Chapter 3
Responses to Comments

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This chapter includes responses for each of the numbered comments identified in the comment letters in Chapter 2, *Comments Received on the Draft EIR*.

There are Master Responses and Individual Responses. Master Responses are developed for subject areas for which multiple comments were received. Individual Responses address all other comments on issues that fall outside the Master Responses. Each response begins with a brief summary of the comment and then responds to the comment.

In responding to comments, CEQA does not require a Lead Agency to conduct every test or perform all research, study or experimentation recommended or demanded by a commenter. Rather, a Lead Agency need only respond to significant environmental issues and does not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the EIR (Guidelines secs. 15088, 15204).

Revisions to the Draft EIR, pursuant to master responses and individual responses and pursuant to Water Board staff initiated changes, are included in Volume II, Revised Draft EIR.

Master Responses

Master Responses are developed for the following subject areas:

1. Purpose and Use of EIR
2. Chromium Plume Boundary and Project Study Area Boundary
    a. Chromium Plume Delineation
    b. Chromium Plume Boundary Control
        i. Boundary Control Monitoring Program
        ii. Freshwater Injection
        iii. Plume Bulging
    c. Background Levels of Chromium
3. Health Risk Assessment
4. Remediation Byproducts
    a. In-situ Remediation
    b. Manganese and Arsenic
    c. Uranium
    d. Total Dissolved Solids and Nitrates
    e. Byproduct Significance Criteria
5. Replacement Water Supply

6. EIR Alternatives
    a. Environmentally Superior Alternative
    b. Electrocoagulation
    c. Alternative Preferences
7. Third Party Participation
8. Impacts of Mitigation
    a. Secondary Effects of Byproduct Mitigation Measures
9. Groundwater Drawdown
10. Reconversion of Cr(III) to Cr (VI)

Master Response 1: Purpose and Use of EIR

Summary of Issues Raised in Comments:

- Several comments suggest that the Draft EIR should be evaluating the existing chromium contamination, rather than the proposed Project, which is chromium remediation.
- Several comments state or suggest that the EIR should be a flexible, living document that can be changed in the future when more information is obtained regarding the location and extent of the contamination.

Response:

The "Project" Analyzed in the EIR. As described in Chapter 1, *Introduction,* of the Draft EIR, the purpose of the EIR is to identify impacts of the proposed comprehensive cleanup strategy for historical chromium discharges from PG&E's Hinkley Compressor Station - not to identify impacts of the chromium contamination itself. PG&E is currently conducting cleanup activities under existing Waste Discharge Requirements for discharge to land (such as agricultural treatment units) amended in 2010 by the Lahontan Water Board (Water Board) and General Waste Discharge Requirements (WDRs, also referred to as a General Permit) for in-situ remediation issued in 2008. However, in order to fully remediate the chromium plume to background levels as required by State Water Board Resolution 92-49, PG&E will need to expand their existing cleanup activities. Although the cleanup alternatives evaluated in the Draft EIR include many of the same technologies that are currently being implemented (agricultural treatment, in-situ remediation, plume containment, freshwater injection), the intensity and geographical extent of these methods would be increased, and additional technologies (above-ground treatment facilities) are also being evaluated. Chapter 2, *Project Description*, of the Draft EIR describes the project goal and objectives, and provides details on six project alternatives evaluated in the Draft EIR. Chapter 3, *Existing Conditions and Impacts*, and Chapter 4, *Other CEQA Analyses*, identify potential impacts associated with each alternative and, if required and feasible, mitigation to avoid or reduce impacts to a less than significant level. Impacts that cannot be avoided or reduced to less than significant levels are clearly identified in the Draft EIR.

Flexible EIR. The EIR is flexible in that six groundwater remediation alternatives are evaluated at an equal level of detail, enabling the Water Board to approve cleanup activities that use any

arrangement of the cleanup technologies. The EIR is also flexible in that the project study area includes areas beyond the known chromium plume boundaries which do not currently have remediation activities, but may in the future. The EIR studies a wide range of implementation intensities of the remedial technologies allowing large-scale implementation as necessary to address the chromium plume cleanup. To that extent, the EIR is more of a "big tent" than a "living document." The EIR will not continue to be updated once the final document is certified by the Water Board because it is intended to be broad enough in scope to encompass a number of cleanup technologies, capable of being implemented over a broad area at a variety of intensities over a range of time periods. In accordance with CEQA requirements, if new information is found that changes the impacts of remediation or if the Water Board finds that additional remedial technologies or other changes in the project are required, then the Water Board will review these changes and determine whether a subsequent EIR, supplemental EIR, or addendum to the EIR is required, as described below, per CEQA Guidelines 15162, 15163, 15164.

Once an EIR has been certified for a project, no subsequent EIR will be prepared for that project unless the Lead Agency (Water Board) determines, on the basis of substantial evidence in light of the whole record, one of more of the following:

1) Substantial changes are proposed in the project which will require major revisions to the previous EIR due to new significant impacts or substantial increase in the severity of previously identified significant effects.

2) Substantial changes occur with respect to the circumstances under which a project was undertaken which will require major revisions to the previous EIR due to new significant impacts or substantial increase in the severity of previously identified significant effects.

3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR, was certified as complete, shows:

    a) The project will have one or more significant effects not discussed in the previous EIR,

    b) Significant effects previously examined will be substantially more severe than shown in the previous EIR,

    c) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects but the project proponents declined to adopt the mitigation measure or alternative, or

    d) Mitigation measures or alternatives which are considerably different than those analyzed in the previous EIR would substantially reduce one or more significant effects but the project proponents declined to adopt the mitigation measure or alternative. (CEQA Guidelines 15162).

Similarly, the Lead Agency may prepare a supplement to an EIR, rather than a subsequent EIR, if the aforementioned conditions occur and only minor additions or revisions would be necessary to make the previous EIR adequately apply to the project in the changed situation (CEQA Guidelines 15163). The Lead Agency may prepare an addendum to a previously certified EIR if some minor changes or additions are necessary, but none of the conditions described above for a subsequent EIR are met (CEQA Guidelines 15164).

As stated in the Draft EIR Section 1.4, *Intent of the EIR*, the Water Board will use the EIR to support its adoption of WDRs for PG&E to implement the various remediation technologies throughout the project area and duration, and to support its adoption of a new Cleanup and Abatement Order (CAO). This EIR provides flexibility to the Water Board in drafting and amending the CAO and WDRs as conditions evolve over time, allowing those changes to occur without additional environmental review as long as the proposed changes fit within the "big tent" of the EIR in terms of impacts addressed and disclosed.

Master Response 2: Chromium Plume Boundary and Project Study Area Boundary

The project study area boundary is determined based on the chromium plume boundary; therefore, this response is divided as follows:

a. Chromium Plume Delineation

b. Chromium Plume Boundary Control

c. Background Levels of Chromium

2a. Chromium Plume Delineation

Summary of Issues Raised in Comments:

- Requests for more monitoring to better define plume.
- Requests to define the area of plume, speed and direction of plume movement.
- PG&E must address the concerns of those individuals who live just outside the plume boundary as it is currently defined.
- Provide methodology for defining plume boundary and "approximate" plume boundary.
- Show detections below 3.1 ppb on plume map.

Response:

Plume Definition. The EIR is prepared based on the best information available at this time. The plume boundary is delineated based on PG&E's Cr(VI) and Cr(T) data results from quarterly monitoring wells and changes over time. The chromium plume boundary was updated in the final EIR using the 4th Quarter 2012 plume boundary to represent the most recent data on conditions during the time when the final EIR was prepared. The area and direction of plume movement is shown in Figures 2-2b through 2-2d, which present the change in the plume over time from 3rd Quarter 2008 to 4th Quarter 2012. Because hydraulic conditions of the groundwater aquifer are not uniform across the entire project area and the plume is influenced by pumping activities, the future plume growth, if any, cannot be predicted with precision. However, estimates of groundwater velocity (and therefore potential plume movement) from various sources are described in the Draft EIR Section 3.1.4.2, *Effects of Existing and Historic Pumping on Groundwater Movement*, and state a range from less than one to 4 feet per day.

Plume boundary definition and the associated methodology are specified by Water Board orders. The EIR itself does not include its own study for plume delineation but relies on the Water Board's

prior direction to use the established maximum total and hexavalent chromium background levels (3.2 and 3.1 ppb, respectively). Currently, the plume is thought to extend 6 to 9 miles north of the Compressor Station, but the northern boundary is not fully delineated yet; ongoing assessment is being conducted. In addition, a revised background study is currently under development and may help further delineate the plume boundary. For monitoring purposes, PG&E uses an approximate boundary (indicated by dashed lines in quarterly plume maps) in the northern area of the plume, pending the results from further investigations. This is standard practice when the existing monitoring well network does not fully define the area of contamination. The plume boundary shown on PG&E's quarterly plume maps is drawn using data from monitoring wells, not domestic wells. For the purposes of the EIR, the project study area has been expanded in the northern part of the plume, as well as the western part, to include detections of chromium above maximum background levels in domestic wells, the potential future delineation of the plume and a 1-mile buffer around it to include all areas in which remediation activities, such as additional monitoring wells, might take place in the future.

The existing chromium plume as of 4th quarter 2012 is described in Section 3.1.4.3, *Hinkley Valley Groundwater Quality*, as well as in Figures 2-2a through 2-2d. These sections and figures are updated to reflect new information since the Draft EIR was released in August 2012.

Defining Approximate Plume Areas. Regarding the definition of the approximate area of the plume, as shown in recent quarterly monitoring maps, approximate boundaries shown with dashed lines are used when the monitoring well network is insufficient to determine the precise boundary or when questions remain as to whether the chromium detections are or are not related to the PG&E chromium discharge. Precise plume definition is not necessary for the purposes of defining the project area for the EIR. The project area has been defined as a larger area to accommodate plume changes and uncertainty, which is appropriate for the EIR.

Plume Monitoring. Monitoring of the plume will continue to occur after the EIR is certified, and the plume boundary may continue to evolve. PG&E will continue to provide updates on a quarterly basis as required by existing Water Board enforcement orders. The Water Board released amended CAO No.R6V-2008-0002-A4 on Jan 8, 2013, requiring PG&E to fully define the chromium plume, especially in the northern-most area and in the east. The amended CAO requires PG&E to install additional monitoring wells in order to delineate the full lateral and vertical extent of chromium in groundwater, including locations where chromium has been detected in domestic wells above the maximum background levels. A work plan was submitted in accordance with the amended CAO on February 22, 2013, and a final report is due October 30, 2013. This new CAO is described in the final EIR. Relevant information from the final report required by the CAO can be incorporated into future WDRs.

Including Areas with Less than 3.1 ppb on Plume Maps. Regarding defining chromium levels below the maximum background levels as part of the plume, the amended CAO R6V-2008-0002A1 adopted maximum and average chromium background concentrations in groundwater in the Hinkley Valley. Although it is possible that chromium detections below the maximum background levels could be due to chromium discharge from PG&E, there is presently no definitive analytical method at this time by which to conclusively determine that detections Cr[VI] below 3.1 ppb or Cr[T] below 3.2 ppb are due to PG&E or are background concentrations.

A new background study is under development to address peer review and community concerns. More information on background levels of chromium is provided in **Master Response 2c**

(Background Levels of Chromium), below. It would be premature to speculate what the outcome of the new background study will be. The new background levels could be higher or lower than the currently defined levels. Remedial methods presented in this EIR can still be used to remediate Cr[VI] (to the extent that remedial methods remain within the scope of activity, intensities, and locations described in this EIR), regardless of whether the background level is changed in the future. If additional activities not discussed in this EIR are considered in light of a new background level (or levels), then the Water Board will consider the need for additional CEQA review.

2b. Chromium Plume Boundary Control

Summary of Issues Raised in Comments:

- Regarding the Boundary Control Monitoring Program, Mitigation Measure WTR-MM-3 should include a provision providing flexibility to the Water Board in drafting and amending the CAO and WDRs as conditions evolve over time.
- Regarding freshwater injection, Mitigation Measure WTR-MM-8 should require more frequent than annual sampling due to the complexity of groundwater issues.
- Regarding freshwater injection, the EIR should be revised to indicate that freshwater injection wells would decrease plume area, not increase.
- Regarding plume bulging, the EIR should describe the effects of in-situ remediation zone (IRZ) flow rates on plume bulging, justify that MMs will in fact reduce plume bulging, and describe direction of plume bulging – is it moving west?

Response:

Boundary Control Monitoring Program Flexibility. Mitigation Measure WTR-MM-3 has been revised to allow flexibility in changing boundary control monitoring requirements to reflect evolving conditions over time.

Freshwater Injection Sampling. In order to ensure that the water quality of freshwater injection is adequately monitored, Mitigation Measure WTR-MM-8 has been revised to require sampling twice per year.

Freshwater Injection and Potential Plume Bulging. Freshwater injection creates higher water level elevations on the west side of the plume between the Desert View Dairy (DVD) and the Hinkley School and is intended to create a hydraulic barrier to migration of the plume westward at this location. Water is extracted from PG&E wells outside of the chromium plume located south of the Compressor Station, treated (primarily for high naturally occurring arsenic), conveyed along two-miles of pipeline, and then injected into wells along Serra Road, located west of the plume and east of the Hinkley School. The freshwater injections are designed to be located outside the Cr[VI] plume to prevent it from spreading further to the west. The 4th Quarter 2012 chromium plume map, however, shows a "finger" of chromium extending to the west of the injection wells, toward an active irrigation well at a ranch. Further investigations are necessary to determine whether the chromium plume is or was being pulled between injection wells, underneath the hydraulic barrier, or if another situation exists. If needed, corrections can be made to the system to enhance the barrier and prevent future plume movement to the west.

The use of a freshwater barrier does not mean the plume area is necessarily decreased in size as a result. Rather, the action deflects the plume from moving to the west and instead directs it eastward. In the area of current freshwater injection, the direction of groundwater flow is to the northeast where numerous extraction wells pump water from the aquifer to be applied to agricultural fields. These agricultural unit extraction wells help to limit the potential for plume movement due to the additional flow of groundwater from the injection locations. While actual bulging may or may not occur due to freshwater injection in the future, the EIR was correct in noting the basic physical potential that adding more water to the aquifer that then flows into the plume area could affect plume movement dynamics. The freshwater injections may act to dilute chromium concentrations locally, making the plume appear smaller along the west side than what it originally used to be.

IRZ Operations and Plume Bulging. Increased in-situ remediation zone (IRZ) injections could cause localized bulging of the chromium plume in the upper aquifer either to the west or the east. At present, CAO R6V-2008-0002A2 allows PG&E to cause the plume to bulge up to 1,000 feet to the east due to IRZ operations. To prevent additional and unauthorized bulging beyond 1,000 feet, PG&E has had to modify injections in the South Central Reinjection Area In-Situ Remediation Zone (SCRIA) area. As described in the 4th Quarter 2012 monitoring report for the in-situ remediation and northwest freshwater injection projects, the extraction rates are currently being reduced below their maximum permitted level to avoid potential plume expansion in the eastern area around the intersection of Summerset Road and Community Boulevard.

As injection rates increase, the potential for plume bulging also increases. The EIR would give the Water Board the flexibility to permit temporary plume bulging from IRZ actions under controlled conditions to achieve cleanup of chromium. If bulging is allowed and unintentionally affects domestic wells, the well users would receive replacement water under Mitigation Measure WTR-MM-2a, as identified in Section 3.1, *Water Resources and Water Quality*, of the Draft EIR.

The EIR mitigation effectively addresses plume bulging, including changing extraction and injection locations and amounts. The evidence for this is the current IRZ units in which operations have been altered to prevent plume bulging on the southeast portion of the plume.

Regarding the question whether the plume is bulging to the west due to IRZ operations, to date there is no evidence that such bulging is occurring due to the IRZ operations. In the 4th Quarter 2012 monitoring a “finger” of chromium plume has been identified around the intersection of Serra Road and Ashwood Road. The area of the “finger” is approximately 1 mile north of the northernmost part of the IRZ injection area and there are extraction wells located between the nearest IRZ injection well and the ”finger” and thus the finger is more likely due to groundwater dynamics independent of the IRZ activities.

2c. Background Levels of Chromium

Summary of Issues Raised in Comments:

- Put EIR on hold until the background study is completed.
- EIR should be approved and subsequently amended, as necessary, once Cr[VI] background levels are determined.
- Recommend PG&E reevaluate background levels to accurately determine quality of water that existed before discharge. EIR may need to be revised based on results.

- The EIR uses the maximum background level of 3.1 ppb as the threshold, but if the California Department of Public Health sets an MCL for Cr (VI) it should be based on the new MCL.
- Affected wells are defined on page 2-6 as “those that do not meet federal, state, and local drinking water standards." Where no federal, state, or local standard yet exists, as is the case for Cr(VI), public health based goals (PHG) are appropriate to employ in determining what are “affected wells.” The PHG for Cr(VI) is 0.02 ppb, but current technology does not allow for detection of Cr(VI) at 0.02 ppb, i.e., 0.06 ppb is the current laboratory detection limit for Cr(VI). Therefore, “affected wells” should be defined as those containing a Cr(VI) concentration equal to or greater than 0.06 ppb. The relationship between affected wells and background conditions should be clarified.
- Re-instate Order Paragraph 3A of CAO R6V-2011-0005A1 because it would help determine which levels are background and which were produced from PG&E contamination.
- The significance criteria added for any wells that have detectable Cr[VI] below maximum background levels within 1 mi is excessive.

Response:

Delay EIR until New Background Study Completed or Complete EIR Now and Amend Later (if necessary). As stated in Draft EIR Section 1.2.2.1, *Cleanup Levels and Definition of Background*, "For the purpose of this Draft EIR, the Water Board is using the values derived from the 2007 Background Study Report to define the chromium plume and as interim cleanup levels pending completion of a new background study." The EIR states that the goal of the project is to restore groundwater quality to background levels of chromium in the minimum amount of time practicable, while limiting or mitigating environmental impacts associated with the cleanup activities to the extent feasible.

The Water Board is presently working with PG&E, the U.S. Geological Survey (USGS), and the Hinkley Community Advisory Committee (CAC) on developing a new Background Study. This study may result in identification of a new background level or levels, which could be higher or lower than those presently established. It would be speculative to guess as to what the background level might be and what the implications of that new background level might be. Given the long durations of all alternatives studied in the EIR, it will take many decades to reach the current maximum background levels throughout the Hinkley Valley. Thus, the remediation can proceed now to treat higher concentrations in the chromium plume more comprehensively regardless of whether the new background study identifies different background levels. If the new background levels are higher than the current levels, then the remedial effort may ultimately be less in scale or shorter in duration than discussed in this EIR. In that event, this EIR would have adequately assessed the impacts of remediation. If the new background levels are lower than the current levels, it is possible that the scale of remediation, the duration, the location, and potentially even the remedial technologies could differ from the range of alternatives discussed in this EIR. As long as the impacts of any revised remediation actions found to be necessary would be within the impacts disclosed in this EIR, no new CEQA document would be necessary. If new significant impacts were to be identified or significant impacts in areas not anticipated by this EIR, then subsequent CEQA evaluation would be required before the Water Board could authorize such activities.

Comments advocating for delaying the EIR until a new background study is completed are noted. However, the Water Board prefers to proceed with expanded remediation as soon as possible rather

than waiting several more years to complete a new background study. The Water Board can change cleanup requirements if and when new information is developed by the background study and will comply with CEQA as required. The completion of this EIR does not prevent future changes in remediation requirements, if new evidence indicates they may be necessary.

Use the PHG Level as the Significance Criteria for Chromium in the EIR. As described in the EIR, the California Office of Environmental Health Hazard Assessment (OEHHA) adopted a final Public Health Goal (PHG) for Cr[VI] of 0.02 parts per billion (ppb) or micrograms per liter (µg/L) in drinking water. Current analytical methods can detect chromium down to 0.06 ppb. Separate from the EIR process, the Water Board issued Amended CAO No. R6V-2011-0005A1 to PG&E, which requires whole house water replacement for certain residents of Hinkley. Under this order, PG&E is required to provide replacement water that meets primary and secondary drinking water standards, and the Cr[VI] levels in replacement water must not be more than 0.06 ppb (the current Cr[VI] detection limit).

The Water Board's determinations in the whole house water replacement order regarding "affected wells" is pursuant to California Water Code requirements, which are different from those in CEQA and those used in the EIR. Under CEQA, a project impact is only identified when the project causes a physical change in the environment that is in excess of CEQA baseline conditions. In terms of chromium, the CEQA baseline condition is that which currently exists and includes the historic contamination from PG&E's Compressor Station. Therefore, a well is only considered "affected" under CEQA if the concentration of chromium exceeds the CEQA baseline conditions, not simply if it is contaminated by PG&E's historic activities at the Compressor Station. In addition, not all affected wells (i.e., those that have an impact above the CEQA baseline condition) are considered significantly impacted. In order for an impact to be significant, it also has to be in excess of a threshold of significance (see Section 3.1.7, *Significance Criteria*, in Section 3.1, *Water Resources and Water Quality*, in the Draft EIR. Therefore, although under the Water Code an affected well can include one that does not meet the PHG, under CEQA, a well is impacted and triggers mitigation where the increases in chromium are above the significance thresholds, which generally are set at levels that exceed the CEQA baseline conditions.

The EIR explains that the Water Board does not have the authority to require PG&E to clean up background Cr[VI] that is not related to the PG&E discharge (see Section 1.2.2.1, *Cleanup Levels and Definition of Background,* in Chapter 1 of the Draft EIR). Currently, the maximum background total and hexavalent chromium levels have been set by the Water Board at 3.1 and 3.2 ppb, respectively. To the extent that the PHG is less than maximum and average background levels, the Water Board does not have the authority to require cleanup of the groundwater to the proposed PHG. Even if the Water Board could require cleanup to levels below background, the *Public Health Goal for Hexavalent Chromium (Cr VI) in Drinking Water* (OEHHA 2011[1]) states specifically, "PHGs are not developed as target levels for cleanup of contamination of ground or ambient surface water or other environmental media, and may not be applicable for such purposes, given the regulatory mandates and constraints of other environmental programs." Therefore, PHG cannot be used as a cleanup level or as the CEQA baseline for determining significance under CEQA for this project.

Use the Current and Future MCL as the Significance Criteria in the EIR for Chromium. Regarding the comment that the EIR significance threshold should use the current MCL for total

[1] Office of Environmental Health Hazard Assessment (OEHHA). 2011. Public Health Goals for Chemicals in Drinking Water. Hexavalent Chromium (Cr VI).

chromium or should use a future MCL for Cr[VI] (once adopted), in both cases these levels would not be appropriate. The current California MCL of 50 ppb is only for total chromium and exceeds the established maximum background levels by over 15 times. The PHG provides evidence that there are potential health effects of very low levels of Cr[VI]. Thus using a significance threshold of 50 ppb of Cr[VI] would allow the project to increase concentrations from perhaps 3 to 50 ppb without identifying a significant impact and requiring any mitigation. As to the future MCL for Cr[VI], if it is significantly higher than the established maximum and average background levels, then a similar problem to the current MCL would occur. If the future MCL is less than established background levels for Cr[VI], the significance threshold for increases in chromium due to remediation activities could not be lowered below the background levels because PG&E is responsible only for mitigating impacts related to its remediation activities. Requiring mitigation for chromium that is unrelated to its remediation activities would violate CEQA's requirement that there be a nexus and proportionality of mitigation to a project-caused impact.

Reinstate Paragraph 3A. This issue does not relate to the EIR, but rather relates to CAO R6V-2011-0005A2. Paragraph 3A of CAO R6V-2011-0005A1, the precursor to CAO R6V-2011-0005A2, requires PG&E to propose a method or methods to perform an initial and quarterly evaluation of every domestic or community well in the affected area as defined in the CAO, to determine if detectable levels of hexavalent chromium between the maximum background level and the PHG represent background conditions, or are more likely than not, partially or completely, caused by the discharge of waste chromium. PG&E responded that, in its opinion, there is no feasible way to make such a determination. The requirements of Paragraph 3A were suspended after PG&E proposed to implement a "voluntary" expanded whole-house replacement water program that would provide replacement water to every well in and within one mile of the plume, when monitoring results indicated detectable levels of hexavalent chromium at any time during the most recent four consecutive quarters. This expanded program would include more households in the replacement water program in a shorter timeframe compared to the statistical trend analysis required by order paragraph 3A. For this reason, the expanded replacement water program is a better path to accomplish the goal of the CAO to get replacement water to as many households as quickly as possible. The issue of chemically determining chromium sources still remains, and will be investigated during an upcoming revised chromium background study.

The 1-mile Criteria for Chromium Outside the Defined Plume Area. The Draft EIR includes a significance criteria for an increase in concentrations of Cr[VI] in a water supply well (when levels are below the maximum background level) within 1 mile of the defined chromium plume. This allowed for the possibility that in the future it may be possible to identify where chromium detections are due to the PG&E discharge even though the levels may be below the established maximum background level. This criterion was also designed to address the potential for wells to become affected in a short period of time after detection of increased Cr[VI] levels in groundwater nearby due to remedial actions.

Upon review, at this time there is no identified analytical methodology by which to definitively determine with confidence whether concentrations of Cr[VI] less than 3.1 ppb are due to PG&E's discharge of Cr[VI], other potential Cr[VI] sources, or due to natural occurring chromium sources. As such, the significance criteria rationale justifying the 1-mile criteria has been revised to remove the discussion about levels below the maximum background level. However, the 1-mile significance criteria has been retained to provide an adequate buffer around the chromium plume during remediation in order to avoid the potential for remedial actions to result in rapid changes in

chromium levels in adjacent domestic wells. The remediation alternatives that are evaluated in the EIR include substantial increases in groundwater extraction and irrigation for agricultural units and substantial increases in IRZ injections, both of which could change groundwater dynamics. As shown in the last few years, the defined chromium plume can change fairly rapidly. The 1-mile buffer is retained in the significance criteria to appropriately protect domestic wells from incurring Cr[VI] levels above maximum background throughout the remediation process.

Master Response 3: Health Risk Assessment

Summary of Issues Raised in Comments:

- The EIR should better assess the health risks of Cr[VI] remediation and associated byproducts (manganese, arsenic, uranium).
- The EIR should include a Health Risk Assessment (HRA) that evaluates potential exposure pathways for groundwater used for domestic consumption.

Response:

Assess Health Risks of Remediation and Byproducts. The health effects of arsenic, manganese and other remedial byproducts are discussed in Section 3.1.6, *Health Effects of Constituents in Groundwater*. This section was updated to expand the discussion of potential health risks associated with manganese in response to a number of comments on this issue. In addition, the characterization of manganese toxicity in Section 3.3, *Geology and Soils*, of the Draft EIR was revised to clarify that manganese can be toxic at higher levels of exposure.

Need for a Health Risk Assessment for Chromium Exposure Pathways. The purpose of the EIR is to assess the impacts of activities related to the future remediation of the chromium plume, not the existing chrome contamination. Thus, no HRA was prepared for the EIR in relation to the current chromium contamination.

The EIR has identified impacts of the remediation and designed mitigation to avoid impacts, including human exposure to increased concentrations of remedial byproducts or chromium due to plume bulging in domestic or agricultural wells. For example, if a well is affected or has reasonable potential to be affected, PG&E will be required to provide replacement water to affected residents. Replacement water is required to meet human health standards (i.e., primary and secondary Maximum Contaminant Levels for drinking water) for constituents affected by remediation, to meet pre-existing concentrations for constituents not affected by remediation, and maximum background levels for chromium. Thus, with mitigation, there will be no long-term increased exposure to toxic elements in groundwater and thus no need to complete a HRA to inform the analysis in the EIR.

A public health assessment (PHA) was conducted by Agency for Toxic Substances and Disease Registry (ATSDR) and the Environmental Health Investigations Branch (EHIB) of the California Department of Health Services (now called CDPH) in December 2000. The study was conducted to determine the health effects of chromium exposures on past, current, and future residents and workers in the vicinity of the Hinkley site and the associated land treatment fields. The PHA also characterized current/future risks as they existed in 2000, and some of the current/future exposure pathways, like irrigation methods, have changed in ways that have changed risks (drag-drip irrigation minimizes inhalation risk). There has also been research done since 2000 that have improved the understanding of Cr[VI] toxicity, particularly related to ingestion risk through an oral

route of exposure, and therefore some of the information in the assessment is considered to be outdated.

Cancer risk is often expressed as the maximum number of new cases of cancer projected to occur in a population of one million people due to exposure to the cancer-causing substance over a 70-year lifetime. Many regulators generally presume the "one in a million" level as an "acceptable" level of risk (OEHHA, 2001). But others argue that there is no "acceptable" level of cancer.

The 2000 ATSDR[2] PHA estimated a 2.6 in a thousand (2,600 in a million) risk of cancer to residents from groundwater ingestion due to past (pre-1988) exposures to chromium, but did not find a pathway of exposure due to past swimming pool use (as they found water for the pool was not from the plume). The PHA estimated a 2.9 in 100,000 (29 in a million) risk of cancer for Mojave Dairy workers due to past irrigation inhalation exposure, but noted that this was a conservative overestimate. For current and future residential exposures, the PHA estimated a 5.2 in 100,000 (52 in a million) risk of cancer for groundwater ingestion. The PHA did not identify current or future soil exposures for residents or workers. For current and future residential and worker exposures, the PHA estimated a 3.3 in 100 million (3.3×10^{8}) cancer risk from irrigation inhalation. The PHA did not find elevated health risks due to past or present ingestion milk, meat, or organs from dairy cows.

Since the EIR has identified mitigation intended to prevent increases in chromium in domestic wells due to remedial actions, the effect of mitigation would be to prevent increased health risks due to remediation. As such, a health risk assessment is not necessary to define the changes in health risk related to chromium due to remedial actions (with mitigation implementation).

Need for a Health Risk Assessment for the EIR for Remedial Byproducts. Since the EIR has identified mitigation intended to prevent increases in concentrations of contaminants in domestic wells due to future remedial actions, the effect of mitigation would be to prevent increased health risks. As such, a health risk assessment is not necessary to define the changes in health risk due to remedial actions (with mitigation implementation). Where ongoing or future investigations suggest a potential for risk of byproducts migrating to nearby water supply wells, those remedial activities will not be allowed or permitted to occur at certain locations, unless mitigation measures such as alternate water supplies are implemented.

Master Response 4: Remediation Byproducts

This response is divided as follows:

a. In-situ Remediation Overall Concerns

b. Manganese and Arsenic

c. Uranium

d. Total Dissolved Solids and Nitrates

e. Byproduct Significance Criteria

[2] U.S. Department of Health and Human Services. Public Health Service. 2000. Agency for Toxic Substances and Disease Registry (ATSDR). Public Health Assessment. Pacific Gas and Electric (a.k.a Hinkley Site). Hinkley, San Bernardino County, California. EPA facility ID: CAOOO0206656. December 4.

4a. In-situ Remediation Overall Concerns

Summary of Issues Raised in Comments:

- Request EIR process be "suspended" and IRZ systems "shut down" until more information is gathered on IRZ byproduct generation.
- Byproducts are not unavoidable because PG&E is producing them through use of IRZ process.
- Explain why ethanol is the preferred carbon source for IRZ treatment. Describe the water quality effects of the constituent. Describe the flammability of the storage of ethanol.
- Would like complete list of constituents injected into our water.
- Substantiate the statement that secondary byproducts tend to reduce over time and distance from the IRZ when exposed to oxidizing conditions in non-treated groundwater.
- Need to identify background for IRZ byproducts.

Response:

Shut Down IRZ Until More Information is Available. As discussed below in **Master Response 4b**, at this time the evidence does not support a conclusion that IRZ remedial byproducts, including manganese and arsenic, are affecting domestic wells outside the chromium plume. The Water Board is requiring PG&E to investigate the area west of the IRZ to confirm that byproducts are contained within the chromium plume. Additional IRZ monitoring to the south, north and east is also required.

However, Mitigation Measure WTR-MM-7 in Section 3.1, *Water Resources and Water Quality*, in the Draft EIR has been revised to require PG&E to complete the required investigation of manganese and arsenic in the area west of the chromium plume and to demonstrate to the satisfaction of the Water Board that the detection of these constituents in domestic wells is not related to IRZ operations prior to expansion of IRZ operations. Under the new WDRs, expansion of IRZs in terms of area or carbon injection levels will only be allowed by the Water Board once PG&E provides sufficient demonstration to the Water Board's satisfaction that the current byproduct plumes are contained within the Cr[VI] plume and/or that byproduct plumes can be managed to avoid unexpected contamination of domestic wells. As required by Mitigation Measure WTR-MM-2, the Water Board will require water replacement when and where remedial byproducts significantly affect well water quality. Given that chromium contamination has been present since the late 1950s/early 1960s and is still present at relatively high levels in the southern part of the plume, it is important to continue IRZ operations while concurrently evaluating and controlling potential spread of byproducts.

Byproducts are Not Unavoidable. The Draft EIR discusses that IRZ byproducts are *unavoidable if IRZ activities are conducted*. However, the Draft EIR identifies that the unavoidable impact is related to temporary increases of IRZ byproducts in the groundwater aquifer itself, not necessarily in water supply wells. In addition, the Draft EIR describes that potential impairment of domestic wells due to IRZ byproducts can be avoided by controlling the byproduct generation, containing the byproduct plumes, treating the byproduct plumes, and/or providing replacement water during the duration of well impairment. Unavoidable impacts of byproducts in water supply wells, while unlikely to occur, can be mitigated with replacement water.

Ethanol as Preferred Carbon Amendment. Section 3.1.5.2, *In-Situ Reduction Treatment*, in the Draft EIR states: "Several organic compounds (including ethanol, lactate, and emulsified vegetable oil) were shown to be effective reagents (ethanol is now favored)." Ethanol is the preferred amendment because experience with IRZ operations has shown ethanol to distribute more effectively in the aquifer, which means that it would have greater effectiveness in reducing Cr[VI] to Cr[III] in the aquifer. Ethanol in the aquifer is detectable as total organic carbon (TOC). TOC by itself has no health effects, but elevated TOC can be a concern for water systems because it can interact with disinfectants like chlorine to form trihalomethanes which may pose health risks. TOC levels increase at the IRZ injection point and then degrade downgradient due to microbial activity which consumes the available organic carbon. Furthermore, the final end products of ethanol, with degradation over time, are water and low levels of carbon dioxide (CO2), which will leave no detectable impacts to the drinking water aquifer. Section 3.3, *Hazards and Hazardous Materials*, of the Draft EIR has been revised to discuss potential hazards associated with handling ethanol, including flammability.

List of Constituents Injected into Water. As described in Chapter 2, *Project Description*, (on pages 2-15 and 2-16 of the Draft EIR):

> "Authorized chemical reductants used for in-situ treatment and groundwater injection for above ground treatment include calcium polysulfide, ferrous chloride, ferrous sulfate, sodium dithionite, and zero-valent iron. Biological reductants include emulsified vegetable oil, ethanol, lactate, whey, molasses, corn syrup, acetate, glucose, and methanol. Only some of these biological reductants have been used to date. Authorized operation and maintenance (O&M) activities include discharges of tracer compounds, well-rehabilitation compounds, process chemicals, and nutrients into groundwater. Tracers, which are salts or dyes, are injected into groundwater to characterize flow conditions within the treatment areas. Tracers may include bromide, fluorescein, eosine, and additional fluorescent tracers. Well rehabilitation compounds are used to remove microbial or geochemical fouling that may have developed in the well. Well rehabilitation compounds authorized for use are acetic acid, citric acid, hydrochloric acid, hydrogen peroxide, and sodium hydroxide. Additionally, the Water Board has approved the use of several commercial well rehabilitation compounds that are certified under the California Waterworks Standards for commonly used rehabilitation of drinking water wells (Liquid Acid Descaler, Aqua-Clear AE, Aqua-Clear MGA, BETZMPH500, NuWell 120 Liquid Acid, NuWell 310 Bioacid Dispersant, and NuWell 400 Non-Ionic Surfactant). Process chemicals authorized for remediation activities include aluminum sulfate, anti-sealants, calcium hydroxide, calcium oxide, hydrochloric acid, phosphoric acid, polymeric flocculants, sodium hydroxide, and sulfuric acid. Potential discharges of nutrients during operation include ammonium, nitrate, phosphate, 14 vitamins, and yeast extract."

The table below shows the IRZ injection history.

Table 3-1. IRZ Injection History

Location	Dates	Number of Injection Wells	Volume of Substrate Injected (gallons)
Cell 1 Pilot Test	December 15, 2004 to May 17, 2005	2	120 (sodium lactate)
Cell 2 Pilot Test	December 14, 2004 to May 22, 2005	2	175 (EVO)
Central Area Pilot Test	November 19 to December 21, 2006	1	400 (sodium lactate)
Central Area IRZ	November 30, 2007 to present	11	28,471 (sodium lactate to 2008) (ethanol – 2008 onward))
Source Area IRZ	April 27, 2008 to present	21	15,172 (ethanol)
South Central Re-injection IRZ	October 20, 2009 to present	12	22,887 (ethanol)
Volumes are through September 2012 Source: PG&E, 2012, Assessment of In-Situ Reactive Zone Treatment Byproducts PG&E Hinkley Compressor Station, Hinkley, California.			

