

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
ORDER NO. _____

NPDES NO. CA0081311

WASTE DISCHARGE REQUIREMENTS
FOR
VALLEY WASTE DISPOSAL COMPANY
AND
CAWELO WATER DISTRICT
KERN FRONT NO. 2 TREATMENT PLANT-CAWELO RESERVOIR B
KERN COUNTY

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

BACKGROUND

1. Valley Waste Disposal Company (hereafter VWDC) submitted a Report of Waste Discharge (RWD), dated 29 June 2000, and applied for a permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the Kern Front No. 2 treatment plant into the Cawelo Water District (CWD) systems' Reservoir B and then to Poso Creek, a water of the United States. VWDC and CWD are hereafter collectively referred to as the Discharger. Supplemental information was provided on 24 August 2000. The discharge is currently regulated by Waste Discharge Requirements Order No. R5-2006-0124 (NPDES No. CA0081311), adopted by the Regional Water Board on 7 December 2006. VWDC's RWD requests an increase of the discharge flow into Reservoir B from 4.3 mgd to 7.4 mgd as well as a slight increase in the effluent limits for EC, boron, and chloride.
2. The CWD covers approximately 45,000 acres and is between State Highway 99 on the west and Highway 65 on the east. The CWD was formed for the purpose of obtaining a "supplemental or partial water supply" and delivering it for irrigation of crops within the CWD. The CWD uses imported surface water conjunctively with pumped groundwater and produced water to provide the water supply to meet irrigation needs of the agricultural lands of the CWD.
3. VWDC receives oil production wastewater at its Kern Front No. 2 treatment plant from companies operating oil wells in the Kern Front oil field. The treatment plant is in the western half of Section 27, T28S, R27E, MDB&M, along the south side of James Road, as shown on Attachment A, a part of this Order. The companies presently conveying oil field produced water to VWDC via pipeline for final treatment and disposal are Bellaire Oil Company (Bellaire) and Vintage Production California LLC, a Delaware corporation (Vintage)(Formerly Oxy USA, Inc.). VWDC currently receives about 4.0 million gallons per day (mgd) of produced water from Vintage and Bellaire. Approximately 85% of the produced water received by VWDC originates from Vintage.

4. Vintage currently discharges about 4 mgd of its produced water to VWDC through a pipeline. Vintage historically discharged produced water to VWDC through series of unlined channels and retains a permit for the discharge. Discharge of up to 4.0 mgd of produced water to the unlined channels is regulated by WDRs Order No. 96-277 (NPDES No. CA0083852). On 16 May 2001, Vintage submitted a RWD to renew Order No. 96-277. Order No. 96-277 was administratively extended on 19 November 2001 and a new order is currently being drafted. When discharge to the unlined channels occurs, over half of the discharged produced water is lost through percolation, evaporation, and evapotranspiration. Vintage currently maintains the WDRs to discharge to the unlined channels as a back-up disposal option. Vintage, which had not regularly discharged to the unlined channels since July 2003, recently resumed intermittent discharges to the channels. Vintage also disposes of a portion of its produced water through deep well injection using Class II injection wells. Class II wells are regulated by the California Division of Oil, Gas, and Geothermal Resources.
5. Increases in the price of crude oil over the past several years have made it economically feasible for Vintage to employ steam more extensively in its oil extraction operations. Use of steam tends to leach salts such as boron and chlorides out of the formations, and this increases the EC of produced water. Vintage's increased use of steaming will increase the overall volume of produced water and the EC, boron, and chlorides in produced water discharged to VWDC.
6. VWDC has been operating in the Kern Front oil field since 1955, and has operated in its current configuration with storage and treatment ponds and conveyance to CWD since 1980. Wastewater received by VWDC is treated to remove oil and grease and inorganic sediment. Four unlined ponds, in series, provide initial gravity separation. Floating oil and grease in the ponds is periodically skimmed and removed. VWDC currently employs one Wemco air flotation unit to provide final polishing and proposes to add a second Wemco unit to increase its final polishing capacity. The Wemco units use air flotation techniques combined with chemical coagulants and mechanical agitation to remove free oil and grease. After final polishing, wastewater is discharged to a concrete-lined storage pond and then pumped to Reservoir B, which is clay lined. When Reservoir B is not available, 11 other unlined storage ponds provide temporary storage capacity. The two Wemco units will have a combined total design treatment capacity of 7.4 mgd. VWDC's treatment configuration and process has largely remained the same for the past 25 years, and the only modification that VWDC is currently proposing is the addition of one more Wemco unit.

