Attachment A

Summary of Comments on Board Order No. R6V-2014-(TENTATIVE)

Waste Discharge Requirements for Pacific Gas and Electric Company Groundwater Remediation Project: Agricultural Treatment Units

Hinkley, California

#	Component	Page	Section	Comment
1	WDRs	9 25	16 I.C.7	"This order authorized plume bulging, limited to the eastern boundary of OU1, and not more than 3,000 feet from the eastern boundary of OU1." This allowance appears to be focused on potential bulging as previously considered for the South Central Re-Injection Area in-situ reduction zones (IRZ). However, although not envisioned for the currently planned agricultural treatment Unit (AU) designs, plume bulging due to recharge and mounding from AU operation would not necessarily be limited to the east, depending on where the new AU is located. We suggest broadening the allowance in this permit such that it allows for plume bulging that is permitted as CAO R6V-2008-0002/A2 is revised, not necessarily limited to the area east of OU1. Similar edits should be made to Requirement I.C.7.
2	WDRs	10	10b	Clarify that 100 mg/kg plant tissue criterion was for total chromium, "The compliance criterion for plant tissue was 100 mg/kg <u>total chromium</u>."
3	WDRs MRP	10	10d	Third sentence missing "monitoring". "Therefore, this Order requires continued soil and plant tissue <u>monitoring</u>..."

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4	WDRs MRP	11 10	17d 5.i,ii Tbl E5	It is not clear why it is necessary to verify that plants are taking up nitrate in irrigation water via plant tissue sampling; nitrate is a plant nutrient. Presumably, this verification is to ensure that excess nitrate does not percolate to groundwater and cause an increase in groundwater concentrations. This could only occur in limited cases where applied nitrate concentrations are higher than groundwater concentrations under the field. There are provisions in the WDRs (Section 25.c), MRP (Section 2 and 3), and MMRP (WTR-MM-2b) requiring monitoring to ensure that nitrate concentrations do not increase due to agricultural activities authorized by the Order and requiring mitigation if domestic wells are impacted by nitrate due to remediation. Given these safeguards, plant tissue sampling for nitrate is not considered necessary and is recommended to be removed.
5	WDRs	22	I.B.5	For clarification, the Water Board orders cited for the plume mapping requirements should be cited by number and acknowledgement given that, should those orders change, the requirements in this order would as well. Suggested edit: "All site maps and figures must comply with mapping requirements according to Water Board Order~~s~~ No. R6V-2008-0002A4 for connecting monitoring wells having concentrations of chromium at or above background levels of total or hexavalent chromium and must show the chromium plume boundaries indicating 3.1, 10, 50, and 1,000 ug/L concentration contours. If Order No. R6V-2008-0002A4 is modified or rescinded, this requirement would be similarly modified."
6	WDRs	23	Discharge Limitations	Should the section heading "Discharge Limitations" be heading "C" and subsequent headings re-lettered?

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7		23	5	The need for a strict restriction within this permit to 'agronomic rates' should be reconsidered in light of overall project remedial goals. It is possible that, at times, remediation may require or suggest over-application of water on a field (for example, to increase containment pumping) and that such over-application can be safely done within an overall capture area (i.e., no excessive byproducts would leave the area of an AU). Other monitoring safeguards listed in this permit (for gradients and byproducts) will monitor and prevent or mitigate negative side effects. Any changes made should be carried over to other references to 'agronomic' on page 16 and Attachment E, Section III.
8	WDRs	24	I.C.1	Suggest extending footnote 2 to include nitrate and uranium, which are also known to currently exceed water quality standards.
9	WDRs WDRs	24 31	I.C.3 II.1	Request extending the time allotted for preparation of a TDS action plan to 120 days. There are many technical considerations and options that will take time to fully evaluate. Given the protectiveness of the mitigation measures for domestic wells and the long timescales over which changes in TDS are expected to develop, additional time is not anticipated to have adverse impacts.
10	WDRs	24	I.C.7	The first statement is not clear as written. Suggested edit, "The discharge of waste shall not cause concentrations of chromium to exceed 10 ug/L in areas where chromium concentrations are less than 10 ug/L, ~~and only in~~ with the exception of the area in OU1 along the eastern boundary as authorized by R6V-2008-0002A2 or areas authorized by subsequent amendments.