The most commonly used carbon sources and tracers are discussed further below:

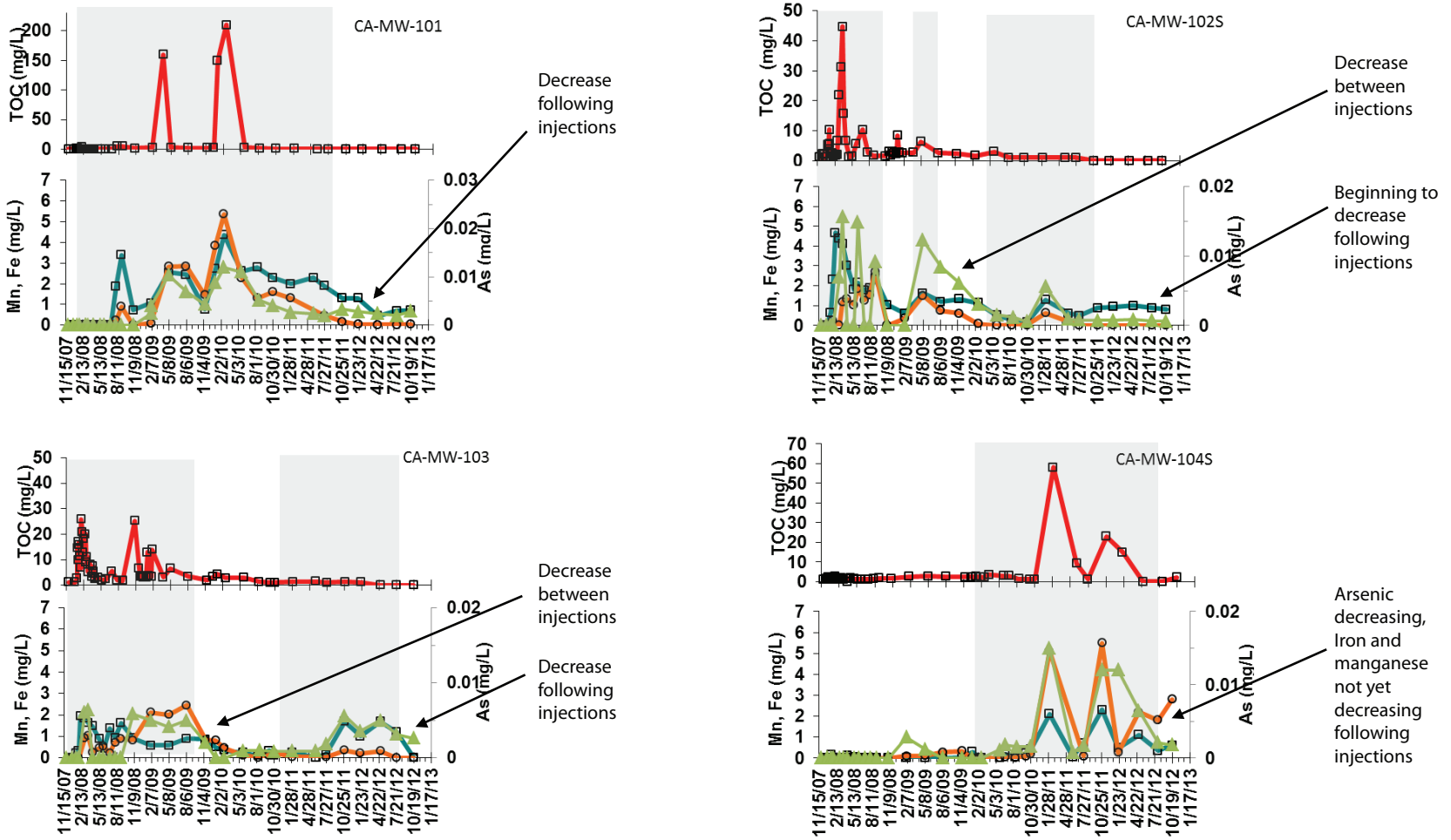
- Ethanol. Ethanol is also known as "absolute alcohol", "drinking alcohol", "grain alcohol" and "ethyl alcohol", as well as other names and is the compound we commonly refer to as alcohol in beer, wine, and spirits. Ethanol degrades over time as it is consumed by microbial action in groundwater. This is the primary carbon amendment used today for IRZ operations and is what is proposed going forward.
- Sodium Lactate. Sodium lactate is a sodium salt of lactic acid that has a mild saline taste. It is produced by fermentation of a sugar source, such as corn or beets, and then neutralizing the resulting lactic acid. It is commonly used as a food additive as a preservative, acidity regulator, and bulking agent and sometimes used in shampoos and for other purposes. This material was pilot tested up to 2008, but is no longer user. This material also degrades over time as it is consumed by microbial action in groundwater, usually in a matter of months. Since it has not been used since 2008, all the prior sodium lactate should have been consumed several years ago.
- Emulsified Vegetable Oil (EVO). EVO is similar to cooking oil. The vegetable oil is mixed in with water to form an emulsion that was previously used in IRZ pilot testing and operations. This material was pilot tested up to 2005, but is no longer used. This material was found to be poorly dispersed within the aquifer and slow to degrade over time as it is consumed by microbial action in groundwater. Since it has not been used since 2005, all the prior EVO should have been consumed several years ago.

- Dyes and Tracers. Dyes and tracers are used infrequently in small doses for study of groundwater movement. Four tests involving 2 pounds each of potassium bromide crystals mixed with extracted water were injected into the two pilot test cells. Three tests involving 40 gallons each of eosine or fluorescein tracers were also conducted between Nov. 2007 and end of 2009. Tracers are typically detected at concentrations of >10 mg for up to two years after initial injection.

Reduction in Byproducts Over Time. As explained in the Draft EIR and Appendix A to the Draft EIR, although carbon injection changes the levels of byproducts in the aquifer, this change is temporary and levels dissipate on the order of several months to years. When organic carbon is injected for remediation and consumed by microbial action, reducing conditions increase. This results in increases in byproduct formation and concentration. Generally, manganese is the first byproduct to form, followed by arsenic and iron. As reducing conditions decrease or as the byproducts migrate into oxygenated groundwater, the concentrations of byproducts (iron, manganese, and arsenic) begin to return to pre-dosing concentrations through a number of processes including dilution, sorption, precipitation and coprecipitation. Once organic carbon injections cease, aerobic conditions return in the treatment area (due to mixing of groundwater with dissolved oxygen content), resulting in further decreases of byproduct concentrations as dissolved iron and manganese are reoxidized, reforming oxide minerals. The figure below (based on sampling done at various times during IRZ pilot operations shows that when total organic carbon (TOC) levels decline, then arsenic, manganese and iron concentrations also decline over a period of several months to a year or slightly longer. This figure has been added to Appendix A of the Draft EIR as Figure A-10.

Thus, as long as carbon amendments are being injected, then there will be elevated byproducts within the downgradient area (estimated in the Draft EIR to be up to 2,000 feet from the injection point). However, as IRZ activities are completed in an area and injections cease, the concentrations of byproducts are expected to return to pre-IRZ levels within a period of months to several years. Thus, after completion of IRZ operations, this remedial method is not expected to have a permanent effect on byproduct concentrations in the aquifer.

Background for IRZ byproducts. Background levels and concentrations of remedial byproducts are described in Section 3.1, *Water Resources and Water Quality* – 3.1.4.3, *Hinkley Valley Groundwater Quality*. These discussions have been updated with new data results received after the Draft EIR was released.

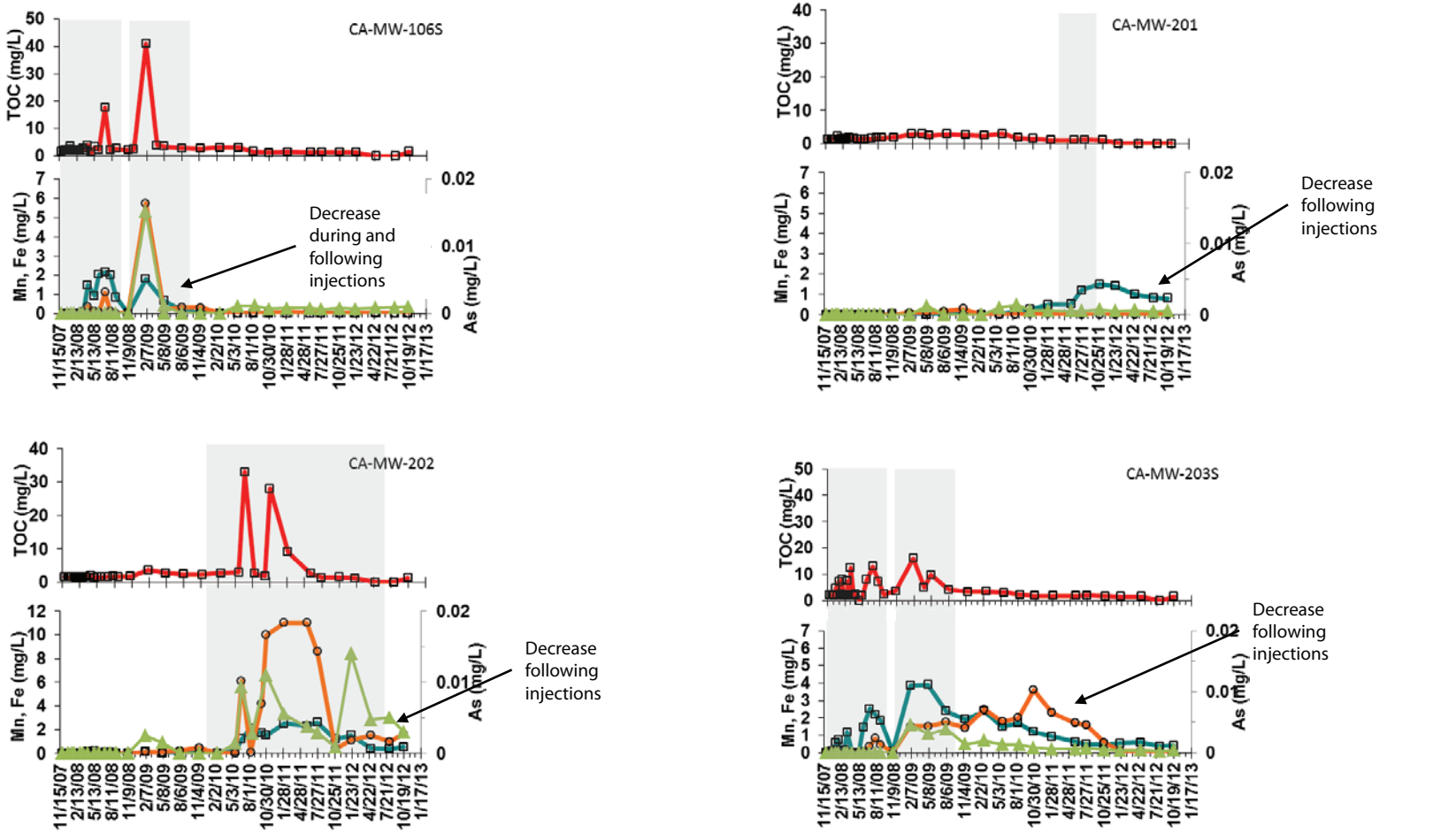


Note: This figure shows changes in concentrations of byproducts (iron, manganese, and arsenic) over time in relation to total organic carbon injections for In-Situ Treatment at PG&E monitoring wells in the Central Area (near injection locations).

Source: PG&E 2010

Graphics/Projects/001222.11 Hinkley (Mar-2013) SS

Figure A-10a
Changes in Byproduct Concentrations

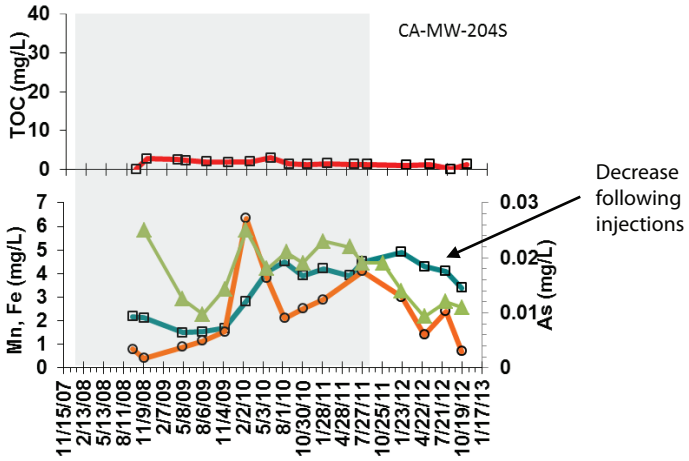


Note: This figure shows changes in concentrations of byproducts (iron, manganese, and arsenic) over time in relation to total organic carbon injections for In-Situ Treatment at PG&E monitoring wells in the Central Area (near injection locations).

Source: PG&E 2010

Graphics/Projects/00122.11 Hinkley (Mar-2013) SS

Figure A-10b
Changes in Byproduct Concentrations



- Dissolved Manganese (Mn)
- Dissolved Arsenic (As)
- Dissolved Iron (Fe)
- Grey shading indicates periods of TOC injection)

TOC	Total organic carbon
Mn	manganese
Fe	iron
CA-MW-#	PG&E monitoring well Identification
Mg/L	milligrams per liter (1 mg/l = 1 parts per million [ppm])

Note: This figure shows changes in concentrations of byproducts (iron, manganese, and arsenic) over time in relation to total organic carbon injections for In-Situ Treatment at PG&E monitoring wells in the Central Area (near injection locations).

Source: PG&E 2010

Graphics/Projects/001222.11 Hinkley (Mar-2013) SS

Figure A-10c
Changes in Byproduct Concentrations

4b. Manganese and Arsenic

Summary of Issues Raised in Comments:

- Characterize background levels of manganese and arsenic.
- Better describe the generation of manganese and arsenic as byproducts of IRZs and their movement through the plume.
- Better define temporary impacts on wells from IRZ processes (i.e., manganese, arsenic), such as how long it takes to filter manganese and other byproducts and how much will disperse into aquifer?
- Balance risks of temporary increases in arsenic and manganese versus benefits of in-situ remediation.
- Better define manganese levels in the west and substantiate that manganese is a byproduct only within the Cr[VI] plume. Use data taken outside of the Cr[VI] plume for verification.
- Better describe the toxicity of manganese.
- Describe the link between vegetable oil and manganese migration/containment.
- Describe the link between ethanol and manganese migration/containment.
- How does the fault line and Mojave River flooding affect migration of byproducts?
- Describe movement of arsenic within the plume.
- Better describe toxicity of arsenic. Section 3.3 states that 5,000 ppb would be the standard for arsenic toxicity but USEPA reports state that arsenic above 10 ppb is toxic.

Response:

Background Levels of Manganese, Arsenic and Iron. PG&E conducted testing of manganese, arsenic, and iron levels in the IRZ areas prior to initiating pilot testing and operations in late-2004. Testing found pre-IRZ manganese levels in groundwater up to 33 ppb in the Source Area pilot test area and up to 210 ppb in the SCRIA/Central IRZ area. Background testing also identified arsenic levels in groundwater up to 4 ppb in the pilot test areas. Iron levels in both pilot test cells were found to be less 1 ppb. (PG&E 2005[3])

Describe Better How Manganese and Arsenic are Generated by IRZ Operations and Move through the Plume. The mechanisms of IRZ operations, including how manganese and arsenic are generated, are described in more detail in Appendix A of the Draft EIR. As discussed above under **Master Response 4a**, reducing conditions created by organic carbon amendments initially increases the concentrations of dissolved manganese, arsenic and iron. Extensive monitoring has shown that manganese migrates the furthest from the carbon injection area, up to 2,000 feet in the downgradient flow direction. Both arsenic and iron tend to migrate less distance in groundwater, usually less than 1,000 feet from the carbon injection areas. Reducing conditions decrease as the byproducts migrate into oxygenated groundwater or from smaller volumes of organic carbon

[3] Pacific Gas and Electric (PG&E). 2005. Final Report, *In-Situ Remediation Pilot Study, PG&E Hinkley Compressor Station, Hinkley, California.*

amendments, and concentrations of these byproducts decline over time back to background levels. Monitoring has shown that byproducts tend to decrease to background levels in about two years following the cessation of reducing conditions in the aquifer.

Better Define Temporary Impact on Wells from In-Situ Process. As discussed below, the evidence to date supports a conclusion that the elevated concentrations of byproducts from IRZ operations are only found within the chromium plume itself. As a result, the evidence does not support a conclusion that IRZ operations to date have affected domestic or agricultural wells outside the chromium plume. With implementation of expanded remedial activities, IRZ operations could also expand. The Draft EIR disclosed that there could be a potential for IRZ byproducts to affect domestic or agricultural wells due to IRZ expansion. However, the Draft EIR proposes mitigation to control IRZ byproduct plumes so that significant effects to domestic or agricultural wells will only be allowed if temporary migration of byproduct plumes is necessary to further overall remediation progress. If the Water Board allows such migration, then PG&E will be required to provide replacement water for affected wells in advance of predicted migration of the byproduct plumes. Replacement water will be required to be provided for as long as the aquifer in proximity of affected wells is impaired above pre-project levels. Thus, the temporary impact to a domestic well will be mitigated before byproducts reach the location. As the chromium plume reduces in size with remediation, byproducts will also be reduced, and the domestic well can eventually be put back in use with time.

Balancing the Risks of Temporary Increases in Arsenic and Manganese versus the Benefits of In-Situ Remediation. As described in the Draft EIR, a temporary increase in byproducts in the aquifer is a necessary effect of IRZ operations for the project goal of reducing chromium concentrations in the aquifer. As previously described, the potential impacts to domestic and agricultural wells, if and when actually affected, can be mitigated through the provision of replacement water or through controls of byproduct plumes. These mitigation measures will be temporary while chromium is being remediated in the aquifer, and the use of the domestic or agricultural wells will be restored with time.

Better Define Manganese Levels in the Area West of the Plume and Substantiate that Manganese is a Byproduct Only within the Cr[VI] Plume. The Water Board has solicited data from community members and issued an Investigative Order (No. R6V-2012-0060) on December 21, 2012, directing PG&E to submit a technical report to the Water Board for fully defining and monitoring byproduct manganese plumes created from the IRZ operations in Hinkley. The order requires PG&E to (1) install more monitoring wells, (2) conduct more frequent monitoring, and (3) conduct tracer studies. New data will be received by the Water Board in response to this order. In the meantime, PG&E submitted a report, "Assessment of In-Situ Reactive Zone Treatment Byproducts," on December 17, 2012, with previous data and tracer study results that indicate manganese in groundwater migrates from IRZ injection wells directly along the groundwater hydraulic gradient, with very little lateral migration, and at relatively constant rates. This data implies that manganese found in well locations more than one mile in the west does not correspond with where manganese from IRZ remediation should be found.

Section 3.1, *Water Resources and Water Quality*, in the Draft EIR has been updated to present 3rd Quarter and 4th Quarter 2012 sampling results from PG&E, the community and the Water Board concerning manganese in an updated figure (Figure 3.1-11a) and a new figure (Figure 3.1-11b).

On December 20, 2012, Lahontan Water Board staff met with members of the Hinkley Community Advisory Committee and its consultant Project Navigator Ltd, PG&E staff, and staff of the US Geological Survey to review data and information concerning manganese and arsenic in groundwater, including domestic wells in Hinkley. Maps of existing manganese data were presented and discussed.

The Water Board has reviewed historical (pre-IRZ operations) and recent (2011-2012) monitoring data results for arsenic and manganese from the Hinkley Community, Water Board, Mojave Water Agency, PG&E, and San Bernardino County (Project Navigator 2012[4]; PG&E 2012a[5]; San Bernardino County 2013[6]). Based on the data available, at this time, the Water Board has not identified evidence indicating that there is a connection between IRZ remediation activities and the detection of manganese in domestic wells more than one mile west of the chromium plume for the following reasons:

- **Groundwater Flow Direction and Velocity.** Groundwater movement through the Hinkley Valley is controlled by aquifer geology, hydraulic conductivity, and changes in groundwater elevations (groundwater inflows and outflows). Tracking the movement of the chromium plume and groundwater tracer studies also helps us understand groundwater flow patterns. Regional groundwater flow in the Hinkley Valley generally moves in a north-northwesterly direction, toward Harper Lake Valley. However, in the immediate vicinity of the Compressor Station, groundwater flow is generally more to the north (PG&E 2012b[7]). In the location of the Central Area IRZ, groundwater direction changes to flow more north-northwest. Despite the change in flow direction, the velocity of groundwater movement (averaging 2.5 feet per day) would likely not have allowed manganese and arsenic to have reached locations two miles due west and about three miles to the northwest.

- **Background Levels.** As discussed above, maximum manganese levels detected in the IRZ area prior to the implementation of IRZ remediation activities range up to 210 ppb (33 ppb in the Source Area and 210 ppb in the Central IRZ area). Where manganese is detected at concentrations below these levels, it is more probable that elevated manganese and arsenic could be due to natural sources (i.e., geology) or other non-PG&E anthropogenic sources (i.e., dairy runoff, agricultural activities, leaking septic tanks, or individual well fouling) than due to IRZ operations.

- **Monitoring Results - Manganese.** The manganese distribution within and outside of the IRZ area does not appear to support a conclusion that manganese has migrated from the IRZ to areas outside the plume. Figures 3-1 and 3-2 and Tables 3-2 and 3-3 in this section show sampling data from 2012 along two transects. Transect 1 starts near the Source Area IRZ injection points and then proceeds northwest to the edge of the chromium plume and then to the nearest domestic wells outside the chromium plume. Transect 2 starts near the Central Area

[4] Project Navigator, Ltd. 2012. Hinkley Groundwater Remediation Project. Manganese Data Review. Prepared for Stakeholders Team Meeting. Prepared by Dr. Ian A. Webster. December 20.

[5] Pacific Gas and Electric (PG&E). 2012a. Memo on Assessment of In-Situ Reactive Zone Treatment Byproducts PG&E Hinkley Compressor Station, Hinkley, California. Prepared by Arcadis. December 17.

[6] San Bernardino County. 2013. 2011 and 2012 Data for Ar, Mn, Ur from Hinkley well systems. Data sent via email from Joy Chakma on January 8. 2013. Environmental Health Services.

[7] Pacific Gas and Electric (PG&E). 2012b. Revised Report of Waste Discharge Class II Surface Impoundments Hinkley Compressor Station, Hinkley, California. Prepared by Cardno-ENTRIX AND AMEC Environment and Infrastructure. March 15.

IRZ injection points and then proceeds westward to the edge of the chromium plume and then to the nearest domestic wells outside the chromium plume. As shown in the figures and tables below, concentrations of manganese near injection points are highly elevated, but then decline substantially as one moves 1,000 to 1,200 feet westward, and then decline further by the edge of the plume, with domestic wells west of the chromium plume having manganese levels that exceeds the lowest range of manganese detections between the highly elevated areas and the edge of the plume. This pattern does not appear to indicate these domestic wells are being affected by IRZ operations on manganese levels.

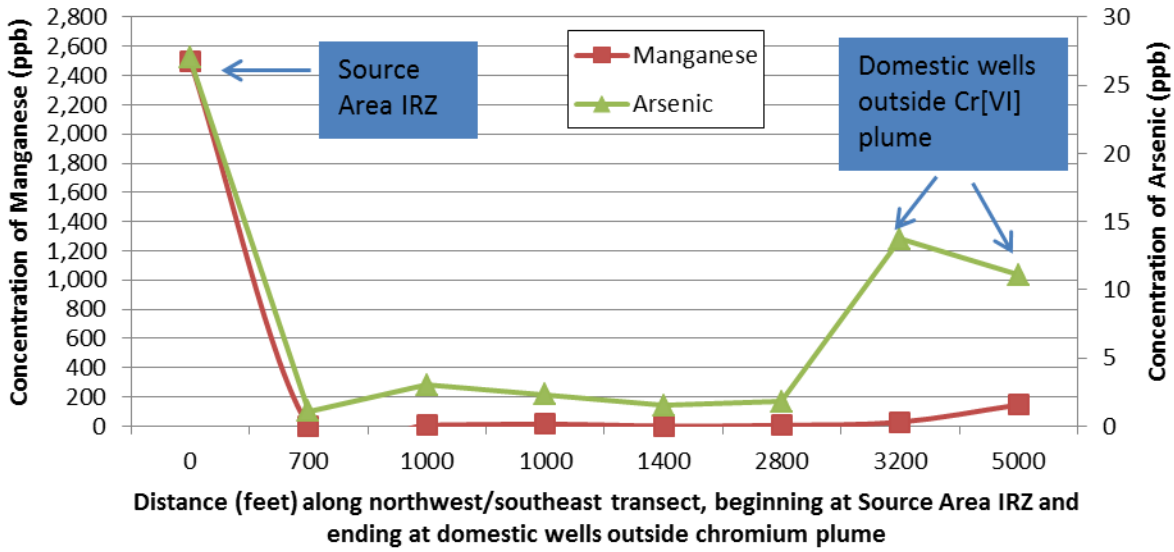
Table 3-2: Transect 1 Sampling Results (From Source Area IRZ to the Northwest, Q3/Q4 2012 sampling)

Well	Location	Manganese (ppb)	Arsenic (ppb)	Notes
SA-SM-08S	~900 feet east of Fairview Road (within Mn and As elevated zone, inside chromium plume)	2,500	27	Monitoring wells (PG&E, Q4/2012)
SA-MW-1S	~600 feet east of Fairview Road (inside chromium plume)	Non-detect	1.1	
SA-MW-16S	~just east of Fairview Road (on edge of chromium plume)	7	3.0	
SA-MW-17S	~just east of Fairview Road (on edge of chromium plume)	14	2.3	
MW-36	Next to Community Blvd, ~400 feet west of Fairview Road (inside chromium plume)	0.77	1.5	
MW-73S	~1,500 feet west of Fairview Road (outside chromium plume)	5.6	1.8	
35-04	~500 feet east of Mt. View Road (outside chromium plume)	27.4	13.7	Domestic well (LRWQCB, 08/29/12)
34-58	~1,700 feet west of Mt. View Road (outside chromium plume)	146	11.1	Domestic well (RWQCB, 10/11/12)

Sources:
1. Monitoring well data from PG&E. 2012. Assessment of In-Situ Reactive Zone Treatment Byproducts, PG&E Hinkley Compressor Station, Hinkley, California
2. Domestic well data provided by Lahontan Regional Water Quality Control Board.

1
2

Figure 3-1: Transect 1 Sampling Results (Q3/Q4 2012)

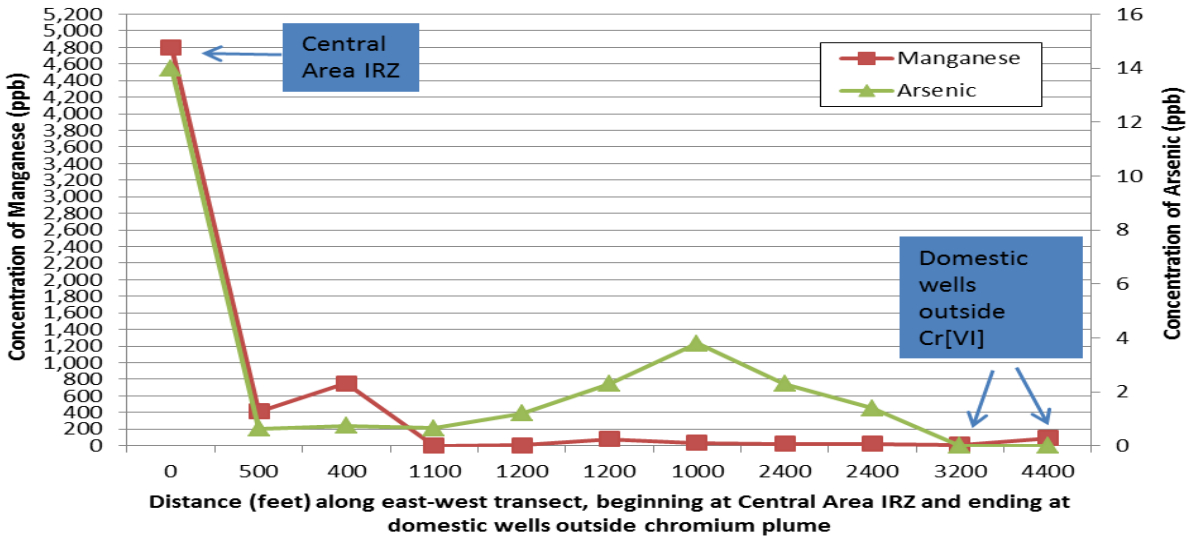


Source: PG&E Q4/2012 Monitoring Report , Lahontan Water Board Sampling (see Table 3-2)

Table 3-3: Transect 2 Sampling Results from Central Area IRZ to the west, Q3/Q4 2012 sampling)

Well	Location	Manganese (ppb)	Arsenic (ppb)	Notes
CA-MW-406	~2,600 feet east of Mt. View Road (within Mn and As elevated zone, inside chromium plume)	1,900	14	Monitoring wells (PG & E, Q4/2012)
CA-MW-504	~2,000 feet east of Mt. View Road, within Mn elevated zone, outside As elevated zone, inside chromium plume	410	0.63	
CA0MW-505	~2,200 feet east of Mt. View Road, within Mn elevated zone, inside chromium plume	750	0.74	
CA-MW-501S	~1,400 feet east of Mt. View Road , inside chromium plume	Non-detect	0.66	
CA-MW-412D	~1,400 feet east of Mt. View Road ,inside chromium plume	5.6	Non-detect	
CA-MW-312D	~1,400 feet east of Mt. View Road, inside chromium plume	80	2.3	
MW-08	~1,400 feet east of Mt. View Road, inside chromium plume	34	3.8	
MW-61	Next to Mt. View Road east of 34-01, on edge of plume	21	2.3	
MW-75	Next to Mt. View east of 34-64, on edge of plume	21	1.4	
34-64	800 feet west of Mt. View Road, outside of plume	12.3	Non-detect	Domestic wells (LWRQCB, 8/29/12)
34-01	1,200 feet west of Mt. View Road, outside of plume	93	Non-detect	
Sources: 1. Monitoring well data from PG&E. 2012. Assessment of In-Situ Reactive zone Treatment Byproducts, PG&E Hinkley Compressor Station, Hinkley, California 2. Domestic well data provided by Lahontan Regional Water Quality Control Board.				

Figure 3-2: Transect 2 Sampling Results (Q3/Q4 2012)



Source: PG&E Q4/2012 Monitoring Report, Lahontan Water Board Sampling (see Table

Monitoring Results – Arsenic. Similarly, while arsenic data results show a particular pattern of rising arsenic concentrations in the immediate downgradient area of IRZ injection points, the data also shows a pattern of decreasing arsenic concentrations as distance increases downgradient, all within the chromium plume. As shown in Table 3-1 and 3-2, concentrations near the injection points are elevated, but then decline notably as one moves 1,000 to 1,200 feet with domestic wells west of the chromium plume either being non-detect for arsenic (see Table 3-1) or have arsenic detections higher than upgradient detections at the edge of the chromium plume (see Table 3-2). Thus, this pattern does not appear to indicate these domestic well are being affected by IRZ operations.

- **Data Quality.** For the community-collected samples, which had the highest detections of manganese in domestic wells west of the chromium plume (with a number of samples over 1,000 ppb of Mn), no sampling quality plan or description of sampling methods has been provided. Samples subsequently taken by the Water Board from the same wells with elevated results reveal substantially lower levels of manganese. This raises the possibility that some of the samples may have quality control issues, such as containing high levels of solids which may indicate that the elevated results may reflect solid concentrations of manganese, as opposed to dissolved concentrations in the aquifer itself.
- **Further Monitoring Needed.** Although the recent pattern of detections does not appear to indicate that IRZ operations may be affecting domestic wells, the Water Board's December 21, 2012, Investigative Order acknowledges that gaps exist within the current monitoring network that could, in theory, have allowed migration of constituents to nearby domestic wells. Investigations to be implemented by PG&E in the near future should be able to definitively determine whether IRZ activities have or have not actually affected nearby domestic wells.

While the above discussions indicate that manganese and arsenic from the IRZ areas do not likely affect domestic wells located more than one mile to the west, the results are less conclusive for domestic wells located less than one mile to the west. Efforts to better understand the relationship between these constituents and IRZ activities upon nearby domestic wells are still underway. While current data suggests that IRZ byproduct plumes are controlled within the chromium plume, further investigations should confirm whether this is definitely the case despite detections in nearby domestic wells. The recent detection of manganese and arsenic in domestic wells more than one mile west of the chromium plume does not change the Draft EIR conclusions that manganese and arsenic byproduct plumes can be controlled and/or mitigated through the mitigation identified in the EIR.

Describe the Link between Vegetable Oil and Manganese Migration/Containment. PG&E does not currently use vegetable oil at the IRZs. Vegetable oil was tested in pilot studies for the IRZ operations in 2004 - 2005 but was found to be not dispersive enough in the aquifer to reduce chromium concentrations in a large area. Since ethanol has a higher dispersive coefficient in water, monitoring data indicates ethanol affects a greater area in the aquifer than did vegetable oil. All the vegetable oil used in the pilot studies would have been consumed by microbial action within about a year of use and thus would no longer be present in the aquifer.

Describe the Link between Ethanol and Manganese Migration/Containment. As discussed above, ethanol is the primary material used to inject carbon into the aquifer to promote microbial reactions that create reducing environment to reduce Cr[VI] to Cr[III]. As ethanol is consumed by the microbial activity and concentrations decline over time, manganese concentrations increase. Elevated manganese levels also subsequently decline over time as the organic carbon source is

consumed or as manganese migrates away from reducing conditions towards oxygenated groundwater. As discussed above, IRZ-caused elevated manganese levels have been found up to 2,000 feet from the injection point, but only within the chromium plume itself. Manganese and other byproduct levels dissipate within months to one to two years of injection.

Manganese Toxicity. Neither the U.S. Environmental Protection Agency (EPA) nor the State of California has established a primary drinking water standard for manganese based upon health effects of the chemical. Secondary drinking water standards may apply to any contaminant in drinking water that may adversely affect the taste, odor or appearance of the water. The secondary MCL for manganese is set at 50 ppb to address aesthetic considerations such as taste and staining . Manganese at higher levels can have toxic effects. EPA has set a lifetime health advisory for manganese in water of 300 ppb and an acute 10-day health advisory of 1,000 ppb (EPA 2004[8]). The health effects of manganese are discussed in Section 3.1.6, *Health Effects of Constituents in Groundwater,* of the Draft EIR. Essentially, the nervous system is determined to be the primary target organ of high levels of manganese consumption with neurological effects generally seen. The description of health effects in the water section for manganese has been updated accordingly, as has the hazardous materials section to better describe the toxicity of manganese.

Fault Line and Flooding Effects on Byproduct Migration. The Lenwood-Lockhart fault is considered to be a zone of low hydraulic conductivity and appears to provide resistance to south-westward flow from the Compressor Station. The fault is considered to impede but not prevent groundwater flow, transmitting some flow component to the northeast. It is interpreted as a leaky boundary (PG&E 2012b). As to flooding from the Mojave River, as discussed in Section 3.1 and Appendix A of the Draft EIR, the Mojave River periodically provides recharge to the Hinkley Aquifer which raises hydraulic heads and promotes greater groundwater movement near the Mojave River. However, flooding does not change the dominant direction of groundwater flow which is generally northward towards Harper Lake. As described above, the groundwater flow directions are not favorable for migration westward from the IRZ area as this represents "uphill" flow.

Movement of Arsenic within Chromium Plume. Extensive groundwater monitoring by PG&E in the IRZ areas shows that arsenic is slow to form and has limited mobility. Arsenic concentrations are greatest at the location of injection wells where carbon reagents create the most reducing conditions. The relationship between arsenic and chromium is inverse; as chromium reduces in concentration, arsenic increases in concentration. Arsenic is generally less mobile than manganese in the IRZ areas, with concentrations typically extending no more than 1,000 feet distance from the injection wells. As arsenic encounters oxygenated groundwater, it precipitates out and reduces in concentration.

Arsenic Toxicity. The health effects of arsenic are discussed in Section 3.1.6, *Health Effects of Constituents in Groundwater*, of the Draft EIR. The Draft EIR describes that the MCL for drinking water for arsenic is 10 ppb, and the Public Health Goal (PHG) is 0.004 ppb (see Table 3.1-3 in Section 3.1, *Water Resources and Water Quality*, of the Draft EIR). The primary drinking water standard is based upon ingestion of arsenic posing a risk of cancer. The PHG is based on lung and urinary bladder cancer risk. Arsenic can also result in a number of non-cancer effects at higher levels of exposure (e.g., vascular effects or skin effects), but the cancer risk is the most sensitive endpoint and the basis for the PHG. Section 3.3, *Hazards and Hazardous Materials*, in the Draft EIR describes a

[8] U.S. Environmental Protection Agency (USEPA). 2004. Drinking Water Health Advisory for Manganese. EPA-822-R-04-003. January.

hazardous waste level for arsenic of 5,000 ppb. A hazardous waste level is different from a drinking water standard. The hazardous waste level triggers special handling, storage, and disposal of wastes containing concentrations higher than the defined level. However, that does not mean that water containing concentrations less than the hazardous waste levels are safe for consumption. As discussed in Section 3.1, toxic levels of arsenic in drinking water are at much lower levels than the hazardous waste level (as indicated by the much lower MCL and PHG).

4c. Uranium

Summary of Issues Raised in Comments:

- Uranium as a byproduct needs to be better described.

