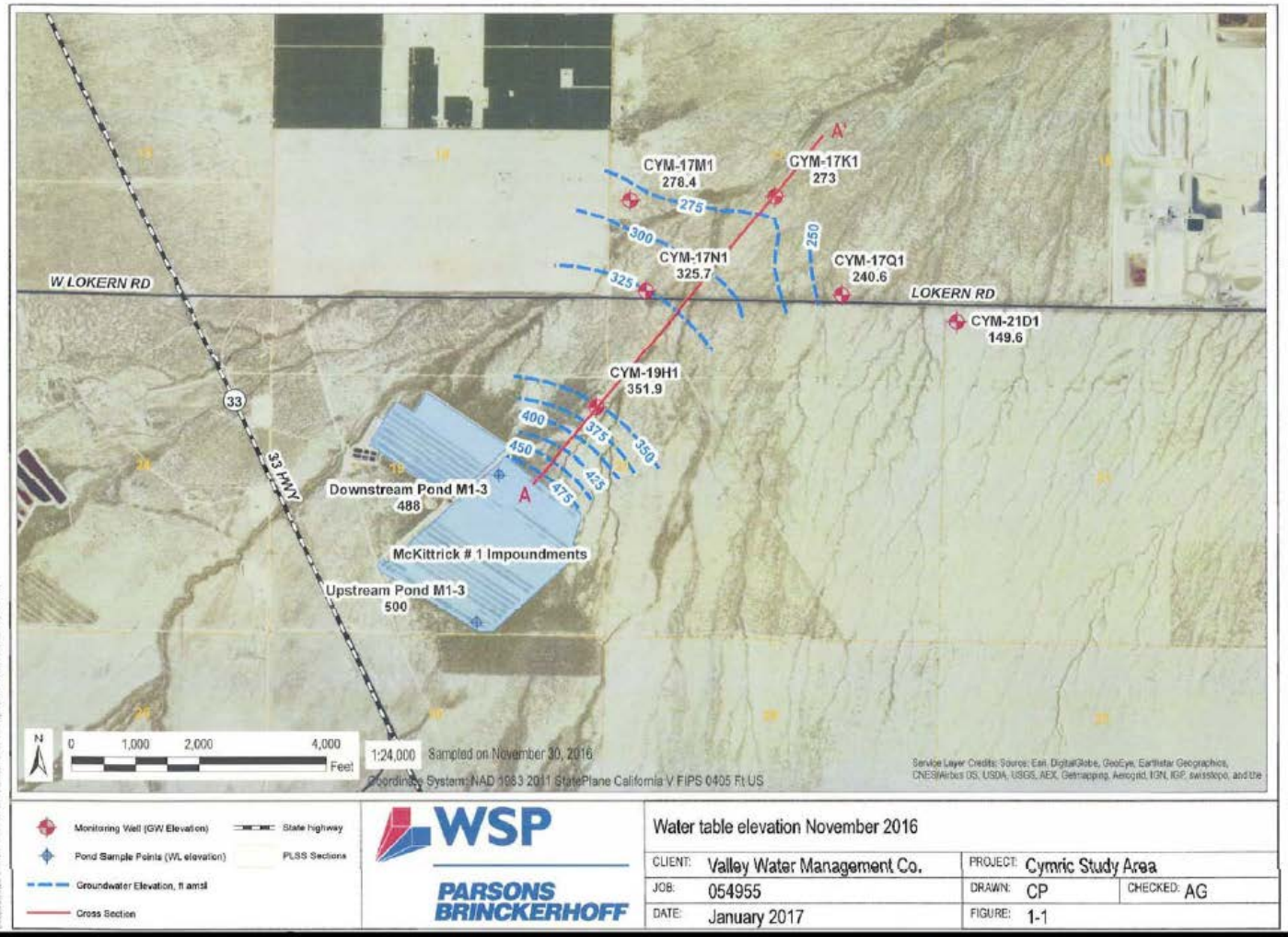
ATTACHMENT B.1

Well ID	Distance From Ponds (feet)	No. of results (date range)	Total Dissolved Solids (mg/L [1])	Boron (mg/L)	Chloride (mg/L)	Nitrate as N (mg/L)
CYM-19H1	1,500	15 (2002 – 2017)	10,500 – 14,000	30 – 41	4,120 – 5,400	16 – 45
CYM-17N1	3,500	15 (2002 – 2017)	7,450 – 18,000	20 – 76	2,700 – 7,900	9 – 20
CYM-17M1	4,400	5 (2014 – 2017)	12,000 – 15,000	41 – 55	5,100 – 5,700	13 – 23
CYM-17Q1	5,300	5 (2014 – 2017)	13,000 – 16,000	45 - 60	4,900 – 5,900	11 – 22
CYM-17K1	5,900	5 (2014 – 2017)	16,000 – 18,000	55 - 68	4,200 – 7,200	10 – 14
CYM-21D1	6,850	15 (2002 – 2017)	1,200 – 8,500	2.5 - 22	334 - 2,400	0.22 – 5.4