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11	WDRs	25 27	I.D.1.a I.D.1.a.ii	The EIR recognized that increases in concentration of 10 or 20 percent may not be statistically significant in defining actually affected domestic wells. We suggest adding the following statement from the significance criteria of the EIR (Section 3.1.7) in this section in the definitions of actually affected wells where percent changes are cited as criteria: "The discharger can present evidence to the Water Board if it believes in a specific instance that the increase is not statistically "significant." In addition, a procedure should be added for sampling verification prior to taking action to prevent taking action on anomalous results. Also, the detailed list of water quality requirements listed on page 25 (I.D.1.a) should be repeated (or referenced) on page 27 (I.D.1.a.ii)
12	WDRs WDRs	31	II.2	Suggest clarifying wells for evaluation of TDS criteria as follows, "Exceedances of the above limits will be determined by calculating the annual average TDS concentrations for the shallow zone and deep zone of the upper aquifer, <u>separately</u>, for ~~each ATU in~~ OU1 and OU3, using appropriate monitoring wells ~~associated with each ATU~~ <u>specified in the RWD (Requirement I.B.4)</u>.
13	Attachment E MRP	2	Tbl E.1 Item B, last row	To be consistent with the EIR WTR-MM-2c and the draft WDRs section I.D.i, arsenic and manganese should be added to the list of constituents to be monitored for wells affected by excessive drawdown.
14	Attachment E MRP	3	Tbl E-1 Item B, Groundwater Elevation row	It should be noted that data collected from nearby monitoring wells may also be needed to sort through data noise at supply wells caused by cycling of the supply wells as they are used.

15	Attachment E MRP	3	Tble E-1 Item B, Groundwater Elevation row	Text should be edited to be consistent with the EIR WTR-MM-2c and to reflect that the area for water level monitoring expands if wells are actually affected. Suggested edit "water supply wells within one-quarter mile from any AU extraction point or actually affected supply well"
16	Attachment E MRP	5-6	2, Table E-2	Revisions to the groundwater monitoring well sampling program are suggested to: • clarify monitoring objectives • modify the well network to align with monitoring objectives and to provide better aerial and depth coverage • modify the frequency of sampling to align with monitoring objectives The attached memo details proposed revisions.
17	Attachment E	5 6	2.iv Table E-2	Based on particle track modeling, a new well north of MW-85 is not recommended given direction of groundwater flow and lack of proximal domestic or supply wells (See attached memo on proposed monitoring program revisions for complete comments on the groundwater monitoring well sampling program for particle tracking).
18	Attachment E	6	2	Locations MW-22A and MW-22B, proposed as downgradient wells for Ranch AU, do not exist as described. We suggest replacing MW-22A with MW-22A1 and MW-24A with MW-24A1. See the attached memo on proposed monitoring program revisions for complete comments on the groundwater monitoring well sampling program.

19	Attachment E MRP	7	Tbl E3, first row	We suggest reducing the monitoring frequency of irrigation water to monthly during the first 3 months of operation followed by quarterly sampling. Current data sets collected from the DVD and AUs indicate that concentrations change over long timescales after initial startup; these changes are adequately characterized by quarterly sampling.
20	Attachment E MRP	10	Tbl E-5, first row	There is a history of plant tissue sampling data results within compliance standards for the East LTU, where chromium was applied at concentrations that are anticipated to be comparable to OU2 AUs (i.e., annual average application concentration was 340 ppb from October 1997 to September 1998 at the East LTU and plant tissue results were <0.05 mg/kg hexavalent chromium and 0.17-0.51 mg/kg total chromium, well below compliance standard of 250 mg/kg for the East LTU). We suggest changing the monitoring area to "AUs where irrigated water concentration of hexavalent chromium exceeds 340 ppb."