Response:

Uranium as a Remedial Byproduct. In the Draft EIR, only limited uranium data were discussed, including recent uranium detections in several agricultural supply wells for PG&E agricultural units. As stated in Section 3.1.4.3, *Hinkley Valley Groundwater Quality,* of the Draft EIR, scientific research from the Central Valley of California found a possible link between increased bicarbonate concentrations in water from summer agricultural irrigation and the mobilization and migration of uranium to deeper aquifers tapped by water supply wells that may otherwise be sequestered under natural conditions. Changes in water chemistry and increases in downward groundwater flow are hypothesized to potentially result in the increased mobilization of uranium concentrations that may otherwise be sequestered under natural conditions. At this time, there is insufficient information to assess whether or not prior and ongoing agricultural irrigation in the Hinkley area or the current remedial agricultural treatment has had any influence on naturally-occurring uranium levels in the Hinkley Valley. However, the EIR identified this as a potentially significant impact, and therefore the EIR requires uranium to be investigated further and if significant impacts are found, mitigation measures are required to return the aquifer to pre-project conditions. It is important to note that uranium is not a constituent associated with PG&E's waste discharge (uranium or its byproducts were not used by PG&E in its Compressor Station operations). Rather, uranium is naturally occurring in the Mojave Desert soils, as discussed below. The potential impact identified in the EIR is that PG&E's increases in agricultural pumping for remediation could transport or mobilize naturally-occurring uranium concentrations to groundwater.

Naturally occurring uranium and other radionuclides have been found in rocks and groundwater in the Mojave Desert and throughout the southwestern United States. In particular, radionuclides can be high in volcanic and granitic rocks in California and in the sediments and soils derived from such rocks. According to a range of sources (Larson and Gottfried 1961; John and Wooden, 1990; Fox and Millar, 1990) uranium concentration in granitic rocks in the southern California desert range from 0.325 ppm to 13 ppm.

Subsequent to the Draft EIR, the Water Board investigated uranium levels in the aquifer through collection of existing data and through a request to PG&E for their information.

San Bernardino County Department of Public Health provided copies of sampling results for two Hinkley area water systems permitted by San Bernardino County in which uranium levels ranged from 4.5 to 21.4 pCi/L in 2011 and 2012 samples.

In response to Water Board Investigative Order No. R6V-2012 – 0057, PG&E submitted a Radionuclide Data Summary Report on November 30, 2012. PG&E had collected limited radionuclide groundwater samples in 2011 and 2012 for wells associated with agricultural irrigation supply, freshwater supply, and the domestic well sampling program. The data report did not include data for domestic and private supply wells located on property not owned by PG&E. Data from agricultural unit supply wells and pivot effluent sampling indicated total uranium levels of 25 to 59 pCi/L, 27 to 81 pCi/L for gross alpha and below 4 to 27 pCi/L for gross beta. Upper aquifer monitoring wells had total uranium levels from 3 to 32 pCi/L, 7 to 34 pCi/L for gross alpha and 6 to 9 pCi/L for gross beta. Lower aquifer monitoring wells had dissolved uranium levels from 1 to 2 pCi/L, 3 to 4 pCi/L for gross alpha, and less 4 to 5 pCi/L for gross beta. PG&E data on freshwater supply wells (PGE-14, FW-01, and FW-02) located upgradient (south) of the chromium plume had total uranium levels of 2 to 4 pCi/L, up to 9 pCi/L for gross alpha and up to 23 pCi/L for gross beta.

Periodic sampling by the State of California of drinking water at the Hinkley School from 2008 to 2011 indicated uranium levels ranging from 0.46 pCI/L to 24.9 pCi/L, with an average of 16.4 pCi/L (California Groundwater Ambient Monitoring and Assessment[9]). A search of GAMA for portions of San Bernardino County indicated uranium levels in wells as follows:

- Upper Mojave River Valley (Victor Valley and Lucerne Valley) – up to 11 pCi/L
- Lower Mojave River Valley (Barstow, Newberry Springs, Calico area) - up to 22 pCi/L
- Helendale (south of Barstow and Hinkley) – up to 20 pCi/L
- Wrightwood (San Gabriel Mountains) – up to 25 pCi/L
- Crestline Area (San Bernardino Mountains) – up to 81 pCi/L
- Roaring Springs Area (San Bernardino Mountains) – up to 330 pCi/L
- Big Bear Lake (San Bernardino Mountains) - up to 33 pCi/L

As shown by the data cited above, it is not unprecedented for groundwater in the Mojave Desert to contain uranium levels that are above the MCL of 20 pCi/L.

Reviewing the data specifically available for the Hinkley aquifer, wells upgradient of the chromium plume contain uranium up to 4 pCi/L, wells in and near agricultural units have uranium levels in a range of 30 to 50 pCi/L, and the Hinkley school (outside the plume) has uranium levels of up 22 pCi/L. As the data set provided by PG&E does not include groundwater samples immediately upgradient of agricultural units or prior to establishment of the agricultural units, it cannot be concluded at this time whether agricultural treatment is or is not affecting naturally occurring uranium levels. For that reason, Mitigation Measure WTR-MM-5 requires further investigation and monitoring to identify the effect of agricultural treatment on uranium levels and to take remedial actions to return levels to pre-project conditions in time.

It should be noted that remedial agricultural units operate exactly the same as non-remedial irrigated agricultural fields. Thus, if it is shown that agricultural treatment is affecting naturally occurring uranium levels, then current agricultural activities (not related to PG&E) outside the chromium plume, as well as prior agricultural activities throughout Hinkley Valley, are also likely to

[9] California Groundwater Ambient Monitoring and Assessment. GAMA Program, available at http://ca.water.usgs.gov/projects/gama/

have affected naturally occurring uranium levels. This will represent a challenge to isolating the effect of the remedial agricultural treatment units from the non-remedial agricultural activities.

4d. Total Dissolved Solids and Nitrates

Summary of Issues Raised in Comments:

- Better describe the production of nitrates and TDS as byproducts of remediation. How are nitrates and related to the DVD?
- Assess impacts of treatment of TDS using reverse osmosis per required mitigation.

Response:

Production of Nitrates and Total Dissolved Solids (TDS) Due to Remediation. As discussed in Section 3.1, *Water Resources and Water Quality*, of the Draft EIR, agricultural treatment has been shown to reduce nitrate levels in irrigation water through uptake by plants. In general, nitrate concentrations should reduce in groundwater over time from agricultural treatment. However, since agricultural treatment may involve the movement of water with relatively higher levels of nitrate from one part of the plume to another part with relatively lower levels of nitrate, there is a possibility that nitrate levels could increase on a localized basis in certain areas. Thus, although nitrate is not produced by agricultural treatment remediation activities, localized increases of nitrate could occur due to movement of water associated with extraction and irrigation for the agricultural treatment.

As to TDS, as discussed in the Draft EIR, concentrations tend to increase with time from use of agricultural irrigation. This occurs when irrigating agricultural lands, particularly in areas of high evaporation like the Hinkley Valley, because much of the water evaporates and leaves the residual solids (i.e., salts) in the soil. Rain and over irrigation, such as occurs during cooler months, can then carry those solids back down to the aquifer, resulting in an increase of dissolved solids in groundwater. Thus, over time, use of agricultural units may result in increased TDS levels.

The Draft EIR proposed mitigation for these constituents in WTR-MM-5 and WTR-MM-6 to ensure that pre-project water quality conditions are restored to the aquifer where it is significantly affected by remedial impacts.

Impacts of Mitigating TDS. Please see discussion of this issue in **Master Response 8** below.

4e. Byproduct Significance Criteria

Summary of Issues Raised in Comments:

- Explain the rationale for the difference in significance criteria for remediation byproducts than that for chromium.
- The mitigation should also require monitoring for byproducts in domestic and agricultural wells within 1 mile of any IRZ area or AU on a semi-annual basis.
- Regarding IRZ byproducts, the criteria should be revised to allow for increases to 25% above maximum pre-remediation levels and be statistically significant.

Response:

Difference in Significance Criteria for Chromium and Remedial Byproducts. For chromium, the significance criteria include an increase in chromium concentrations within 1 mile of the defined plume from remedial actions. For byproducts, the significance criteria include an increase in byproduct concentrations within ½ mile upgradient or ¼ mile cross-gradient of water supply well. The reason for the difference in distances has to do with the evidence to date of the migration direction and migration rates of these different constituents.

The intent of including criteria that requires replacement water in a buffer zone prior to changes in contaminant concentrations in water supply wells is to avoid impacts before they happen. As evidenced by the changes in the chromium plume since 2008, there have been substantial changes in the defined plume area on the order of a number of miles over the last 4 years, including substantial changes between different quarters within a year. Thus, a 1-mile buffer zone is appropriate for chromium to protect water supply wells. For remedial byproducts, the evidence to date is that the byproduct plumes are located in a smaller area around the remedial units. For example, to date, elevated manganese associated with IRZ operations has been found in an area up to approximately 2,000 feet downgradient of the injection point. Thus, based on evidence of chromium plume movement versus byproduct plume movement, there is a solid basis for having different buffers.

Byproduct Monitoring. The mitigation requires monitoring of areas within ½ -mile downgradient and ¼-mile crossgradient of IRZs and AUs on a semi-annual basis. As discussed above, these buffer areas are considered appropriate given the evidence to date about the size and movement of byproduct plumes.

Suggested Changes in Significance Criteria above Pre-project Levels and Related Statistical Significance. PG&E requested that the significance criteria for remedial byproducts should be changed to allow for an increase of up to 25% of pre-project levels and that the increase should be statistically significant. The Draft EIR significance criteria specifies that increases for the byproducts with primary MCLs (arsenic, nitrate, uranium) are significant if they are 10% or more, when levels are already above the MCL, or 20% or more, when levels are below the MCL. The Draft EIR significance criteria specify that increases for byproducts with only secondary MCLs (manganese, iron, TDS) are significant if they are 20% or more. The rationale for these levels is explained in Section 3.1, *Water Resources and Water Quality*, in the Draft EIR and includes preventing degradation of water quality per the state's non-degradation objective. Thus, the increase criteria are on good foundation and consistent with prior rulings.

As to the request that the increases be statistically significant, the significance criterion has not been revised because the Water Board finds that the percentage increases do represent significant changes in water quality constituents. However, the EIR now notes in the presentation of the significance criteria that the discharger can present evidence to the Water Board, if it believes in a specific instance, that the increase is not statistically significant.

Master Response 5: Replacement Water Supply

Summary of Issues Raised in Comments:

- The EIR should evaluate whether groundwater containing chromium will be allowed to be used as a replacement water supply.

- The mitigation measures should identify timeframes for implementation, including implementation of "comprehensive program" to determine adversely affected wells and implementation of alternative water supplies, if necessary.
- Deeper wells are not a good idea.

Response:

Chromium in Groundwater Used for Replacement Water Supply. As described in Section 3.1, *Water Resources and Water Quality*, of the Draft EIR, the replacement water required by Mitigation Measure WTR-MM-2 will need to meet primary and secondary MCLs for any constituent affected by remediation and will need to meet pre-project water quality for constituents not affected by remediation. Given that chromium is thought to have toxic effects at levels much lower than the current MCL of 50 ppb (the current MCL is for total chromium, not hexavalent chromium) and the defined maximum background levels of Cr[T] and Cr[VI] are 3.2 ppb and 3.1 ppb respectively, Mitigation Measure WTR-MM-2 has been modified to require replacement water to meet the established maximum chromium background levels. However, the Water Board can use its authority under the Water Code to require replacement water contain lower concentrations of hexavalent chromium.

Implementation Timeframes. Mitigation Measures (including WTR-MM-2) require quarterly monitoring for chromium, semi-annual monitoring of byproducts, and annual modeling of predicted changes in chromium and byproduct plumes. Mitigation Measure WTR-MM-2 requires completion of a feasibility study and plan for alternative water supplies prior to expansion of remedial activities. The Water Board will require annual reporting of affected wells, replacement water provision completed and planned, and modeling of anticipated plume movement.

Deeper Wells. There is a potential that deeper wells (in the lower aquifer) may not provide water of a sufficient quality to meet water replacement requirements. PG&E has identified that its investigation of deeper wells as one means to meet the current replacement water order has indicated that levels of Cr[VI] are greater than 0.06 ppb, and thus will not meet the replacement water order's water quality requirements. PG&E has also stated that arsenic was detected, but has not provided this data to the Water Board yet.

Under CEQA, mitigation can only be required to address significant impacts, and there must be a nexus and proportionality of mitigation to a project-caused impact. As the EIR defines the significant level of chromium triggering mitigation as anything over the maximum background level (currently 3.1 ppb Cr[VI]), the EIR can only require that replacement water not exceed the maximum background level. Thus, where lower aquifer Cr[VI] concentrations are less than 3.1 ppb Cr[VI], the EIR mitigation would allow use of deeper wells for replacement water, providing the water also met other water quality requirements.

The reference to PG&E's deep aquifer investigation should note that was limited in quantity, area, and analysis. The investigation took place at only three locations in the western area. Since other deep aquifer areas to the north and east of the chromium plume were not investigated, it would be inappropriate to apply the results in the western area to the other areas. It should also be noted that initial low chromium detections in deep aquifer wells during the western area investigation showed non-detect levels in follow-up sampling. Such results suggest that, after development and initial sampling, deep aquifer wells could be appropriate in the western area. Since no similar follow-up sampling was conducted for initial high arsenic levels which over time could have reduced to below

drinking water standards, it is premature to deduce that deep aquifer wells are also unsuitable because of arsenic detections. Thus deeper wells are retained as one option for providing replacement water in the EIR.

Master Response 6: EIR Alternatives

This response is divided as follows:

a. Environmentally Superior Alternative

b. Electrocoagulation

c. Alternative Preferences

6a. Environmentally Superior Alternative

Summary of Issues Raised in Comments:

- The EIR should identify a single environmentally superior alternative.

Response:

The Final EIR now identifies Alternative 4B as the environmentally superior alternative as it meets the project's objectives, is feasible, and would have the least amount of environmental impact of the action alternatives. As shown in Section 4.6.5, *Identifying the Environmentally Superior Alternative*, of the Draft EIR, Alternative 4B would have the least level of adverse effects on the environment due to remedial actions, including a lower level of species habitat disruption, less amount of byproducts formed and TDS created, a smaller footprint of groundwater drawdown, and lower levels of groundwater lowering from agricultural extraction. Although Alternative 4B would have fewer new impacts on the environment compared to the other action alternatives, this alternative would result in slower remediation of the existing chromium plume and a longer cleanup time. This means the aquifer would remain contaminated with chromium longer than the other action alternatives. Thus, although Alternative 4B has been identified as the environmentally superior alternative compared to the other action alternatives, this does not mean that this Alternative 4B is necessarily the preferred alternative for the Water Board. The Water Board will need to weigh the environmental impacts of different alternatives compared to the timeliness of chromium remediation when deciding what requirements to include in future WDRs and CAOs.

6b. Electrocoagulation

Summary of Issues under the Water Code Raised in Comments:

- According to a commenter (and provider of the technology), electrocoagulation is a fast, effective, and affordable way to remediate all contaminants from water and would have the least environmental impact.
- According to a commenter (and provider of the technology), electrocoagulation is also effective for potable water pretreatment.
- Recommend modification of Alternative 4C-5 to include the use of electrocoagulation versus chemical treatment.

- Better explain why electrocoagulation was dismissed as an alternative.
- Electrocoagulation technology could be made available for 2-3 months for pilot study.

Response:

Prior to considering the merits of electrocoagulation (EC) as a remedial technology, it is important to remind the reader of the limitations on the Water Board's authority. While the Water Board can specify the requirements for remediation in terms of time, location, and cleanup levels, as well as limitations on discharges to water, Water Code section 13360 prohibits it from specifying the means and methods by which a responsible party actually remediates contaminated groundwater. Thus, the specific choice of technology is up to PG&E. Water Board requirements in its CAO and WDRs will influence the choice of technology in that all technologies may not meet the Water Board's requirement for plume control, speed of cleanup, and specified limits on pumping or discharges. The Water Board has asked PG&E to propose and evaluate different technologies that it may use to remediate the chromium plume and propose a remedial program. In the end, the Water Board will not mandate a specific suite of technologies, as long as the remedial program will feasibly meet Water Board cleanup requirements. Thus, the Water Board is not in a position to mandate electrocoagulation or any other technology and the choice of technology is up to PG&E. However, any technology employed must be capable to meet the Water Board's cleanup requirements.

ICF, the consultant hired by the Water Board to assist in preparing the EIR, reviewed the feasibility of the EC technology for remediation of chromium in groundwater and a summary of their findings is below (ICF's review of electrocoagulation has been added as Appendix A.2 of the this Final EIR).

Electrocoagulation has successfully been used for treatment of wastewater from municipal and industrial activities, including treatment of municipal wastewater and/or process waters from paper mills, textile mills, tanneries, petroleum refineries, and slaughterhouses. However, EC has not been used at full scale for groundwater remediation purposes. Bench-scale studies in laboratory settings of aqueous matrices demonstrate that EC can effectively reduce concentrations of Cr[VI]. However, the technology has never been fully implemented in the field to treat groundwater at thecapacity suggested by the commenter, which is 600 gallons per minute (GPM) per unit.

Researchers conducted a single pilot field study of a 50 GPM system to remove Cr[VI] from groundwater in Richland, Washington at the U.S. Department of Energy Hanford site in 2007. Several operational problems were encountered during the study that resulted in significant down time for maintenance and repair of the system, including the build-up of calcium carbonate, or scaling of the cathode, and coating of the anode with iron oxide in the form of magnetite. This resulted in reduced efficiency of the system (reduction in Cr[VI] removal over time) and required extended down periods so that the materials could be physically removed. Based on the pilot study, a number of site-specific and system specific factors may affect the ability of the EC system to remove contaminants including the following:

- Properties of the water to be treated including pH, conductivity, chemical concentrations, and particle size, affect the efficiency of EC.
- Numerous operation factors need to be adjusted on a site-specific basis for EC systems to run efficiently including electrode materials and design, electrode spacing, using consistent or alternating polarity and the time intervals for switching polarities if using the later, flow configuration, and current density or the electric current the area.

- The efficiency (removal rate) of EC systems Appear to decrease with increasing concentrations

Other operational considerations include the following:

- EC sludge, produced through treating Cr[VI], will contain the reduced trivalent chromium (Cr[III]) and other solid materials from groundwater that are capable of being treated with EC. In a prior test, the chromium oxide formed during the EC process passed the Toxicity Characteristic Leaching Procedure (TCLP) analysis[10], as it is not readily leachable. General leachability of other potential components of the sludge at Hinkley, such as arsenic and radionuclides, are not known. Any sludge will require testing for proper disposal methods and could require disposal at a hazardous waste facility.
- Hydrogen gas is generated at the cathode during operation and may be released in sufficient quantity to potentially cause explosive conditions. Hydrogen monitoring and removal processes need to be incorporated into system design.
- During treatment, the pH of the groundwater may increase due to an excess of hydroxyl ions produced at the cathode. If pH increase is pronounced, effluent may need to be treated before re-injection into the aquifer.

The Hanford pilot study demonstrated that Cr[VI] levels could be reduced from 200 to 250 ppb to 20 ppb, and at optimal efficiency, as low as 8 ppb. High levels of Cr[VI] in the Hinkley aquifer are greater than 50 ppb (in some cases over 3,000 ppb) and the current maximum background levels of hexavalent chromium in Hinkley is 3.1 ppb.

The commenter claimed that Cr[VI] levels in groundwater at Hinkley could be reduced to background levels in approximately 1 to 4 years in different areas of the site. These estimates are based on assumptions, including pumping and treatment capacity, that have not been demonstrated and which appear unlikely, as further discussed below.

According to the PG&E's 2010 Feasibility Study Addendum No. 3, the treatment times presented for Draft EIR Alternatives 4B, 4C-2, 4C-3, 4C-4 and 4C-5 to meet the cleanup goal of 3.1 ppb of Cr[VI] range from 29 to 50 years. Alternatives 4C-3 and 4C-5 include ex-situ treatment methods (using chemical precipitation/filtration), which could be replaced or supplemented by the EC method. The commenter claims that an EC system will operate at 830,000 gallons per day (gpd) or roughly 600 gallons per minute (gpm). In the Draft EIR, Alternative 4C-5 has an ex-situ treatment pumping rate of 200 gpm. The pumping rates that the aquifer can tolerate are the limiting factor, not the volume the treatment method can handle. Thus, pumping from four units at 600 gpm would have to be modeled to show that it is feasible considering potential hydrologic aquifer limitations. The commenter claims that the EC system will reduce Cr[VI] concentrations to background levels in each volume of water in 60 seconds. Research demonstrates that removal rates for chromium are much less efficient than for other metals like copper and zinc. Treatment times could be affected by complex site-specific factors including initial Cr[VI] concentration and other chemicals present in the groundwater. Based on the effects of scaling issues on Cr[VI] removal rates in the Hanford pilot study and the number of complex site-specific factors that may contribute to such scaling, the timeframe proposed may be overly optimistic. While the commenter claims that operational costs for EC would be far lower than the costs for alternatives evaluated in the EIR, with the lack of pilot testing at Hinkley and/or full scale groundwater remediation case studies, it is premature to assert

[10] TCLP testing is done to determine if waste can leach from a material at hazardous waste levels.

what the actual costs of remediation would be if EC were to be used on a small or large scale to remediate the Hinkley chromium plume.

The EC method was originally presented in PG&E's 2010 Feasibility Study as a method that did not pass the screening analysis because PG&E asserted it would be harder to manage and offered no clear advantage compared to chemical dosing (i.e., in-situ treatment), was energy intensive, and was not likely feasible for the project due to high capital and O&M costs and the large size of the existing diffuse plume and treatment flows. Neither PG&E's dismissal of EC nor the commenter's advocacy for EC are based on a pilot study at Hinkley or on a full-scale groundwater remediation case study elsewhere that could demonstrate the feasibility of EC and better define potential costs and remedial outcomes.

Some of the potential benefits of the EC method could include the following:

- The EC method would completely remove chromium from the water, as would any ex-situ technology. This would eliminate any risk of reconversion of Cr[VI] from Cr[III] in the aquifer post remediation. However, as described in **Master Response 10** below, the potential for reconversion is considered low, and thus removal of chromium from the aquifer does not appear to provide a substantial water quality benefit.
- The water treated by the EC method would ultimately be returned to the Hinkley aquifer via well reinjection or infiltration galleries. This would limit the risk of further groundwater drawdown which would be an advantage over agricultural treatment methods. However, IRZ operations or ex-situ chemical filtration/precipitation both return water directly to the aquifer and thus replacement of these remedial methods with EC would not represent a change in impacts to groundwater levels. Thus, EC method would have to be proven to be effective in replacing agricultural treatment of the lower concentration plume in order to provide this potential groundwater benefit.
- The footprint of an EC system is smaller than for the onsite aboveground treatment plants included in Alternative 4C-3 and 4C-5. Each EC system unit ("train") units would be approximately 40 feet by 8 feet (320 square feet) plus additional access space for parking, delivery of materials, storage. Each EC train would likely require an area of perhaps 4,000 square feet (100 feet by 40 feet) or less, whereas one aboveground treatment facility would cover approximately 40,000 square feet. The number of EC system units required would depend on the pumping rates determined necessary, but the overall footprint of multiple units would likely be less than that of one or two aboveground treatment plants included in Alternative 4C-3 and 4C-5.

While the EC technology may be appropriate for the project, it has not been used as a full scale groundwater treatment system. Pilot testing of the EC method for groundwater treatment has been limited and has indicated efficiency issues. The EC system would have to be pilot-tested on a small scale at the Hinkley site and found to be effective to either address the higher concentration plume (thus replacing either chemical filtration/precipitation and/or IRZ operations) or the lower concentration plume (thus replacing agricultural treatment). Under CEQA, only alternatives that are likely to be feasible and recommended for implementation by the lead agency are required to be analyzed.

In contrast to EC, the remediation methods currently presented in the Draft EIR have been implemented and proven for groundwater remediation projects and at the Hinkley site. The in-situ treatment and agricultural treatment methods were both pilot-tested and have been used in Hinkley

for several years. The proposed ex-situ technology (aboveground treatment using chemical reduction/precipitation and reinjection of treated water into the groundwater) was selected based on similar operations that have been implemented by PG&E at its Topock site where the technology has been effective in the cleanup of water contaminated by Cr[VI].

While EC is not specifically analyzed in the EIR, there is nothing at this time to preclude the potential future use of EC as a remedial technology should it be later proven to be effective in addressing the chromium plume in Hinkley. The specific impacts of EC, as refined through a site-specific pilot study, would have to be defined so as to identify whether the impacts are sufficiently disclosed already in this EIR or whether additional CEQA analysis is necessary. If the impacts of the remediation project incorporating EC as one of the remedial technologies would be the same as or less than that of the alternatives analyzed in this EIR, then PG&E could select to use the technology without requiring the Water Board to prepare a supplemental EIR. Based on the information provided about EC to date, there is a distinct possibility that it would not have secondary impacts that are greater than ex-situ treatment already proposed, and may lower one or more environmental impacts. However, it is premature to make a definitive conclusion without a more detailed site-specific analysis of feasibility and proposal.

6c. Alternative Preferences

Summary of Issues Raised in Comments:

- The Water Board circulated surveys to the community about alternative preferences. Five were returned with the following results:
    - Cleanup time: Three responses said they prefer the cleanup to be balanced between speed and environmental impacts, one said to take time and avoid impacts and one did not answer.
    - Alternative choice: Two responses stated their first choice as Alternative 4C-5 and their last choice as the No Project Alternative. Two stated their first choice as Alternative 4C-3. One did not answer.
    - "Acceptable" impacts (number of respondents indicating acceptable):
        - Temporary lowering of water table (2)
        - Loss of domestic well use, but maintenance of use for landscaping with alternate water supply for domestic use, with water supply restored in future (1)
        - Loss of desert tortoise and Mojave ground squirrel habitat with possible land swap elsewhere for habitat (1)
        - Lots of temporary byproducts to groundwater from in-situ remediation with water quality restored in future. Mitigation and possible alternate water supply until water quality is restored (1)
        - Respondents either indicate none, 1 or 2 "acceptable" impacts. None indicated more than 2 impacts were acceptable.
- A member of the Hinkley community also circulated surveys about alternative preferences, and 88 were returned with the following results (number of respondents):
    - Speed of remediation

- Quick regardless of environmental impacts (21)
- Balanced between speed and environmental impacts(8)
- Long and avoid impacts (30)
- No results (29)

- Choices regarding leaving Cr[III] in the soil/aquifer post remediation
  - Remove Cr[III] (48)
  - Leave Cr[III] (11)
  - Not sure (25)
  - No response (4)

Response:

The surveys identify individual preferences regarding alternatives and/or impacts the respondent would like to have avoided. This input will be considered by the Water Board as one consideration when developing the requirements of the new CAO and WDRs.

The surveys do not concern the adequacy of the analysis in the DEIR. As such, for CEQA no further response is necessary.

Master Response 7: Third Party Participation

Summary of Issues Raised in Comments:

- Bring in a neutral third party, such as EPA or U.S. Geological Survey (USGS), to provide oversight and help define the plume and evaluate PGE's cleanup.
- Independent research, that is not PG&E or PG&E affiliate, should be conducted to determine actual plume boundaries.
- The Water Board should have an independent entity, not PG&E or PG&E affiliate, conduct duplicate sampling of both domestic and monitoring wells.
- The USGS should assist with defining the plume, testing to determine the origin of Cr[VI], and evaluating PGE's cleanup.
- CAC meetings should be run by independent neutral third party to ensure that the Water Board and community members get equal chance to participate.

Response:

The Water Board has sought the assistance of independent parties in the past as necessary to help re-evaluate issues regarding the remediation of the chromium plume. For example, the Water Board sought outside peer review of the 2007 Background Study Report, which has resulted in planning for a new background study. In addition, the Water Board solicited review by the USEPA and California Department of Toxic Substance Control (DTSC) of the PG&E feasibility studies to ensure that a reasonable range of remedial technologies were being considered for the project. The Water Board has also sought input from OEHHA concerning health risk issues, as for example concerning swamp coolers. Water Board staff is also planning to collect random duplicate samples with PG&E's

sampling consultant to verify sampling results provided in monitoring reports. The USGS has been involved in meetings concerning recent manganese and arsenic detections in the western area.

Regarding plume definition and determining new background values to define the plume since December 2012, Hinkley stakeholders have been meeting monthly to discuss an approach to determining background levels of chromium in groundwater. This "Background Study Working Group" is comprised of Water Board staff, PG&E and its consultants, a sub-group of the Hinkley Community Advisory Committee, the CAC's consultant (Project Navigator) and Dr. John Izbicki of the U.S. Geological Survey (USGS). The Working Group's current focus as of early 2013 is to collaboratively develop a study approach that incorporates investigations of Hinkley Valley hydrology, geology, and geochemistry to determine the sources of chromium in groundwater. This effort is referred to as a "revised" background study plan, as it is intended to correct deficiencies in PG&E's 2007 Background Study Report which were identified by peer reviewers in 2011.

Dr. John Izbicki of the USGS is a recognized expert on chromium in the Mojave Desert. He is advising the Working Group on using specialized techniques such as stable isotope analysis, element speciation, mineralogical analysis, and detailed groundwater flow studies into the revised background study. As a Working Group member, he will aid in developing the study approach(s) for the revised background study, and he will submit a proposal detailing his agency's involvement in implementing the background study to determine background chromium levels in the Hinkley Valley.

PG&E has agreed to provide funding for Dr. Izbicki's participation in the Working Group. Water Board staff has worked with the State Water Board's administrative and contracting departments to set up a holding account within the State Board's Cleanup and Abatement Account. PG&E has deposited funds into that account which will be used to execute a contract between the Lahontan Water Board and the USGS for the background study. Water Board staff developed and submitted the contract proposal for the planning phase of the revised background study to the State Board's contracting office in March 2013.

Regarding the CAC, the Water Board has been working with the CAC and PG&E to support hiring an independent meeting facilitator. In the interim, a meeting facilitator from the State Water Resources Control Board has provided facilitation services at recent CAC meetings to ensure equal participation and efficient use of meeting time.

Master Response 8: Impacts of Mitigation

Summary of Issues Raised in Comments:

- The EIR should better consider the impacts of mitigation measures including mitigation for secondary byproducts. For example, mitigation measures for total dissolved solids (TDS) could require the construction and operation of a reverse osmosis treatment system to remove TDS from aquifer.

Response:

Section 3.1, *Water Resources and Water Quality,* has been revised to include a description of the potential secondary impacts of mitigation for remediation of byproducts to restore the aquifer back to pre-project conditions. As allowed by CEQA, the analysis of the impacts of mitigation can be done on a more general level than analysis of project impacts.

As described in the revised Section 3.1, the environmental impacts of mitigating remedial byproducts that could potentially remain after completion of remediation activities would be similar in character and location as those associated with the proposed remediation activities to clean up the chromium plume. For example, the impacts of constructing and operating an aboveground treatment plant to remediate chromium will be similar to the impacts of constructing and operating an aboveground treatment plant to remediate TDS. As another example, potential aeration and infiltration galleries for treating manganese would require pipelines and disturbance of land that would be similar to agricultural treatment units. The exact location of remediation facilities is not known at this time, but some of the facilities and facility locations used for chromium remediation could also be used for byproduct remediation. For example, aboveground treatment plant locations could be used for both treatment of chromium and remediation byproducts. Where agricultural units are no longer needed for chromium remediation, these disturbed areas could be used for remedial facilities for byproducts. As presented in the revised Section 3.1, when considering the potential impacts of byproduct mitigation to restore the Hinkley aquifer to pre-project conditions, and requiring mitigation similar to that being required for chromium remediation impacts, there would not be new significant impacts or substantially more severe significant impacts than already disclosed in the Draft EIR. Thus, recirculation of the EIR to disclose those impacts related to the remediation of the byproducts is not required.

Master Response 9: Groundwater Drawdown

Summary of Issues Raised in Comments:

- The potential impacts of "local aquifer drawdown" and "aquifer compaction" should be identified in Table 4-4 (they are blank in the Draft EIR).
- Requests that groundwater drawdown not be allowed as an impact of the Project.
- Estimated maximum drawdown at scaled flows appears overly conservative.

Response:

Table 4-4 in Section 4.6.3, *Comparison of Environmental Impacts of the Project Alternatives*, of the Draft EIR has been revised to include rankings for local aquifer drawdown and aquifer compaction. This was a typographic error as the ratings for these two issues is exactly the same as for regional aquifer, but in formatting, the ratings were lost.

The comment that groundwater drawdown should not be allowed as an impact of the project is noted. If drawdown were not allowed, then there would be two consequences: (1) agricultural treatment extraction flows could not be substantially increased from present levels, which would make it difficult to control plume migration and would substantially slow down the timeframe to meet cleanup goals ; and (2) agricultural treatment would have to be replaced by another remedial method such as plume-wide pump and treat or plume-wide IRZs, both of which were dismissed in the feasibility analysis due to concerns about cost and effectiveness.

Regarding the “conservative” nature of drawdown for the scaled flows, it is recognized that there may not be a linear relation between drawdown level and extraction flow amounts. However, at this time, groundwater modeling has only been completed for the Feasibility Study flow levels, not for the potential scaled up flows that may be necessary to address the larger plume present today. Thus,

the linear scaling up of drawdown levels is considered a reasonable way to disclose the worst-case situation. The EIR describes that the maximum drawdown levels may not actually occur as it may prove more advantageous to maintain high groundwater levels in the aquifer during remediation to allow for better circulation of water through contaminated aquifer areas. Although the drawdown levels may err on the conservative side, they are still considered appropriate as an outer bounds analysis and have not been changed in the Final EIR.

Master Response 10: Reconversion of Cr[III] to Cr[VI]

Summary of Issues Raised in Comments:

- A general survey was developed by a Hinkley resident to gauge the preference of the Hinkley community on Draft EIR alternatives and the remediation process. One survey question was on preferences to remove or leave Cr[III] in aquifer soils. Survey results indicate that, out of 88 surveys received by the Water Board, the majority (48) wanted Cr[III] removed from the soil/aquifer due to concerns that the Cr[III] would be reconverted back to Cr[VI] post remediation.
- Other comments express concern about the potential reconversion.

Response:

Cr[III] is the most stable form of chromium and is naturally occurring in the environment. Due to the high toxicity of Cr[VI], remediation of contaminated sites is typically required. Different remedial methods have been employed to date to eliminate environmental and human health threats and exposure from Cr[VI]. One method often used focuses on reduction of Cr[VI] to the stable and less toxic Cr[III], such as being implemented by PG&E in the IRZ areas.

This method can involve different pathways for the reduction of Cr[Vl] in the environment to the less toxic Cr[III]. In chemistry terms, it is easier to reduce Cr[VI] to Cr[III] than it is to go the other direction. The reason for the latter is that the conditions to convert Cr[III] to Cr[VI] are more complex and unusual. Pathways for oxidation of Cr[III] to Cr[VI] are influenced by dissolved oxygen, pH and oxidation-reduction potential (ORP). The only constituents that occur naturally in the environment that are known to oxidize Cr[III] to Cr[VI] are dissolved oxygen and manganese oxides (Stanin and Pirnie 2004[11]). Although dissolved oxygen could potentially act as a chromium oxidizer, studies have shown chromium oxidation from dissolved oxygen alone to be extremely minimal or non-existent (Palmer and Puls 1994[12]) and negligible (Stanin and Pirnie 2004). For dissolved oxygen to oxidize Cr[III], other chemical conditions are required, such as an alkaline pH. For example, areas in the western Mojave Desert (i.e., Surprise Spring and Sheep Creek) have high naturally occurring Cr[VI] concentrations due to high dissolved oxygen levels and alkaline pH values (greater than 8.0 and occasionally greater than 9.0), as well as significant amounts of mafic rock

[11] Stanin, F. and Pirnie, M. 2004. The Transport and Fate of Chromium[VI] in the Environment. http://www.engr.uconn.edu/~baholmen/docs/ENVE290W/National%20Chromium%20Files%20From%20Luke/Cr(VI)%20Handbook/L1608_C05.pdf

[12] Palmer, C. D. and Puls, R. W. 1994. *EPA Groundwater Issue. Natural Attenuation of Hexavalent Chromium in Groundwater and Soils.* EPA154015-941505. Superfund Technology Support Center for Ground Water. October. USEPA Office of Solid Waste and Emergency Response. EPA/540/5-94/505. October. Available: http://www.epa.gov/superfund/remedytech/tsp/download/natatt.pdf

(Izbicki et al 2008[13]) due to the close proximity to the San Gabriel and San Bernardino Mountains (PG&E 2011[14]).

The probability of Cr[III] conversion to Cr[VI] is not likely. As previously discussed, Cr[III] hydroxides are highly insoluble and readily sorb to the soil greatly limiting their mobility. That condition along with relatively neutral pH groundwater values limit access to manganese oxides that could act as oxidizers to Cr[III]. While manganese oxides under certain conditions may act as chromium oxidizers, these conditions are largely absent in Hinkley. Conditions known to promote Cr[III] oxidation via manganese oxides include alkaline or high pH and the presence of mafic rock (dark-colored rocks containing abundant iron and magnesium).

To further assess the potential of oxidation of Cr[III] to Cr[VI] over a wider data set, ICF reviewed more than 6,000 data points from more than 300 PG&E site groundwater sampling locations collected from 2001 to 2013 for parameters that indicate chromium speciation including pH, Eh (reduction potential), manganese, and dissolved oxygen. Although dissolved oxygen can act as an oxidizer, the pH conditions (generally slightly acidic to slightly alkaline) at Hinkley mitigate this reaction. Based on this data, the conditions at the Hinkley site appear to highly favor formation of Cr[III] and minimize opportunity for oxidation to Cr[VI]. Minimal oxidation is also supported by site background analysis. Since the PG&E site is the only anthropogenic source of Cr[VI] in Hinkley, the low proportion of hexavalent chromium concentrations outside the plume are indicative of the net effect of the competing chromium oxidation and reduction reactions without the influence of the contamination source. ICF also reviewed water quality data collected in July and August 2012 shows that the groundwater within the plume as well as outside the plume has oxic, neutral groundwater with low potential to promote oxidation.