7. Discharges from VWDC into Reservoir B (Discharge 001) from 2001 through 2006 exhibited the following characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	1.89
Electrical Conductivity @ 25 °C	umhos/cm	1010
Chloride	mg/L	71.7
Boron	mg/L	0.73
Oil and Grease	mg/L	10.0

8. VWDC conveys its treated wastewater from the storage pond through a 20-inch, 3.4-mile pipeline to the CWD's Reservoir B. The discharge point from the 20-inch pipeline into Reservoir B is Discharge 001. Reservoir B is an integral part of the CWD's water distribution system, which consists of 5.3 miles of lined canal and 38 miles of pipeline ranging in size from 15" to 60." Reservoir B is on the boundary between the Kern Uplands Hydrologic Area (No. 558.90) and the North Kern Hydrologic Area (558.80) as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986. Reservoir B supplies irrigation water used in the North Kern Hydrologic Area via the Distribution Canal. The outfall from Reservoir B into the Distribution Canal is hereafter referred to as Discharge 002.
9. Oil and grease removed by the Wemco units is transferred to a concrete-lined collection sump. According to a sludge management plan submitted on 29 March 1996, oil and grease that accumulates in the sump is removed with a vacuum truck approximately three times per year and returned to the oil field operators to be processed as crude oil.
10. On 24 February 1995, the Regional Water Board adopted WDRs Order No. 95-031 (NPDES Permit No. CA0082295) for Texaco Exploration and Production Inc. (Texaco) and CWD. Order No. 95-031 allows Texaco to discharge up to 18 mgd (five-year average) of oil-field produced water from the Kern River oil field into Reservoir B. CWD is required to manage the water through management practices and blending to ensure protection of applicable beneficial uses. In July 1999, Texaco submitted an RWD in support of renewing Order No. 95-031. The July 1999 RWD proposes increasing the permitted maximum daily discharge to 27.3 mgd. Order No. 95-031 was administratively extended on 19 January 2000, and a new order is pending. In 2001 Texaco merged with Chevron U.S.A., Inc. Texaco subsequently changed its name to ChevronTexaco and then to Chevron U.S.A., Inc. (Chevron). In early 2007, Chevron indicated that it intends to increase the permitted maximum daily discharge into Reservoir B to approximately 33.5 mgd.

11. Discharges from Chevron into Reservoir B from 2001 through 2006 exhibited the following characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	17.3
Electrical Conductivity @ 25 °C	umhos/cm	956
Chloride	mg/L	137.7
Boron	mg/L	0.99
Oil and Grease	mg/L	9.3

12. CWD blends produced water from Chevron and VWDC in Reservoir B with water from other surface and groundwater supplies of CWD to meet the effluent and receiving water limits set forth in Order No. 95-031 and will continue to do so for this Order. Surface water blended into Reservoir B consists of Kern River, State Water Project, and Central Valley Project waters delivered from the Beardsley Canal through Lerdo Pumping Station B. CWD delivers blended water to farmers for irrigation of crops within the CWD. Through use of its Distribution Canal, CWD discharges blended water to Poso Creek, a water of the United States, for recharge of the groundwater basin in the winter months when irrigation demand is low. The outfall from the Distribution Canal into Poso Creek is hereafter referred to as Discharge 003.
13. Surface water deliveries to Reservoir B from Lerdo Pumping Station B between 2001 and 2006 exhibited the following characteristics:

Irrigation Season (April through September)

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	85.2
Electrical Conductivity @ 25 °C	umhos/cm	179
Chloride	mg/L	25.5
Boron	mg/L	0.11

Non-Irrigation Season (October through March)

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	14.2
Electrical Conductivity @ 25 °C	umhos/cm	204
Chloride	mg/L	19.7
Boron	mg/L	0.15

14. Discharges of reclaimed water (consisting of a blend of Chevron and VWDC produced water and surface water from Lerdo Pumping station B) from the outfall of Reservoir B

into the Distribution Canal (Discharge 002) between 2001 and 2006 exhibited the following characteristics:

Irrigation Season (April through September)

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	88.3
Electrical Conductivity @ 25 °C	umhos/cm	311
Chloride	mg/L	43.3
Boron	mg/L	0.27

Non-Irrigation Season (October through March)

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	26.2
Electrical Conductivity @ 25 °C	umhos/cm	676
Chloride	mg/L	100.8
Boron	mg/L	0.71

15. Discharges from the CWD into Poso Creek occur on an irregular basis, usually in the winter months. CWD obtains water supplies from many sources and manages all the irrigation water within its distribution network. To retain as much water within the CWD as possible, CWD attempts to discharge to Poso Creek (Discharge 003) only when there is no surface water flow or insufficient surface water flow in Poso Creek to extend past the downstream boundary of the CWD. The CWD and the downstream water districts (North Kern Water Storage District or NKWSD and Semitropic Water Storage District or SWSD) filed competing applications for rights to waters in Poso Creek. CWD, by subsequent agreement with NKWSD and SWSD, has right to approximately the first 135 cfs as measured at State Highway 65. Flows greater than 135 cfs at State Highway 65 are allocated to NKWSD and SWSD until said flow exceeds 685 cfs, after which the flow is allocated to CWD, NKWSD, and SWSD relative to remaining demands. The right approximates the flow that matches CWD's Poso Creek recharge capacity. Between 2001 and 2006, CWD reported discharging to Poso Creek only in late 2004 and early 2005. The following shows the number of days CWD discharged to Poso Creek each month, and the average volume of the discharges:

<u>Month</u>	<u>Days Discharging to Poso Creek</u>	<u>Volume of discharge to Poso Creek (mgd)</u>
November 2004	14	14.3
December 2004	14	14.3
January 2005	14	14.3

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<u>Month</u>	<u>Days Discharging to Poso Creek</u>	<u>Volume of discharge to Poso Creek (mgd)</u>
February 2005	27	21.0
March 2005	7	31.0

16. Poso Creek exhibits the following average monthly flows at Highway 65, upstream of the CWD:

<u>Month</u>	<u>Average Flow (mgd)</u>
January	20.61
February	42.23
March	45.03
April	35.73
May	21.09
June	9.10
July	2.37
August	0.40
September	0.22
October	0.86
November	4.54
December	9.58

17. Discharges from CWD into Poso Creek (Discharge 003) between 2001 and 2006 exhibited the following average characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Electrical Conductivity @ 25°C	umhos/cm	761
Chloride	mg/L	101.4
Boron	mg/L	0.77

18. Poso Creek flows within the CWD from 1993 through 2006 exhibited the following average characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Electrical Conductivity @ 25°C	umhos/cm	251.5
Chloride	mg/L	14.4
Boron	mg/L	0.03

19. The CWD's Reservoir B, Distribution Canal, and other facilities may be shut down for maintenance or emergency reasons for up to four weeks each year. At such times, VWDC is unable to discharge to Reservoir B and instead diverts its wastewater to on-site temporary storage ponds. All sixteen on-site storage ponds reportedly have 300

acre-feet (98 million gallons) of combined available storage capacity. Stored wastewater not lost to percolation or evaporation is delivered to CWD's Reservoir B upon resumption of its operation.

20. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereafter Basin Plan), designates beneficial uses, establishes narrative and numerical water quality objectives, and contains implementation plans and policies for protecting all waters of the Basin. The Basin Plan includes plans and policies of the State Water Resources Control Board (State Water Board) incorporated by reference. Pursuant to Section 13263(a) of the California Water Code (CWC), waste discharge requirements must implement the Basin Plan.
21. The U.S. Environmental Protection Agency (USEPA) promulgated the *National Toxics Rule* (NTR) on 5 February 1993 and the *California Toxics Rule* (CTR) on 18 May 2000. These Rules contain water quality criteria (WQC) applicable to this discharge. The State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Plan or SIP) on 18 May 2000, which contains implementation procedures for criteria of the NTR and the CTR. The SIP was amended by the State Water Board on 24 February 2005.
22. On 27 February 2001, the Regional Water Board issued a request pursuant to Water Code Section 13267 for the Discharger to submit Priority Pollutant Monitoring Data to comply with the Implementation Policy. The Discharger conducted the analyses using test methods specified in the 27 February letter and submitted the results to Regional Water Board staff. The Priority Pollutant Monitoring Data show that arsenic has a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective. This Order contains effluent limitations for arsenic.

BENEFICIAL USES OF THE RECEIVING STREAM

23. The Basin Plan designates the following beneficial uses for Poso Creek: agricultural supply (AGR), water contact and non-contact water recreation, warm and cold water freshwater habitat, wildlife habitat, groundwater recharge, and freshwater replenishment.
24. Based on USGS Professional Report 437B and interpretation by CWD's consulting geologist, the Poso Creek recharge area extends across the CWD and can be characterized as sandy surface soils overlying greater than 550 feet of continental deposits. The continental deposits consist of sandy soils with several gravel layers, and exhibit high percolation rates. Unless creek flows enter the CWD at the upstream gauging station in sufficient magnitude to exceed the evaporative rate and infiltrative and percolative capacity of the CWD recharge area, all water in Poso Creek will recharge the groundwater.