21	Attachment E MRP	14	IV	This item requires Board notification when more than 50 percent of the extraction and injection locations are shut down, or when the total system flow rate is decreased by greater than 50 percent. It does not state the duration of the change for which the Board requires notification. We propose that the Board be notified by telephone or e-mail correspondence if the flow rate in a given OU is reduced by 50 percent for longer than 5 consecutive days. Any change lasting longer than 24 hours will be reported in the quarterly monitoring reports regardless. Evaluation across an OU will prevent unnecessary notifications as fields are turned on and off for crop harvests, and other reasons. Notification based on 'counts' of individual wells operating will be misleading and should be removed, as in many instances there are multiple wells which only yield a very small percentage of the flow; these wells can be safely idled while a few larger producing wells can remain operational to meet remediation needs. In addition, the requirement to notify why "an AU is not being maintained by at least 50 percent in area." is not clear. Does this mean when the field area is reduced by turning fallow for an extended period of time? Please clarify or eliminate.
22	Attachment E MRP	15	V.1.a	It is unclear what the difference between "requirement violations" in the second sentence and "violations of the WDRs" in the third sentence is. Please clarify.
23	Attachment E MRP	16	V.2 Monthly, Quarterly, Twice-yearly Reports 1.a	Is the requirement to report ponding specific to startup under requirement 1a? If not, suggest pulling it into a separate requirement, as the rest of the requirements in this item pertain to construction and initiation of operations at new AUs.

24	Attachment E MRP	16	V.2 Monthly, Quarterly, Twice-yearly Reports 1.a	The heading of this section is confusing because it contains multiple reporting frequencies but does not detail what is in these reports. It appears that quarterly reports are required to contain monthly, quarterly, and twice-yearly sampling results. Suggest changing the heading to "Quarterly Reports".
25	Attachment E MRP	17	V.2 Monthly, Quarterly, Twice-yearly Reports 1.d	We suggest the following edit to clarify the definition of normal operation within the context of a system that varies in operation seasonally and to tie operational evaluations to capture performance: "Cite changes or variations in volumes or extraction flowrates from the same season in the previous ~~monitoring event~~ year. If the volume extracted or flowrate from an AU is ~~fields are operated~~ at less than 50 percent of the same season in the previous year ~~normal~~, provide reasoning and corrective measures, if needed to maintain capture." Correct typo in last line by deleting 'effective of'.
26	Attachment E MRP	17	V.2 Monthly, Quarterly, Twice-yearly Reports 1.h	Given that several requirements in the WDRs are different among OUs, we suggest providing the range and average by OU.
27	Attachment E MRP	17	V.2 Monthly, Quarterly, Twice-yearly Reports 1.i	Note: potentiometric surface maps may be prepared for the lower zone of the upper aquifer and the upper zone of the upper aquifer.

28	Attachment E MRP	17	V.2 Monthly, Quarterly, Twice-yearly Reports 1.i	Contouring of these constituents could prove difficult given that there is a baseline distribution that is not necessarily related to operations of AUs under this permit, creating a distribution that is not a rational "plume" emanating from a single source. It is recommended that dot maps to indicate magnitude of concentration or percent change in concentration from the previous reporting period may be prepared instead. Suggest changing wording to 'Draw isoconcentration lines for or otherwise graphically display data for nitrate (as N)….'.
28. 1	Attachment F MMRP	20, 23	WTR-MM-2b and WTR-MM-2b	Please clarify that the timing of WTR-MM-2b and 2c permits initial monitoring concurrent with remediation efforts if such monitoring would otherwise delay remediation efforts.
28. 2	Attachment F MMRP	29, 30, 34	WTR-MM-5 WTR-MM-6 and WTR-MM-8	Please clarify that timing WTR-MM-5 , 6, and 8 is not tied to issuance of building permits. There is currently no requirement that these mitigation measures be completed prior to additional facilities being constructed. "Per monitoring requirements" would be a more accurate description.
29	Attachment F MMRP	38	HAZ-MM-2	Anticipated construction activities may not trigger the requirements for a spill prevention and control (SPCC) plan or equivalent. Suggest revision of Implementation Timing text to read "Prior to and during construction activities triggering the requirement of a SPCC or equivalent."