Two impacts from project remediation activities evaluated in the EIR may affect the amount of oxidized chromium [CrVI] in the area: 1) an overall increase in Cr[III] in surface and aquifer soils, and 2) mobilization of dissolved manganese, which is a byproduct of the in-situ treatment remediation processes. While additional Cr[III] in the environment will not change the natural oxidation and reduction processes or the rates at which these occur, it may result in increased Cr[VI] simply by providing additional Cr[III] for oxidation. Chromium occurs naturally in soils at levels of 0.5 to 6.0 mg/kg in the Hinkley area, with an average value of 3.25 mg/kg (PG&E 2011, Feasibility Study Addendum No. 3). The total potential contribution of in-situ remediation to Cr[III] concentrations from chromium (III) hydroxides from project implementation has been estimated to be approximately 0.01 to 0.8 mg/kg (PG&E 2011, Feasibility Study Addendum No. 3), which is minimal compared to existing naturally occurring levels. The greatest mass of chromium will be in OU-1, at and just north of the Compressor Station, at the depth of the water table and deeper, or 75 to 105 feet below ground surface (bgs). To a lesser extent Cr[III] will also increase in concentrations within the top 5 feet of the soil in the agricultural treatment units (PG&E 2011). Therefore, slight increases in Cr[III] input to soil are unlikely to potentially increase future Cr[VI] concentrations in groundwater should the conversion even occur.

[13] Izbicki, John A., Ball, James W., Bullen, Thomas D., Sutley, Stephen J. 2008. Chromium, chromium isotopes and selected trace elements, western Mojave Desert, USA. Elsevier. Applied Geochemistry Vol. 23, pages 1325-1352.

[14] Pacific Gas and Electric Company (PG&E). 2011. *Addendum #3 to the Feasibility Study, Pacific Gas and Electric Company Compressor Station, Hinkley, California*. September 15. Main report prepared by Haley & Aldrich. Appendices prepared by Haley & Aldrich, Arcadis, and CH2MHill. Available: <http://www.swrcb.ca.gov/rwqcb6/water_issues/projects/pge/index.shtml>.

One of the byproducts of IRZs is dissolved manganese, originating from manganese particles that are naturally present in the soil. As reducing conditions are promoted in the IRZ areas, manganese (Mn) is mobilized out of soil and becomes dissolved in groundwater. Chromium oxidation is associated with Mn [III/IV] oxides, which are insoluble. Under reducing conditions, Mn[III/IV] compounds convert to Mn[II] which is soluble (Stanin and Pirnie 2004). This process enhances mobilization of total manganese and causes increase in Mn[II[concentrations. However Mn[II] at any concentration is not capable of oxidizing trivalent chromium. Should the Mn[II] compounds reform the Mn[III/IV] oxides down gradient from the reducing environment, it will not result in net increase of original Mn[III/IV] oxide concentrations. Prior experience with in-situ remediation has shown that concentrations of remedial byproducts like Mn[II] return to background levels as groundwater migrates from reducing conditions into oxidized conditions. This is the expected situation during IRZ implementation during comprehensive site-wide cleanup. Then at the end of remedial actions, injected carbon will be consumed by microbial processes, and oxidation conditions will return to all locations in the IRZ areas. This condition is expected to result in manganese concentrations returning to pre-injection background levels and in no net increase in Mn [III/IV] oxides in the area that could result in chromium oxidation.

Thus, although it is a reasonable for members of the community to be concerned about the potential for reconversion of Cr[III] to Cr[VI], the specific conditions of the Hinkley aquifer and previous experience with chromium reduction by PG&E and others indicate that the potential for substantial reconversion is low or not likely to occur. ICF's data review of site conditions and a more detailed discussion of the potential for "reconversion" are provided in Appendix A.3 of the Draft EIR.

Individual Responses

Response to Comment Letter 1 (CDFG)

Comment 1-1

Comment: This comment is an introduction that summarizes the proposed project; summarizes CDFG concerns regarding potential impacts to listed species; and states CDFG's responsibilities as a Trustee agency and Responsible Agency.

Response: Comment noted. The specific concerns are described in the individual comments, which are addressed below. This comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 1-2

Comment: The CDFG Incidental Take Permit (ITP) for the Mohave Ground Squirrel should include desert tortoise.

Response: Table 1-1 (Other Required Permits and Approvals) in Section 1.3, *Other Permits and Approvals*, of the Draft EIR has been revised to include desert tortoise. This does not change the conclusions in the Draft EIR.

Comment 1-3

Comment: The project may require a Streambed Alteration Agreement (SAA); CDFG has direct authority regarding any proposed activity that would divert, obstruct or affect the natural flow or change the bed channel or bank of any waterway; and early consultation is recommended.

Response: Comment noted. As described in Section 3.7.3.6, *Jurisdictional Waters*, the only surface waters in the project area are the Mojave River, small desert washes that flow south to the Mojave River, and desert washes that flow north to Harper Lake. It is not anticipated that the project would divert, obstruct, or affect the natural flow of any waterway. However, there may be a need to extend pipelines or roadways across desert washes in order to facilitate the remediation. Therefore, a SAA may be necessary and has been added to Table 1-1, *Other Required Permits and Approvals*.

Comment 1-4

Comment: The commenter asks if Mohave Ground Squirrel protocol surveys have been completed with the correct trapping methods.

Response: Mohave Ground Squirrel surveys using the protocol trapping methods have not been completed. The potential Mohave Ground Squirrel recorded for the project was incidentally recorded during a biological survey that had a different focus. Although protocol surveys are required to prove absence and may be required for obtaining the permit, they are not required for the EIR. The Draft EIR in Section 3.7, *Biological Resources*, identifies potential impacts to Mohave ground squirrel (because there is Mohave ground squirrel habitat in the project area) and mitigation which includes conducting protocol level surveys (Mitigation Measure BIO-MM-1k). No revisions to the Draft EIR are necessary.

Comment 1-5

Comment: The document, throughout the Biological Resources section, refers to surveys conducted on February 15th which is outside the timing range for most species protocol surveys; and the comment provides example survey time periods for burrowing owls and other species.

Response: The February 15th date, which is mentioned twice in Section 3.7.3.4, *Biological Resources with Special Status*, is when the data was provided by Haley & Aldrich based on biological surveys conducted by CH2M Hill in the project area on behalf of PG&E. The actual surveys were conducted between September and October 2011. Section 3.7.3.4 has been revised to make this clarification. This does not change the conclusions in the Draft EIR.

Comment 1-6

Comment: If Mojave fringe-toed lizard (Uma scoparia) habitat is impacted, it will need to be replaced at a 3:1 ratio.

Response: The mitigation for Mojave fringe-toed lizard has been revised to include Mitigation Measure BIO-MM-1p (If Remedial Actions Affect Mojave Fringe-toed Lizard Habitat, than Compensate for Habitat Losses), specifying that compensatory mitigation for the loss of habitat will be determined through consultation with CDFG, and the minimum compensation ratio will be 3:1.

Comment 1-7

Comment: The field investigation conducted on December 20, 2011, is out of all surveying ranges for special-status plant species, and CDFG recommends protocol surveys be conducted during the appropriate time and data sheets be submitted to CDFG for review.

Response: The reconnaissance survey completed on December 20, 2011, was not treated as a focused protocol survey. When focused protocol surveys are completed as part of the required mitigation, they shall be conducted according to the most recently accepted protocols, or with coordination with the wildlife agencies. No revisions to the Draft EIR are necessary.

Comment 1-8

Comment: CDFG recommends either Alternative 4C-2 or 4C-5 because they have the least impact on biological resources and species habitat.

Response: Comment noted. This comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 1-9

Comment: Desert tortoise protocol-level surveys will need to be conducted before CDFG can make an adequate determination of presence at the project site.

Response: Focused protocol surveys will be completed as part of the required mitigation (BIO-MM-1a). No revisions to the Draft EIR are necessary.

Comment 1-10

Comment: If a desert tortoise is handled or harmed, it is considered take without an Incidental Take Permit (ITP).

Response: The EIR has been revised to note that a state incidental take permit for desert tortoise will be required in Table 1-1 (Other Required Permits and Approvals) in Section 1.3, *Other Permits and Approvals*. This does not change the conclusions of the Draft EIR.

Comment 1-11

Comment: The commenter asks if a qualified biologist will be on site at all times for all activities, states that any authorized biologists need to be approved by the USFWS and CDFG, and CDFG needs to approve the monitors.

Response: Mitigation Measure BIO-MM-1d states that a biological monitor would be present for all exclusion fencing installation activities, as well as during clearing and grubbing (initial ground disturbance) of the work area; and that after these were complete, there will be a minimum of once weekly monitoring. Mitigation Measures BIO-MM-1a (Construction Measures Required to Minimize, Reduce, or Mitigate Impacts to Desert Tortoise) and BIO-MM-1d (BIO-MM-1d: Conduct Ongoing Biological Construction Monitoring) have been revised to clarify that authorized biologists need to be approved by CDFG and USFWS and any monitors need to be approved by CDFG. This does not change the conclusions in the Draft EIR.

Comment 1-12

Comment: CDFG will need a report that summarizes tortoise seen, injured, killed, excavated, and handled; and that CDFG will need to approve a desert tortoise translocation plan before any desert tortoise are moved offsite.

Response: Mitigation Measure BIO-MM-1a (Construction Measures Required to Minimize, Reduce, or Mitigate Impacts to Desert Tortoise) has been revised to state that a translocation plan will need to be approved by CDFG and USFWS if relocating desert tortoise; and that an annual report will be submitted to CDFG and USFWS to document desert tortoise seen, injured, killed, excavated, and/or handled, along with all pertinent details. This does not change the conclusions in the Draft EIR.

Comment 1-13

Comment: The comment recommends American badger, Mojave River vole, desert kit fox, and sensitive plant species be added to the awareness and training programs.

Response: Mitigation Measure BIO-MM-1c (Implement Pre-Construction and Ongoing Awareness and Training Program) has been revised to include American badger, Mojave River vole, desert kit fox, and sensitive plant species. This does not change the conclusions in the Draft EIR.

Comment 1-14

Comment: The comment recommends including Barstow General Plan buildout in the discussion of biological resources cumulative effects.

Response: Section 4.2, *Cumulative Impacts*, in Chapter 4, *Other CEQA Analyses,* of the Draft EIR has been revised to include Barstow General Plan Buildout. This does not change conclusions in the Draft EIR.

Comment 1-15

Comment: The comment recommends analyzing the cumulative effects of increased predators on special status species from operation of the Desert View Dairy operation, Hawes Composting Facility, and Abengoa Mojave Solar Project.

Response: Section 4.2, *Cumulative Impacts*, in Chapter 4, *Other CEQA Analyses*, of the Draft EIR has been revised to include analysis of the potential cumulative effects of increased predators for the Desert View Dairy operation, Hawes Composting Facility, and Abengoa Mojave Solar Project. This does not change conclusions in the Draft EIR

Response to Comment Letter 2 (NAHC)

Comment 2-1

Comment: This comment is an introduction that states the purpose of the Native American Heritage Commission (NAHC) and that the comment letter includes state and federal statutes relating to Native American historic resources or properties of religious and cultural significance.

Response: Comment noted. This is standard NAHC language that provides a review of CEQA as it pertains to Native American historic properties/resources. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 2-2

Comment: The lead agency should request that NAHC do a Sacred Lands File search as part of careful planning for the project.

Response: Comment noted. As described in Cultural Resources Section 3.8.3.5, *Native American Consultation*, of the Draft EIR, ICF contacted the NAHC on behalf of the lead agency (Water Board) to initiate consultation and a Sacred Lands File search on May 14, 2012. The NAHC response letter dated May 15, 2012, included a list of 11 Native American contacts; and ICF sent a letter dated May 17, 2012, to all 11 contacts. Section 3.8.3.5 has been revised to note the subsequent communication that occurred. This does not change the conclusions in the Draft EIR.

Comment 2-3

Comment: Early consultation with Native American Tribes is recommended, and the Lahontan Water Board should make contact with the list of Native American Contacts on the attached list of Native American Contacts.

Response: Refer to response to **Comment 2-2**.

Comment 2-4

Comment: Avoidance, as defined by CEQA guidelines Section 15370, is recommended when approving a project that would damage or destroy Native American cultural resources. Section 2183.2 requires documentation, data recovery of cultural resources.

Response: Comment noted. There are no known Native American cultural resources identified to date to avoid. To address the potential discovery of unknown resources, the Draft EIR identifies Mitigation Measures CUL-MM-5 and CUL-MM-7, which concern unanticipated discoveries of archaeological resources and human remains. No revisions to the Draft EIR are necessary.

Comment 2-5

Comment: If the project is under the jurisdiction of NEPA, it should comply with NEPA regulations for cultural resources.

Response: Comment noted. As described in Table 1-1 in Chapter 1, *Introduction*, of the Draft EIR, PG&E will be required to obtain an encroachment permit from the U.S. Bureau of Land Management (BLM) because the project area includes some BLM land. In its capacity as a federal agency, BLM would be required to comply with NEPA for this action, including any NEPA requirements for cultural resources.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 2-6

Comment: The confidentiality of "historic properties of religious and cultural significance" should also be considered protected by California Government Code and National Register of Historic Places.

Response: Comment noted. No such areas were identified either through the Sacred Lands File search or through correspondence with the local Native American contacts for this project. No revisions to the Draft EIR are necessary.

Comment 2-7

Comment: Proper protocols should be followed in the event of a discovery of human remains in a project location other than a dedicated cemetery.

Response: Mitigation Measure CUL-MM-7 (Comply with State and County Procedures for the Treatment of Human Remains Discoveries) requires compliance with proper protocols, but has been revised to clarify that this concerns human remains discovered at a project location other than a dedicated cemetery. This does not change the conclusions in the Draft EIR.

Comment 2-8

Comment: Tribal consultation with regular meetings and informal involvement with local tribes will lead to more qualitative consultation tribal input on specific projects.

Response: Comment noted. No tribal contacts requested regular meetings or informal involvement. No revisions to the Draft EIR are necessary.

Comment 2-9

Comment: If Native American cultural sites or burial sites are found within the project site, the NAHC recommends "avoidance" of the site (CEQA Guidelines Section 15370(a)).

Response: Comment noted. Also refer to response to **Comment 2-4**. No revisions to the Draft EIR are necessary.

Response to Comment Letter 3 (MDAQMD)

Comment 3-1

Comment: The Mojave Desert Air Quality Management District (MDAQMD) has reviewed the Draft EIR and briefly summarizes the proposed project.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 3-2

Comment: The District has reviewed the Draft EIR, concurs that the proposed mitigation measures for air quality represent feasible mitigation, and has no comments.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 4A (Banks et al)

Comment 4A-1

Comment: The Hinkley community requests PG&E clean the plume with the least amount of impact on the environment and byproducts in the aquifer, and they prefer the plume be cleaned properly and in its entirety taking due caution not to make things worse for the community or its wildlife.

Response: Comment noted. The comment expresses general preferences for remedial actions which the Water Board will consider in making remedial decisions, but the comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 4A-2

Comment: The Hinkley community requests the Water Board have an independent entity (not PG&E or PG&E affiliate) conduct duplicate sample of domestic and monitoring wells and determine actual plume boundaries and origin of Cr[VI]. It is the Water Board's responsibility to determine delineation of plume and ensure it is returned to natural state.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary. Please refer to **Master Response 2** regarding chromium plume boundary and project study area boundary, and refer to **Master Response 7** regarding third party participation.

Response to Comment Letter 4B (Banks D)

Comment 4B-1

Comment: The EIR needs to better define the temporary impact on wells from the in-situ process (manganese and arsenic), how long it takes to filter manganese and other byproducts, and how much will disperse into the aquifer.

Response: The temporary impact is described in the discussion Impact WTR-2g (Increase in Other Secondary Byproducts (Dissolved Arsenic, Iron, and Manganese) due to In-Situ Remediation) in Section 3.1, *Water Resources and Water Quality*. Additional information is provided in **Master Response 4** regarding remediation byproducts (Manganese and Arsenic). A discussion of the fate and transport of byproducts within the aquifer is provided in Section 3.1.5.2, *In-Situ Reduction Treatment, In-Situ Treatment Byproducts and Control*.

Response to Comment Letter 4C (Banks D)

Comment 4C-1

Comment: The EIR should be a flexible, living document that can be changed in the future when more information is obtained regarding the location and extent of the plume.

Response: The EIR is flexible in that six groundwater remediation alternatives have been evaluated at an equal level of detail, enabling the Water Board to allow remedial actions consistent with the actions included in any of the alternatives once the EIR is certified. Refer to **Master Response 1** regarding purpose and use of EIR. The EIR also included a very broad project area to account for potential change in remedial locations over time.

The EIR is prepared based on the information available at the time. The plume boundary was determined based on data from monitoring wells. The commenter is correct in that the plume boundary has expanded over time and may continue to expand. Refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary.

Comment 4C-2

Comment: We have no idea where the plume is and it's moving.

Response: Refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary.

Comment 4C-3

Comment: The number one priority should be determining if Cr[VI] is from PG&E contamination or naturally occurring. Order 3A is an example of trying to determine if it's from PG&E or not, and there is technology by the USGS and Mr. Izbicki and his colleagues that can determine if the Cr[VI] is from PG&E or naturally occurring.

Response: Section 3.1.4.3, *Hinkley Valley Groundwater Quality, Chromium in the Environment*, provides a detailed discussion on background levels and the source of PG&E's chromium contamination. Refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary. As noted in **Master Response 2**, a new background study is being planned to further evaluate background levels.

Comment 4C-4

Comment: With regard to injections (in-situ remediation), there is no baseline for byproducts and concerned there will be large amounts of arsenic, manganese or uranium in 10 years and PG&E will not take responsibility, so a third party needs to determine baseline.

Response: Please refer to **Master Response 4** regarding background levels of arsenic, manganese, and uranium. In addition, Mitigation Measures WTR-MM-2 and WTR-MM-5 require establishing pre-remediation reference levels of remedial byproducts prior to expansion of remedial activities. As discussed in Master Response 4, the EIR mitigation requires PG&E to control byproduct plumes, provide replacement water where byproduct plumes affect water supply wells, and to remediate byproduct plumes.

Please also refer to **Master Response 7** regarding third party participation.

Comment 4C-5

Comment: The in-situ process increases the manganese, and PG&E is putting the people in a petri dish under Water Board oversight, so they need an entity with experience to oversee what is going on.

Response: Comment noted. The Water Board is the agency with the legal authority and responsibility for oversight. Refer to **Master Response 4** regarding remediation byproducts for information on manganese as a byproduct of the in-situ process; as explained therein, the information available to date does not indicate that elevated manganese due to IRZ operations has spread beyond the chromium plume boundary. In Section 3.1.9, the EIR identifies the following mitigation measures that addresses potential future migration of byproducts from the IRZ area: WTR-MM-2b (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts), WTR-MM-4 (Mitigation Program for Restoring the Hinkley Aquifer Affected by Remedial Activities for Beneficial Uses), and WTR-MM-7 (Construction and Operation of Additional Extraction Wells to Control Carbon Amendment In-situ Byproduct Plumes).

Refer to **Master Response 7** regarding third party participation.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 4C-6

Comment: The Community Advisory Committee (CAC) is different than what the Water Board intended. It is under the influence of PG&E and has become another vehicle for PG&E to inject their will on the community. The commenter asks: Does PG&E negotiate the contract with Project Navigator and what are they being paid? Their contract needs to be for one year, not three months, so they can do their job properly and independently. Does PG&E come uninvited to their non-public meetings? Why hasn't an independent facilitator for the CAC meetings been provided as requested? Can the Water Board attend the CAC meetings once a month to facilitate without PG&E as board members or facilitators?

Response: The Community Advisory Committee has been evolving over time since initial formation in summer 2011. Since summer 2012, the State Water Resources Control Board has provided an impartial facilitator to assist at CAC monthly meetings. This facilitator has also provided guidance to the CAC to contract with an independent facilitator in the future. In addition, the Water Board has assisted the CAC with negotiations with PG&E for future contracts with the IRP manager to address community concerns. Through attendance at monthly CAC meetings, Water Board staff offers suggestions to the Chair to make meetings more efficient and less redundant.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 4C-7

Comment: According to Project Navigator's PG&E research, the plume moves three feet per day and well tests as far as Harper Lake have come in at 10 parts per billion, so the plume boundary could be further than anyone realized. PG&E is moving too slow in defining the plume, so a third party should be brought in to do it.

Response: Refer to **Master Response 2** regarding chromium plume boundary and project study area boundary. In January 2013, the Water Board issued Cleanup and Abatement Order No. R6V-2008-0002A4 requiring PG&E to conduct additional investigations for defining the horizontal and vertical extent of the chromium plume in groundwater. This action should address concerns about PG&E potential chromium contamination in the Harper Dry Lake Valley. Refer to **Master Response 7** regarding third party participation.

Comment 4C-8

Comment: The Water Board should negotiate with PG&E to bring in the USGS to help define the plume, determine the Cr[VI] origin, and evaluate PG&E's cleanup because with all the pumping, the water has reduced oxygen which can change the makeup of the plume, increasing the uranium and other issues.

Response: Refer to **Master Response 2** regarding chromium plume boundary and project study area boundary. Water Board staff agreed to have outside, expert involvement for determining background chromium concentrations and is negotiating a contract with the USGS to participate in future studies.

Refer to **Master Response 7** regarding third party participation, and **Master Response 4** regarding remediation byproducts.

Regarding potential generation of uranium due to remedial activities, Mitigation Measure WTR-MM-5 requires investigation of the potential generation of uranium due to remedial activities, as the currently available information is inadequate by which to determine what effect remedial activities may be having on uranium.

Response to Comment Letter 5 (Burns F)

Comment 5-1

Comment: Hinkley is known around the world and will go down in history as a disaster and that the Union Carbide disasters in West Virginia and India were worse. Nobody at PG&E or Union Carbide was prosecuted for these disasters. Think of people when making decisions.

Response: The comment and concern are noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 6A (CAC-IRP)

Comment 6A-1

Comment: The comment thanks the Water Board for issuing the long-awaited EIR and states that the CAC understands the critical path significance of the EIR on the road to a final remediation.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6A-2

Comment: The process to finalize the EIR should take into consideration the CAC's objectives, including clean water to homes and in the aquifer as soon as possible.

Response: The focus of the project is on cleaning up the aquifer. The EIR assesses impacts to homes and the aquifer due to remediation and provides mitigation to address significant impacts, including the provision of replacement water to homes where wells are affected by remedial actions.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6A-3

Comment: The CAC's push for progress can be achieved with a flexible EIR. Approving the EIR now makes progress possible even though the final clean up methodology and Cr[VI] goals are not established, and allows permits and a final-performance based CAO to be issued.

Response: Comment noted. The EIR is flexible in that six groundwater remediation alternatives have been evaluated at an equal level of detail, enabling the Water Board to require remediation that could include a range of technologies once the EIR is certified. Refer to **Master Response 1** regarding purpose and use of EIR.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6A-4

Comment: The CAC endorses a flexible Water Board enforcement approach using EIR amendments and CAO amendments.

Response: Comment noted. The EIR is flexible in that six groundwater remediation alternatives have been evaluated at an equal level of detail, enabling the Water Board to require remediation that may employ a range of technologies once the EIR is certified. Refer to **Master Response 1** regarding purpose and use of EIR. Enforcement approaches are outside the scope and authority of the EIR.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6A-5

Comment: The optimum remedy select target is 8 to 12 agriculture treatment units because it balances remedy speed and the need for minimal impacts.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 6B (CAC-IRP)

Comment 6B-1

Comment: The comment is an introductory statement, thanking the Water Board for preparing the EIR, the numerous community briefings, and extending the review period.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6B-2

Comment: The project requires a comprehensive and flexible EIR which can be modified in the future as new EIR-relevant data comes to light, and that the current Draft EIR provides an excellent framework.

Response: Please refer to response to **Comment 6A-4**.

Comment 6B-3

Comment: The Water Board should address the detailed comments supplied by their EIR review consultant Environmental Audit and use the comments as appropriate as the document is discussed in the months ahead.

Response: The comments provided by Environmental Audit have been numbered (Comments 6B-18 to 6B-65) and are addressed in this chapter. No revisions to the Draft EIR are necessary.

Comment 6B-4

Comment: The Draft EIR provides a broad framework for documenting and starting to understand the effects of groundwater remedies on the environment, but further work seems to be required in the issue of secondary chemical generation within the in-situ reactive zone (IRZ), and the Community Advisory Committee (CAC) thinks the EIR process should be suspended and the IRZ shut down until more information is gathered.

Response: Please refer to **Master Response 1** regarding purpose and use of EIR. Regarding the secondary chemicals generated by IRZ remediation and the request to suspend the EIR process and IRZ operations, please refer to **Master Response 4** regarding remediation byproducts.

Comment 6B-5

Comment: The Independent Review Panel (IRP) and CAC have discussed suspending the EIR process and IRZ treatment, and major technical exchange sessions should occur to review all relevant data and data gaps are reviewed.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary. Refer to **Master Response 4** regarding remediation byproducts and the request for suspending the EIR process and IRZ treatment. The Water Board has initiated technical exchange sessions with interested parties concerning the detections of manganese and arsenic in domestic wells in the area west of the defined chromium plume. In addition, the Water Board has required PG&E to conduct additional byproduct investigations.

Comment 6B-6

Comment: Comments are provided in three main attachments, including 1) comments from Environmental Audit, 2) comments by the IRP manager, and 3) data collected by CAC member Nick Grill for manganese in the IRZ.

Response: The comments provided by the IRP manager have been numbered (6B-1 to 6B-17) and by Environmental Audit have been numbered (Comments 6B-18 to 6B-65), and all are addressed in this chapter.

The data collected by Mr. Grill has been reviewed and considered by the Water Board. Please see **Master Response 4** concerning remediation byproducts and the assertions that the manganese and arsenic detections west of the chromium plume may be related to IRZ operations.

No revisions to the Draft EIR are necessary.

Comment 6B-7

Comment: Environmental Audit was retained by the IRP manager on behalf of the CAC to review the EIR, per the guidelines established in the Memorandum of Agreement between the CAC and PG&E; and their comments are provided in Attachment A.

Response: Comment noted. The comments from Environmental Audit have been numbered (Comments 6B-18 to 6B-65), and all are addressed in this chapter. This comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6B-8

Comment: The environmental impacts of remediation activities in the IRZ have not been fully evaluated because the Draft EIR only addresses the impacts with Cr[VI] and not the IRZ byproducts such as manganese and arsenic.

Response: Refer to **Master Response 8** regarding the assessment of environmental impacts of EIR mitigation concerning remediation byproducts.

Comment 6B-9

Comment: The EIR should include a Health Risk Assessment (HRA) for diesel truck emissions and above ground construction activities, but not for potential exposure pathways created by secondary chemicals (byproducts).

Response: An HRA was prepared to address diesel because the project (groundwater remediation) would result in exposing sensitive receptors to diesel exhaust from construction and operation (i.e., an exposure pathway would be created by the project). The project would not create or increase an exposure pathway to the byproducts because mitigation is included to avoid the impact of significant increase in byproduct concentrations in water used for domestic or agricultural purposes. It is not the purpose of the EIR to address past contamination or the chromium plume, but rather the proposed remediation techniques. Also refer to **Master Response 3** regarding a Health Risk Assessment (HRA).

No revisions to the Draft EIR are necessary.

Comment 6B-10

Comment: The new background study being conducted by the Water Board will generate new information regarding naturally occurring Cr[VI] background levels that need to be considered. The commenter states that because the EIR is a flexible document with an "amendable EIR framework," it can be completed and then subsequently amended as necessary when background Cr[VI] levels are determined.

Response: Comment noted. Refer to **Master Response 1** regarding purpose and use of EIR, and to **Master Response 2** regarding the new background chromium study. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6B-11

Comment: The community is concerned about the secondary chemical byproducts, most notably manganese and arsenic, of the in-situ reactive zone (IRZ). In light of recent arsenic and manganese

measurements provided by CAC member Mr. Nick Grill, the commenter is concerned about: 1) Figures 3.1-9 and 3.1-11 show data for arsenic and manganese, respectively, but the timeframe in which the data was collected is unclear, and 2) the statement "Current data shows manganese as byproduct only within the chromium plume, and not beyond the plume boundaries" (under *Concentrations of Other Constituents* in Section 3.1.4.3, *Hinkley Valley Groundwater Quality,* of the Draft EIR) because Mr. Grill's data indicates otherwise. The CAC wants IRZ to be shut down until more comprehensive sampling occurs and the byproduct containment is better understood.

Response: Refer to **Master Response 4** regarding remediation byproducts and the request to shut down the IRZ.

Comment 6B-12

Comment: The CAC believes too little is understood about secondary by-product generation in the form of arsenic and manganese, and that until a better understanding of the systems operation is gained, the IRZ should be "switched off" which could entail simply eliminating the present injection of ethanol while using the current IRZ system for hydraulic control. The commenter understands this could lead to down gradient releases of Cr[VI], possibly affecting the plume shape and size.

Response: Refer to **Master Response 4** regarding remediation byproducts and the request to shut down the IRZ.

Comment 6B-13

Comment: The Water Board should consider installing additional monitoring wells adjacent to IRZ area to prove and monitor containment of byproducts (manganese and arsenic).

Response: The Water Board issued an Investigative Order on Byproduct Plume Monitoring in IRZ Areas (Order No. R6V-2012-0060) on December 21, 2012, which requires PG&E to investigate whether discharges and byproducts from IRZ activities are being contained within the permitted project area. On February 15, 2013, PG&E submitted a workplan to the Water Board that proposes installing additional monitoring wells outside of the existing plume boundaries to investigate potential byproducts migration. Also, refer to **Master Response 4** regarding remediation byproducts. In addition, Water Board staff has collected domestic well samples for arsenic and manganese, along with several other parameters, outside of the IRZ area in August and September 2012 and February 2013. PG&E has also been installing new monitoring wells in areas west of the IRZ area.

The EIR addresses monitoring of expanded remedial activities for byproducts under Mitigation Measure WTR-MM-2b (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts). This measure states that "PG&E will conduct an initial monitoring of domestic and agricultural wells within one-mile downgradient or cross-gradient of any proposed in-situ or agricultural treatment unit commencing immediately upon approval of a new order allowing expanded remediation." The results of this monitoring program will inform the Water Board if additional mitigation measures are necessary, which the Water Board will make a permit requirement.

Comment 6B-14

Comment: The Water Board should evaluate if there is optimal dosing of the carbon source that would minimize byproduct formation. Past work on the IRZ and its predicted performance should be reviewed and compared to actual operating performance.

Response: The EIR addresses this issue through Mitigation Measure WTR-MM-7 (Construction and Operation of Additional Extraction Wells to Control Carbon Amendment In-situ Byproduct Plumes), which states that "if arsenic levels are increased at designated monitoring wells or iron or manganese are increased above their respective regulatory criteria, PG&E will construct and operate additional extraction wells or implement an equally effective mitigation measure along or upgradient of the IRZ treatment boundary to intercept or reduce reagent concentrations and secondary byproducts to prevent effects to domestic water supply wells." In addition, PG&E currently implements a monitoring and a contingency plan for adjusting the extraction and/or injection pumping, and/or the added concentration of the ethanol in the IRZ treatment areas. The goal of the monitoring and contingency plan is to limit the area with potentially elevated concentrations of remediation by-products to within the existing Cr(VI) plume boundary.

The EIR allows for the possibility that in order to facilitate the chromium remediation, it may be necessary to allow some migration of byproduct plumes. However, the EIR requires advance provision of replacement water to affected wells before any such expansion would actually occur in order to avoid impacts to domestic or agricultural water use. Because the EIR already addresses this issue, no revisions to the Draft EIR are necessary.

Comment 6B-15

Comment: The Water Board should better quantify the actual quantities of arsenic and manganese being generated relative to Cr[VI] being treated in order to evaluate risks.

Response: Refer to **Master Response 4** regarding remediation byproducts.

Comment 6B-16

Comment: The Water Board should have technical exchange meetings on the need to balance risks of temporary increases in arsenic and manganese versus benefits of in-situ remediation, which appear to be the most expeditious way to remediate entire plume to background levels.

Response: Refer to **Master Response 4** regarding remediation byproducts. Regarding technical exchange meetings, the Water Board has been engaged in technical exchange meetings concerning the detection of arsenic and manganese in the area west of the chromium plume. The EIR evaluates the tradeoffs between temporary increases in arsenic and manganese in the aquifer due to IRZ operations and includes a robust mitigation framework to address and control impacts associated with IRZ operations. No revisions to the Draft EIR are necessary.

Comment 6B-17

Comment: The manganese monitoring data collected by Mr. Nick Grill is provided in Attachment B. The CAC and IRP manager appreciate the opportunity to submit comments, and the most pressing issue is the IRZ byproducts.

Response: Comment noted. The manganese data provided has been reviewed and considered by the Water Board. Refer to **Master Response 4** regarding remediation byproducts.

Comment 6B-18

Comment: The comment is an introduction stating that Environmental Audit was retained by Project Navigator in its role as IRP to assist the CAC with their review of the Draft EIR.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6B-19

Comment: The NOP for the Draft EIR refers to preparation of a Subsequent EIR and an explanation for the change to a stand-alone EIR should be provided.

Response: The current project is consideration of supplemental remedial requirements to be added in a new CAO and WDRs to replace those associated with the comprehensive cleanup of the chromium that were issues in 2008. As such, the Water Board initially viewed this project as a "subsequent" action updating the prior CAO and WDRs. After the NOP was distributed, the Water Board decided that the new project area and the project ambition is much larger than envisioned in the 2008 CAO and WDRs, such that the issues are substantially different and better addressed in a stand-alone EIR.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6B-20

Comment: "Background level" refers to the water quality before the discharge, the accuracy of background levels used in the EIR is questionable, the new background study the Water Board is requiring of PG&E should be expedited, and the EIR's setting and potential impact s may need to be updated when background study is complete.

Response: Comment noted. Refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary (Background Levels of Chromium). The EIR is based on the information available at this time. The Water Board will have to evaluate the implication of the findings of the new background study when it is completed; it would be speculative to assess those future findings at this time. Until that time, the current background levels remain in place.

Comment 6B-21

Comment: The Draft EIR only addresses impacts associated with Cr[VI] contamination and cleanup, and it does not evaluate and disclose impacts of other contaminants associated with cleanup (e.g., manganese, iron, arsenic and uranium).

Response: The EIR addresses in detail the impacts of remedial byproducts. Refer to **Master Response 8** regarding the secondary impacts of remedial actions.

Comment 6B-22

Comment: The Draft EIR evaluates six alternatives, instead of a single proposed project, thereby maintaining project flexibility; however, the EIR needs to define the CEQA project.

Response: The CEQA project is "comprehensive groundwater cleanup strategy for historic chromium discharges from PG&E's Hinkley Compressor Station." As stated in Section 1.4, *Intent of the EIR*, of the Draft EIR, this EIR evaluates six alternatives to achieve the final groundwater cleanup. All of the alternatives involve different combinations of several types of remediation technologies, including groundwater extraction and agricultural reuse; clean water injection; groundwater extraction, above ground treatment, and discharge; and in-situ treatment. The different combinations of these remediation technologies not only result in cleanup times to 3.1 ppb of Cr[VI]) ranging from 29 to 50 years, but they also result in differing kinds and severity of secondary impacts. The scope of the alternatives chosen to be analyzed in this EIR was intended in part to demonstrate the tradeoffs between cleanup time and environmental impacts from the remedial activities. As remediation activities are ramped up in order to achieve cleanup more quickly, the severity of the environmental impacts potentially also increases.

Rather than selecting one remediation alternative as the proposed project and providing a less detailed evaluation of other alternatives (as CEQA allows), the EIR provides a detailed analysis of all of the alternatives. The Water Board will use the EIR to support its adoption of WDRs for PG&E to implement remediation throughout the project area and duration, and to support its adoption of a new CAO. The new CAO will establish specific cleanup objectives and timelines based on the analysis contained in the EIR and will require PG&E to take actions within the prescribed timelines to meet the cleanup objectives. The Water Board is actually prohibited by the California Water Code section 13360 from specifying the exact method and manner by which PG&E complies with a CAO or the WDRs; as such the EIR has been as broad as possible in disclosing the remedial technologies and actions that PG&E may use to comply with the new CAO and WDRs. Thus, the EIR has fully disclosed the potential impacts of the remedial "project" as required by CEQA.

In summary, evaluating six remediation scenarios at an equal level of detail provides the Water Board with greater flexibility when deciding what cleanup requirements to establish once the EIR is certified. Also refer to **Master Response 1** regarding the purpose and use of EIR. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6B-23

Comment: The relationship between affected wells and background concentrations is unclear. The public health based goal (PHG) of 0.02 ppb for Cr[VI] is used, but the current technology only detects up to 0.06 ppb, so affected wells should be those that contain Cr[VI] concentrations equal to or greater than 0.06 ppb.

Response: Refer to **Master Response 2** regarding chromium plume boundary and project study area boundary (Background Levels of Chromium).