25. The beneficial use of water in CWD Reservoir B and the CWD distribution system by design is AGR.

GROUNDWATER

26. The beneficial uses of the underlying groundwater, as designated in the Basin Plan, are municipal and domestic supply (MUN), agricultural supply (AGR), industrial process supply, and industrial service supply.
27. Basin Plan water quality objectives to protect the beneficial uses of groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity of groundwater, and taste and odor. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, or animals. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The Basin Plan requires the application of the most stringent objective necessary to ensure that groundwaters do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.
28. State Water Board Resolution No. 68-16 (hereafter Resolution 68-16) requires the Regional Water Board, in regulating discharge of waste, to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board's policies (e.g., quality that exceeds water quality objectives). Resolution 68-16 requires that the discharge meet best practicable treatment and control (BPTC).
29. The California Legislature enacted A.B. 3030 during the 1992 session, subsequently codified in California Water Code §10750, *et seq.* Water Code §10750 states, in part, that:
- Any local agency, whose service area includes a groundwater basin, or a portion of a groundwater basin, that is not subject to groundwater management pursuant to other provision of law or a court order, judgment, or decree, may, by ordinance, or by resolution if the local agency is not authorized to act by ordinance, adopt and implement a groundwater Management Plan pursuant to this part within all or a portion of its service area.
30. Water Code §60224 empowers the CWD to take any action needed for protection and preservation of groundwater supplies within the CWD including:
- The prevention of contaminants from entering CWD groundwater supplies;

- The removal of contaminants from groundwater supplies of the CWD;
- The location and characterizing of contaminants which may enter the groundwater supplies of the CWD;
- The identification of parties responsible for contamination of groundwater; and
- The performance of engineering studies.

31. The CWD adopted a Ground Water Management Plan (Plan) on 21 July 1994 to establish a policy of efficient water use, conservation, and management. The CWD is updating its Plan. Action elements in the Plan include:

- Acquire and import available, supplemental surface water for crop irrigation and groundwater recharge.
- Continue the application for appropriation of Poso Creek water and develop Poso Creek as a groundwater recharge facility within the CWD.
- Facilitate conjunctive use operations by the importation and recharge use of supplemental water.
- Construct and operate CWD wells.
- Monitor well construction and abandonment as administered by Kern County.

Monitoring elements of the Plan include:

- Semi-annual monitoring of groundwater levels of wells within the CWD.
- Semi-annual preparation of maps of equal elevation of water in wells.
- Monitor groundwater quality at 5-year intervals and prepare maps of conductivity, chloride, and boron concentrations.
- Operate and maintain the Poso Creek gauging station above State Highway 65.

32. In March 2007, the Discharger submitted a report entitled Cawelo Water District, Valley Waste Disposal Company, Chevron, Proposed Modification of Waste Discharge Requirements for Discharges Into Reservoir "B" and Poso Creek, Technical Study Update for the California Regional Water Quality Control Board (hereafter Study) in support of proposed production water flow and EC increases from VWDC and proposed production water flow increases from Chevron to CWD Reservoir B. The Study presents the results of a salt balance model that evaluates the potential impacts to groundwater underlying the CWD resulting from the proposed increases. It assumes that the EC of the VWDC and Chevron discharges will remain the same as their historic 10-year median values and varies the volume production water discharges and surface water imports into the CWD system. As described in more detail below and in the Information Sheet, the Study concludes that at projected quality and maximum flow rates from VWDC and Chevron of 7.4 mgd and 33.5 mgd, respectively, the EC of underlying groundwater could increase by 5.98 $\mu\text{mhos/cm}$ per year when balanced by contracted and projected freshwater sources. The Study states that salts in produced water from VWDC and Chevron will be blended and balanced with imported fresh water

from the Kern River and the State Water Project and managed by the CWD to meet its irrigation needs and comply with Basin Plan requirement

33. The Discharger submitted a groundwater monitoring report on 1 February 2005 in conformance with the Plan described in Finding No. 31. The 1 February report states that the average EC of groundwater in the CWD decreased from 711 umhos/cm to 662 umhos/cm between 1999 and 2004. The large number of monitoring wells, the variability of well construction specifications and screening intervals, the discontinuities in the wells sampled each year, and the 400-foot vadose zone make it difficult to determine what actual effect recent increases in volume and salinity of produced water have had on the quality of groundwater throughout the CWD.
34. Groundwater depth, flow, and mixing varies depending on factors such as irrigation demand, precipitation, surface water applied, groundwater flow into and out of the area, and the groundwater extraction zone. The Discharger's model of the effect of the discharge on groundwater look at averages over the entire CWD. The actual impact can vary considerably both vertically and spatially. The impacts will be less noticeable in upgradient (eastern areas) where there is an influx of good quality groundwater.
35. To sustain existing irrigated agriculture, CWD supplements its existing limited surface water supplies and overdrafted groundwater with imported surface water and the produced water reclamation project using treated produced water from Valley Waste Disposal Company and other sources as described herein. Through its authority and Plan, the CWD proposes to manage the project within its boundaries to meet Basin Plan objectives. The Basin Plan allows blending of wastewater with surface and groundwater to promote reuse of wastewater in water short areas provided it is otherwise consistent with water quality policies. The Poso Creek Subarea and CWD are water-short areas and CWD can ensure consistency with water quality policies by proper management.
36. Irrigation wells within the CWD extend to 1200 feet below ground surface, typically draw water from perforated zones in an unconfined aquifer that extends from 450 feet bgs to 1200 feet bgs. The base of the aquifer is about 1500 feet bgs. The CWD model assumes that compliance with water quality objectives is determined over the full depth of the active well zone. Domestic wells within CWD are typically shallower.

EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL

37. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto that are applicable to the discharge are contained herein.
38. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or

contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Water Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for arsenic. An effluent limitation for arsenic is included in this Order.

39. The Basin Plan establishes the following limits for discharges to land and surface water within the Poso Creek Subarea:

EC	1,000 umhos/cm
Chloride	200 mg/L
Boron	1.0 mg/L

The Poso Creek Subarea consists of about 35,000 acres of land between State Highways 99 and 65, about six miles north of Bakersfield and corresponds with the CWD. It is reasonable to apply these limits for beneficial use of water for irrigated agriculture for discharges to land within the CWD (Discharge 002).

40. The Basin Plan states in part that:

Policies regarding the disposal of oil field wastewater are:

- Maximum salinity limits for wastewaters in unlined sumps overlying groundwater with existing and future probable beneficial uses are 1,000 umhos/cm EC, 200 mg/L chlorides, and 1 mg/L boron, except in the White Wolf subarea where more or less restrictive limits apply. The limits for the White Wolf subarea are discussed in the “Discharges to Land” subsection of the “Municipal and Domestic Wastewater” section.
- Discharges of oil field wastewater that exceed the above maximum salinity limits may be permitted to unlined sumps, stream channels, or surface waters if the discharger successfully demonstrates to the Regional Water Board in a public hearing that the proposed discharge will not substantially affect water quality nor cause a violation of water quality objectives.

41. At the request of the NKWSD, the Regional Water Board conducted public hearings in 1985 to determine appropriate limits for state and federal waters conveyed in canals serving the NKWSD and CWD to encourage reclamation of produced water and fully protect citrus and other sensitive crops grown in both districts. The Regional Water Board adopted NPDES permits specifying that supplies of the NKWSD comply with the following quality to protect such crops:

EC	700 umhos/cm
Chloride	106 mg/L

Boron 0.5 mg/L

42. The Basin Plan states that the maximum average annual increase in salinity measured as EC shall not exceed 6 umhos/cm per year for groundwater within the Poso Groundwater Hydrographic Unit. The Poso Creek Subarea and CWD are both within the Poso Groundwater Hydrographic Unit.
43. **pH:** The Basin Plan numeric water quality objective states that the pH “...*shall not be depressed below 6.5 nor raised above 8.3.*” Effluent limitations for pH are included in this Order and are based on the Basin Plan objectives for pH.
44. **Oil and Grease:** VWDC receives wastewater from facilities subject to 40 CFR § 435.50, Oil and Gas Extraction Point Source Category, Agricultural and Wildlife Water Use Subcategory. 40 CFR 435.52 specifies that a daily maximum oil and grease effluent limit of 35 mg/L is best practical control technology currently available (BPT). The Board has determined, based on Best Professional Judgment (BPJ), that daily maximum effluent limitations for oil and grease are necessary for the protection of water quality and shall be consistent with limitations imposed on facilities discharging wastewaters to VWDC. Effluent limitations for oil and grease are included in this Order and are technology-based limitations based on BPJ and that represent BPT.
45. **Conductivity @ 25 °C (EC):** WDRs Order No. R5-2006-0124 limits EC of the discharge to a daily maximum of 1,200 umhos/cm and a monthly average of 1,100 umhos/cm. VWDC requests the limitations for EC at Discharge 001 be raised to a daily maximum of 1,300 umhos/cm and a monthly average of 1,250 umhos/cm. The Study (Finding No. 32) shows that when VWDC is discharging 7.4 mgd and Chevron is discharging 33.5 mgd of produced water with EC at levels equal to the 10-year historical median values, the EC of underlying groundwater may increase as much as 5.98 umhos/cm per year, which complies with the Basin Plan. This Order authorizes a maximum daily flow rate of 7.4 mgd. As the Study uses a long-term median value EC of 1,030 umhos/cm from VWDC for its calculations, and groundwater quality changes will exhibit the average effect of the managed discharge, it is reasonable and appropriate to control the long-term effect with an annual average effluent EC limit. This Order contains an EC discharge specification at Discharge 001 of 1,030 umhos/cm as an annual average. To be effective with this limitation, CWD must manage produced water from VWDC and Chevron to ensure compliance with the water quality objective for incremental increase within the CWD. In addition to the above limits on Discharge 001, the 1,000 umhos/cm EC limits/specifications for Discharges 002 and 003 are consistent with Basin Plan limitations for discharges to land within the Poso Creek Subarea and oil field discharges to surface waters within the Tulare Lake Basin (Finding Nos. 39 and 40).
46. **Boron:** Order No. R5-2006-0124 contains monthly average limitations for boron of 1.5 mg/L and daily maximum limitations of 1.6 mg/L respectively at Discharge 001.