[1] Milligrams per liter

RANGE OF WATER QUALITY RESULTS FOR GROUNDWATER
AT THE MCKITTRICK 1 & 1-3 FACILITY
RESPONSE TO COMMENTS
FOR
VALLEY WATER MANAGEMENT COMPANY
MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

ATTACHMENT B.2



WSP

PARSONS BRINCKERHOFF

Water table elevation November 2016

CLIENT:	Valley Water Management Co.	PROJECT:	Cymric Study Area	
JOB:	054955	DRAWN:	CP	CHECKED: AG
DATE:	January 2017	FIGURE:	1-1	

Image Originates From
Self-Monitoring Report
Prepared By WSP USA
On Behalf Of
Valley Water Management
Company

TYPICAL GROUNDWATER ELEVATION CONTOUR MAP
RESPONSE TO COMMENTS
FOR
VALLEY WATER MANAGEMENT COMPANY
MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

ATTACHMENT C

ATTACHMENT 3

Hollin Kretzmann

From: Harvey, Dale@Waterboards <Dale.Harvey@waterboards.ca.gov>
Sent: Thursday, April 5, 2018 8:32 AM
To: agrinberg@cleanwater.org; Holcomb, Ronald@Waterboards; Keith Nakatani; TJ Frantz; Rodgers, Clay@Waterboards; Creedon, Pamela@Waterboards; Pulupa, Patrick@Waterboards; Hollin Kretzmann
Subject: RE: Revised Documents for RWQCB April Meeting, Agenda Item 13, VWMC McKittrick 1 & 1-3 Facility

Andrew, we do not have track changes versions of the documents. Regarding the MRP, it was issued yesterday by the Executive Officer. It requires essentially the same monitoring as that originally proposes; we just removed the informational findings as the information is in the Staff Report and not needed for enforcement of the MRP. Regarding the Resolution, the main changes were the addition of a new Finding 11 and modification of the Therefore be it Resolved section to acknowledge that the Board may consider compliance solutions that are being developed through CV-SALTS. Changes to the Response to Comments were mostly editorial and highlight the issuance of the MRP.

W. Dale Harvey, P.E., M.S.C.E.
Supervising Engineer
Office (559) 445-6190
Cell (559) 974-1965
Dale.Harvey@waterboards.ca.gov

From: agrinberg@cleanwater.org <agrinberg@cleanwater.org>
Sent: Thursday, April 05, 2018 8:13 AM
To: Holcomb, Ronald@Waterboards <Ronald.Holcomb@waterboards.ca.gov>; Keith Nakatani <knakatani@cleanwater.org>; TJ Frantz <tom.frantz49@gmail.com>; Rodgers, Clay@Waterboards <Clay.Rodgers@waterboards.ca.gov>; Creedon, Pamela@Waterboards <Pamela.Creedon@waterboards.ca.gov>; Pulupa, Patrick@Waterboards <Patrick.Pulupa@waterboards.ca.gov>; Harvey, Dale@Waterboards <Dale.Harvey@waterboards.ca.gov>; hkretzmann@biologicaldiversity.org
Subject: RE: Revised Documents for RWQCB April Meeting, Agenda Item 13, VWMC McKittrick 1 & 1-3 Facility

Thanks Ron

Are these documents available with changes tracked? Trying to sort through what this means...

Andrew

-----Original Message-----
From: "Holcomb, Ronald@Waterboards" <Ronald.Holcomb@waterboards.ca.gov>
Sent: Wednesday, April 4, 2018 7:15pm
To: "A M Affuant ('amauffant@chevron.com')" <amauffant@chevron.com>, "Andrew Grinberg ('agrinberg@cleanwater.org')" <agrinberg@cleanwater.org>, "Gordus, Andy@Wildlife" <Andy.Gordus@wildlife.ca.gov>, "Bill Allayaud ('bill@ewg.org')" <bill@ewg.org>, "Bartling, Bill@DOC" <Bill.Bartling@conservation.ca.gov>, "Bob Gore ('bob_gore@gualcogroup.com')" <bob_gore@gualcogroup.com>, "Chapin DC (David) at Aera (DCChapin@aeraenergy.com)" <DCChapin@aeraenergy.com>, "Chris Reedy (creedy@valleywatermanagement.org)" <creedy@valleywatermanagement.org>, "Christine Zimmerman ('clllz@me.com')" <clllz@me.com>, "Gustavo Aguirre ('gaguirre@crpe-ej.org')" <gaguirre@crpe-ej.org>, "Hollin Kretzmann