Section 2.5, *Whole-House Replacement Water*, of the Draft EIR describes the relationship between the "affected wells" identified in the Water Board's Replacement Water Provisions (CAO R6V-2011-0005A1 through A4) and CEQA baseline concentrations covered under the EIR. The Replacement Water Provisions are issued as enforcement actions by the Water Board to address impacts to water supply wells from the existing chromium plume, which are not considered impacts under CEQA in this EIR because they were not caused by the implementation of the proposed project (remedial activities). This EIR covers the impacts of the remediation; and under CEQA, mitigation can only be required to CEQA baseline levels. Therefore, the EIR uses significance criteria based on the CEQA baseline levels rather than the PHG of 0.02 ppb or the detection levels of 0.06 ppb.

This issue is already addressed in the EIR and therefore, no revisions to the Draft EIR are necessary.

Comment 6B-24

Comment: Figures ES-2 and 2-2b summarize data from 4th Quarter 2011, but no information was provided to explain how the plume boundary's 3.1 ppb level was determined in the northern portion of the plume, where sampling data is not available, so the method used to define the plume should be provided.

Response: Refer to **Master Response 2** which describes the use of monitoring wells to define the chromium plume boundary and project study area boundary (Chromium Plume Delineation).

Comment 6B-25

Comment: In Section 3.1.2, *Terminology*, the term acre-feet should be defined in terms of gallons since the public is more familiar with gallons as a form of measurement.

Response: Comment noted. A definition of acre-feet is defined in gallons in Section 3.1.2 of the EIR. No revision to the EIR is necessary.

Comment 6B-26

Comment: In Section 3.1, *Water Resources and Water Quality*, the EIR does not provide a definition for "water supply well."

Response: Comment noted. For the purposes of the EIR, water supply wells are those that provide water for agricultural, domestic, or industrial uses, including those that are used to supply water for the freshwater injection wells in the western area of the plume. The definition of a water supply well is provided in Section 3.1 for clarification.

Comment 6B-27

Comment: The EIR should quantify whether or not groundwater with elevated Cr[III], Cr[VI] or other byproduct concentrations is being used for household purposes (e.g., showering, washing dishes etc.), and should have a health risk assessment that evaluates these potential pathways.

Response: Several health risk assessments have been completed in the past for chromium in water supply wells. These health risk assessments determined that the risk from inhalation was very small, and the California Office of Environmental Health Hazard Assessment determined the risk from ingestion to potentially be more significant. Based upon this understanding, the Water Board has ordered PG&E to provide whole house replacement water for any wells affected by the chromium plume in areas with detectable chromium within one-mile of the plume. At this time, the Water Board is not aware of elevated Cr[III] or byproduct concentrations (due to IRZ operations) in well water being used for household purposes.

The EIR requires PG&E to provide whole house replacement water for any wells that may become affected by chromium or secondary byproducts from future remedial activities and for wells that are within a buffer area (as defined in the EIR) of areas affected by chromium or secondary byproducts due to remedial activities. As a result, the future remedial actions, as mitigated, should not result in a significant increase in exposure of individuals to chromium or secondary byproducts.

Refer to **Master Response 3** regarding a Health Risk Assessment (HRA).

No revisions to the Draft EIR are necessary.

Comment 6B-28

Comment: The EIR should define the term "SCRIA project" (under "Hinkley Compressor Station Chromium Cleanup and Abatement Orders—CAO R6V-2008-0002" in Section 3.1.3.2, *State Regulations*).

Response: Section 2.4. *Existing Conditions,* first refers to the South Central Reinjection Area (SCRIA). The SCRIA project involves the pumping of groundwater from extraction wells in the part of the chromium plume between Highway 58 and Santa Fe Road. Groundwater is piped southward, amended with ethanol, and discharged into injection wells in the SCRIA. The project's original intent was to hydraulically contain plume migration in the northwestern plume area and to reduce chromium injected to the SCRIA from the dissolved form Cr(VI) to the solid form Cr(III). The SCRIA project began discharges to groundwater in October 2009.

The definition of SCRIA is now provided in Section 3.1.2, *Terminology,* and further described in Section 2.4 where it is first introduced.

Comment 6B-29

Comment: The EIR should include a discussion of health risks associated with Cr[VI] and other remediation byproducts. (The only Health Risk Assessment [HRA] in the EIR was for diesel truck emissions and ex-situ treatment plant construction).

Response: Section 1.2.2.5, *Health and Safety,* states: "Contaminated groundwater is an existing condition attributable to the prior release of Cr from the Compressor Station. As such, prior or current health impacts related to chromium contamination are a component of the project's CEQA baseline and attributable to the prior releases and not to the proposed project (i.e., the comprehensive cleanup strategy). The comprehensive cleanup strategy is intended to lower the Cr[VI] concentrations in groundwater to background levels and as such would reduce health impacts related to chromium contamination compared with existing conditions (late 2011). Therefore, the impacts identified in this EIR are those associated with the remediation activities, not the existing contamination. However, there is the potential for certain remedial actions to result in increased concentrations of other constituents (such as arsenic, iron, manganese, nitrate, or total dissolved solids) as a result of remedial activity. Should this occur, remedial activity could increase public health risks compared with existing conditions."

Section 3.1.6 of the *Water Resources and Water Quality* Section describes the potential health effects of constituents in groundwater, including chromium as well as the remediation byproducts of total dissolved solids (TDS), nitrate and nitrite, arsenic, iron, manganese, uranium and alpha radiation. Section 3.3.3.2, *Existing Potential Contaminants in Soil and Groundwater,* of the *Hazards and Hazardous Materials* Section addresses the toxicity of chromium and associated remediation byproducts.

An HRA was prepared to address diesel because the project (groundwater remediation) would result in exposing sensitive receptors to diesel exhaust from construction and operation (i.e., an exposure pathway would be created by the project).

The project would not create or increase an exposure pathway to secondary byproducts of remediation. It is not the purpose of the EIR to address past contamination or the chromium plume,

but rather the proposed remediation techniques. To address impacts of byproducts, the EIR identifies Mitigation Measure WTR-MM_2b (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts). Please refer to **Master Response 3** regarding a Health Risk Assessment (HRA).

No revisions to the Draft EIR are necessary.

Comment 6B-30

Comment: The results of PG&E's new background study should be incorporated into the Final EIR, which should be revised to reflect the latest data.

Response: The EIR is based on currently available data, generally as of 4th quarter 2012. A potential new background study has not been completed to date, and the results may not be known for at least two more years, which exceeds the timeframe for adopting this EIR. Refer to **Master Response 2** regarding the new background study.

No revisions to the Draft EIR are necessary.

Comment 6B-31

Comment: The EIR (under "Manganese" in Section 3.1.4.3, *Hinkley Valley Groundwater Quality*) states that current data shows manganese as a byproduct only within the chromium plume and not beyond plume boundaries and request support for the statement.

Response: Refer to **Master Response 4** regarding remediation byproducts (Manganese and Arsenic). While water supply well samples show manganese and arsenic in some wells, data has not been provided to show a link with the IRZ areas.

Comment 6B-32

Comment: The units on Figure 3.1-12 (e.g., 8 feet/year) appear to be incorrect because water is measured in volume.

Response: In Figure 3.1-12, all of the water budget values are feet of water (depth). The pumping is depth of water per year for the parcel. All of the values apply to the land application being considered (acres). Therefore, for a 40-acre parcel the pumping would be 40 acres x 8 ft/yr = 320 af/yr. A note was added to the figure to clarify this.

No revisions to the Draft EIR are necessary.

Comment 6B-33

Comment: The EIR (under "In-Situ Treatment Experience to Date" in Section 3.1.5.2, *In-Situ Reduction Treatment*) should explain why ethanol is now favored for in-situ treatment. The commenter also asks if the treatment uses 95% ethanol, what is the other 5%?

Response: PG&E began using ethanol as the preferred form of carbon amendment in October 2008 because of the low cost compared to other amendments (e.g. sodium lactate), and better distribution efficiency within the aquifer(PG&E 2010 – FS). The ethanol being used contains 95% as alcohol and the remaining 5% as non-toxic chemicals to make drinking the ethanol undesirable.

Section 3.1.5.2, *In-Situ Reduction Treatment* describes the in-situ experience to date. No revisions to the Draft EIR are necessary.

Comment 6B-34

Comment: The EIR should address the water quality impacts of using ethanol for in-situ treatment.

Response: Section 3.1.5.2, *In-Situ Reduction Treatment,* describes in-situ treatment mechanisms. This section describes the treatment involving the injection of carbon-containing compounds to stimulate microbial and chemical processes which convert Cr[VI] to Cr[III] through a chemical reaction known as "reduction." This section also states what happens to the carbon when it breaks down. Ethanol discharges in the project area have the potential to locally increase concentrations of total organic carbon (TOC) and reduction byproducts, such as arsenic, manganese, and iron in receiving waters. TOC increases are consumed by microorganisms (bacteria) and eventually reduce in concentration to pre-injection levels. IRZ byproducts return to pre-injection concentrations as the reducing conditions abate within several months and up to one to two years. Water quality conditions in the IRZ area are monitored quarterly by PG&E (see Lahontan Water Board,2009. Notice Of Applicability Of General Waste Discharge Requirements For The General Site-Wide Groundwater Remediation Project at the PG&E Compressor Station, Hinkley, San Bernardino County [WDID NO. 6B369107001, Board Order No. R6V·2008-0014]). Also refer to **Master Response 4** regarding remediation byproducts for more information on byproducts and water quality impacts of the in-situ remediation process.

The discussion of ethanol has been expanded in Section 3.1.5.2 for clarification.

Comment 6B-35

Comment: PG&E is required to cleanup Cr[VI] to background conditions (defined as 3.1 ppb at this time) but expresses concern that if the future MCL is set at a level less than background levels that PG&E will not be required to remediate to the MCL.

Response: The commenter is correct in that PG&E is not necessarily required to cleanup groundwater levels to drinking water standards. This is because PG&E is only required to remediate the effects of its own discharge; it is not responsible to remediate naturally occurring levels of chromium or chromium due to sources from other dischargers.

In the Draft EIR, Mitigation Measure WTR-MM-2 only requires PG&E to provide replacement water that meets drinking water standards for constituents affected by the remediation. Because the current MCL (50 ppb) for chromium is so much higher than background levels (3.1 ppb of Cr[VI]), the mitigation measure has been revised to require PG&E to provide replacement water that meets maximum background levels of chromium to affected wells as defined in the EIR.

For more information, refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary (Background Levels of Chromium). Section 1.2.2, *Public Comments* (Cleanup Levels and the Definition of Background) and Section 3.1.7, *Significance Criteria*, both address the topic of clean-up levels and why they are different than PHG levels.

This topic is already addressed in the Draft EIR, thus no revisions to the Draft EIR are necessary.

Comment 6B-36

Comment: The significance criteria for remediation byproducts should be discussed further and should be consistent with chromium contamination.

Response: Please refer to **Master Response 4** regarding the byproduct significance criteria.

Comment 6B-37

Comment: With regard to plume bulging, there should be further discussion to justify that the mitigation measures to address plume bulging are adequate to control and monitor the impact; and mitigation should include monitoring outside the plume.

Response: This comment refers to Section 3.1.8.2, *Water Quality Impacts*, regarding the potential impacts of Alternative 4C-2 on the spreading of chromium plume due to remedial activities.

Mitigation Measure WTR-MM-2b (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts) requires monitoring for chromium in domestic wells within 1-mile of the chromium plume on a quarterly basis, which is in addition to normal plume monitoring in monitoring wells.

Mitigation Measure WTR-MM-3 (Boundary Control Monitoring, Enhancement and Maintenance of Hydraulic Control and Plume Water Balance to Prevent or Reduce Potential Temporary Localized Chromium Plume Bulging) specifies several measures with the purpose of reducing plume bulging effects. These measures will be monitored and evaluated over time to ensure effectiveness, and re-adjusted when needed. Mitigation Measure WTR-MM-3 includes the development of a Boundary Monitoring Plan to address monitoring needed for potential plume bulging.

The issues of potential plume bulging and plume migration are also addressed in past Water Board enforcement actions. The Water Board's amended CAO R6V-2008-0002A2 allows some bulging on the eastern plume boundary in order to accommodate additional remedial actions in the SCRIA area. On the other hand, amended CAO R6V-2008-002-A3 requires PG&E to reduce plume migration in the area generally north of Thompson Road and CAO R6V-2008-002-A4 requires PG&E to monitor and statistically evaluate Cr[IV] concentrations in domestic water supply wells in areas outside the southern contiguous plume boundary. Similar orders can be imposed upon PG&E if monitoring and evaluation of future remedial actions indicate that plume bulging or migration is not being contained.

Refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary (Chromium Plume Boundary Control) for more information on the potential for plume bulging and boundary control efforts.

No revisions to the Draft EIR are necessary.

Comment 6B-38

Comment: The comment states that Mitigation Measure WTR-MM-2 should identify timeframes for implementation to determine adversely affected wells and implementation of alternative water supplies, if necessary.

Response: Please refer to **Master Response 5** regarding timeframes for alternative water supplies.

Comment 6B-39

Comment: It is not clear in the EIR how Mitigation Measures WTR-MM-2a and WTR-MM-2b apply to new wells where existing background data does not exist.

Response: Mitigation Measure WTR-MM-2a (Mitigation Program for Water Supply Wells Affected by the Chromium Plume Expansion due to Remedial Activities and Mitigation Measure) and WTR-MM-2b (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts) both specify increases based on "current data." PG&E is already monitoring extensive areas around the current plume with the exception of the northernmost plume area where expansion of the monitoring network is underway. Thus, data is already being developed to understand current levels of chromium. Mitigation Measure WTR-MM-2b requires an initial monitoring of domestic wells within 1 mile downgradient or cross gradient of any proposed IRZ or agricultural treatment unit; thus data will be developed to support future application of mitigation measures.

No revisions to the Draft EIR are necessary.

Comment 6B-40

Comment: Mitigation Measures WTR-MM-2a and WTR-MM-2b should provide for the potential to employ different models or updates to existing models.

Response: Regarding implementing modeling requirements of the EIR mitigation, the mitigation measures do not preclude the use of different or updated water quality models. The Water Board retains the authority to require changes or updates to models, as and if necessary. The comment is non-specific about any deficiencies in current models used to support the remedial planning and thus no further response can be provided on the need for change or update to the modeling tools. To date, PG&E has used standard models recognized in the industry for assessing plume dynamics such as MODFLOW.

No revisions to the Draft EIR are necessary.

Comment 6B-41

Comment: Mitigation Measure WTR-MM-2b should also require monitoring for remedial activity byproducts in domestic and agricultural wells within one mile of any in-situ or agricultural treatment unit twice yearly.

Response: This comment addresses content in Section 3.1.9, *Mitigation Measures* (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts). Current WDRs specify a robust monitoring program for PG&E to evaluate IRZ impacts to water quality and containment with the IRZ areas. If monitoring indicates that byproducts are migrating outside the IRZ areas, the Water Board has authority to require addition sampling and analysis in monitoring well and domestic well samples. The same can be included in future WDRs when remedial actions are expanded within the chromium plume.

Please refer to **Master Response 4** concerning the request to expand the area of monitoring of remedial byproducts.

Comment 6B-42

Comment: The chromium plume has expanded and appears to not be completely defined or confined, and byproducts are being detected outside the IRZ, so mitigation measures in the EIR must be formulated to prevent further degradation of water quality.

Response: The EIR acknowledges in Section 3.1.4.1, *Hinkley Groundwater Quality*, that the chromium plume is not fully defined and is not being contained from migration in the northern area. Byproduct distribution is also discussed in Appendix A (Section A.5.2).

Please refer to **Master Response 4** concerning remedial byproducts. As discussed therein, the pattern of byproduct detections to date is consistent with a conclusion that byproduct plumes are presently contained within the chromium plume area. The evidence is strong that detections of manganese and arsenic in domestic wells further away from the chromium plume are not likely related to IRZ operations when considering groundwater flow directions, background levels of constituents, and the patterns of detections. While these factors also support the presumption that domestic wells closer to the chromium plume are not likely related to IRZ operations, the Water Board is investigating this issue further in order to confirm whether or not IRZ operations have affected domestic wells outside the chromium plume.

With regards to degradation of water quality, the Water Board has already determined that minimal impairment is reasonable so long as it is for a temporary time and within a limited distance. As described in the EIR, it may be necessary to allow temporary impairment of water quality in the aquifer in order to allow for overall chromium remediation to be achieved expeditiously. For example, IRZ operations result in byproducts, which currently are believed to be contained within the chromium plume. As another example, temporary bulging may be necessary in order to allow IRZ injection levels to be increased substantially. If the Water Board decides to allow temporary impairment of water quality, the EIR requires that replacement water be provided to all affected wells and that the impairment itself be remedied over time.

In response to the comment of chromium plume definition and hydraulic control, refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary. In response to the comment of byproducts detected outside of the IRZ, refer to **Master Response 4** regarding remediation byproducts.

Comment 6B-43

Comment: PG&E should immediately conduct initial monitoring of groundwater levels and quality in more domestic and agricultural wells, without waiting for the new Amended CAO (No. R6V-2008-A4), because delays in implementing effective remediation have resulted in plume expansion.

Response: Please refer to **Master Response 2** concerning plume identification. The amended CAO has been issued and includes consideration of chromium detections of domestic wells. It is premature to require that PG&E analyze for constituents beside chromium in domestic wells without knowing which cleanup alternative will be selected and knowing where cleanup actions will be implemented. Once a final cleanup strategy has been accepted, a more precise monitoring program can be implemented in the area most likely to be affected by remedial actions.

Comment 6B-44

Comment: Mitigation Measure WTR-MM-3 needs to specify what constitutes a Boundary Monitoring Plan and Contingency Plan for AUs because mitigation measures need requirements, performance standards, and similar information provided.

Response: The EIR is evaluating and addressing chromium cleanup, not existing contamination. Thus, as described in Mitigation Measure WTR-MM-3 (Boundary Control Monitoring, Enhancement and Maintenance of Hydraulic Control and Plume Water Balance to Prevent or Reduce Temporary Localized Chromium Plume Bulging), the measure is required to address temporary and intentional chromium plume bulging from remedial activities, not the unintended chromium plume movement unrelated to remedial activities. The chromium plume movement unrelated to remediation activities is the subject of existing Water Board CAOs and WDRs.

The mitigation does contain "requirements" and "performances standards" as follows:

- Maintenance of "inward gradients"… "as long as necessary to prevent Cr[VI] migration."
- "Extraction wells designed to stop the spread of the plume beyond the wells."
- Operation and maintenance of the groundwater extraction system to "achieve and maintain hydraulic capture within targeted areas on a year round basis."
- Operation of the groundwater extraction system consistent with CAP-R6V-2008-0002A3. CAO R6V-2008-0002A3 requires:
    - Specified area of hydraulic capture south of Thompson Road and monthly monitoring of water levels.
    - Evaluation of implementation of additional extraction north of Thompson Road.
- Implementation of the Contingency Plan for AU Operations as described in the Feasibility Study Addendum No. 3. The contingency plans includes:
    - Performance criteria for maintenance of hydraulic gradients and/or concentration trends.
    - Bringing additional agricultural units on line if performance criteria not met.
    - Use of infiltration galleries or ex-situ treatment options if additional agricultural units are infeasible or insufficient to maintain hydraulic gradients and/or concentration trends.

Thus, Mitigation Measure WTR-MM-3 is sufficiently developed at this time to rely on its implementation as mitigation for plume bulging from remedial activities. The mitigation provides a framework of requirements that will appropriately guide the development of the Boundary Monitoring Plan for assessing mitigation effectiveness and a Contingency Plan for plume containment, to be incorporated in future WDRs.

No revisions to the EIR are necessary.

Comment 6B-45

Comment: Mitigation Measure WTR-MM-8, which requires treated water be sampled on an annual basis to ensure source is acceptable for freshwater injection, should specify more frequent sampling because of the complex groundwater issues.

Response: As described in **Master Response 2,** in order to ensure that the water quality of freshwater injection is adequately monitored, Mitigation Measure WTR-MM-8 has been revised to require sampling twice per year. The Water Board has the ability to increase the sampling frequency if data so indicates the need.

Comment 6B-46

Comment: It does not appear the EIR includes the environmental impacts associated with implementing the existing Manganese Mitigation Plan. Key elements of the mitigation measures in the plan should be included in the Mitigation Monitoring Program and the Cleanup and Abatement Order to assure enforcement.

Response: The EIR is evaluating and addressing future chromium cleanup, not an existing manganese cleanup plan to deal with existing manganese. Please refer to **Master Response 8** regarding the secondary impacts of implementing mitigation of manganese remediation per Mitigation Measure WTR-MM-7. The existing Manganese Mitigation Plan is described in the Draft EIR in Section 3.1.5.2 as follows:

- Installation and operation of a groundwater extraction well to capture groundwater with concentrations of dissolved manganese that exceed the threshold concentration;
- Aeration of the extracted groundwater in an above ground system;
- Percolation of treated groundwater via dry wells or an infiltration gallery; and
- Installation of three new monitoring wells on the north side of SR 58 to monitor manganese in groundwater.

These details have been added to WTR-MM-7 as potential methods to address future byproduct manganese as necessary and the secondary impacts of these measures is now discussed in Section 3.1. It is beyond the intent and ability of the EIR to specify cleanup and abatement requirements and assure enforcement of Water Board orders.

Comment 6B-47

Comment: The EIR should further discuss the health risks due to exposure to contaminants, such as uranium and other radionuclide concentrations in groundwater from pumping for agricultural treatment.

Response: The health effects of uranium and alpha radiation are described in Section 3.1.6.7, *Uranium and Alpha Radiation*. As described in the EIR, it is premature to assess the potential effects of agricultural treatment on uranium levels as it is not understood whether or not agricultural treatment is or is not actually affecting uranium levels in groundwater, air, and plants .Thus it would be premature to characterize health risks at this time. Mitigation Measure WTR-MM-5 requires further investigation of this issue and remedial action if necessary to address potential increases in uranium and potential risks to humans and the environment.

No revisions to the EIR are necessary.

Comment 6B-48

Comment: Mitigation Measure WTR-MM-5 needs to include enforceable compliance dates for investigation of TDS, uranium, and other radionuclide levels.

Response: Mitigation Measure WTR-MM-5 (Investigate and Monitor Total Dissolved Solids, Uranium and Other Radionuclide levels in relation to Agricultural Treatment and Take Contingency Actions) has been revised to include compliance dates for the investigation including collection of pre-remediation reference monitoring data for one year prior to establishment of new agricultural treatment units, submission of the investigation plan within 3 months of Water Board approval of WDRs allowing new agricultural treatment units, and completion of the investigation plan within one year after approval of WDRs allowing new agricultural treatment unit.

Comment 6B-49

Comment: Ethanol is flammable, and the EIR should consider potential hazards associated with its storage, transport, and use.

Response: The commenter is correct in that ethanol is flammable. The Draft EIR Section 3.3, *Hazards and Hazardous Materials*, addresses potential impacts associated with the storage, transportation, and use of hazardous materials based on significance criteria established in CEQA Guidelines Appendix G. As discussed for Impact HAZ-1b (releases of hazardous materials or waste used or generated from construction activities and during remedial operations), PG&E would be required to comply with existing federal and state regulations administered through the San Bernardino County Fire Department's Unified Program governing proper handling of hazardous materials and hazardous materials worker safety requirement procedure. Because compliance is mandatory, the risk is considered less than significant. The discussion under Impact HAZ-1b has been revised to clarify that ethanol is one of the substances used during remedial operations.

Comment 6B-50

Comment: The references to the local geology rely on references from PG&E, and better general references for existing geology would be data from USGS or California Geologic Survey.

Response: The reports prepared by PG&E that are referenced for local geology were actually prepared by the consultant, Stantec, for PG&E. Stantec certifies in its reports that the information, conclusions, and recommendations provided by Stantec have been prepared under the supervision of and reviewed by licensed professionals in the State of California. In addition, the investigation reports submitted by PG&E and prepared by Stantec often reference USGS and other external sources.

The comment does not provide any details indicating a concern with the geological information itself and thus no further response can be provided. No revisions to the Draft EIR are necessary.

Comment 6B-51

Comment: Mitigation Measure AIR-MM-3, which requires trucks to limit idling to 3 minutes, should instead be consistent with the California Air Resource Board's Airborne Toxic Control Measures regulation order (Section 2485. Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling), which limits idling to 5 minutes, because frequent start up and shutdown of truck engines could actually result in higher emissions as opposed to reduced emissions.

Response: Mitigation Measure AIR-MM-3 is more restrictive and would reduce emissions beyond current CARB regulations. It would not result in more frequent start-up and shutdowns because it reduces the amount of time any truck can idle at any location from 5 minutes to 3 minutes. The 5

and 3 minute idling amounts are per trip and do not restart once a truck shuts down. Regardless, idling emissions do in fact exceed startup emissions. For example, idling emission rates (1.221 grams per hour or 0.02 grams per minute) from EMFAC 2007 greatly exceed PM emission rates from cold starts (0.006 grams per start). Therefore, reducing idling time would reduce public exposure to pollutants.

No revisions to the Draft EIR are necessary.

Comment 6B-52

Comment: The construction emission estimates for Alternatives 4C-3 and 4C-5 in Tables 3.5-11 and 3.5-12 (Section 3.5, *Air Quality and Climate Change*) appear to omit paving emissions compared to information in the EIR, Appendix D.

Response: The commenter is correct. Although the paving emissions for Alternatives 4C-3 and 4C-5 were included in the URBEMIS modeling (Appendix D, page 20), they were inadvertently omitted from the construction emissions summary table in Appendix D and from Tables 3.5-11 and 3.5-12 in Section 3.5. Table 3.5-11 and Table 3.5-12, as well as the summary table in Appendix D, have been revised to include the paving emissions. This does not change the conclusions in the Draft EIR.

Comment 6B-53

Comment: Regarding Tables 3.5-17 and 3.5-18 (Section 3.5, *Air Quality and Climate Change*), it is unclear in the supporting documentation (Appendix D, page 13) if the CO_2-equivalent (CO_2e) emissions have been calculated correctly because no details are presented in Appendix D; therefore, project impacts on climate change could not be verified.

Response: The commenter is correct. The detail regarding the methodology used to calculate construction-related CO_2-equivalent (CO_2e) emissions was not included. Section 3.5.5.1, *Construction Emissions*, has been revised to include this information. This does not change the conclusions in the Draft EIR.

Comment 6B-54

Comment: It is unclear in the supporting documentation for Construction Emissions Summary (Appendix D, page 13) if the omission of the paving emissions that occurred for criteria pollutant emissions also occurred for CO_2e emissions.

Response: The commenter is correct, and the GHG emissions related to paving for Alternatives 4C-3 and 4C-5 were inadvertently omitted. Tables 3.5-17 and 3.5-18, as well as Appendix D, have been revised to include this information. This does not change the conclusions in the Draft EIR.

Comment 6B-55

Comment: Table and page numbers should be added to Appendix D for easier referencing.

Response: Appendix D has been revised to include page numbers. This does not change the conclusions in the Draft EIR.

Comment 6B-56

Comment: The calculation for the distances should be added to the discussion of existing noise conditions in Section 3.6.3, *Environmental Setting*, of the Draft EIR which discusses the distances to the 60 and 65 L_{dn} (day-night sound level) traffic noise contours from SR-58.

Response: These distances were estimated from the data in Table 3.6-9 which provides traffic noise contour distances from roadways as a function of traffic volume. The table does not have a traffic volume that corresponds to the traffic volume on SR-58 (11,000 per day). Accordingly, the data in the table was used to estimate the contour distances that correspond to a daily volume of 11,000. The lowest volume shown in the table for a freeway is 28,000. The difference in noise generated by a roadway with daily traffic of 11,000 and 28,000 is 4.1 dB. [10 log (28,000/11,000) = 4.1 dB]. This means that at a given reference distance traffic noise will be 4.1 dB less for the roadway with the daily volume of 11,000. Based on acoustically soft ground distance attenuation of 4.5 dB per doubling of distance, the 60 and 65 L_{dn} contour distances for the roadway with daily volume of 28,000 can be adjusted to correspond to a roadway with daily volume of 11,000 with the following equation:

$$10^{(-4.1/15)} = 0.533$$

0.533 is then the factor used to determine the contour distances for a daily volume of 11,000.

0.533 x 360 feet = 192 feet ~ 200 feet

0.533 x 790 feet = 421 feet ~ 425 feet

These distances are actually only provided for general reference and are not factors directly involved in the impact analysis. No revisions to the Draft EIR are necessary.

Comment 6B-57

Comment: Mitigation Measure NOI-MM-1 will not reduce significant construction noise impacts to a less than significant level because there are no specific measures showing how noise can be reduced from 80 dBA to 55 dBA (a 25 dBA reduction).

Response: The significance threshold for construction noise states an impact pertaining to noise was considered significant under CEQA if:

- Residential uses would be exposed to construction noise that exceeds County noise standards (55 dBA daytime and 45 dBA nighttime) during non-exempt hours.

Accordingly, construction noise impacts are only significant if noise exceeds 55 dBA (daytime) or 45 dBA (nighttime) during non-exempt hours. Similarly it is not necessary to reduce construction to 55 dBA at a residence at all times in order to comply with the noise ordinance or to reduce the impact to a less-than-significant level. It only is required during non-exempt hours. A key element of the mitigation measure is the following:

- Scheduling substantial noise-generating/vibration activity during exempt daytime hours

Implementation of this measure alone would mitigate significant construction noise impacts to a less-than-significant level. If work must occur during non-exempt hours the contractor will be compelled limit noise to 55 dBA or 45 dBA at residences depending on the time of day. The mitigation measure lists several measures that can be implemented to reduce noise in this situation.

If the contractor is unable to reduce noise to 55 dBA or 45 dBA as required during non-exempt hours, that work would have to be conducted during exempt hours.

The mitigation measure as stated will reduce significant construction noise impacts to a less-than-significant level. No revisions to the Draft EIR are necessary.

Comment 6B-58

Comment: The comment asks for identification of the Habitat Conservation Program referenced in Mitigation Measure BIO-MM-1d.

Response: Mitigation Measure BIO-MM-1d (Conduct Ongoing Biological Monitoring during Construction) has been revised to remove reference to a Habitat Conservation Plan, which was included in error. The ongoing biological monitoring is to ensure compliance with the mitigation measures presented in the Draft EIR. This does not change the conclusions in the Draft EIR.

Comment 6B-59

Comment: For Mitigation Measure CUL-MM-1, the cultural resources surveys should be limited to areas proposed for construction activities, not in areas where no remediation or construction are proposed. The entire project study area includes the chromium plume and one-mile surrounding the plume.

Response: The mitigation measure is intended to apply to all potential future construction activities that might occur anywhere in the project study area. For example, monitoring wells could be constructed outside the plume but within the project study area, and the mitigation applies to all construction activities. The intent is only to conduct surveys in areas where construction may actually occur, not to areas that won't be disturbed. Mitigation Measure CUl-MM-1 has been clarified accordingly. This does not change the conclusions in the Draft EIR.

Comment 6B-60

Comment: The cumulative impact analysis needs to include past, present and reasonably foreseeable future projects (CEQA Guidelines Section 151530); therefore, the analysis should consider all existing and previous Water Board Orders and related remediation activities completed by PG&E in the Hinkley Valley.

Response: Prior Water Board orders have resulted in the ongoing remediation, which is the existing setting. This includes 182 acres of agriculture treatment units (AUs), AU pumping up to 1,100 gallons per day (gpm), injection of up to 80 gpm of freshwater on the west side to contain the plume, 71,370 linear feet of pipelines and 541 monitoring, extraction and injection wells with temporary increases in byproducts in the IRZ area within the Cr[VI] plume. This is described in Chapter 2 of the Draft EIR. Prior Water Board orders are discussed where relevant in the EIR, as well as in the various PG&E Feasibility Study documents (all of which are referenced in the EIR). Thus, the context for the prior Water Board orders is properly described in the EIR.

Chapter 3 of the Draft EIR describes the existing setting for each subject area and where appropriate articulates the existing setting relative to the effects of prior Water Board orders. For example, Chapters 2 and 3 describe the existing remedial activities including IRZ operations, agricultural units, and freshwater injection. As the existing setting is defined in the EIR, the effects of prior Water Board orders are de facto presented in the EIR. The existing setting used for the project impact

analysis is the same as used for the cumulative impact analysis. This is the proper consideration of the effects of the past and existing Water Board orders and related remediation activities. The EIR uses a current CEQA baseline (4th quarter 2012), not a past baseline prior to the initiation of remedial and investigatory activities, and thus it is not necessary to catalogue the effects of prior remediation over a past baseline; instead it is sufficient to describe the existing setting which has been influenced by past remedial actions.

The comment is non-specific as to effects of prior Water Board orders and related remediation activities that are not implicitly considered in the cumulative impact analysis, and thus no further response can be provided.

Aside from the proposed project, there are no other reasonably foreseeable future remediation activities. The only other PG&E project in the Hinkley Valley is the proposed addition of two impoundments (evaporation ponds) at the Hinkley Compressor Station. The two ponds would be located on the same site as two former ponds, adjacent to three existing ponds. The cumulative analysis has been revised to consider this project, and it would not contribute to a significant cumulative impact. This does not change the conclusions in the Draft EIR.

Comment 6B-61

Comment: Table 4-4 (Summary Comparison of Potentially Significant Environmental Impacts of Project Alternatives) needs to include “local aquifer drawdown” and “aquifer compaction” which are blank.

Response: Table 4-4 has been revised to fill in the blanks. This does not change the conclusions in the Draft EIR.

Comment 6B-62

Comment: The EIR does not identify a single environmentally superior alternative, so this decision-making needs to occur. The comment also states that the EIR should provide the reader with more insights on the process after this document and opportunities for the Hinkley community to provide input.

Response: As stated in Section 4.6.5, *Identifying the Environmentally Superior Alternative*, of the Draft EIR, it is challenging to identify a single alternative that is clearly environmentally superior because some alternatives are better than other alternatives for different environmental reasons. As such, an environmentally superior alternative (other than the No Project Alternative) is identified in terms of remediating the chromium plume (Alternative 4C-4), groundwater drawdown effect on local water supply (Alternative 4B), water quality effects of remedial byproducts (Alternative 4B), disturbance of biological resources (Alternative 4B), change in visual character (Alternative 4B), and other impacts involving construction or operation (Alternative 4B).

Without taking into consideration the cleanup timeframes, Alternative 4B would be considered environmentally superior because it would have the least groundwater drawdown, the lowest level of remedial byproducts, and the least new disturbance of special-status species habitat. However, Alternative 4B is the second slowest of the action alternatives to reach the plume cleanup levels (Alternative 4C-5 is the slowest). For the purposes of CEQA disclosure only, Alternative 4B is identified in the EIR as the CEQA environmentally superior alternative in the final EIR. However, this does not mean that Alternative 4B is identified as a preferred alternative; this only means that of the

action alternatives it would have the least new secondary environmental impacts (the chromium plume is an existing condition and thus is not a consequence of the remediation).

As stated in Section 1.4, *Intent of the EIR*, of the Draft EIR, the Water Board will use the EIR to support its adoption of WDRs for PG&E to implement the various remediation technologies throughout the project area and duration, and to support its adoption of a new CAO. The new CAO will establish specific cleanup objectives on the analysis contained in the EIR and will require PG&E to take actions within the prescribed timelines to meet the cleanup objectives. The Water Board will specify cleanup requirements and discharge limitations, but is prohibited by California Water Code section 13360 from specifying the exact methods and manner of compliance with cleanup orders. This means that the Water Board will not mandate specific remediation technologies, or identify a preferred alternative in the EIR. All proposed WDRs and CAOs will be publically noticed per routine Water Board procedures and the public will have a separate opportunity to comment and speak on these proposed actions.

Comment 6B-63

Comment: The Water Board is required to adopt a Mitigation Monitoring Program (MMP) to ensure the mitigation measures and project revisions identified in the EIR are implemented. The MMP needs to enforce mitigation measures and set compliance timeframes, and the public should be allowed to review and comment on the MMP.

Response: The commenter is correct in that CEQA requires an agency to adopt a MMP, which includes implementation and compliance timeframes, performance standards, and monitoring and reporting requirements. Although a lead agency may choose to include a draft MMP in the Draft or final EIR to obtain public comment, it is not required. The MMP is required to be adopted at the time of project approval, which in this case will be when the Water Board considers new WDRs and/or new CAO relative to expanded remediation activity. CEQA does not require a public comment period on the MMP. The MMP will be available as part of the approval packet at the time the draft WDRs and/or new CAO are available, and the public will be able to comment on the MMP at that time. The Water Board will allow time for the public to review the MMP in advance of any project approval hearings.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6B-64

Comment: Mitigation measures should be considered for inclusion in the Final Cleanup and Abatement Order issued by the Water Board to ensure the mitigation measures are enforced.

Response: The mitigation measures will be implemented through the WDRs, as appropriate. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 6B-65

Comment: The commenter thanks the CAC and IRP manager for selecting Environmental Audit to review and comment on the Draft EIR.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 7A (Cheney D)

Comment 7A-1

Comment: The Draft EIR is not sufficient, and Hinkley residents cannot get an understanding of the 1,000 page document in a few hours of presentation. The commenter proposes there be an ongoing education (outreach) workshop staffed by Water Board personnel full time for educating the public and answering questions about the EIR, and that the EIR presentations be separate from comment sessions.

Response: The commenter does not state how or why the Draft EIR is not sufficient. The Draft EIR is lengthy because the project is complex, and the six project alternatives analyzed are evaluated at an equal level of detail. The length or size of an EIR does not deem it insufficient.

The Water Board extended the public review period from the required 45 days to 76 days to provide people more time to review the document. In an effort to help the public understand the EIR, the Water Board conducted public meetings on August 29, 2012 and October 16, 2012, to review the project and the EIR. The Water Board held a public hearing on the Draft EIR on September 12, 2012, and discussed the EIR at a public Board meeting on January 16, 2013. Thus, the Water Board has gone beyond the CEQA requirements to assist the public in their review of the EIR.

