

## SUMMARY TABLE REGARDING PORTIONS OF CCST STUDY REFERENCING HYDRAULIC FRACTURING IN KERN RIVER FIELD

| Chevron Comment # | Volume | Page Number | Language or concern:  | Comments/Suggested Revisions:   |
|-------------------|--------|-------------|---|---|
| 1                 | 1      | n/a         | Appendix M lists API 03045795 as having been hydraulically fractured.   | This well should be removed from Appendix M based on the written confirmation from DOGGR dated December 2, 2015 that this well was not hydraulically fractured. DOGGR also confirmed that a second well, API 03052152, which was identified in CCST's September 2, 2015 correspondence to Chevron, was not hydraulically fractured.   |
| 2                 | 2      | 27          | "Our study found only one oil field where both hydraulic fracturing occurs and farmers use the produced water for irrigation. In the Kern River field in the San Joaquin Basin, hydraulic fracturing operations occasionally occur, and a fraction of the produced water goes to irrigation."                           | Based on the necessary revision to Appendix M, these two sentences should be deleted as no form of hydraulic fracturing is occurring in the Kern River Field.   |
| 3                 | 2      | 115         | "Of these fields, well stimulations have only been reported in Kern River and Mount Poso. In Mount Poso, the last reported hydraulic fracture was in 2003. Although hydraulic fracturing was reported as recently as 2014 in the Kern River, only three hydraulic fracturing operations have been reported since 2012." | "Of these fields, well stimulations have only been reported to have occurred in Kern River and Mount Poso. The last reported hydraulic fracture was in 2007 and 2003 respectively."   |
| 4                 | 2      | 115         | Second full paragraph: mixes references of produced water from the Kern River oil field and treatment at the Kern Front No. 2 Treatment Plant.  | The water from the Kern River oil field that goes to Cawelo Water District is not treated at the Kern Front No. 2 Treatment Plant. It appears this information was taken from the Cawelo-Valley Water Management WDR Permit. The descriptive language should be revised and the correct reference should be to the Cawelo-Chevron WDR Permit, Central Valley Regional Water Quality Control Board permit number R5-2012-0058. |
| 5                 | 2      | 115-116     | Last paragraph, Appendix 2-C and Figure 2.C-2 describes the treatment process at Kern Front No. 2 Treatment Plant, which is not the process used for treatment of the water from Kern River oil field to Cawelo Water District.   | As noted in Chevron Comment #6 above, this information is not correct. It is unclear whether the study team evaluated the actual treatment process for the produced water from the Kern River Field. It is recommended that the authors review and determine if modifications to this paragraph are needed.   |
| 6                 | 3      | 19          | "Our study found only one oil field where both hydraulic fracturing occurs and farmers use the produced water for irrigation. In the Kern River field in the San Joaquin Basin, hydraulic fracturing operations occasionally occur, and a fraction of the produced water goes to irrigation."                           | Based on the necessary revision to Appendix M (see Comment 1 above), these two sentences should be deleted as no form of hydraulic fracturing is occurring in the Kern River Field.   |
| 7                 | 3      | 298         | Figure 5.4-4 identifies Kern River Field as a field where hydraulic fracturing occurs.  | This figure is not accurate as there is no hydraulic fracturing activity occurring in Kern River Field. Therefore, Kern River Field should be deleted from the figure.  |
| 8                 | 3      | 299-300     | "A search of CVRWQCB records indicates only Chevron USA, Inc. (Chevron), was permitted to discharge produced water for irrigation and groundwater recharge (CVRWQCB, 2012)."  | This statement is only accurate if it is referring to water produced from the Kern River Field. Valley Water Management Company has a permit that allows for irrigation and groundwater recharge with water from the Kern Front Field (Central Valley Regional Water Quality Control Board permit number R5-2012-0059).   |
| 9                 | 3      | 300         | "Three of the wells identified as hydraulically fractured in the integrated set (Volume I, Appendix M) are operated by Chevron."  | Only two wells identified in Appendix M (API 02951577 and API 02985697) are operated by Chevron. Given the context of this paragraph and that the data confirms there is no hydraulic fracturing occurring in the Kern River Field, this sentence should be deleted.  |

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| 10                      | 3      | 300            | "Due to the small proportion of well records searched, this record suggests two hydraulic fracturing operations per year occur in the Kern River field on average. This is out of approximately 350 new wells per year from 2002 through 2013." | This text should be deleted. With the removal of API 03045795 from the data set based on DOGGR's written confirmation and given that no hydraulic fracturing is occurring in the Kern River Field, an extrapolation to an average of two hydraulic fracturing operations per year is inaccurate. |
| 11                      | 3      | 338            | "Analysis of available data suggests occasional hydraulic fracturing in fields from which produced water is used for irrigation."   | With the written confirmation provided by DOGGR, the available data does not indicate that any of the fields from which produced water is used for irrigation currently has hydraulic fracturing. This sentence should be deleted.   |