Calculated potential increases in groundwater boron concentrations are small and do not consider that significant attenuation of boron in the soil column can occur as irrigation waters percolate to groundwater. This Order also contains boron limitations for Discharge 001 of 1.5 mg/L (monthly average) and 1.6 mg/L (daily maximum). The 1.0 mg/L boron limits/specifications for Discharges 002 and 003 are consistent with Basin Plan limitations for discharges to land within the Poso Creek Subarea and oil field discharges to surface waters within the Tulare Lake Basin (Finding Nos. 39 and 40).

47. **Chloride:** WDRs Order No. R5-2006-0124 contains monthly average discharge specifications for chloride of 100 mg/L and daily maximum limitations of 125 mg/L. This Order contains a discharge specification for Discharge 001 of 200 mg/L (daily maximum). This limit is consistent with the Basin Plan. The 200 mg/L chloride limits/specifications for Discharges 002 and 003 are also consistent with the Basin Plan limitations for discharges to land within the Poso Creek Subarea and oil field discharges to surface waters within the Tulare Lake Basin (Finding Nos. 39 and 40).
48. **Arsenic:** The Basin Plan includes a water quality objective that “*waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.*” Groundwater recharge is a beneficial use of the receiving stream with the groundwater having a designated beneficial use of municipal supply. The maximum observed effluent arsenic concentration from VWDC was 55 ug/L. The maximum observed receiving water arsenic concentration was 6 ug/L. Arsenic in the discharge to Reservoir B exceeds the USEPA Primary Maximum Contaminant Level (MCL) of 10 □g/L. Pursuant to the Safe Drinking Water Act, the California Department of Health Services (DHS) must revise the arsenic MCL in Title 22 CCR to be as low or lower than the USEPA MCL. Under conditions where VWDC and Chevron are discharging at capacity, the concentration of arsenic in the discharge to Poso Creek (Discharge 003) could exceed the MCL. Applying the Basin Plan’s “Policy for Application of Water Quality Objectives,” to protect the future municipal and domestic water use of groundwater, it is reasonable to apply the USEPA MCL for arsenic to discharges to Poso Creek, as water discharged to the creek is managed to recharge groundwater. An Effluent Limitation for arsenic is included in this Order and is based on protection of the beneficial use of groundwater recharge and municipal and domestic water supply, the Basin Plan water quality objective for chemical constituents, and toxicity; and the USEPA Primary MCL.
49. The Clean Water Act, Sections 303(a-c), required states to adopt numeric criteria where they are necessary to protect designated uses. The Regional Water Board adopted numeric criteria in the Basin Plan. The Basin Plan is a regulatory reference for meeting the State and federal requirements for water quality control (40 CFR 131.20). Resolution 68-16, the Antidegradation Policy, does not allow changes in water quality less than that prescribed in Water Quality Control Plans (Basin Plans). The Basin Plan states that; “The numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.” This Order contains Receiving Water Limitations based on the Basin Plan numerical and narrative water quality objectives for Biostimulatory

Substances, Chemical Constituents, Color, Dissolved Oxygen, Floating Material, Oil and Grease, pH, Pesticides, Radioactivity, Salinity, Sediment, Settleable Material, Suspended Material, Tastes and Odors, Temperature, Toxicity and Turbidity.

GENERAL

50. Section 13267 of the California Water Code states, in part, “(a) A regional board, in establishing...waste discharge requirements... may investigate the quality of any waters of the state within its region” and “(b) (1) In conducting an investigation..., the regional board may require that any person who... discharges... waste...that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.” The attached Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267. The groundwater monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program are necessary to determine compliance with these waste discharge requirements. The Discharger is responsible for the discharges of waste at the facility subject to this Order.
51. The Regional Water Board has considered the information in the attached Fact Sheet in developing the Findings of this Order. The Information Sheet, Monitoring and Reporting Program No. _____, and Attachments A through D are a part of this Order.
52. The USEPA and the Regional Water Board have classified this discharge as a minor discharge.
53. Except for the oil and grease discharged to the concrete tank, this discharge is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, section 20005, et seq., (hereafter Title 27) pursuant to Section 20090(b) for the following reasons:
 - a. The Regional Board is issuing these waste discharge requirements, which implement the Basin Plan;
 - b. The Discharger will comply with these waste discharge requirements; and
 - c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.
54. The oil and grease removed from produced water is a designated waste as defined in Title 27 and subject to the full containment specifications therein. However, the concrete tank that contains the oil and grease is a fully enclosed facility of limited extent and operated in a manner that precludes discharge of the designated waste, which is

prohibited by this Order. Accordingly, it is exempt from the prescriptive and performance specifications of Title 27 pursuant to section 20090(i) thereof. The Wemco units are similarly exempt.

55. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.
56. This Regional Water Board considered degradation that could be caused by discharges of oilfield wastewater to land, groundwater, and surface water and determined degradation that results from discharges that comply with EC, chloride, and boron effluent limits of 1,000 umhos/cm, 200 mg/L, and 1.0 mg/L, respectively, as reasonable and of maximum benefit to the people of the State. The Basin Plan indicates that higher effluent limits may be considered if a discharger first demonstrates to this Regional Water Board that the discharge with higher limits will not substantially affect water quality or cause it to exceed water quality objectives. Such a demonstration has been made and thus an exception is granted by this Order.

The CWD must manage the blended discharges so they will not substantially affect water quality and violate water quality objectives. As consistency is reliant on the assumptions of the Study as well as proper management, should the assumptions later prove flawed, a right must be retained to reopen this Order before its expiration. A provision reserves this right. A discharge for reclamation in a water short area is considered of maximum benefit to the people of the State as long as water quality objectives are achieved. The discharge as conditioned in the proposed Order is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16.

57. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), requiring preparation of an environmental impact report or negative declaration in accordance with Section 13389 of the California Water Code.
58. The CWD approved on 12 April 2007 a negative declaration pursuant to the provisions of CEQA for the subject increase in volumes and salinity of produced water to be delivered to its irrigation system. The project as approved will not have a significant impact on water quality.
59. The Discharger and interested agencies and persons were notified of the intent to prescribe waste discharge requirements for this discharge and provided an opportunity

for a public hearing and an opportunity to submit their written views and recommendations.

60. All comments pertaining to the discharge were heard and considered in a public meeting.
61. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided USEPA has no objections.

IT IS HEREBY ORDERED that Order No. R5-2006-0124 is rescinded and pursuant to CWC Sections 13263, 13267, 13377, and 13383, Valley Waste Disposal Company and Cawelo Water District, their agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of other than treated oilfield produced water at a location or in a manner different from that described and approved herein is prohibited.
2. The by-pass or overflow of pollutants to surface waters is prohibited, except as allowed by Standard Provision A.13. [See attached “Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)”].
3. Discharge of waste classified as ‘hazardous’ as defined in Section 2521(a) of Title 23, CCR, Section 2510 et seq., is prohibited.
4. Discharge of waste classified as ‘designated’ as defined in CWC Section 13173, except as allowed herein and by other valid waste discharge requirements, is prohibited.
5. Neither the discharge nor its treatment shall create a nuisance as defined in Section 13050 of the California Water Code.

B. Discharge Specifications:

1. Effluent from Discharge 001 (from VWDC into Reservoir B) shall not exceed the following limits:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>	<u>Annual Average</u>
Flow	mgd	---	7.4 ¹	---
Electrical Conductivity	umhos/cm	---	---	1,030
Chloride	mg/L	---	200	---
Boron	mg/L	1.5	1.6	---
Oil and Grease	mg/L	---	35	---

¹ The Daily Maximum discharge flow shall not exceed 4.3 mgd until the requirements of Provision F.9 are satisfied.

- Effluent from Discharge 002 (from Reservoir B outfall into the Distribution Canal) shall not exceed the following limits:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
Electrical Conductivity	umhos/cm	---	1,000
Chloride	mg/L	---	200
Boron	mg/L	---	1.0

C. Effluent Limitations

- Effluent from Discharge 003 (from the Distribution Canal outfall into Poso Creek) shall not exceed the following:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
Electrical Conductivity	umhos/cm	---	1,000
Chloride	mg/L	---	200
Boron	mg/L	---	1.0
Arsenic	ug/L	---	10
Oil and Grease	mg/L	---	Non-Detect

- Discharge 003 shall not have a pH less than 6.5 nor greater than 8.3.
- Survival of aquatic organisms in 96-hour bioassays of undiluted waste from Discharge 003 shall be no less than:

Minimum for any one bioassay: ----- 70%
 Median for any three or more consecutive bioassays: ----- 90%

D. Receiving Water Limitations:

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit.

Discharge 003 shall not cause the following conditions downstream of the Poso Creek outfall structure:

1. Concentrations of dissolved oxygen (DO) to fall below 7.0 mg/L. The monthly median of the mean daily dissolved oxygen concentration shall not fall below 85 percent of saturation in the main water mass, and the 95th percentile concentration shall not fall below 75 percent of saturation. Where ambient DO is less than these objectives, discharges shall not cause a further decrease in DO concentrations.
2. Un-ionized ammonia to be present in amounts that adversely affect beneficial uses or that exceed 0.025 mg/l (as N).
3. Biostimulatory substances to be present in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.
4. Suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
5. Discoloration that causes nuisance or adversely affects beneficial uses.
6. Suspended sediment load and suspended sediment discharge rate in such a manner that causes nuisance or adversely affects beneficial uses.
7. The turbidity to increase as follows:
 - a. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.
 - b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.
 - c. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.
 - d. More than 10 percent where natural turbidity is greater than 100 NTUs.
8. The ambient pH to fall below 6.5, exceed 8.3, or changed by more than 0.3 units.
9. The ambient temperature to increase more than 5 °F.