30	Attachment F MMRP	43	Air-MM-1	Tier 4 Final engine requirements begin to go into effect in 2014 for certain size engines and do not go into full effect until 2015. Equipment providers are in the process of bringing their equipment into compliance with the Tier 4 Final requirements. However, getting equipment with Tier 4f engines will be logistically difficult until equipment providers have had an opportunity to change their fleet to higher-tier equipment. A requirement to use Tier 4 Final equipment may have the undesirable consequence of having to haul equipment longer distances from more distant sources. Also note that emissions criteria for Tier 4i and Tier 4f equipment are identical with the exception of NO_x. Unmitigated construction emissions of NO_x are below the MDAQMD Threshold, with the exception of Alternatives 4C-3 and 4C-5 (Table 3.5-11 of the EIR). Request revision of the measure to read "PG&E or their contractor will ensure that all off-road diesel-powered equipment used during construction will be equipped with an EPA Tier 4 Interim engine, and a EPA Tier 4 Final or cleaner engine when available, except for specialized construction equipment in which an EPA Tier 4 engine is not available."

31	Attachment F MMRP	49	Air-MM-6	Table 3-5 of Appendix B to Attachment F shows that mitigation measure Air-MM-6 is not required to reduce impacts from the No Project Alternative to less than significant. Request revision of the first sentence of the mitigation measure to read "PG&E or its contractor will submit a signed letter to San Bernardino County and the Water Board agreeing to include as a condition of all construction contracts/subcontracts <u>for all action alternatives</u> requirements to reduce GHG emissions and submit documentation of results." Additionally, the Coating Restriction Plan will likely not apply to all anticipated construction. Request modifying the first bullet under paragraph 1 to read "Implement a County-approved Coating Restriction Plan, <u>if applicable</u>."
32	Attachment F MMRP	49	Air-MM-7	Table 3-5 of Appendix B to Attachment F shows that mitigation measure Air-MM-7 is not required to reduce impacts from the No Project Alternative to less than significant. Request revision of the first sentence under Mitigation Measure to read "PG&E or its contractor will implement the following as GHG mitigation during the operation of the approved <u>action alternatives</u>~~project~~.
32.1	Attachment F MMRP	67	BIO-MM-1h	Please clarify that BIO-MM-1h only requires consultation with the wildlife agencies and does not require PG&E to obtain any permits from those agencies. The consultation process will determine whether a permit will be obtained.
33	Attachment F MMRP	B-2	Table 3-1 of Appendix B	Table 3-1 of Appendix B to Attachment F is missing impacts WTR-2g, WTR-2h, WTR-2i, WTR-3, WTR-4, and WTR-5. Suggest adding these to the table for completeness.
34	Attachment G Antidegradation Analysis		General Comment	The proposed Permit and the entire remediation area in Hinkley include the use of an extensive network of monitoring wells to detect and prevent additional degradation of the groundwater resource. We recommend including additional