The Draft EIR includes an Executive Summary which provides an abbreviated version of the project goals and objectives, project alternatives, project impacts and mitigation measures, a comparison of the alternatives, key areas of controversy and issues to be resolved, and the intent of the EIR.

The Water Board will continue to notify the public of the EIR and project status through the Water Board's Lyris Listserv mailing list, and the Water Board will continue to have several staff working on this project and available to answer public questions. Further, Water Board staff are active participants in the Hinkley Community Advisory Committee's monthly meetings, where questions or concerns on the EIR can be raised and addressed in that public venue. Lastly, Water Board staff plan to hold an additional public information session during a 30-day review period for the final EIR, prior to Water Board consideration of the final EIR at a public hearing in 2013.

No revisions to the EIR are necessary.

Comment 7A-2

Comment: The Water Board should provide a full time onsite manager with an open door policy for Hinkley residents and the public and who is the direct liaison to the CAC. Remote management is not acceptable.

Response: As stated above in response to Comment 7A-1, the Water Board will continue to have the same staff working on this project for continuity and institutional knowledge and who are available to answer questions by phone or email. Also, as noted in the response to Comment 7A-1, Water Board staff are active participants in monthly Hinkley CAC meetings, as well as participants in additional on-site monthly meetings related to groundwater investigations and cleanup for the project. Therefore, it is not accurate to characterize Water Board staff's project involvement as "remote management." At this time, the Water Board does not have the ability to provide a full-time staff on-site for this project and does not believe that full-time on-site staffing is needed.

This comment does not concern the adequacy of the EIR, and thus no revisions to the Draft EIR are necessary in response.

Comment 7A-3

Comment: All unproven remediation technologies (e.g., water filtration systems, injection of foreign substances into water table, etc.) need to be termed "experimental."

Response: The proposed remediation technologies discussed in the EIR are not experimental. Water filtration and in-situ remediation have been used widely on many other projects nationwide. IRZ and agricultural treatment were both pilot-tested at Hinkley before being applied at scale. Thus, they are not considered experimental at this time. The effectiveness of any remedial actions cannot be always known with 100% precision, but that does not mean the technologies themselves are experimental.

No revisions to the Draft EIR are necessary.

Comment 7A-4

Comment: The biological impact of the property buyout program is inadequate. Any source of water in a desert area may become wildlife habitat, and PG&E is not performing adequate evaluation of properties before tearing them down, as year-long studies are required to evaluate impacts to migratory species. The commenter asks if there is a program in place, how many species have been identified, where are the CDFG reports showing game loss due to loss of habitat, have there been any studies on the effect of Cr[VI] on local wildlife. All this information should be available to the public at a resource information center staffed by Water Board personnel.

Response: The Draft EIR is evaluating a comprehensive chromium cleanup strategy, not PG&E's buyout program. Although PG&E may need to buy property to implement the remediation, the buyout program is a private party action and is not part of the proposed project. The comment seems to be asserting that there are private sources of water that are providing wildlife habitat. It is unclear what the commenter is actually referring to as providing wildlife habitat (private ponds? irrigation of trees, shrubs, lawns or household crops?); but domestic landscapes are generally not considered to be high-value wildlife habitat, and the jurisdictional agencies (U.S. Fish and Wildlife Service and California Department of Fish and Wildlife) in general do not consider alteration of previously disturbed landscapes (like residential areas) to result in a significant impact on wildlife habitat. In addition it is unclear what "migratory species" the commenter is referring to. No doubt, the commenter is correct that open water sources will be opportunistically used by wildlife; however, the exact value of these water sources for wildlife overall is complex. For example, artificial open water or man-made food sources could increase the population of predatory species (such as ravens) which may prey on other native species (such as desert tortoise), such that the benefit or adverse effect on overall native species and their habitat is highly site specific. At any rate, the buyout program is a private act and is not part of the remedial program which is the subject of the EIR.

PG&E may acquire additional land to implement future remediation after adoption of the EIR. However, as noted above, disturbance of previously disturbed or altered landscapes, such as residential areas, in general is not considered a significant impact on species habitat. PG&E is required to comply with state and federal laws concerning wildlife species and obtain permits from

USFWS and CDFW whenever required. PG&E is required to comply with the mitigation identified in the EIR for impacts to wildlife.

Potential impacts on wildlife (e.g., loss or introduction of habitat from adding more agriculture units) and mitigation are addressed in Section 3.7, *Biological Resources*. No revisions to the EIR are necessary.

Comment 7A-5

Comment: The impact to human health has been overlooked, and the remediation/buyout program has had adverse mental and physical effects on Hinkley residents. There needs to be free counseling, and PG&E should pay for medical issues.

Response: Comment noted. CEQA requires analysis of the environmental impacts of the project being considered for approval by the Water Board which is the groundwater cleanup. The EIR discusses potential health effects (such as related to water quality and air quality) related to the impact of the remediation program going forward, but potential mental health effects are not required to be analyzed as part of the EIR.

The buyout program is a private action taken by PG&E, not the Water Board; and PG&E is responsible for the effects of the buyout program.

No revisions to the EIR are necessary per this comment.

Comment 7A-6

Comment: PG&E continues to lie about the extent of the plume, an outside source needs to be brought in to identify the plume accurately, and PG&E should be fined for each acre foot of water they failed to identify. The Water Board has evidence of Cr[VI] four miles northeast of the plume and is not acting on the data.

Response: Comment noted. The plume boundary has changed over the years and continues to change based on the use of the current maximum background levels. The EIR has been revised to consider an expanded project study area that includes new Cr[VI] detections above 3.1 ppb north of Burnt Tree Road. The Water Board ordered PG&E in early 2013 to expand its monitoring and investigation northward and westward in order to better assess the area and changing nature of the northern and western edge of the plume.

Refer to **Master Response 2** regarding chromium plume boundary and project study area boundary. Refer to **Master Response 7** regarding third party involvement.

Comment 7A-7

Comment: The comment states that remediation should be stopped and current plan abandoned until clean water is supplied (piped in) to Hinkley. Remediation experimentation has proved hazardous to wildlife and human life, and some methods are causing further contamination. Water filtration cannot be considered as it is still experimental.

Response: Comment noted. The focus of the EIR is evaluating proposed remedial actions – not past chromium contamination or past remediation actions – which are considered the CEQA baseline for EIR evaluation.

The impacts of future remediation on health are considered in the EIR in Section 3.1, *Water Quality and Water Resources,* and Section 3.5, *Air Quality and Climate Change*. The impacts of remediation on wildlife are evaluated in Section 3.7, *Biological Resources*.

Regarding the comment that none of the remedial methods has had the desired results, this is incorrect. Both the IRZ and agricultural treatment remediation have shown to be effective in reducing chromium contamination both in pilot studies and implementation. But neither has been fully ramped up to get the maximum benefit for cleanup – that is the subject of the alternatives evaluated in the EIR.

Regarding the comment that some methods are causing further contamination, the comment is non-specific, but the commenter is referred to **Master Response 2** concerning the chromium plume and **Master Response 4** regarding secondary byproducts.

Water filtration (above-ground treatment such as ion exchange or reverse osmosis) is a common method of providing water that meets drinking water standards. Any application of technology to a specific site requires testing to adapt the technology to the local conditions.

Refer to **Master Response 4** regarding remediation byproducts. Refer to **Master Response 5** regarding replacement water supply.

Comment 7A-8

Comment: The comment summarizes the primary points discussed above for Comments 7A-1 through 7A-8.

Response: Refer to response to **Comments 7A-1 through 7A-7**. Regarding the comment that Mr. Haefele has demonstrated that the Lahontan Water Board has covered up evidence of groundwater contamination in Hinkley, this is incorrect. Please see the response to Mr. Haefele in **Response to Comment Letter 17**) in this chapter.

Response to Comment Letter 7B (Cheney D)

Comment 7B-1

Comment: The assessment of manganese migration in Appendix A is not accurate. Manganese migration has been severely underestimated and is a larger problem than stated in this EIR.

Response: The comment provides no data and no information to substantiate the claim that manganese migration is not accurate and is underestimated. Please refer to **Master Response 4,** which assesses information about sampling of domestic wells west of the chromium plume and why the evidence to date supports a conclusion that elevated manganese is contained within the chromium plume which is what is described in the Draft EIR. PG&E is under orders by the Water Board to investigate potential manganese migration on the western boundary. Until that data is submitted in fall 2013, there is no existing information to point to manganese migration beyond the IRZ areas.

Maps of manganese extent in the Draft EIR have been updated with recent sampling information in Section 3.1, *Water Resources and Water Quality* (see Figure 3.1-11a and 3.1-11b); but as noted above, this new information does not change the overall picture of IRZ generation of secondary byproducts or their potential for migration.

Comment 7B-2

Comment: Regarding Appendix A (A.2.2), groundwater elevation monitoring is inadequate and possibly inaccurate; and elevation monitoring needs to be done with automated real time logging equipment.

Response: The suggestion for automated real time logging equipment is noted. However, the comment provides no data and no information to substantiate the claim that groundwater elevation monitoring is inadequate and/or inaccurate. Groundwater levels plume wide are generally monitored by PG&E using water level meters, which is standard practice for determining water level elevations. In addition, some monitoring wells associated with plume capture near the Desert View Dairy include continuous data logging using telemetry. Monitoring results, including groundwater flow maps, are presented in quarterly reports to the Water Board. These reports are signed and certified by registered professional geologists and engineers subject to state laws regarding the quality and accuracy of the information presented in such reports.

No revisions to the EIR are necessary.

Comment 7B-3

Comment: The census data in Section 3.2.3.3, *Population and Housing*, is from the 2000 census, and the most recent census was three years ago.

Response: Section 3.2.3.3 has been revised to include 2010 census information. This does not change the conclusions in the Draft EIR.

Comment 7B-4

Comment: A sentence in Section 3.3, *Hazards and Hazardous Materials,* states that manganese is not considered toxic and does not meet the definition of a hazardous waste. However, the commenter cites an EPA study referring to neurological problems in humans and animals and asks why the EIR is not informing residents of this toxin.

Response: The discussion in Section 3.3, *Hazards and Hazardous Waste*, was focused on impacts of potential hazardous materials that might be handled during remediation and require disposal. As noted at the end of Section 3.3.3.2, *Existing Potential Contaminants in Soil and Groundwater, Secondary By-Products of Prior In-Situ Remediation*, project water quality impacts related to manganese (and other remedial byproducts) are discussed separately in Section 3.1, *Water Quality and Water Resources*. In specific, Section 3.1.6.6 describes that "Although manganese is an essential nutrient at low doses, chronic exposure to high doses may be harmful." Section 3.1.6.6 has been revised to elaborate on potential health effects due to manganese in drinking water, including neurological effects.

The commenter is correct that in high concentrations, manganese can have toxic effects. Relevant text in Section 3.3.3.2 has been changed to clearly indicate the manganese can have toxic effects at elevated levels. As noted above, the focus in Section 3.3 is not on risks associated with drinking water, but rather risks associated with handling of potential hazardous waste. Section 3.3 has been revised to add further information on manganese toxicity, naturally occurring levels in soil, cleanup levels, and the potential for exposure due to IRZ operations.

Comment 7B-5

Comment: The commenter is still reading the EIR and believes much of it to be insufficient.

Response: Comment noted. The commenter provides no reason on why or specific information on how the EIR is insufficient. No revisions to the Draft EIR are necessary.

Comment 7B-6

Comment: The comment states that all remediation should be halted, deal with animal and human issues first, and return to remediation when it can be done safely.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 7C (Cheney D)

Comment 7C-1

Comment: The job is not getting done. PG&E is responsible for the cleanup yet it is not their business. The Water Board has the tools to get the job done and needs to get it done.

Response: Comment noted. In California, the dischargers of waste to waters of the state are responsible to remediate their effects on beneficial uses of these waters, and the Water Board's responsibility is oversight and enforcement of California water law. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 7C-2

Comment: The people in Hinkley have been used like lab rats and he doesn't appreciate being given two-week notice to let PG&E know if he wants to sell his home.

Response: Comment noted. The PG&E buyout program is a private action of PG&E, not an action of the Water Board. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 7C-3

Comment: The commenter wants clean water.

Response: The EIR requires provision of replacement water where drinking water wells are significantly affected or likely to be significantly affected by future remedial actions. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 8 (Cheny T)

Comment 8-1

Comment: The assessment of manganese migration in Appendix A is not accurate. Manganese migration has been severely underestimated and is a larger problem than stated in this EIR.

Response: This comment is the same as Comment 7B-1. Refer to response to **Comment 7B-1**.

Comment 8-2

Comment: Regarding Appendix A (A.2.2), groundwater elevation monitoring is inadequate and possibly inaccurate, and elevation monitoring needs to be done with automated real time logging equipment.

Response: This comment is the same as Comment 7B-2. Refer to response to **Comment 7B-2**.

Comment 8-3

Comment: The census data in Section 3.2.3.3, *Population and Housing*, is from the 2000 census and the most recent census was three years ago, and the commenter suggests an independent census should be taken to get accurate account of Hinkley residents.

Response: Section 3.2.3.3 has been revised to include 2010 census information. This does not change the conclusions in the Draft EIR.

Comment 8-4

Comment: Section 3.3, *Hazards and Hazardous Materials*, indicates manganese is not considered toxic, but it is known to cause severe neurological problems in humans and animals, especially when inhaled and references an EPA study on manganese. The commenter asks why are residents and workers are not being informed of this toxin.

Response: This comment is the same as Comment 7B-4. Refer to response to **Comment 7B-4**.

Comment 8-5

Comment: The comment expresses concern for common wildlife species that could be affected by the project and asks where that discussion is.

Response: Potential direct and indirect impacts to wildlife have been addressed in Section 3.7, *Biological Resources*, for a wide variety of species, including common wildlife species. The primary focus under CEQA is on rare, threatened or endangered species, given that they are under more threat and thus more susceptible to project-level impacts. The mitigation measures identified for these species also will benefit common wildlife species as well.

Under CEQA, impacts to common species are only considered significant if there is a major threat to the species, such that it would be made rare by a project, or if the project would substantially impede wildlife movement or affect significant nursery sites such that the population of the species overall would be substantially reduced. Highly localized effects to common species are not considered significant as they would not result in overall restriction of the species range and distribution. Also see response to **Comment 7A-4** regarding this issue.

No revisions to the Draft EIR are necessary.

Comment 8-6

Comment: The commenter is still reading the EIR and believes much of it to be insufficient.

Response: Comment noted. The commenter provides no reason on why or specific information on how the EIR is insufficient. No revisions to the Draft EIR are necessary.

Comment 8-7

Comment: All remediation should be halted, deal with animal and human issues first, and return to remediation when it can be done safely.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 9 (Coffey)

Comment 9-1

Comment: The comment is a self-introduction, explaining that the comments are his own opinions and he's not there on behalf of any other entity.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 9-2

Comment: The current remediation plan that was adopted a few years ago is an ill-advised plan and the Board was informed with a formal appeal. The comment in particular asserts that the injection of fluids into the aquifer was going to cause more trouble than it could solve. The comment also states that the water comes from the north and from the west and moves south and east. The comment compares remediation to sticking a hose in the aquifer resulting in "bad things."

Response: Comment noted. The comment does not specifically concern the adequacy of the EIR. The commenter appears to be talking about injection of carbon into the aquifer as part of IRZ operations and asserting that it has created problems, but the comment does not substantiate what those problems actually are. The commenter is correct that water in the Mojave River flows west to east. In the Hinkley Valley, however, the dominant groundwater flow direction from the Mojave River in the south is northward toward Harper Valley.

No revisions to the Draft EIR are necessary.

Comment 9-3

Comment: The Water Board is in pari delicto (in equal fault) with PG&E for a new release of Cr[VI], manganese, arsenic and uranium and thus must recuse itself from any further consideration and another agency (e.g., EPA) should finish the job.

Response: Comment noted. The Water Board is the state agency with legal authority to require remediation of the groundwater affected by PG&E's discharge. The Water Board has issued numerous orders to PG&E concerning control and remediation of the chromium plume. Regarding remediation and IRZ byproducts, the Water Board's orders require control of byproduct plumes which PG&E is responsible to implement. To date, the evidence appears to support that byproduct plumes are being limited to the area within the chromium plume. The Water Board is requiring additional investigation to ensure that the IRZ byproduct plumes are monitored and controlled. As noted in the Draft EIR, further investigation is required before making conclusions about the relation of remediation and uranium levels.

Refer to **Master Response 7** regarding third party participation. The comment does not concern the adequacy of the EIR.

No revisions to the Draft EIR are necessary.

Comment 9-4

Comment: Regarding deeper wells, going from upper aquifer to lower aquifer will result in seepage and transfer of water from upper to lower, create a bigger mess, and exacerbate the current problem.

Response: As described in the Draft EIR, in most areas there is a competent blue clay layer that separates the upper and lower aquifer. A well that is screened in the lower aquifer only, where there is a competent blue clay layer, will only draw water from the lower aquifer. The commenter is correct that if a well is screened both in the upper and lower aquifer, there is a potential to comingle water from the different aquifers; however, that is not what is proposed in terms of using deeper wells as a potential water replacement method. Deeper wells installed for future remedial actions or alternate water supply will be screen only in the lower aquifer and not across both aquifers. The Water Board will not allow the use of deeper wells if there is a potential to spread chromium from the upper aquifer to the lower aquifer. This has been added to the EIR mitigation.

Comment 9-5

Comment: All the arsenic and uranium floating around now is a federal issue, and it must be remediated along with other problems caused by ill-advised remediation effort.

Response: Comment noted. Refer to **Master Response 4** regarding remediation byproducts. The comment does not substantiate why potential arsenic and uranium levels are a federal issue. The reference to "neutron-source radiation" is unclear but may be a reference to man-made radiation sources as somehow being related to uranium found in groundwater in Hinkley. The comment provides no substantiation to clarify what is meant by this comment, and thus no further response can be provided.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 9-6

Comment: PG&E should be compensating homeowners at the point in time before the problems became public knowledge, the banks started redlining the community, and property values fell below zero.

Response: Comment noted. The comment concerns effect of the prior chromium contamination on property values. The EIR is focused on analysis of the impacts of proposed remediation, not the effect of prior chromium contamination for which PG&E is responsible. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 9-7

Comment: PG&E purchases the water rights (when they buy out a homeowner), every person has the right to 10 acre-feet (af) of water on their property, PG&E will be the largest single water right

owner in the western Mojave, so they're not going to lose money compensating homeowners for the lost water rights.

Response: Comment noted. The comment concerns private transactions between PG&E and property owners in Hinkley. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 9-8

Comment: Regarding the whole house systems proposed, the best they can do is two af per year which means the homeowners do not get the benefit of the full 10 af if they want to use it, so these water rights must be adjudicated separately.

Response: Comment noted. This is a private transaction between PG&E and the property owner(s). Water rights in the adjudicated Mojave Basin are overseen by the Mojave Water Agency and not the Water Board. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 9-9

Comment: Homeowners should be entitled to keep the water rights if PG&E buys the house and land because some day the water will be worth money.

Response: Comment noted. This is a private transaction between PG&E and the property owner(s). The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 9-10

Comment: The comment states, "…when we're looking at the endangered species eradication plan, these things always turn into the tortoise loses again, the kangaroo rat loses again, the French toad lizard loses again. And the lost ratio for relocating a tortoise from some place he's been living for 250,000 years is about 90 percent….That's not relocation. That's eradication."

Response: Comment noted. The potential impacts on endangered species, including the desert tortoise and other species are addressed in Section 3.7, *Biological Resources*. As stated in Mitigation Measure BIO-MM-1a, preconstruction surveys will be conducted, and if desert tortoise are found, they either will be allowed to move passively away or physically relocated by an authorized handler to a location within their home range (defined by USFWS as less than 1,000 feet). This relocation protocol has been proven effective and has been approved by both federal and state agencies with authority over threatened and endangered species. The EIR has been reviewed and comments provided by the California Department of Fish and Game (now called Department of Fish and Wildlife) to ensure compliance with state requirements. No changes to the Draft EIR are necessary.

Comment 9-11

Comment: It is time for the EPA to step in and deal with these problems quickly and appropriately.

Response: Comment noted. The Water Board is the agency responsible for issuing the WDRs and CAOs necessary for remediation, not the EPA. The Water Board, on occasion, has sought advice from the USEPA, and may again in the future where appropriate. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 10 (Diaz)

Comment 10-1

Comment: PG&E should pay a water cleanup company to do the job and that the Water Board should hire someone independent of PG&E to do the cleanup.

Response: Comment noted. PG&E is responsible to implement the groundwater remediation ordered by the Water Board whether they conduct the cleanup themselves or hire contractors to implement the cleanup. Water Board is limited by Water Code section 13360 in its ability to specify the method and manner of compliance with its orders. Please refer to **Master Response 7** concerning third-party involvement. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 10-2

Comment: There's always a line (plume boundary), it's changing, and someone will always be on the other side of the line. The commenter is worried about the community surviving.

Response: Comment noted. The comment does not concern the adequacy of the EIR. Refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary. No revisions to the Draft EIR are necessary.

Comment 10-3

Comment: PG&E should be taken out of the fight and somebody who knows how to clean up water should be hired.

Response: Comment noted. See response to **Comment 10-1**. Please also refer to **Master Response 7** concerning third-party involvement. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 10-4

Comment: PG&E's newsletter "PG&E Currents" presents a different story than is presented to their shareholders. They are trying to do it as cheaply as possible and are doing a pretty good job.

Response: Comment noted. Please see response to **Comment 10-1**. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 10-5

Comment: The commenter will read as much of the EIR as he can and thanks everyone for their work.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 11 (Dodd)

Comment 11-1

Comment: The commenter recognizes Harold Springer (Singer) who was one of the first Water Board members to write an order against PG&E.

Response: Comment noted. Harold Singer was the Executive Officer of the Water Board from 1989 to 2012 and not a Water Board member. Mr. Singer issued orders on the Water Board's behalf to PG&E, beginning with the second cleanup and abatement order signed in 1994. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 11-2

Comment: The commenter hired an independent company to test his wells every time PG&E does, and the results are the same.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 11-3

Comment: The Mountain View Dairy is polluted with nitrates, sodium, etc. and the owner has been told that there may not be a system to take care of it. The comment also asks if the IRZ is treating nitrates, sodium, or TDS (presumably from the dairies) and there are things not being tested for.

Response: Comment noted. It is assumed that the commenter is referring to the Desert View Dairy, which is located on Mountain View Road. Desert View Dairy is owned by PG&E and leased to a local dairyman. The water quality issues at the Desert View Dairy and other dairies are separate compliance matters that are being overseen by the Water Board. This EIR is focused on the water quality issues related to future remediation of the PG&E chromium plume. The IRZ system is designed to address chromium related to PG&E's historic waste discharges from their compressor station. A benefit of IRZ operation seen is reduction of nitrate concentrations alongside with chromium concentrations in a reduced environment. Although the PG&E agricultural treatment units are also designed for treatment of chromium, they have also been shown to reduce nitrate levels, as discussed in the Draft EIR. As to TDS, the PG&E agricultural units could increase TDS levels (like other agricultural activities), but mitigation is proposed in the Draft EIR to address potential increases. As to sodium, neither the IRZ operations nor the agricultural treatment units are known to affect sodium concentrations, one way or the other. The EIR requires monitoring and testing for byproducts of remediation as necessary to control impacts of remediation. The cumulative section of the EIR does consider the cumulative water quality issues including those associated with dairies.

No revisions to the Draft EIR are necessary.

Comment 11-4

Comment: Nobody is addressing manganese, arsenic, and uranium; Mountain View Dairy and Fairview Dairy; and the spreading plume.

Response: Comment noted. Please refer to response to **Comment 11-3** concerning the dairies. Regarding manganese and arsenic, the Water Board requires monitoring and control of IRZ

byproducts in permits issued to PG&E. Regarding uranium, mitigation in the EIR requires further evaluation of the potential impact of remediation on uranium levels. Refer to **Master Response 2** regarding chromium plume boundary and project study area boundary, and refer to **Master Response 4** regarding remediation byproducts.

No revisions to the Draft EIR are necessary.

Comment 11-5

Comment: The commenter states that there are more people present at the September 12, 2012, public meeting than usually attends and he thanks them.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 12A (Duitsman E)

Comment 12A-1

Comment: The commenter asks, regarding the October 16 presentation, if the 25% relates to screen depth and would like an explanation and example.

Response: The comment appears to refer to the significance criterion that states that groundwater drawdown caused by the remediation is significant if it results in a drawdown of more than 25% of wetted screen depth of a water supply well. For example, if a well is screened from 80 to 120 feet below ground surface it would have 40 feet of screen depth. If water levels are presently at 80 feet and the remediation caused a drop in water levels of 10 feet or more (10 feet is 25% of the 40 feet of wetted screen depth, e.g. water levels drop to 90 feet or lower), then that would be considered significant.

The EIR is revised in Section 3.1 to make it clear that the criterion applies to wetted screen depth.

Response to Comment Letter 12B (Duitsman E)

Comment 12B-1

Comment: The commenter is concerned about "unavoidable byproducts" and doesn't like this phrase because they are avoidable. With all the assumptions, confusion and old/bad data, the subsurface treatment by injecting ethanol into groundwater should be stopped immediately.

Response: Please refer to **Master Response 4** concerning this issue. The term "unavoidable byproducts" refers to constituents created in groundwater temporarily if a remedial alternative including IRZ is selected for comprehensive site cleanup. The comment to stop IRZ operations with ethanol is noted.

Comment 12B-2

Comment: The commenter has been unable to find a complete list of all the "ingredients" dumped into the water, he understands 70,000 gallons of vegetable oil is on the list, and he asks if the oil could suspend the manganese and thus explain why manganese is not contained and why the black water sometimes appears oily.

Response: Please refer to **Master Response 4** concerning substances injected into the aquifer, vegetable oil, and remedial byproducts.

Comment 12B-3

Comment: PG&E says it's impossible for manganese (as a byproduct from PG&E remediation) to be past Mountain View Road because it would have to flow up hill and over the fault line, so it can't be from PG&E. The commenter asks if manganese on the west side could be from increased water flow and raised water table levels in 2010.

Response: Please refer to **Master Response 4** regarding IRZ byproducts, the recent detections in domestic wells west of the chromium plume, and the relation of these detections to the IRZ operations. The Manganese Working Group's preliminary findings are that high concentrations of manganese found in domestic wells in the upgradient flow direction (to the south and southwest) from IRZ operations is unlikely due to actions by PG&E. In addition, high concentrations of manganese found in domestic wells more than one mile to the west are also unlikely due to actions by PG&E. The Water Board is requiring PG&E to conduct further investigations to determine the western extent of byproducts and potential flow from the IRZ areas.

Comment 12B-4

Comment: The commenter would like to know the background level for vegetable oil and would like to be reimbursed for testing 8 wells outside the boundaries for vegetable oil.

Response: Comment noted. Please refer to **Master Response 4** regarding the pilot testing use of vegetable oil in IRZ pilot testing. As explained therein, the emulsified vegetable oil would have been consumed by microbial activity several years ago, and no data exist to show it is present in the aquifer today.

Response to Comment Letter 12C (Duitsman E)

Comment 12C-1

Comment: The Water Board's 2-page flyer (that they distribute at every meeting) indicates manganese is within the boundaries of the chromium plume, and he asks if the 245 domestic wells sampled for the second quarter 2012 report were tested for anything other than chromium. The commenter asked PG&E to test for byproducts and said they refused. The commenter states that some residents are having the wells outside PG&E's plume "boundaries" tested for byproducts manganese and arsenic at great time and expense, and asks why the burden is on the residents to test and produce data.

Response: Please refer to **Master Response 4** regarding IRZ byproducts, the recent detections in domestic wells west of the chromium plume, and the relation of these detections to the IRZ operations. PG&E's 4th quarter 2012 monitoring report for the IRZ areas contains data showing manganese at levels of less than 22 ppb in monitoring wells on Mountain View Road, compared to manganese at levels of 390 ppb and greater in the IRZ areas. This information indicates that manganese is not migrating west of Mountain View Road from the IRZ areas. Regarding testing domestic wells outside the plume boundaries for constituents other than chromium, the Water Board has sampled domestic wells west of Mountain View Road outside the IRZ areas. This sampling occurred in September and October 2012, February 2013, and April 2013. The results of the Water

Board's 2012 sampling is shown in Figure 3.1-11b in Section 3.1, *Water Resources and Water Quality*. Additional sampling results are shared with the residents, and the CAC as they are obtained.

Comment 12C-2

Comment: It appears the byproducts are outside the boundaries, which PG&E says is impossible, and it should be simple to prove or disprove. Until proved one way or the other, all PG&E's pumping, injecting, ethanol remediation should be halted immediately.

Response: Please refer to **Master Response 4** regarding IRZ byproducts, the recent detections in domestic wells west of the chromium plume, and the relation of these detections to the IRZ operations.

Response to Comment Letter 12D (Duitsman E)

Comment 12D-1

Comment: The comment states "stop remediation and all AU watering."

Response: Comment noted. Please refer to **Master Response 4** regarding IRZ remediation. The comment does not substantiate why agricultural unit operations should be stopped (agricultural units are not known to increase manganese levels like IRZ operations).

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 12D-2

Comment: Manganese is not contained within the boundaries of the plume, manganese is not unavoidable, and creating manganese is not acceptable and does not restore water to its natural state.

Response: Please refer to responses provided above comments and in **Master Response 4** regarding remediation byproducts.

Response to Comment Letter 12E (Duitsman E)

Comment 12E-1

Comment: The black water and high levels of manganese and arsenic outside the boundaries are still being denied by PG&E, and all remediation should be stopped until this mystery is solved.

Response: Comment noted. Refer to **Master Response 4** regarding remediation byproducts.

Response to Comment Letter 13 (Duitsman J)

Comment 13-1

Comment: Injecting ethanol should be postponed until Nick Grill's data is studied in regard to unavoidable byproducts – manganese.

Response: Comment noted. Refer to **Master Response 4** regarding remediation byproducts.

Comment 13-2

Comment: The commenter asks why wait years to do tracing of water flow when there is a tracing element in place in manganese.

Response: Comment noted. Refer to **Master Response 4** regarding remediation byproducts. Manganese is not a particularly useful tracer element because there are naturally occurring levels of manganese, other potential sources of manganese than PG&E (such as landfills, septic tanks, and agricultural activities), as well as manganese within the IRZ area due to carbon amendment. Effective tracers are compounds that can definitively establish direction of groundwater flow without being attributed to or altered by a variety of sources. The Water Board is requiring PG&E to conduct additional investigations and analyses in 2013 related to byproducts from the IRZ areas.

Comment 13-3

Comment: Using compressors to raise pressure in the aquifer will not move Cr[VI] or ethanol or its byproduct in a predictable way because of irregularities in the strata and fault lines.

Response: It is unclear what the commenter is referring to. Neither the current nor proposed remediation includes the use of compressors to raise pressure in the aquifer. If the comment is referring to the Compressor Station, the compression of natural gas only occurs within a pipeline and not in the aquifer. The Draft EIR discusses the potential effects of IRZ and freshwater injection into the aquifer. While all aquifers tend to have a certain degree of variable sedimentary layers, the monitoring well layout is designed to accommodate such variations. Mitigation measures discussed in Section 3.1.9 of the EIR include monitoring and remedial action if such IRZ or other activities result in spread of chromium in unanticipated ways.

Comment 13-4

Comment: The comment states please halt the compression/injection process now.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 13-5

Comment: The comment requests a reference to a specific study that supports the use of ethanol.

Response: Comment noted. Ethanol has been shown to be more effective than other carbon amendment materials in reaching more of the targeted aquifer area for chromium remediation in pilot testing completed at Hinkley. The reader is referred to GEOTRACKER (http://geotracker.waterboards.ca.gov/) for PG&E's feasibility studies and pilot testing analyses. This comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 14 (Duitsman M)

Comment 14-1

Comment: The EIR supports the fact that there is no safe way to perform remediation and calls for an immediate halt to all remediation until a community water system is installed.

Response: Comment noted. The EIR describes the impacts of current remediation and proposed feasible mitigation to address identified significant impacts from future remediation. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 15 (Fletcher)

Comment 15-1

Comment: PG&E gave the community three options – deeper well, filtration or property purchase – with a deadline; and they should be offered all three options and there should be no deadline.

Response: Comment noted. The comment concerns the current water replacement program which is not the project analyzed in the EIR. The EIR concerns proposed remediation activities to cleanup chromium in the aquifer in the future. As described in the EIR, where the remediation activities significantly affect domestic wells, three options are included in proposed mitigation: deeper wells, wellhead treatment, or alternative water supply. Mitigation measures would only be implemented on a temporary basis until the chromium plume reduces in size and byproducts no longer pose a threat to domestic wells. Proposed EIR mitigation does not include property purchase as an option. Property purchases are a private transaction between PG&E and a homeowner.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 16 (Griep)

Comment 16-1

Comment: There's been a great dereliction of duty for years by Water Board, and they're partly to blame for the tragedies that happened to the people of Hinkley. What are the ties between the Water Board and PG&E through all these years?

Response: Comment noted. The Water Board is the state agency with authority to regulate discharges to state waters and thus is the state agency with authority to require groundwater cleanup. The Water Board is independent of PG&E. The Water Board has required investigations and cleanup of the aquifer by PG&E since the initial reporting of chromium to groundwater in 1987. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 16-2

Comment: There should be a complete analysis of the water in all areas that are of concern to the citizens of Hinkley.

Response: Comment noted. The Water Board is requiring monitoring of domestic wells in proximity to the chromium plume. The EIR requires testing of domestic wells within proximity to byproduct plumes that may be created from future remedial actions. Where domestic wells are outside of areas that may be affected by the chromium plume or future remediation activities, the Water Board does not have authority to require well testing.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 16-3

Comment: The commenter asks what the Water Board is doing and if they care about the people because this has been going on a long time.

Response: Comment noted. The Water Board has been working for many years to require better identification of the chromium plume, to find effective methods to clean up the aquifer, and to require implementation of those methods. PG&E's cleanup actions began in 1992 as a result of Water Board orders. Following concerns expressed by Hinkley residents over chromium being inhaled from mist from agricultural center-pivots, the Water Board in 2001 ordered PG&E to cease actions creating nuisance conditions. Also in 2001, Water Board staff conducted their own independent domestic well sampling program to determine the extent of chromium impacts to the community. In 2004, the Water Board starting hosting public informational meetings at the Hinkley School to inform residents of upcoming Water Board permits and enforcement actions. The Water Board committed at that time to hold Water Board hearings in Barstow whenever a PG&E chromium matter is on the agenda. Beginning in 2007, the Water Board established a page on its website devoted solely to actions related to our oversight of cleanup of the chromium plume. And since 2011, the Water Board has attended monthly Community Advisory Community meetings to inform the community of Water Board activities conducted over the past month. Lastly, the Water Board has mandated bottled water and now whole house replacement water to be provided to those residents affected by the chromium plume.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 17 (Haefele)

Comment 17-1

Comment: The Water Board only recently publicized the presence of uranium although they have known it for almost 20 years, and references a quote from a July 30, 1993, Desert Dispatch newspaper article about high levels of uranium found in a Hinkley well. The comment also states there were measurable levels of beta radio nuclei activity detected in the wells tested, it's only present when there's a source of radioactivity attributable to human actions, and the party responsible needs to be held accountable. Cleanup needs to be expanded to encompass all contaminants.

Response: Refer to **Master Response 4** regarding remediation byproducts, including a discussion of uranium levels. The EIR description of uranium refers specifically to the limited amount of data evaluating potential changes in uranium levels due to agricultural treatment unit activities. It was not intended to refer to a lack of data on uranium levels in Hinkley groundwater, for which there is some data, including the testing that the commenter references.

The Water Board's contractor, ICF attempted to contact Mr. Haefele via email and phone to request provision of the referenced testing of uranium in 1993, but was not able to get a reply. ICF also contacted the Lahontan Water Board office and Mojave Water Agency concerning the 1993 uranium testing and was unable to locate the referenced sampling results. However, as explained in **Master Response 4**, the Water Board and ICF were able to find other sources of data on uranium in groundwater in Hinkley and the Mojave Desert, from the San Bernardino County Department of Public Health, additional data from PG&E, and the California Groundwater Ambient Monitoring and

Assessment (GAMA) database. As discussed in **Master Response 4**, there are levels of uranium in groundwater above the MCL in a number of areas of the Mojave Desert and adjacent mountains, including some detections in the water supply wells at the Hinkley School. This wide pattern of detections indicates that there are naturally-occurring sources of uranium in the Mojave Desert, possibly from granitic and volcanic rock and soils derived from these geologic units that influence groundwater levels in some areas, possibly including the Hinkley area.

As to the assertion that beta radiation is only found due to man-made sources, this is not correct. There are both natural and man-made beta emitting radionuclides (USEPA 2012, http://www.epa.gov/rpdweb00/understand/beta.html). Thus, the detection of beta radiation in groundwater per se is not absolute evidence of man-made contamination. The levels of beta radiation must be compared to nearby naturally occurring levels prior to being able to make a determination that a particular detection may be contamination or not.

The commenter does not describe who he thinks is the party responsible for the alleged radioactive contamination in groundwater.