10. Deposition of material that causes nuisance or adversely affects beneficial uses.
11. Oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
12. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.
13. Violation of any applicable water quality standard for receiving waters adopted by the Regional Water Board or the State Water Board pursuant to the CWA and regulations adopted thereunder.
14. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.
15. Chemical constituents in concentrations that adversely affect beneficial uses.
16. Water in Poso Creek downstream of the CWD to exceed the following:

EC	700 umhos/cm
Chloride	106 mg/L
Boron	0.5 mg/L

E. Groundwater Limitations:

The discharge, in combination with other sources, shall not cause groundwater underlying the CWD to contain waste constituents in concentrations that adversely affect beneficial uses. In no case shall the discharge, in combination with other sources, cause underlying groundwater to increase in EC by more than 6 umhos/cm per year.

F. Provisions:

1. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated February 2004, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."
2. The Discharger shall comply with Monitoring and Reporting Program (MRP) No. _____, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

3. Storage of wastewater in the VWDC's storage ponds shall be limited to the minimum time necessary to complete maintenance on the CWD distribution facilities.
4. The treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
5. All technical reports required herein 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. To demonstrate compliance with Title 16, CCR, Sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
6. The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger shall initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a work plan to conduct a Toxicity Reduction Evaluation (TRE) and, after Regional Water Board evaluation, conduct the TRE. As a result of a TRE, this Order may be reopened to include a chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric toxicity limitation.
7. The Discharger shall comply with the following time schedule to assure compliance with the monitoring requirements of Monitoring and Reporting Program No. _____:

<u>Task No.</u>	<u>Description</u>	<u>Compliance Date</u>
a.	Submit work plan and time schedule for installation of continuous flow and EC meters at Discharge 001 required by this Order.	8 January 2007

- b. Begin installation of continuous flow and EC meters. **12 March 2007**
- c. Full compliance with the terms of monitoring and reporting specified by this Order. **5 June 2007**

The Discharger shall submit to the Regional Water Board on or before the compliance due date a written report detailing compliance or non-compliance with the specified date and task. If non-compliance is being reported, the reasons for such non-compliance shall be stated along with an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the schedule.

- 8. **Salinity Evaluation and Minimization Plan.** The Discharger shall prepare a salinity evaluation and minimization plan to address sources of salinity from the VWDC. The plan shall be completed and submitted to the Regional Water Board **within nine months of the effective date of this Order** for approval by the Executive Officer.
- 9. The Daily Maximum discharge flow from VWDC to Reservoir B shall not exceed 4.3 mgd until VWDC provides written certification in the form of a technical report that it has installed as designed its second WEMCO treatment unit for a treatment capacity of 7.4 mgd. The certification must be consistent with the requirements of Provision F.5 above. Following Executive Officer written concurrence with the certification, VWDC may increase its discharge flow to 7.4 mgd.
- 10. The Discharger shall report to the Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986.
- 11. When requested by USEPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger Self Monitoring Reports.
- 12. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by Monitoring and Reporting Program No. _____.
- 13. This Order may be reopened for modification, or revocation and reissuance based on conditions that necessitate a major modification of a permit, as described in 40 CFR 122.62 and including:

- a. If new or amended applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.
 - b. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.
14. This Order may be reopened should assumptions used in the Study prove flawed or other information is provided that indicates reevaluation of the Study methodology or results is necessary. (The critical Study results were based on flows of 7.4 and 33.5 mgd and average annual ECs of 1030 umhos/cm and 940 umhos/cm from VWDC and Chevron, respectively, as well as a minimum of 65,000 acre feet of imported fresh water.
 15. Should these assumed values change, it could require reevaluation of the Study results and may necessitate reductions in flow or EC limits.)
 16. The NPDES requirements of this Order expire on _____ and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date an application for renewal of waste discharge requirements if it wishes to continue the surface water discharge (i.e. Discharge 003).
 17. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of, or clearance from the State Water Board (Division of Water Rights).
 18. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Water Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

WDRS ORDER NO. _____
VALLEY WASTE DISPOSAL COMPANY
AND CAWELO WATER DISTRICT
KERN FRONT NO. 2 TREATMENT PLANT – CAWELO RESERVOIR B
KERN COUNTY

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

PAMELA C. CREEDON, Executive Officer

GEA/WDH: 6/5/07