('hkretzmann@biologicaldiversity.org')" <hkretzmann@biologicaldiversity.org>, "Holly Pearen ('hpearen@edf.org')" <hpearen@edf.org>, "Jennifer Clary ('jclary@cleanwater.org')" <jclary@cleanwater.org>, "Jhon Arbelaez ('jarbelaez@earthworksaction.org')" <jarbelaez@earthworksaction.org>, "Borkovich, John@Waterboards" <John.Borkovich@waterboards.ca.gov>, "Juan Flores ('jflores@crpe-ej.org')" <jflores@crpe-ej.org>, "Kathryn Phillips ('kathryn.phillips@sierraclub.org')" <kathryn.phillips@sierraclub.org>, "Keith Nakatani (knakatani@cleanwater.org)" <knakatani@cleanwater.org>, "kyle.jones (kyle.jones@sierraclub.org)" <kyle.jones@sierraclub.org>, "Mary Kay Benson ('mkbe.sparkles3@gmail.com')" <mkbe.sparkles3@gmail.com>, "Melissa Thorme (mthorme@DowneyBrand.com)" <mthorme@DowneyBrand.com>, "Mike Glavin ('mike.glavin@crc.com')" <mike.glavin@crc.com>, "Miriam Gordon ('mgordon@cleanwater.org')" <mgordon@cleanwater.org>, "Pulupa, Patrick@Waterboards" <Patrick.Pulupa@waterboards.ca.gov>, "rock (rock@cipa.org)" <rock@cipa.org>, "Roseanna Esparza ('resparza@cleanwater.org')" <resparza@cleanwater.org>, "Yu, Stephanie@Waterboards" <Stephanie.Yu@Waterboards.ca.gov>, "Suzanne Noble (snoble@wspa.org)" <snoble@wspa.org>, "Vern Goehring ('vern@cal.net')" <vern@cal.net>
Cc: "Harvey, Dale@Waterboards" <Dale.Harvey@waterboards.ca.gov>
Subject: Revised Documents for RWQCB April Meeting, Agenda Item 13, VWMC McKittrick 1 & 1-3 Facility

Please find attached the following documents:

Revised and signed Monitoring and Reporting Program
Revised Tentative Resolution
Revised Response to Comments

The Monitoring and Reporting Program for Valley Water Management Company's McKittrick 1 & 1-3 facility was issued by the Executive Officer on 4 April 2018. The tentative Resolution and the Response to Comments were updated on 4 April 2018.

These documents are for Agenda Item 13 for the April 5/6 2018 meeting of the Central Valley Regional Water Quality Control Board, titled *Consideration of a Monitoring and Reporting Program and consideration of a Resolution Directing Staff to Prepare an Appropriate Order for Valley Water Management Company's McKittrick 1 & 1-3 Facility*. The Agenda may be viewed at this link:

https://www.waterboards.ca.gov/centralvalley/board_decisions/tentative_orders/1804/

If you have any questions, please contact Ron Holcomb by telephone at 559-445-6050, or by email at ronald.holcomb@waterboards.ca.gov.

Thank you.

ATTACHMENT 4

May 7, 2018

Patrick Pulupa, Executive Officer
Central Valley Regional Water Quality Control Board
1685 "E" Street
Fresno, CA 93706-2007

Re: Request to Prepare Staff Record Regarding Central Valley Regional Water Quality Control Board's Resolution R5-2018-0015

Dear Mr. Pulupa:

The Center for Biological Diversity has petitioned the State Water Resources Control Board for review and reconsideration of the Central Valley Regional Water Quality Control Board's adoption of the above-referenced resolution. A copy of that petition is enclosed.

Pursuant to Title 23 of the California Code of Regulations § 3867(d)(9), the Center of Biological Diversity requests the preparation of the regional board staff record, which should include a tape recording(s) and/or transcript(s) of any pertinent regional board or staff hearing(s) on the above-referenced matter.

Thank you for your attention to this request and cooperation in this matter.

Sincerely,

/s/ Hollin Kretzmann

Hollin Kretzmann
Senior Attorney
Center for Biological Diversity
1212 Broadway, Suite 800
Oakland, California 94612
hkretzmann@biologicaldiversity.org
(510) 844-7133