As described in the EIR, the levels of uranium (and gross alpha) found in agricultural treatment unit extraction wells are above the MCLs, but the data developed to date is insufficient to support a conclusion that the levels found indicate that agricultural treatment is having an effect on uranium (or gross alpha) levels in groundwater. Mitigation identified in the Draft EIR requires further investigation to examine the potential for agricultural treatment to affect uranium levels. For example, investigations can require uranium testing of soil and plant samples. The Draft EIR also states that if investigations reveal uranium data from remedial actions pose a threat to human health and the environment, PG&E will be required to control byproduct contamination.

The Draft EIR has been updated to present a fuller picture of what is known and what is not known about uranium in groundwater in Hinkley, including the information in **Master Response 4** and above. This does not change the conclusions in the Draft EIR.

Comment 17-2

Comment: The Water Board knows more about the radioactivity issue in Hinkley than letting on and is part of a cover up, and he references the Hinkley Uranium Contamination Fan Club on Facebook.

Response: Comment noted. Pleases refer to the prior response and to **Master Response 4** regarding remediation byproducts, including uranium and radioactivity.

ICF also reviewed the material on the referenced Facebook page which presents assertions that the uranium and radioactivity in the Hinkley aquifer is related to alleged secret underground nuclear testing in the past at the China Lake Naval Weapons Station approximately 40 miles north of Hinkley. The Facebook page does not present any actual documentation to support the assertion that nuclear test explosions at the Naval Weapons Station occurred. Further, the groundwater in Hinkley does not derive from the north, it derives mostly from the Mojave River to the south, with some minor local infiltration from mountains adjacent to Hinkley Valley[15]. Groundwater in Hinkley flows northward into the Harper Valley and thus groundwater in Hinkley is not affected by groundwater present under the Naval Weapons Station.

[15] Stamos, C. L., P. Martin, T. Nishikawa, B. Cox. 2001. *Simulation of Ground-Water Flow in the Mojave River Basin, California*. USGS Water Resources Investigation Report 01-4002 Version 3. Sacramento, CA.

Further information presented on the Facebook page is as follows:

- In 1993, Mr. Haefele's well in Hinkley was identified as having 39 pCi/L of uranium. [As noted above, ICF requested documentation of this information from Mr. Haefele several times, but did not receive a response].
- Mojave Water Agency (MWA) reportedly tested numerous other wells in the area and found levels from 2 to 19 pCi/L. [As noted above, ICF attempted to locate this information from MWA, but MWA could not locate it. However, these levels are consistent with recent sampling data at the Hinkley School discussed in **Master Response 4**].
- The conversion from pCi/l to ppb on the Facebook page appears to be incorrect. The Facebook page states that 1 pCi/l is equivalent to 1 ppm (= 1,000 ppb). Actually, a common conversion factor is that 0.67 pCi/l is equivalent to 1 ppb (= 0.001 ppm).[16] As a result, the sign on SR 58 that says 39,000 ppb of uranium is found in Hinkley groundwater (which likely refers to the 1993 detection in Mr. Haefele's well of 39 pCi/l) is incorrect due to the conversion error. Using the conversion factor, the detection in Mr. Haefele's well would be approximately 58 ppb (not 39,000 ppb).
- The Facebook page also appears to have errors describing the change to the uranium MCL that happened in 2000. The standard for uranium was previously 20 pCi/l. In 2000, the USEPA changed it to 30 ppb. Since the page stated in error that pCi/l is equal to ppm, the page presents the impression that the standard for uranium dropped from 20 ppm to 30 ppb. Whereas the change was actually more like an increase from 22 ppb (using the conversion factor of 0.67 pCi/l = 1 ppb) to 30 ppb.
- The Facebook page claims that the uranium levels in Hinkley groundwater are 100s to 1000s times the USEPA MCL, when the levels cited above in the MWA testing (2 to 19 pCi/l) are below or slightly above the MCL and Mr. Haefele's well detection was about 2 times the MCL. As described in the Draft EIR, the PG&E detections in agricultural unit extraction wells were at levels up to 59 pCi/l, which is approximately 3 times the MCL.

Response to Comment Letter 18 (Halstead A)

Comment 18-1

Comment: The commenter's family property is outside the plume now, but she wants testing for everybody so the compensation is available to them also, if necessary.

Response: Comment noted. This comment is about the current requirements of the whole house water replacement order, which is a separate action from that being analyzed in the EIR.

The EIR is concerned with future remedial actions. The EIR mitigation will require quarterly monitoring of chromium in domestic wells within one-mile downgradient or cross gradient of the chromium plume. If the commenter's home is within the plume or within one-mile downgradient or cross gradient, the EIR mitigation will require monitoring. If the remediation activities affect a

[16] Conversion factor from the USEPA. See:
http://www.epa.gov/ogwdw000/radionuclides/pdfs/webcast/presentations/qa_rad_webcast.pdf
The conversion factor is different for different radioactive materials; the factor noted above is a common factor used for uranium only.

domestic well due to chromium or remediation byproducts, the EIR mitigation requires replacement water to be provided. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 18-2

Comment: The Water Board should approve the EIR so full Cr[VI] remedies can be put into action and states that value should be put on people as well as tortoises.

Response: Comment noted. The purpose of the comprehensive cleanup project is remediation of chromium waste in groundwater to restore beneficial uses to the aquifer including domestic water use. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 19 (Halstead G)

Comment 19-1

Comment: The commenter states that he now has 2.3 chromium in his well and his neighbor does too. At first PG&E denied they were in the plume and refused to provide them water, so they complained and now they've been getting bottled water for about a month. PG&E says they are outside the plume but there have been large readings in Harper Lake and Lockhart. There are families out there and people who bought property, and it's not fair.

Response: Comment noted. The EIR project area has been revised to include the areas north of Burnt Tree Road in the Harper Valley where detections exceed the currently defined maximum background levels for chromium (3.1 ppb for Cr[VI] and 3.2 ppb for Cr[T]). At present, 2.3 ppb is less than the defined maximum background level for chromium. Although PG&E is under a separate order to provide whole house replacement water, the EIR mitigation for replacement water is limited to wells that are affected by future remediation activities as defined in the EIR.

Refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 20A (Harper)

Comment 20A-1

Comment: The Water Board should approve the Draft EIR as fast as possible to get Cr[VI] out of the water as fast as possible.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 20A-2

Comment: The commenter is not selling her property, intends to stay the rest of her life, has 2.3 ppb of Cr[VI] in her well water, and grows vegetables and fruit trees.

Response: Comment noted. The level of Cr[VI] cited is presently less than the defined maximum background level of 3.1 ppb used to define the chromium plume. Future investigations and domestic well sampling will evaluate if chromium concentrations in the Harper Valley are stable or increasing. If the latter, it may indicate a threat by the chromium plume to migrate with groundwater.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 20B (Harper)

Comment 20B-1

Comment: The plume boundary at the north end should be extended so residents have option to apply for whole house water replacement, deeper wells or buyout.

Response: The EIR project area has been revised to include the areas north of Burnt Tree Road in the Harper Valley where detections in domestic wells exceed the currently defined maximum background levels for chromium (3.1 ppb for Cr[VI] and 3.2 ppb for Cr[T]). The plume area is defined as areas containing chromium above the maximum background levels. The whole house water replacement order applies to all areas of the defined plume, and within a one-mile buffer down and cross gradient from the plume. It should be noted that, although the EIR project area and eligibility for the whole house replacement water program are both related to quarterly monitoring, it is not necessarily the same area. The EIR mitigation requires replacement water when the remediation significantly affects well water quality as defined in the EIR (i.e., impact of remediation), and is not necessarily the same as those getting replacement water under Water Board order.

Refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary.

Comment 20B-2

Comment: The commenter asks if USGS should be involved in this Cr[VI] issue and if PG&E could pay for their services.

Response: Comment noted. The Water Board has authority and responsibility and is the appropriate jurisdictional agency to deal with the Cr[VI] issue. The Water Board has informally involved the USGS in the evaluation of recent manganese and arsenic detections west of the chromium plume and in discussions about the design for the new background study. Additionally, a formal contract with the USGS to aid in chromium background studies is under development by Water Board staff. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 20B-3

Comment: The CAC should be chaired by a Hinkley citizen, and it seems a conflict of interest to have PG&E co-chair. PG&E should have a representative and Kevin Sullivan is doing a good job.

Response: Comment noted. The comment concerns the CAC, not the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 20B-4

Comment: The Water Board should adopt the EIR as soon as possible so PG&E can proceed with full remediation to remove Cr[VI] from groundwater.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 21 (Hendrickson-Lloyd)

Comment 21-1

Comment: The comment is part of a power point presentation that shows the plume concentration and size. The comment asks if treatment for Cr[VI] can eliminate TDS (total dissolved solids), in the context of TDS and nitrates at the Desert View Dairy.

Response: Comment noted. The comment presents information about the plume area from the EIR without comment. Regarding the question whether treatment for Cr[VI] can eliminate TDS, there are technologies such as reverse osmosis that can treat for both Cr[VI] and TDS at the same time. Regarding the technologies included in the EIR alternatives, neither IRZ nor agricultural treatment are used for treating TDS, specifically. However, as nitrate is taken up in plants for agricultural treatment, nitrate concentrations are reduced in groundwater. Aboveground treatment technologies could address both Cr[VI] and TDS.

No revisions to the Draft EIR are necessary.

Comment 21-2

Comment: The comment presents information about the remediation timeframes from the EIR and states that all remediation alternatives require too much time.

Response: Comment noted. The comment concerns the merit of the remediation alternatives and does not concern the adequacy of the EIR. As mentioned in earlier responses, the Water Board is prevented by law from specifying the method and manner of cleanup of waste so long as the discharger proposes technically and feasible methods. And as explained in the Draft EIR, the more aggressive methods proposed for cleaning up chromium in a sooner timeframe result in more adverse impacts to the environment. The environmental impacts must be weighed with a proposed cleanup time in evaluating a reasonable cleanup action. These actions are described in detail in the Draft EIR.

No revisions to the Draft EIR are necessary.

Comment 21-3

Comment: The commenter asks if the bulge in the 3.1-10 ppb plume is moving west toward the school and homes, and suggests extracting water from the center of the plume and injecting at western edge of bulge.

Response: As shown in revised Figure 2-2B, the western boundary of the 3.1 ppb Cr[VI] plume has been more or less stable since 2008 until the end of 2012, meaning movement towards the school and northern residences are not obvious. In the 4th quarter of 2012, a “finger” of plume detection

was indicated by monitoring between Acacia Road and SR58. This "finger" is located immediately between two of the freshwater injection wells. Overall, this recent set of chromium detections westward is thought to be a result of pumping from an agricultural well near Hinkley Road and of reduction in the amount of water applied to the fresh water injection wells. The detections are indicative of the localized inefficiency of the freshwater injection system rather than an overall westward movement of the plume. Correction of this inefficiency should restore the water table barrier created by the fresh water injection wells.

Concerning the idea of extracting water from the center of the plume and injecting it along the northwestern plume, this would not be a prudent measure since higher chromium concentrations exist in the plume center. Placing these higher concentrations on the edge of the plume in the cross gradient flow direction would spread chromium to more locations and counter current cleanup actions. This is why the Water Board issued a permit allowing PG&E to inject only fresh water on the plume edge, as is currently done using the fresh water injection wells.

Comment 21-4

Comment: The EIR does not discuss Cr[VI] contamination in dry soil above the water table at the plume core.

Response: As described in the EIR (Page 3.3-15), PG&E conducted Cr[VI] soil removal operations at various locations at the source area. The following additional information has been added to the EIR:

As required by Water Board Cleanup and Abatement Order No. 6-87-160, initial site investigations and soil sampling were conducted by PG&E beginning in 1988 to determine the extent of chromium contamination. These investigations were focused on the areas where cooling water from the cooling towers and/or sludge containing Cr[VI] were discharged to the environment, including the former unlined ponds, and other impoundments or conveyances. Soil samples were collected at depths up to 80 feet below ground surface (Ecology and Environment, Inc. 1988). Based on results of that sampling, chromium-contaminated soil was excavated from shallow depths in some of the area of the former unlined ponds, discharge trench, and beneath tanks (Lahontan Water Board 2008). Amended CAO 6-87-160A1 found that the soil cleanup was successfully completed. Subsequent investigations were conducted in areas where wastewater or sludge containing chromium were discharged; process water containing chromium came in contact with soil; and chromium-containing chemicals were stored. Soil investigations also were performed when chemical sheds, cooling towers, or other structures were demolished.

Between 1998 and 2008, PG&E performed numerous major investigations and removal actions for contaminated soil within the source area at the Compressor Station and all surrounding locations where Cr[VI] releases occurred at or near known source areas. Based on these remediation activities, the highest levels of Cr[VI] contamination that could be present in surficial soils were removed, and Cr[VI] contamination was reduced to levels that were below the acceptable EPA soluble threshold limit concentration of 5,000 ppb for industrial soils. The known source areas, considered the primary release points of Cr[VI], include the former evaporation ponds and Areas A, B, and C. Surficial soils in the project area have been largely remediated to levels below EPA standards for industrial-grade soils. In 2003, the regulatory objective for soil remediation was updated to excavate and remove soils containing Cr(T) and Cr(VI) concentrations above the USEPA Region 9 industrial soil preliminary remediation goals (PRGs), which are 450 mg/kg for Cr(T) and 64 mg/kg for Cr(VI) (U.S. Environmental Protection Agency 2002).

As described in the PG&E Feasibility Study, Addendum No.3, Appendix A, Table 4, the following soil removal activities have taken place:

- Compressor Station Area A: In 1992, soil was removed to less than the USEPA Preliminary Remediation Goal (PRG)[17] (at the time) of 500 mg/kg for Cr[T] (field confirmation samples up to 330 mg/kg).
- Compressor Station Area B: In 1988, Cr[VI] was not detected in soils and Cr[T] was detected from ND to 30 mg/kg in 1988. Soil removal not warranted.
- Compressor Station Area C: In 1988, most soil found in Cr[III] form, not Cr[VI]. In 1992, soil was removed to less than the USEPA PRG (at the time) of 500 mg/kg for Cr[T] (field confirmation samples up to 370 mg/kg).
- Lined Storage Ponds, 2, 3, 4, and 5: In 1991 and 1993 investigations, Cr[VI] in sludge and soil was found below detection limit and Cr[T] was found ranging up to 760 mg/kg. Chromium Soluble Threshold Limit Concentration (STLC) results below 5 mg/l (hazardous waste level)..
- Former Debris Area: In 1996, approximately 50 cubic yards of soil were removed and transported to a Class I landfill. Confirmation samples showed Cr[VI] up to 0.8 mg/kg and Cr[T] up to 18 mg/kg.
- Rental Compressor Area (South of Area A): In a 2001 – 2003 investigation, all samples showed Cr[T] below 500 mg/kg (confirmation samples up to 110 mg/kg) and Cr[VI] below detection limit. Therefore, no soil removal was warranted.
- Former Cooling Towers A & B: No soil removal as average soil concentration were below the STLC limit for Cr[VI] of 5 mg/l in the 2002 investigation.
- P-Unit Chemical Shed: In 2003, approximately 60 cubic yards of chromium-contaminated soil was removed and transported to a Class 1 landfill.
- Former Oil and Water Separator: In a 2003 investigation, all soil samples were below 500 mg/kg for Cr[T] (highest detection of Cr[T] at 9.9 mg/kg). No removals were conducted.
- Surge Tank: In 2005, 14.5 cubic yards of soil were excavated. Confirmation results below USEPA 2002 industrial soil PRGs (at the time) for Cr[VI] of 69 mg/kg and Cr[T] of 450 mg/kg.
- Property 12 – Debris Area: A 2006 to 2008 investigation found asbestos-containing materials but no evidence of chromium contamination.
- Concrete Pipelines investigation and Removal: In a 2008 investigation, all samples were below industrial and residential PRGs for soil.

This information has been added to Section 3.3, *Hazards and Hazardous Waste*.

[17] The Preliminary Remediation Goals (PRGs) are general reference levels published by the USEPA that were used for cleanup levels. They were based on generic health risk screening levels that were conservative in nature. The PRGs are now called Regional Screening Levels (RSLs) which serve the same function today. There are different PRGs (or RSLs) used for soil, water and air and different PRGs (or RSLs) for residential and industrial settings. PRGs for soil also differ if there is a concern about groundwater infiltration or not.

Comment 21-5

Comment: The comment is part of a power point presentation that shows characteristics and attributes of electrocoagulation (EC) as remediation treatment, including shorter cleanup time, smaller physical footprint, greater well pumping and aboveground distribution, less environmental impacts, ability to treat wide range of contaminants, minimal waste disposal, etc. EC treatment is widely used in industrial, municipal and power plant water treatment.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Comment 21-6

Comment: The comment is part of a power point presentation that shows characteristics and attributes of EC for potable water pretreatment, including effectiveness on a wide range of contaminants; reduces demands on reverse osmosis, ion-exchange and sterilization; and minimal waste discharge. The comment includes a figure showing an example of a 600 gallon per minute (gpm) Powell Water EC Train and a figure showing the cross section for 50-3,500 ppb Plume EC Treatment.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Comment 21-7

Comment: Alternative 4C-5 should be modified to include electrocoagulation because lower environmental impact, transportable, higher capacity, and faster clean up time.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Comment 21-8

Comment: The comment states the conclusions of the power point presentation, including assertions that electrocoagulation is a viable ex-situ treatment for the plume core and Desert View Dairy site, would reduce remediation times and has low environmental impact. The comment also includes information about the energy use, cost, emissions, and other data.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Comment 21-9

Comment: The comment is power point slides showing a figure showing the C1000 1 MW Power Package, the characteristics of Combined Heat and Power package, and the treatment timeline.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Comment 21-10

Comment: The comment includes backup information about the energy use, cost, emissions, and other data for electrocoagulation.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Response to Comment Letter 22A (Hendrickson)

Comment 22A-1

Comment: The comment is an introduction to the comment letter, stating it discusses the status of the Cr[VI] plume contaminating the aquifer and recommending use of the Powell "Water Electrocoagulation" as a faster, more affordable remediation alternative.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Comment 22A-2

Comment: The physical and environmental footprint of two to four 600 gallons per minute (GPM) EC (electrocoagulation) treatment trains is small. The EC effluent would be pumped to injection wells along the western boundary of the plume, and the shortened treatment times could allow 10 times that of the 250 gpm chemical reduction/precipitation treatment system. Powell Water EC equipment is proven worldwide and could be made available for a demonstration.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Response to Comment Letter 22B (Hendrickson)

Comment 22B-1

Comment: The comment is part of a power point presentation that shows the plume concentration and size. The comment asks if treatment for Cr[VI] can eliminate TDS (total dissolved solids), in the context of TDS and nitrates at Desert View Dairy.

Response: The comment is the same as Comment 21-1. Refer to response to **Comment 21-1**.

Comment 22B-2

Comment: All remediation alternatives require too much time.

Response: Comment noted. Refer to response to **Comment 21-2**. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 22B-3

Comment: The comment is part of a power point presentation and states that the bulge in the 3.1 ppb plume is moving west toward the school and homes.

Response: The comment is similar to Comment 21-3. Refer to response to **Comment 21-3**.

Comment 22B-4

Comment: Cr[VI] contamination in dry soil above the water table in the plume core is not discussed.

Response: Refer to response to **Comment 21-4**.

Comment 22B-5

Comment: Electrocoagulation (EC) treatment and Combined Heat and Power (CHP) treatment are investigated; and the process, cost, and benefits are presented (e.g., faster cleanup, less environmental impacts, reduced operations/maintenance costs, reduced CO2 emissions, minimal waste disposal). The comment also provides comparison to in-situ treatment.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Comment 22B-6

Comment: The comment presents back up slides for electrocoagulation (EC) treatment, demonstrating time period and amount of cleanup.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Response to Comment Letter 22C (Hendrickson)

Comment 22C-1

Comment: Electrocoagulation technology was rejected in the Draft EIR because of its potential cost, but it is superior to chemical coagulation because it is faster, has less solid waste, and also removes uranium and other contaminants.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives for information and discussion on electrocoagulation.

Response to Comment Letter 23A (Hernandez)

Comment 23A-1

Comment: The September 13, 2012, Water Board meeting in Barstow was informative and professional, but they should be run by an independent, neutral third party to ensure the Water Board and community members get an equal chance to participate.

Response: Comment noted. The Water Board, rather than a third party, will continue to run Water Board meetings because it is part of their responsibility as lead agency. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 23A-2

Comment: PG&E and Water Board are not considering suggestions from the community regarding cleanup and provision of drinking water.

Response: Comment noted. The commenter did not provide specific suggestions within the comment. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 23A-3

Comment: The community of Hinkley has suffered over last 50 years from the loss of some 3,000 people and decreased property values due to the contamination problem.

Response: Comment noted. The commenter did not provide specific suggestions within the comment. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 23A-4

Comment: When PG&E conducts studies and makes decisions on behalf of the Hinkley community, they base their decisions on those affected by the chromium contamination, not the community as a whole, and everyone is affected directly or indirectly. The commenter's water tests clean so he can't participate in the buy-out program, but those around him test contaminated, so he is concerned that it will be contaminated in the future.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary. Also refer to **Master Response 2** regarding chromium plume boundary and project study area boundary.

Comment 23A-5

Comment: It is nearly impossible to get what he put into his home because of the decreased property value and water contamination.

Response: Comment noted. The commenter did not provide specific suggestions within the comment. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 23A-6

Comment: There are high levels of Cr[VI] appearing on Hinkley Road, and PG&E has a fiduciary responsibility to correct all Cr[VI] in the entire zip code of Hinkley. It's possible that PG&E missed a vein of contaminated water west of the compressor station. Either 2011 floods carried Cr[VI] west of the compressor station or in-situ treatment caused redirection of water.

Response: Comment noted. The commenter appears to be referring to an area of detections of Cr[VI] near the intersection of Hinkley Road and Community Boulevard. An area of Cr[VI] detections above 3.1 ppb has been identified in 4th Quarter 2012 sampling by PG&E with the highest detection in the 4th Quarter Monitoring Report being around 8 ppb. This area is located approximately 1.5 miles due west from the Compressor Station and is located on the west side of the Lockhart Fault. Based on groundwater elevation contour data (See PG&E, 2012, Assessment of In-Situ Reactive Zone

Treatment Byproducts, Figure 1), the direction of flow in this area is toward the northeast, indicating that water flows from this area toward the chromium plume, not from the plume toward this area. In addition, this area is located west of the Lockhart Fault, whereas the chromium plume is located east of the Lockhart Fault. Based on historic evidence to date, it appears that there is usually a lower groundwater table to the east of the fault than west of the fault, and thus the fault appears to act as a barrier that retards (slows down) westward flow of water. Thus, based on the evidence to date, the detection of Cr[VI] around the intersection of Hinkley Road and Community Road appears to be unrelated to the PG&E chromium plume. The evidence suggests that these detections may reflect variation in natural background levels and/or an unknown chromium source that is not related to PG&E's historic waste discharge of chromium from the compressor station. These assumptions will be further investigated as part of a revised chromium background study, which is currently in the planning phases.

This comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are required.

Comment 23A-7

Comment: PG&E should pipe in water from the Mojave Water Agency (MWA) main water line to everybody's house in Hinkley.

Response: Comment noted. The EIR is limited to analyzing the impacts of the proposed remediation activities and thus under CEQA can only require mitigation for effects of remediation, not effects of the original chromium plume. The EIR discusses replacement water where remediation activities would affect water supply wells and includes several options for replacement water including wellhead treatment, deeper wells, or a water system, but did not specifically mention the possibility of a connection to the MWA pipeline. A water system provided as mitigation for the remedial activities could be derived from wells located in the Hinkley area that are upgradient of the chromium plume or could be derived from a connection to the MWA water line that crosses part of the project area along Community Boulevard. The EIR has been revised to note that the water supply system option could include a connection to the MWA pipeline and describes the source of water in that pipeline.

Also please refer to **Master Response 5** regarding replacement water supply.

Comment 23A-8

Comment: The commenter supports whole-house water treatment as a temporary solution but thinks installing water lines would solve the problem completely and save the community.

Response: Comment noted. Please refer to the prior response concerning EIR mitigation for replacement water and a potential community water system connected to MWA. Please also refer to **Master Response 5** regarding replacement water supply.

Comment 23A-9

Comment: The Water Board and PG&E should further investigate unsafe levels of arsenic and manganese in domestic wells since dangerous levels were shown in wells tested in October 2012, and that the in-situ treatment be stopped until issue resolved.

Response: Please refer to **Master Response 4** regarding remediation byproducts, including detection of arsenic and manganese in domestic wells west of the chromium plume.

Comments 23A-10 and 23A -11

Comment: The most current third quarter 2012 plume map is misleading and should show the affected areas and the path it took to get there, not the individual plume areas (and he provides a marked up figure).

Response: The commenter describes that the 2012 plume maps show a "gap" in the chromium plume between approximately Thompson Road and Tindall Road, where monitoring wells showed chromium less than the currently defined maximum background levels. The current requirement is that all monitoring results be shown on the quarterly monitoring maps, and the maps identify areas where chromium is above the defined maximum background levels.

EIR Figures 2-2b, 2-2c, and 2-2d show the progression of the plume over time since 2008 and thus they show where the plume was in previous years as the commenter requests. These figures were updated through 4th Q 2012.

As far as updating the "path" that chromium took to get to a particular point, the plume maps are only required to show the actual chromium detections. In some of the monitoring data, there are outlying areas with chromium that are higher than maximum background levels with intervening monitoring wells showing less than maximum background levels between the higher detection and the "main" part of the plume. It would not be accurate to indicate with plume contours those areas with detections below the maximum background level that are actually areas with detections above the maximum background levels.

Please refer to **Master Response 2** regarding chromium plume boundary and project study area boundary.

Response to Comment Letter 23B (Hernandez)

Comment 23B-1

Comment: The commenter agrees with the EIR report.

Response: Comment noted. No revisions to the Draft EIR are necessary.

Comment 23B-2

Comment: The commenter supports going forward with remediation with one of the middle options because too fast is problematic, and also supports the water program in place to provide water.

Response: Comment noted regarding preferences for remedial alternatives. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 23B-3

Comment: The social impact on the community started back in 1952, and they've probably lost 3,000 people since 1970. The comment states that there was no data to show the Cr[VI] origin, 3.1 ppb is now used as an arbitrary level, and there is concern it will change again and the responsible party will walk. During this time, the Water Board issued a 3A amendment (which tries to determine which Cr[VI] is from PG&E and which is natural), and the amendment was suspended and should be put back.

Response: Comment noted regarding the social impact. The focus of CEQA is on physical impacts of the environment from future remedial activities and thus the EIR is not analyzing the social impacts of prior chromium contamination. However, the EIR does describe potential prior socioeconomic effects of chromium contamination and PG&E property buyout and the EIR analyzes potential secondary socioeconomic effects of future remedial actions as they relate to physical impacts, as required by CEQA.

Regarding the concerns about 3.1 ppb as a maximum background level and the 3A amendment, please see **Master Response 2** regarding background levels.

Comment 23B-4

Comment: The community has died and that property purchase should go hand in hand with cleanup which will take 26-40 years. The commenter states he lost his neighbors, his house is paid for, and he can't sell it unless it's to PG&E, who wants to cut that program. If PG&E had installed a new water system when the contamination went public, it might have taken forever to clean it up but everybody would have been safe.

Response: Comment noted. The Water Board has authority to require remediation of the chromium plume in a specific timeframe. The Water Board also has the authority to require PG&E to provide replacement water where wells are affected by the chromium plume. The Water Board does not have the authority to require replacement water to wells that are not affected by the chromium plume and does not have the authority to require property buyouts. Property buyouts are a private action by PG&E.

For the EIR, the Water Board can impose mitigation for replacement water where remedial actions affect water supply wells and one of the options for providing replacement water would be a water supply system. However, under CEQA, the EIR is limited to requiring mitigation in areas shown to be affected by remediation. Under California law, the Water Board cannot specify a particular water supply system for the entire Hinkley community as requested by the commenter.

No revisions to the Draft EIR are necessary.

Comment 23B-5

Comment: The comment states that he can't in good conscious tell his family or others to buy property in Hinkley right now, that you can't get a loan against the property or do anything with it, and that the set agendas for the CAC meetings are not for the community.

Response: Comment noted. The comment concerns the socioeconomic impacts of the chromium plume on property values in Hinkley. As noted above in prior responses, the EIR is focused on the effects of future remediation, and it identifies secondary physical effects that might be result from socioeconomic impacts. Thus, the EIR is limited from requiring mitigation for potential impacts to property values due to the chromium plume itself.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 23B-6

Comment: The whole house water system is a short term solution.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 23B-7

Comment: People have a negative perception of Hinkley because of the contamination. If PG&E had provided a long term replacement water system in the first place, it would have saved the community.

Response: Comment noted. Please refer to the response to **Comment 23B-4** above and to **Master Response 5** regarding replacement water supply.

Comment 23B-8

Comment: 3A should be reinstated, and PG&E should be responsible for what they caused however long it takes.

Response: Please see **Master Response 2** regarding background levels and the 3A issue.

Comment 23B-9

Comment: If you want something to grow, you have to start with the proper foundation which is to disconnect everybody. Nobody really knows how much filtration systems cost, and we don't know what's going to happen after five years.

Response: Comment noted. The comment concerns the whole house water replacement order which is not part of the EIR remediation alternatives. As noted above, the EIR mitigation does include a potential for a water supply system for wells affected by remediation activities. No revisions to the Draft EIR are necessary.

Response to Comment Letter 24 (Kegyulics)

Comment 24-1

Comment: Public water to the City of Hinkley would be the only solution during the time they need to clean it up naturally. Chemically induced cleanup is worse.

Response: Comment noted. Please refer to **Master Response 5** regarding replacement water supply. Regarding the comment that chemically induced cleanup being worse, presumably this comment is referred to IRZ treatment with carbon amendment; the EIR analyzes the impacts of IRZ treatment as well as all other treatment technologies included in the EIR alternatives. **Master Response 4** discusses the issue of IRZ operational byproducts. No revisions to the Draft EIR are necessary.

Response to Comment Letter 25 (Lloyd)

Comment 25-1

Comment: Electrocoagulation is the fastest most effective way to remediate all contaminants from water with the least environmental impact, and he presents an Executive Summary to the Board.

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives including electrocoagulation.

Response to Comment Letter 26A (Monk)

Comment 26A-1

Comment: The Water Board should provide written test results for tests that PG&E has done on wells located at 34655 Mountain View Road.

Response: Comment noted. The comment letter includes an attachment from PG&E indicating that the results of testing of the well at 34655 Mountain View Road was non-detect for Cr[T] with a detection limit of 1 ppb and 0.36 ppb for Cr[VI]. Please see response to **Comment 26 A-5** below as to the significance of the detection of 0.36 ppb of Cr[VI].

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 26A-2

Comment: The Water Board should provide in writing that the deeper well option is not feasible for them because they don't have any clay where they live.

Response: Comment noted. The blue clay layer separates the upper aquifer from the lower aquifer, but the clay layer is not present in all locations in Hinkley. The chromium plume is primarily located in the upper aquifer (except in a limited area near SR 58 where agricultural pumping apparently drew the chromium into the lower aquifer). Thus, where there is no blue clay, there is no lower aquifer and thus no utility to installing a deeper well.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 26A-3

Comment: The Water Board should provide written test results for the PG&E pool at the Hinkley Compressor Station to show how much chromium they were exposed to by PG&E allowing people to swim in the pool.

Response: Comment noted. The federal Agency for Toxic Substances and Disease Registry (ATSDR) prepared a Public Health Assessment in 2000 for the PG&E Hinkley site (ATSDR 2000) that looked at prior exposures to chromium. In that study, ATSDR described that a PG&E representative states that the on-site swimming pool at the Compressor Station was supplied by wells located south and upgradient of the chromium plume and thus that there was not a path of exposure associated with pool use. The Water Board does not have any additional information on the PG&E swimming pool, which may have been under the purview of the County Health Department.

The comment concerns potential prior exposure to chromium. The EIR is focused on analyzing the impacts of future effects of chromium remediation, not the past potential effects of chromium exposure. Thus, the comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 26A-4

Comment: The Water Board should provide written documentation that PG&E acknowledges their pool at the Hinkley Compressor Station existing.

Response: Comment noted. As noted in the response to **Comment 26A-3** above, the ATSDR 2000 report notes the existence of the PG&E pool. Requests for PG&E should be sent to PG&E directly. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 26A-5

Comment: The commenter states her neighbors located over half-mile south of Riverview Road have Cr[VI] in their wells over 4.0 ppb, so Cr[VI] is flowing upstream in increasing amounts. PG&E is supplying them with bottled water and offered to buy their property, so they must believe the area we live is contaminated.

Response: Comment noted. As described in the EIR, the currently defined maximum background level is 3.1 ppb of Cr[VI] and 3.2 ppb of Cr[T]. As such, detections of chromium that are below these levels are not defined as proof of chromium from the PG&E plume. The Water Board is not aware of sampling data for a domestic well having "over 4.0 ppb" in a well south of Riverview Road but would request the commenter to submit such evidence to the Board so that it may review it.

As to the finding of 0.36 ppb of Cr[VI] in a domestic well at 34655 Mountain View Road (which is approximately 1.5 miles south/southwest of the Compressor Station) this level is well below the currently defined maximum background level of 3.1 ppb. Monitoring of wells within the first mile south of the Compressor Station has consistency shown Cr[VI] levels less than 3.1 ppb. Furthermore, groundwater contours show a clear northward groundwater flow direction away from the Mojave River. As such, the evidence to date is that the chromium plume is not located south of the Compressor Station property. Thus, the detection of chromium in the domestic well at 34655 Mountain View Road is likely not related to PG&E's plume.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are required.

Comment 26A-6

Comment: Electrocoagulation is our choice for cleanup of Cr[VI].

Response: Comment noted. Refer to **Master Response 6** regarding EIR alternatives including electrocoagulation.

Response to Comment Letter 26B (Monk)

Comment 26B-1

Comment: The commenter asks how to get historical records of well test results for their property, how much exposure to Cr[VI] did they get from the pool at PG&E Compressor Station (which PG&E allowed people to swim in the 1960s and 1970s), And why they can't qualify for a deeper well (which is in the part of old riverbed where there is no clay).

Response: Comment noted. Regarding the historical records of PG&E testing, the commenter should request those from PG&E or the County Health Department. Where testing of the well is part of the

domestic sampling program reported to the Water Board, sampling results are included in quarterly monitoring reports submitted by PG&E to the Water Board. Those reports are provided on Geotracker http://geotracker.waterboards.ca.gov/. Sampling results for the well at 34655 Mountain View Road from summer 2012 are included in the 3rd Quarter 2012 Monitoring Report.

Regarding the PG&E pool, please see response to **Comment 26A-3** above. Regarding the deeper well option, please see response to **Comment 26A-2** above.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 27A (Morris R)

Comment 27A-1

Comment: There should be a stop order on ethanol now, and USGS should prove ethanol is not releasing manganese into the aquifer.

Response: Comment noted. Please refer to **Master Response 4** regarding remediation byproducts (including discussion of ethanol and manganese) and **Master Response 7** regarding third party participation.

Response to Comment Letter 27B (Morris R)

Comment 27B-1

Comment: Someone from the Water Board stated that they believe the 2010 flood released manganese into the water in Hinkley. The commenter has lived through many floods in Hinkley, and none have brought out black water (manganese). The manganese that we are now seeing is the fault of the Water Board and PG&E.

Response: Comment noted. Please refer to **Master Response 4** regarding remediation byproducts including manganese. As described therein, the evidence to date does not support the premise that the detections of manganese in domestic wells to the west of the chromium plume are related to the PG&E IRZ operations. The precise source or cause of the manganese in domestic wells could be naturally occurring or other man-made sources, but does not appear related to the PG&E actions, based on the data at this time. The Water Board is continuing to investigate this issue.

Regarding flooding, the Mojave River alluvial channel is periodically recharged (every 5–10 years) during major runoff events. The water levels immediately adjacent to the Mojave River channel may be recharged by as much as 20 to 40 feet during these surface flow events (Stamos et al. 2001). However, as you move away from the area immediately adjacent to the river, the effect of Mojave River runoff events on groundwater levels in the Hinkley Valley diminishes rapidly (Lines 1996). Based on data for the high flow period between November 1992 and March 1993, water table rises in the project study area were roughly 16 feet to over 48 feet beneath and immediately adjacent to the Mojave River, 8 feet to 16 feet up to 0.75 mile north of the river, 4 feet to 8 feet up to 1.25 miles north of the river, and 1 foot to 4 feet up to 1.75 miles north of the river (Lines 1996). Recent years with some recharge in the Hinkley Valley portion of the Mojave River aquifer are 1983, 1993, 1998, 2005, and 2010.

Although the potential water table rise in a well further away from the Mojave River may be limited in the immediate post flood period, it is possible that the rising water table may have contained groundwater with enough oxygen that it caused manganese to precipitate out of solution as manganese oxide, leading to the black water seen in wells. Another possibility is that stagnant water in large diameter supply wells created a reducing environment that results in higher than normal levels of manganese in well water. As the well water is exposed to oxygen by pumping action or in plumbing fixtures, it could result in manganese precipitating out of solution as manganese oxide, potentially leading to the black water. Additional investigations to be conducted by PG&E in 2013, as required by the Water Board's December 2012 Investigative Order should shed more light on this issue.

Comment 27B-2

Comment: Long before PG&E was allowed to pump ethanol into the ground, the Water Board should have dumped food coloring into the wells to see where the water flowed. The Water Board has failed in protecting the people of Hinkley and should not be in charge of cleanups.