			information on the extent of monitoring as a finding in the WDRs and in the Antidegradation Analysis (Attachment G). Some suggested details to include are: • The Hinkley Remediation Project is well monitored via sampling and analysis of more than 700 monitoring wells across the site, providing an extensive chromium dataset. • Extensive domestic and supply well sampling associated with AU operation authorized in this permit is specified, including: o Sampling of more than 100 domestic and supply wells for pre-remedial reference sampling for agricultural byproducts o Ongoing monitoring for water levels in domestic wells or nearby monitoring wells within 0.25 mile of AU extraction points. o Ongoing monitoring for agricultural by-products within 0.5 mile downgradient and 0.25 mile cross-gradient of AUs • Monitoring of more than 40 monitoring wells located in and around the existing AUs for agricultural byproducts. Additionally, provisions are included for development of monitoring programs for agricultural byproducts for any new AUs proposed and constructed.
35	Attachment G Antidegradation Analysis	General Comment	The State Water Resources Control Board's Antidegradation Policy (Resolution 68-16) establishes the statewide policy wherein waters of the state that are of high quality "shall be maintained to the maximum extent possible". In accordance with the law and State Board policy, the Permit and Antidegradation Analysis meets the requirements of Resolution 68-16 through a combination of discharge and receiving water limitations, extensive monitoring, and other requirements, including mitigation measures identified in the EIR prepared pursuant to the California Environmental Quality Act. These requirements ensure that any degradation of existing high quality waters in the Project area is limited in spatial extent, magnitude, and duration as feasible for the remediation Project.

				The Third District Court of Appeal in Asociación de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Board (2012) 210 Cal.App.4th 1255 ("Agua") has recently interpreted the application of Resolution 68-16 to Regional Board permits. The Agua Court found that Resolution 68-16 may allow water quality degradation if the following conditions are met: (1) any change in water quality must be consistent with maximum benefit to the people of the state; (2) the degradation will not unreasonably affect present and anticipated beneficial uses; and (3) the degradation will not result in water quality less than that prescribed in the Basin Plan and other applicable policies. (Asociación de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Board (2012) 210 Cal.App.4th 1255, 1278.) By adopting the Permit in this matter, the Regional Board will act consistent with case law and State Board policy. As reflected in the Permit and accompanied findings, the limited term of degradation allowed under the Permit is consistent with maximum benefit to the people of the state because the Project will result in removal of hexavalent chromium from the groundwater and restore the groundwater to its intended beneficial uses.
36	Attachment G Antidegradation Analysis	1	Introduction	Suggest revising the fourth sentence of second paragraph to "The EIR concluded that temporary localized decreases in groundwater quality ~~will~~ may result from the Project..."
37	Attachment G Antidegradation Analysis	1	Introduction	Suggest adding a reference to the basin-wide approach in the second to last sentence of the second paragraph as follows, "… and requires that the Discharger restore water quality to pre-remedial reference conditions or implement a basin-wide approach to TDS and nitrate, as described below."

38	Attachment G Antidegradation Analysis	3 6	Paragraph 3 Table G-1	The section on chromium supposes in advance of completion of the background study that background concentrations for hexavalent chromium are less than 10 ppb. This may not be the case. For instance, new monitoring well MW-203D contains hexavalent chromium concentrations greater than 10 ppb that may be background associated with weathered volcanic bedrock (see report titled "Compliance with Provision 1.C. of Cleanup and Abatement Order R6V-2008-0002-A4 and Requirements of Investigation Order R6V-2013-0029" submitted by Stantec on October 29, 2013). As such, this definitive discussion of high quality groundwater prior to discharge should be removed or caveated to recognize that the background study may determine otherwise.
39	Attachment G Antidegradation Analysis	4	Nitrate	Water quality in OU1 is not generally high quality for nitrate as stated. Baseline data collected in 2007 from the Central Area IRZ and Source Area IRZ monitoring well networks installed across OU1 showed shallow concentrations of nitrate routinely greater than 10 mg/L-N, with 69 of 120 monitoring wells yielding concentrations greater than 10 mg/L. "yes" should be changed to "no" in Table G-1 to reflect this condition in OU1.
40	Attachment G Antidegradation Analysis	4 6	TDS Table G-1	Concentrations of TDS in OU3 are not necessarily high quality with concentrations less than 500 mg/L. Recent analysis of monitoring wells in OU3 showed detections greater than 500 mg/L. See Figures G7 and G8 in the report titled "Compliance with Provision 1.C. of Cleanup and Abatement Order R6V-2008-0002-A4 and Requirements of Investigation Order R6V-2013-0029" submitted by Stantec on October 29, 2013. In addition, concentrations may increase towards the north in OU3 as the evaporative conditions of the playa are encountered. Revisions to reflect the existing data and acknowledge the unknown and potentially higher concentrations condition near the playa are suggested.

41	Attachment G Antidegradation Analysis	2 6	Occurrence of High Quality Waters for Constituent Regulated under this Order Table G-1	We suggest analyzing uranium in the "Occurrence of High Quality Waters for Constituent Regulated under this Order" and Table G-1, given that an investigation for uranium is required by the EIR mitigation measure WTR-MM-5 and the monitoring and reporting required in the draft MRP for uranium.
42	Attachment G Antidegradation Analysis	4-5 6	Arsenic Table G-1	The areas with higher background arsenic concentrations are not necessarily limited to the areas upgradient of the compressor station in southern OU1 and in the southwestern portion of OU3. For instance, a homeowner with a domestic well located on Dixie Road north of Alcudia previously provided the Water Board with results of sampling by PG&E, which indicated concentrations of arsenic of 130 ppb in the far eastern portion of OU3. In addition, the community collected samples from a domestic well in the far north of OU3 on Orchid Road which yielded 110 ppb of arsenic. These results were shown on Figure 13 of the *Assessment of In-Situ Reactive Zone Treatment Byproducts* submitted by ARCADIS on December 17, 2012, and a table of results compiled by the Water Board (including these results) was included in Appendix C1 of the recent *Response to Investigative Order No. R6V-2012-0060 and R6V-2013-0026: Manganese Investigation Technical Report* submitted by ARCADIS on November 19, 2013. Suggest the following revision to the text, "... but certain areas show higher background arsenic concentrations: ~~upgradient of the compressor in southern OU1, and in the southwestern portion of OU3~~." Also suggest revising Table G-1 to reflect these observations.

43	Attachment G Antidegradation Analysis	5	Manganese	We offer a few additions/corrections to the information in this section: -Elevated manganese concentrations have also historically been detected in OU-2 (up to 1,650 ug/L in DW-02, north of Highway 58, in 2003). -The maximum concentration of manganese detected in OU1 was in the South Central Re-injection Area, where the new AUs are proposed, rather than the Central Area -The maximum concentration of manganese detected in the 2007 background study was 197 ug/L, rather than 48 ug/L. -In a study conducted by the USGS reported in 2008, manganese concentrations were detected in the Mojave Groundwater Basin at concentrations up to 111 ug/L.
44	Attachment G Antidegradation Analysis	6	Table G-1	This table is limited to the upper aquifer. Suggest mentioning knowledge of the lower aquifer water quality, for instance the presence of arsenic concentrations above the MCL in the lower aquifer as discussed in the *Assessment of Alternative 5 - Whole House Replacement Water Program* submitted by Stantec on February 27, 2013.
45	Attachment G Antidegradation Analysis	7	Compliance with Resolution 68-16	"These increases are expected to be short-term and occur only at the eastern boundary of OU1 for up to 3,000 feet in distance..." This allowance appears to be focused on potential bulging as previously considered for the South Central Re-Injection Area IRZ. However, although not envisioned for the currently planned AU designs, plume bulging due to recharge and mounding from AU operation would not necessarily be limited to the east, depending on where the new AU is located. We suggest broadening the allowance in this permit such that it allows for plume bulging that is permitted as CAO R6V-2008-0002/A2 is revised, not necessarily limited to the east.

46	Attachment G Antidegradation Analysis	8	Nitrate, Uranium, Total Dissolved Solids	WTR-MM-6, which specifies actions should triggers be exceeded for nitrate, is discussed here in the anti-degradation analysis and was specified in the EIR. However, specifics as to how the criteria will be evaluated (e.g., which wells will be used, whether individual well concentrations or averages will be used) are not identified in the WDRs/MRP. We suggest that the criteria should be evaluated at individual wells and that the criteria should apply only for wells impacted by irrigation water with higher concentrations of nitrate than the receiving water and not due to movement of variable distribution of nitrate within the capture zone of the extraction system.