Response: Comment noted. The Water Board is the state agency with authority over the groundwater cleanup. The IRZ treatment method was pilot-tested at a small-scale near the Compressor Station before being allowed to scale up. Tracer tests conducted during and after pilot testing were able to predict the flow of groundwater, and therefore byproducts, during IRZ actions. Because the pilot tests were so successful at reducing chromium concentrations to less than 1.0 ppb and because monitoring was able to track byproducts formed in groundwater, the Water Board permitted the project to go forward at a larger scale, as is seen today. Other assessments of groundwater flow directions determined that, in general, it is northward (not to the west) of the IRZ operations. The Water Board also requires monitoring of remedial byproducts, including manganese and arsenic, and control of the byproduct plumes.

Please also see **Master Response 7** concerning Third-Party Involvement.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 27C (Morris R)

Comment 27C-1

Comment: Every well in Hinkley should be tested so the real plume can be defined.

Response: Comment noted. As described in Mitigation Measure WTR-MM-2a, PG&E is required to conduct quarterly monitoring of chromium in domestic wells within one-mile downgradient or cross gradient of the chromium plume. The Water Board is requiring PG&E to conduct additional investigation to better define the plume, particularly in northern areas.

Please also refer to **Master Response 2** regarding chromium plume boundary and project study area boundary.

Response to Comment Letter 28A (Morris R-K)

Comment 28A-1

Comment: The EIR should be thrown out.

Response: Comment noted. Please see responses to substantive comments below.

Comment 28A-2

Comment: The EIR (Section 3.3, *Hazards and Hazardous Materials*) states that manganese is not considered toxic, but two reports indicate manganese is very toxic.

Response: Refer to **Master Response 4** regarding remediation byproducts. As noted therein, the reference in Section 3.3 was in error and has been corrected. Additional information about the toxicity of manganese has been added to the EIR. Also refer to response to **Comment 7B-4**.

Comment 28A-3

Comment: The EIR (Section 3.3 *Hazards and Hazardous Materials*) states that arsenic at 5,000 ppb would be standard, but two reports indicate arsenic above 10 ppb is toxic.

Response: Refer to **Master Response 4** regarding remediation byproducts. As noted therein, the reference in Section 3.3 was to the hazardous waste level for arsenic, which is 5 mg/l (= 5 ppm = 5, 000 ppb). This standard concerns regulatory requirements for handling hazardous materials, which is different from a drinking water standard. The EIR correctly describes the drinking water standard as 10 ppb in Section 3.1, *Water Resources and Water Quality*.

Comment 28A-4

Comment: PG&E is allowed to lower the EPA/CDPH standards. PG&E and the founder and president of ChemRisk destroyed the first and only Cr[VI] study over 30 years ago.

Response: The comment concerns allegations about the validity of a 1997 Journal of Occupational and Environmental Medicine article (Zhang, JinDong and ShuKun Li. 1997. Cancer mortality in a Chinese population exposed to hexavalent chromium in water. JOEM 39(4):315-319.) The JOEM subsequently retracted the paper due to concerns raised, and the OEHHA's Public Health Goal did not use it. This 1997 study was not used to set significance thresholds or the Public Health Goal set by OEHHA in 2011. For the current project, cleanup standards are presently based on background levels, in accordance with policies of the State Water Resources Control Board. No revisions to the Draft EIR are necessary.

Comment 28A-5

Comment: The west plume boundary should be approximately 2.25 miles west of Mountain View Road according to specific test well results listed by the commenter. The commenter also quotes Ian Webster stating if total chromium is 10 ppb, then hexavalent chromium would be 9.5 ppb.

Response: Regarding the detection 7.8 ppb of Cr[VI at 36227 Hinkley Road, the commenter appears to be referring to an area of detections of Cr[VI] around the intersection of Hinkley Road and Community Boulevard above 3.1 ppb in 4th Quarter sampling by PG&E with the highest detection in

the 4th Quarter Monitoring Report being the detection at 36227 Hinkley Road. This area is located approximately 1.5 miles due west from the Compressor Station and is located on west side of the Lockhart Fault. Based on groundwater elevation contour data (See PG&E, 2012, Assessment of In-Situ Reactive Zone Treatment Byproducts, Figure 1), the direction of flow in this area is toward the northeast, indicating that water flows from this area toward the chromium plume, not from the plume toward this area. In addition, this area is located west of the Lockhart Fault, whereas the chromium plume is located east of the Lockhart Fault. Based on historic evidence to date, it appears that there is usually a lower groundwater table to the east of the fault than west of the fault, and thus the fault appears to act as a barrier to westward flow of water. Thus, based on the evidence to date, the detection of Cr[VI] around the intersection of Hinkley Road and Community Boulevard appears to be unrelated to the PG&E chromium plume. The evidence suggests that these detections may reflect variation in natural background levels and/or may reflect a non PG&E man-made chromium source. These assumptions will be further investigated as part of a revised chromium background study, which is currently in the planning phases.

Regarding the reported detection of total chromium at 10 ppb in 1987 at 37362 Mulberry Avenue, the Water Board has not been provided a copy of such results. In 1987 the detection reporting limit for chromium was 10 ppb; thus this report may or may not be an actual confirmation of 10 ppb of chromium. Without reviewing the actual sampling results from 1987, no further assessment can be made.

Regarding the comment that most of total chromium is hexavalent chromium, that is generally consistent with the sampling of chromium reported both within and outside the defined chromium plume. As to whether hexavalent chromium is always 95% of total chromium, there is some variation in the amount of hexavalent chromium making up total chromium results on a sample by sample basis.

Please refer to **Master Response 2** for further information regarding chromium plume boundary and project study area boundary

Regarding the detections of manganese and arsenic in domestic wells west of the chromium plume, please refer to **Master Response 4**.

Comment 28A-6

Comment: The Water Board and PG&E should be released and removed from Hinkley water clean-up. The Water Board should be replaced by the USGS for data collection and interpretation, who without prejudice would give us a real plume boundary. PG&E should be replaced by the Corps who are used to cleaning up other people's messes; to purge the Hinkley aquifer of all contamination and would follow the USEPA and CDPH standards.

Response: Comment noted. The Water Board is the state agency with authority and responsibility to oversee groundwater cleanup. The cleanup is being done to background levels which are substantially below the USEPA maximum Contaminant Level of 100 ppb (for Cr[T]) and below the California Maximum Contaminant Level of 50 ppb (also for Cr[T]). The CDPH public health goal, as described in the EIR, is not a regulatory or cleanup level and the Water Board is legally limited from requiring cleanup to below background levels.

Refer to **Master Response 7** regarding third party participation. The comment does not concern the adequacy of the Draft EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 28B (Morris R-K)

Comment 28B-1

Comment: The highest concern is a total disregard for following EPA regulations and California Department of Public Health regulations.

Response: Comment noted. The commenter does not specify who has total disregard for following regulations. The Water Board is the state agency with authority and responsibility to oversee groundwater cleanup. The cleanup is being done to background levels, which are substantially below the USEPA maximum Contaminant Level of 100 ppb (for Cr[T]) and below the California Maximum Contaminant Level of 50 ppb (also for Cr[T]). The CDPH public health goal, as described in the EIR, is not a regulatory or cleanup level and the Water Board is legally limited from requiring cleanup to below background levels.

Comment 28B-2

Comment: The EIR states that manganese is not considered toxic in Section 3.3, *Hazards and Hazardous Materials*, of the Draft EIR, and references two studies that purportedly show manganese to be toxic above 50 parts per billion (ppb) and arsenic at 10 ppb.

Response: The text in Section 3.3 in the Draft EIR was only intended to identify manganese in soil as likely to be non-toxic in the context of a hazardous waste definition and refers the reader to Section 3.1, *Water Resources and Water Quality*, for a discussion of potential impacts related to byproduct generation including manganese and impacts to drinking water. This description was incomplete and has been corrected in the EIR to clearly identify that manganese in high levels can be toxic and have substantial health effects. Regarding manganese being toxic at 50 ppb, the commenter is referring to the Secondary Maximum Contaminant Level (MCL) of 50 ppb. As clearly stated in the document cited by the commenter (CDPH web site http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Manganese.aspx), secondary MCLs are set for aesthetic reasons, not health reasons. The secondary MCL for manganese was set based upon taste and staining. Manganese at very high levels can be toxic and can cause neurologic damage. The USEPA has a lifetime health advisory level of 0.3 mg/l (or 300 ppb). The EIR has been updated to describe potential manganese toxicity more completely.

As described in Section 3.1.6.4, *Arsenic*, existing California and EPA Maximum Contaminant Levels of arsenic in drinking water are 10 ppb.

The significance criteria for purposes of the CEQA analysis is discussed in Section 3.1.7, *Significance Criteria*; and the impacts are discussed in Impact WTR-2g (Increase in other secondary byproducts – dissolved arsenic, iron, and manganese – due to in-situ remediation).

Also refer to **Master Response 4** regarding remediation byproducts.

Comment 28B-3

Comment: Wells on the property located 3 miles west of PG&E have manganese (5600 ppb and 1300 ppb) and arsenic (19 ppb and 56 ppb).

Response: Comment noted. The Water Board is aware of the test results. Please refer to **Master Response 4** regarding remediation byproducts including the detections of manganese and arsenic in domestic wells west of the chromium plume.

Comment 28B-4

Comment: PG&E has been studying water flow of Hinkley and their Cr[VI] plume for over 50 years, and they should be removed from the studies and clean up, and their data and the EIR report should be disregarded. The USGS and Army Corps of Engineers should be put in charge of collecting data and clean up.

Response: Comment noted. While discharges to ground from the Compressor Station began over 50 years ago, the Water Board has required groundwater monitoring since the lined ponds were first installed in 1974, Refer to **Master Response 7** regarding third party participation.

Comment 28B-5

Comment: All water should be removed from the ground, cleaned, and replaced.

Response: Comment noted. The purpose of the remediation alternatives in the EIR is to clean up the chromium plume to background levels. The comment provided describes the original Feasibility Study Alternative 5 in which pump and treat was proposed by PG&E for the entire chromium plume. However, the estimated cleanup time of 140 years for this alternative, was deemed to be too long; and the likely impacts to the environment, such as extensive groundwater drawdown, were deemed undesirable. For this and other reasons, the Water Board requested PG&E to pursue other alternatives that would more quickly achieve cleanup with less impact to the environment. These other alternatives were analyzed in more detail in the Draft EIR. The EIR also included mitigation, such as remediation of byproducts generated back to pre-remediation reference levels, for potentially significant impacts.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 28C (Morris R-K)

Comment 28C-1

Comment: Remediation needs to stop now. There should be no more ethanol injected into the aquifer. PG&E and Water Board have failed to control manganese and arsenic.

Response: Comment noted. Refer to **Master Response 4** regarding remediation byproducts.

Comment 28C-2

Comment: The plume boundary needs to be redefined based on detections of arsenic and manganese in the commenter's well in October 2012.

Response: Comment noted. Refer to **Master Response 4** regarding remediation byproducts.

Comment 28C-3

Comment: Stop the EIR now.

Response: Comment noted. The comment does not specifically identify why the EIR should be stopped now. Possibly, the commenter thinks that the EIR should be halted out of concern that the IRZ operations may be affecting domestic well concentrations of byproducts such as manganese and arsenic, and that IRZ operations should be shut down. If that is the concern, please refer to **Master Response 4** regarding remediation byproducts.

Response to Comment Letter 29 (Norman)

Comment 29-1

Comment: There should be no groundwater drawdown.

Response: Comment noted. The EIR analyzes the impact of groundwater drawdown and proposes feasible mitigation. Alternative 4B proposes the least amount of groundwater pumping and thus would result in the least amount of drawdown of the aquifer. However, Alternative 4B has one of the longest cleanup times for restoring the aquifer back for beneficial use. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 29-2

Comment: The source of manganese, uranium, etc. should be found before poisoning everyone.

Response: Comment noted. The EIR analyzes impacts related to remedial byproducts. Refer to **Master Response 4** regarding remediation byproducts for more information on manganese and uranium.

Comment 29-3

Comment: There are no horned toads around the last few years along with turtles.

Response: Comment noted. Potential effects on wildlife from the groundwater remediation program are addressed in Section 3.7, *Biological Resources*. No revisions to the Draft EIR are necessary.

Comment 29-4

Comment: There should be no aquifer compaction.

Response: Comment noted. The EIR analyzes impacts related to aquifer compaction. As stated in response to Comment 29-1, Alternative 4B proposes the least amount of groundwater pumping and thus would result in the least amount of drawdown and aquifer compaction. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 30 (PG&E)

Comment 30-1

Comment: The EIR provides sufficient flexibility to implement the final groundwater remedy in an efficient and least impactful manner, and the six alternatives analyzed provide a range of options that weigh the speed of groundwater cleanup against potential impacts. The most beneficial alternative is either Alternative 4B or 4C-2 because they provide the best balance between clean up speed and minimizing environmental impacts.

Response: Comment noted regarding PG&E's preferred alternative. No comments are provided on the EIR analysis. No revisions to the Draft EIR are necessary.

Comment 30-2

Comment: PG&E has collected extensive data on the effectiveness of and potential impacts from operation of agricultural treatment units and in-situ treatment, and data for constituents other than chromium as part of the voluntary Whole House Replacement Water program. The EIR and related permits should acknowledge that remediation can be optimized during the operational period to reduce impacts by using such features as crop rotation and advanced irrigation strategies in the agricultural units to reduce the amount of byproducts generated. The EIR and related permits should be flexible enough to allow for such future optimization. Without such flexibility, the potential impacts may be overestimated in the EIR, and the mitigation unnecessarily over-reaching.

Response: The EIR provides flexibility by analyzing several alternatives and provides a conservative analysis by covering a large project area. Based on the data available to date, it cannot be concluded that the potential impacts are overestimated in the EIR, particularly in light of the continued changes in the defined area of chromium plume. The EIR mitigation will be triggered by significant effects of remediation. Thus, if agricultural unit optimization, such as using crop rotation or advanced irrigation can reduce the generation of secondary byproducts such as TDS or reduce the level of groundwater drawdown, then PG&E can lower the level of required mitigation to address these impacts.

No revisions to the Draft EIR are necessary.

Comment 30-3

Comment: The environmental impacts of the mitigation measures should be considered in the impact analysis and should not have more impact than the original impact. Timeframes proposed for mitigation (for post chromium mitigation measures) are unrealistically short and technically impracticable (e.g., mitigation for total dissolved solids could require a reverse osmosis treatment system to remove TDS).

Response: The EIR has been revised to further analyze the secondary environmental impacts of the mitigation measures. As allowed by CEQA, the analysis of the impacts of mitigation can be at a more general level than analysis of the project impacts. The key mitigation measures that result in secondary environmental impacts include water supply replacement, treatment of IRZ byproducts, and treatment of agricultural unit byproducts. Water supply replacement impacts were discussed in the Draft EIR. The impacts of treatment of IRZ byproducts would include those related to aeration and infiltration galleries, which are associated with construction of pipelines and the footprint of new facilities. The impacts of treatment of AU unit byproducts would also include those associated with pipelines and new facilities (such as reverse osmosis units), which could include land disturbance, aesthetics, and traffic and disposal effects. Proposed timeframes for post-chromium mitigation measures are realistic and technically achievable (e.g., for total dissolved solids) when implemented concurrent with remedial actions, such as was accomplished at the Topock treatment plant. Section 3.1, *Water Resources and Water Quality*, has been revised to include expanded analysis of the secondary impacts of water quality mitigation.

Comment 30-4

Comment: The EIR should allow for consideration of natural restoration processes and/or basin-wide solutions that achieve the same basin wide restoration goals with reduced environmental impacts (and references Attachment 2).

Response: The possibility of using basin-wide approaches, such as potential changes in other agricultural activities in the groundwater basin, to lower TDS and nitrate inputs has been added to Mitigation Measures WTR-MM-5 (concerning TDS) and WTR-MM-6 (concerning nitrate). In concept, these options would apply to other agricultural fields not used for agricultural unit treatment and could include changes in irrigation techniques to use drag drip irrigation (thus lowering irrigation amounts and TDS loading), crop rotation (which may lower water demand), or fallowing of agricultural land. Since the proposed remediation alternatives will increase agricultural fields and production of animal feed, there is an option to implement a "farm swap" to allow fallowing of other local agricultural fields without lowering the amount of locally available feed for local dairies, which are a key source of local jobs and economic activity. Participation by owners of other agricultural land would be voluntary and would be subject to private negotiation between PG&E and willing participants. In addition, there may be options to work with local Hinkley dairies to lower TDS and nitrate inputs through better site management practices of manure and runoff. Some of these dairies are also under regulatory oversight by the Water Board and thus there may be combined solutions to dairy water quality issues concerning TDS and nitrate and PG&E agricultural treatment unit TDS issues. While these approaches could lower overall loading of TDS and nitrate into the Hinkley groundwater aquifer, long-term use of agricultural treatment units for chromium treatment may still result in localized increases in TDS. If such increases potentially affect a nearby water supply well, mitigation measures will need to be implemented regardless of a basin-wide approach. These types of issues will need to be addressed in better detail if the Water Board chooses to balance potential basin-wide improvements against localized impairments in deciding on WDR and CAO requirements.

Section 3.1, *Water Resources and Water Quality*, has been revised to allow for basin-wide approaches to mitigation of agricultural unit byproducts. This does not change the conclusions in the Draft EIR.

Comment 30-5

Comment: PG&E is committed to continuing the progress made in cleaning up the Cr[VI] groundwater plume and provides data on the amount treated. The comment states that continuing to implement proven technologies (agricultural treatment units) is in best interest of Hinkley and consistent with historical agricultural presence.

Response: Comment noted. The comment provides a general statement with regards to progress made towards cleaning up the chromium plume. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 30-6

Comment: Increased agricultural presence in the Hinkley Valley will support local agriculture-related jobs and economy, and these (agricultural treatment) alternatives minimize long term negative effects (e.g., excessive aquifer drawdown, byproduct generation, unsightly treatment plant, and long term truck traffic).

Response: Comment noted. All of the EIR alternatives include agricultural treatment as a key feature. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 30-7

Comment: PG&E looks forward to working with the Water Board and community of Hinkley on selection of a final remedy that balances cleanup speed with least amount of environmental impacts.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 30-8

Comment: The description of Alternative 4C-2 should be revised to clarify that faster cleanup is achieved by increasing winter pumping rates.

Response: The comment is correct. The text in Section ES.3.2.3, *Alternative 4C-2*, and Section 2.9.3 *Alternative 4C-2* (first paragraph) has been revised to clarify the faster cleanup periods of Alternative 4C-2 compared to Alternative 4B would be from increased pumping rates. This does not change the conclusions in the Draft EIR.

Comment 30-9

Comment: Under Alternative 4B there would still be pumping and treatment during winter months, but at a lower rate than the Alternative 4C series. The description of Alternative 4B incorrectly states that land treatment will not occur during winter months.

Response: The comment is correct. Section 2.9.2.2, *Implementation Details (Alternative 4B)*, has been revised to clarify that the pumping rate is lower but does not stop during winter months. This does not change the conclusions in the Draft EIR.

Comment 30-10

Comment: Text should be added to clarify the size of the proposed above-ground treatment facilities.

Response: Section 2.9.4.1, *Overview*, has been revised to provide the approximate size of the above-ground treatment facilities. This does not change the conclusions in the Draft EIR.

Comment 30-11

Comment: Text should be added to clarify the operational characteristics described apply to monitoring wells, as well as extraction and injection wells.

Response: Section 2.10.4.1, *Wells*, has been revised to provide this clarification. This does not change the conclusions in the Draft EIR.

Comment 30-12

Comment: Text describing the use of monitoring wells should be added below the text describing that of the freshwater supply wells.

Response: Section 2.10.4.1, *Wells*, has been revised to provide this clarification. This does not change the conclusions in the Draft EIR.

Comment 30-13

Comment: Several revisions to Section 2 tables and figures are recommended, and the proposed revisions are included as an attachment. These include revisions to Tables 2-3, 2-4, 2-5, 2-6, 2-7, and 2-8 and Figures 2-4, 2-5, 2-6, and 2-8.

Response: The proposed revisions provided in the attachment to the comment letter for Tables 2-3, 2-4, 2-5, 2-6, 2-7, and 2-8 and Figures 2-4, 2-5, 2-6, and 2-8 are minor technical clarifications only and have been made. This does not change the conclusions of the EIR.

Comment 30-14

Comment: The No Project cleanup timeframes in the EIR may be overestimated. Based on groundwater modeling, the commenter recommends revising the estimated timeframes as follows: Total chromium removal is 6 years, 80% chromium mass removal is 10-13 years, maximum background 3.1 is 75-150 years, and average background of 1.2 is 130 to220 years.

Response: [If PG&E provides supporting GW modeling, then this will be the response]: Table 3.1-2, Table 3.1-11, and Table ES-1 have been revised to note a range of cleanup timeframes suggested in this comment, but only for remediation of the first quarter 2010 plume. Since by definition the No Project Alternative could not be expanded to address the expanded plume area, the timeframe for cleanup of the entire plume is still identified as 1,000 years or greater, assuming natural attenuation of the expanded plume areas.

If PG&E does not provide supporting GW modeling by 04/16 then this will be the response. Water Board requested modeling support for these revised timeframes. This was not received in time for inclusion in the Final EIR and thus the Draft EIR estimates are unchanged.

Comment 30-15

Comment: In Table 3.1-2 (comparison of water resource impacts by alternatives), the maximum drawdown at scaled flows appears to be overly conservative, perhaps assuming a linear relationship between flow rate and maximum draw down. As the project is scaled, pumping would occur in areas outside the Feasibility Study (FS) pumping center (e.g., areas to the north), and maximum drawdown at the FS pumping center is not expected to increase linearly with scaling. Also see comments on Table 3.1-8 (Comment 30-32).

Response: The commenter is correct that a linear relationship was assumed between flow rate and maximum drawdown for the scaled flows. Since PG&E has not completed a groundwater drawdown and AU layout for the expanded plume yet, the use of a linear relationship is an appropriate approach for the purposes of CEQA disclosure, even if it likely overstates the impact. The EIR notes explicitly in Table 3.1-8 that the drawdown levels may overstate the impact; however, it would be premature to change the estimated drawdown levels until the full configuration of AU unit extraction and pumping is modeled to address the full expanded plume. The commenter is correct that extraction points are likely to be distributed throughout the plume rather than put in one central area, which may ameliorate some of the drawdown effect predicted using only a linear relationship.

No revisions to the EIR are necessary.

Comment 30-16

Comment: Table 3.1-2 (comparison of water resource impacts by alternatives) needs to be revised so the number of potentially affected wells matches the quantities shown in Table 3.1-8 (maximum localized groundwater drawdown in Hinkley Valley alternative).

Response: Table 3.1-9 actually shows the number of potentially affected wells, and Table 3.1-2 is consistent with the total domestic wells identified as affected in Table 3.1-9. Table 3.1-8 shows the potential drawdown levels, and Table 3.1-2 is consistent with the drawdown levels in Table 3.1-8. No revisions to the Draft EIR are necessary.

Comment 30-17

Comment: The analysis indicates that for Alternatives 4C-2, 4C-3 and 4C-5 the amount of plume bulging increases as the in-situ flow rate increases over existing conditions; but the analysis does not consider that the additional extraction for agricultural treatment included as part of these alternatives should decrease the potential for bulging. The text in Table 3.1-2 should be revised accordingly.

Response: Table 3.1-2 has been revised to clarify the potential for bulging in Alternatives 4C-2, 4C-3 and 4C-5 may be reduced by the addition of AUs. This does not change the conclusions in the Draft EIR.

Comment 30-18

Comment: The discussion of federal regulations regarding maximum contaminant levels (MCLs) should clarify that the MCL for total chromium regulates Cr[VI], and Cr[VI] represents the vast majority of health risk that drives the MCL for total chromium.

Response: The discussion of MCLs in PG&E's submitted comment is not completely accurate; however, the discussion in the EIR has been modified to say: While total chromium comprises the sum of hexavalent chromium Cr[VI] and trivalent chromium Cr(III) concentrations, the federal MCL for total chromium did not take into account the health effects associated with ingestion of Cr[VI], as health studies concerning ingestion were not completed and the health effects from ingestion were not well understood at the time of MCL adoption. Subsequent study after adoption of the federal MCL has raised concerns about health effects from ingestion of Cr[VI]. This does not change the conclusions in the Draft EIR.

Comment 30-19

Comment: There is a typographical error on page 3.1-13, and "pm" should be "ppm."

Response: The comment is correct. The text in Section 3.1.3.2, *State Regulations* (under *State Board Resolution No. 88-63, "Sources of Drinking Water"*) has been revised to correct the typographical error. This does not change the conclusions in the Draft EIR."

Comment 30-20

Comment: Figure 3.1-2 shows the Harper Lake label in the wrong location.

Response: The comment is correct. Figure 3.1-2 has been revised to move the Harper Lake label north to the correct location. This does not change the conclusions in the Draft EIR.

Comment 30-21

Comment: The text referencing the settlement agreement should be revised to say "alleged" violations for consistency with the Water Board's announcement of the proposed settlement.

Response: The text in Section 3.1.4.2, *Groundwater Basins* (under *Hinkley Valley Water Supplies*), has been revised as suggested. This does not change the conclusions in the Draft EIR.

Comment 30-22

Comment: Because the delineation of the northern boundary of the plume has been a public concern, the text should be revised to mention the revised background study being reviewed by the Water Board.

Response: Section 3.1.4.2, Groundwater Basins (under Effects of Existing and Historic Pumping on Groundwater Movement), has been modified to describe that the plume is thought to be at least 6.5 miles north of the Compressor Station, but the northern boundary is not fully delineated yet. The plume length has been greatly influenced by pumping by others as well as natural conditions. The Water Board issued Amended CAO in January 2013 requiring that PG&E conduct additional investigation to delineate the plume to the current maximum background levels of 3.1 ppb Cr[VI] and 3.2 ppb Cr[T]. Those new results should be known in fall 2013. This does not change the conclusions in the Draft EIR. Also refer to Master Response 2 regarding chromium plume boundary and project study area boundary.

Comment 30-23

Comment: The discussion under *Total Dissolve Solids Concentrations* in Section 3.1.4.3, *Hinkley Valley Groundwater Quality*, includes speculative information regarding the supply wells at the Compressor Station pulling the TDS plume from the former Mojave Dairy and pulling chromium concentrations southward. Because this information is speculative and not critical to the EIR, it should be deleted.

Response: The text in Section 3.1.4.3 has been modified to describe that the increase in chromium, TDS, and nitrate concentrations over the years may be attributed to supply well capture of constituents from former and current agricultural activities on nearby properties. More studies may be necessary to determine the exact contribution of nearby land uses upon the supply wells. This does not change the conclusions in the Draft EIR.

Comment 30-24

Comment: The discussion under *Nitrate Concentrations* in Section 3.1.4.3, *Hinkley Valley Groundwater Quality*, incorrectly states that half the samples from lysimeters in the alfalfa fields have nitrate concentrations of less than 1 ppm and half have more than 10 ppm. Instead it is 3 of 14 lysimeters which is less than half, and the text should be revised.

Response: The text under Nitrate Concentrations in Section 3.1.4.3, Hinkley Valley Groundwater Quality, has been revised to reflect the most recent information, which is data from the fourth quarter 2012 Desert View Dairy monitoring report. The revised text describes that current data from 4th quarter 2012 for the agricultural treatment unit reveals that 5 of the 12 lysimeters in the

alfalfa fields have yielded samples with nitrate concentrations of more than 10 ppm, or about 42 percent. This does not change the conclusions in the Draft EIR.

Comment 30-25

Comment: The text should be revised to reflect the correct date that the revised manganese mitigation plan was submitted. It should be May 2012, not March 2012.

Response: The text in Section 3.1.5.2, *In-Situ Reduction Treatment/In-Situ Treatment Byproducts and Control*, has been revised to correct the date. This does not change the conclusions in the Draft EIR.

Comment 30-26

Comment: The text should be revised to clarify that the occupational studies of Cr[VI] were in industrial settings and the exposure was at high concentrations.

Response: The text in Section 3.1.6.1, *Chromium*, has been revised to include the statement of inhalation in occupational "and industrial setting" but not to include the statement "at high concentrations." The reasoning for the latter is based upon a response by the Acting Director of OEHHA in a memo to Harold Singer, dated August 17, 2011, which states that while the comment is literally true, it misses a critical point that the PHG document suggests that tumors would have been increased at dose levels well below those tested in the bioassay of more animals had been used in the experiment.. This does not change the conclusions in the Draft EIR.

Comment 30-27

Comment: The text should be revised to reflect the correct formula for sodium chloride – it's NaCl, not $NACl_2$.

Response: The text in Section 3.1.6.2, *Total Dissolved Solids*, has been revised to show NaCl for sodium chloride. This does not change the conclusions in the Draft EIR.

Comment 30-28

Comment: Although there is no current MCL for Cr[VI], the EIR should clarify that MCL for total chromium is based on health risks associated with Cr[VI] and governs the standard for Cr[VI] until the Department of Public Health sets and MCL for Cr[VI], at which time that would constitute the applicable threshold of significance.

Response: The EIR is factually correct in noting that there is no specific MCL for Cr[VI]. As noted in the response to **Comment 30-18**, when the current MCL was developed, it did not take into account more recent studies of the effects of Cr[VI] oral ingestion which have indicated health effect concerns for ingestion. Thus, while the total chromium MCL is the current legal standard for drinking water, that does not mean that there are no health risks from consumption of water containing Cr[VI] up to 50 ppb (the California MCL for total chromium). The PHG for Cr[VI] of 0.02 ppb supports an argument that there are potential risks from consuming drinking water with Cr[VI] concentrations below 50 ppb. The Water Board's cleanup standard for this site is background levels and the Water Board is legally limited from requiring cleanup below background levels. Thus background levels remain the appropriate significance criteria for chromium in this EIR regardless of what the current or future MCL may be. No revisions to the EIR are necessary.

Comment 30-29

Comment: Regarding the significance criteria for any wells with detectable Cr[VI]concentrations below maximum background levels with one mile of the plume but whose Cr[VI] increases, the significance criteria is not appropriate because concentrations of Cr[VI] may increase and be unrelated to remedial actions and thus should be changed.

Response: The commenter is correct that there is uncertainty in determining whether detections of increases of chromium below the maximum background levels of Cr[VI] are due to PG&E's remediation of the chromium plume or due to variations in naturally-occurring Cr[VI] (or other man-made sources of chromium). The intent of the one-mile criteria in the significance criteria is to address the potential for rapid changes in the plume configuration that might occur during the decades-long remedial actions. The changes in the plume configuration between 2008 and 2012 are evidence that such changes are a real possibility. Thus, the significant criteria has been changed to delete reference to chromium detections below the maximum background level as being due to PG&E. Regarding the request to add statistical significance to the criteria for Cr[VI] increases, this change was not made because the intent of this mitigation is to be preventive in areas close to the plume that are most susceptible to plume boundary shifts. The one-mile criterion has been retained in order to require avoiding impacts on wells instead of mitigating increased chromium concentrations in wells after the fact.

The PHG for Cr[VI] of 0.02 ppb supports an argument that there are potential risks from consuming drinking water with Cr[VI] concentrations below 50 ppb. The Water Board's cleanup standard for this site is background levels and the Water Board is legally limited from requiring cleanup below background levels. Thus background levels remain the appropriate significance criteria for chromium in this EIR regardless of what the current or future MCL may be.

Comment 30-30

Comment: Regarding the statement in the EIR that the MCL for total chromium is outdated because it does not consider health threat from Cr[VI], the MCL is largely based on health risks associated with Cr[VI] and thus is not outdated. The EIR should be revised accordingly and should state that the significance threshold could change if the Department of Public Health sets an MCL for Cr[VI].

Response: The EIR is correct in noting that the current California MCL for Cr[T] does not take into account more recent health data and information for Cr[VI], such as the 2008 National Toxicology Program report on hexavalent chromium. The current MCL was adopted in 1977, at which time the primary concern was limited to inhalation risks, and the health risks associated with oral ingestion of Cr[VI] had not received the level of scrutiny that they received subsequent to 1977. Indeed, state law (SB 351) adopted in 2001 requires CDPH to adopt a Cr[VI] specific MCL and pressure to adopt this specific MCL was driven in large part by the developing understanding of potential health risks associated with oral ingestion. Documentation of the potential health risks associated with oral ingestion can be found in the OEHHA PHG adoption document.

The PHG for Cr[VI] of 0.02 ppb supports an argument that there are potential risks from consuming drinking water with Cr[T] concentrations below 50 ppb, in light of the fact (noted in the EIR) that perhaps 85 to 100 percent of chromium found in water in Hinkley is CR[VI]. The Water Board's cleanup standard for this site is background levels and the Water Board is legally limited from requiring cleanup below background levels. Thus background levels remain the appropriate significance criteria for chromium in this EIR regardless of what the current or future MCL may be.

Revisions to the significance criteria for total chromium have been made to provide clarification per this comment and per Comment 30-29.

Comment 30-31

Comment: Regarding the significance criteria for water supply well impacts from remediation byproducts, a 10% or 20% increase for wells that already have water quality that is above an MCL may not be significant because that level of increase could be due to natural variation, and a requirement for statistical significance should be included in the evaluation. The comment also states that, in determining if remediation byproducts degrade water quality, the EIR should clarify that the project must cause the increase in concentrations of remediation byproducts before the mitigation is imposed.

Response: The significance criteria has not been changed to add statistical significance as the Water Board believes that the increase levels do constitute significant changes. Clarification has also been added that impacts have to be caused or that potential impacts are likely by the remedial actions before mitigation is required. This does not change the conclusions in the Draft EIR.

Comment 30-32

Comment: In Table 3.1-8 (Maximum Localized Groundwater Drawdown in the Hinkley Valley Alternative), the maximum drawdown at scaled flows appears to be overly conservative, perhaps assuming a linear relationship between flow rate and maximum draw down. As such, footnote "b" in the table should be extended to all alternatives for the maximum drawdown at scaled flows column, and it should be corrected to reference Table 3.1-7 not 3.1-6.

Response: The commenter is correct that a linear relationship was assumed between flow rate and maximum drawdown for the scaled flows. Since PG&E has not completed a groundwater drawdown analysis and an AU layout for the expanded plume yet, the use of a linear relationship is an appropriate approach for the purposes of CEQA disclosure, even if it likely overstates the impact. The EIR notes explicitly on Table 3.1-8 that the drawdown levels may overstate the impact; however, it would be premature to change the estimated drawdown levels until the full configuration of AU unit extraction and pumping is modeled to the full expanded plume. The commenter is correct that extraction points are likely to be distributed throughout the plume rather than put in one central area, which may ameliorate some of the drawdown effects predicted using only a linear relationship.

Table 3.1-8 has been revised as suggested by the comments. This does not change the conclusions in the Draft EIR.

Comment 30-33

Comment: In Table 3.1-8, footnote b should reference Table 3.1-7 not 3.1-6.

Response: The commenter is correct. The footnote in Table 3.1-8 has been revised accordingly. This does not change the conclusions in the Draft EIR.

Comment 30-34

Comment: In Table 3.1-9, a footnote should be added that states "Groundwater elevations in private wells were estimated based on available data from monitoring wells. The actual number of partially or fully affected private wells may differ."

Response: The commenter is correct. Table 3.1-9 has been revised accordingly. This does not change the conclusions in the Draft EIR.

Comment 30-35

Comment: The total number of wells partially or fully affected for Alternative 4C-4 should be 147, not 133.

Response: The text on Page 3.1-56 is referring to potentially affected domestic wells only, which total 133 as shown in Table 3.1-9. No revisions to the EIR are necessary.

Comment 30-36

Comment: For comments on Table 3.1-10 (estimated effects of groundwater drawdown on potential aquifer compaction), refer to comments on Table 3.1-8 (Comment 30-32).

Response: Table 3.1-10 has been revised to add notes similar to the revised notes on Table 3.1-8. This does not change the conclusions in the Draft EIR.

Comment 30-37

Comment: In the discussion for Impact WTR-2d (temporary localized chromium plume spreading due to remedial activities), the EIR indicates that freshwater injections could cause plume spreading or bulging; however, the freshwater injections are designed to be placed sufficiently outside the Cr[VI] plume so they would decrease the plume area; and the text should be revised accordingly.

Response: The commenter is correct that freshwater injection is designed to limit plume spreading in a specific area. Current freshwater injection is designed to avoid spreading of the plume to the west toward the west. Since all alternatives include the same freshwater injection activities as at present (with a 15% contingency), the EIR has been revised to indicate that future injection activities would not result in plume bulging above pre-remediation reference levels.

The discussion for Impact WTR-2d (temporary localized chromium plume spreading due to remedial activities) has been revised to clarify that freshwater injections are not expected to cause bulging over pre-remediation reference levels. This does not change the conclusions in the Draft EIR.

Comment 30-38

Comment: In the discussion under Impact WTR-2d (temporary localized chromium plume spreading due to remedial activities), a 10% increase in chromium above background levels may not be significant, and the text should be revised to add "and the increase is statistically significant."

Response: The discussion for Impact WTR-2d has not been revised as the Water Board is of the opinion that the 10% increase is a significant impact.

Comment 30-39

Comment: There is redundant text in the bullets describing the significance criteria for Impact WTR-2d (temporary localized chromium plume spreading due to remedial activities).

Response: The text is similar but not redundant. The first bullet specifies if remedial actions cause chromium concentrations to increase from below maximum background levels to above maximum background levels or increase by 10% or more if current levels exceed the maximum background level. The second bullet specifies if remediation actions cause chromium concentrations to increase in a well within 1 mile of the defined plume. No revisions to the Draft EIR are necessary.

Comment 30-40

Comment: In the discussion under Impact WTR-2d (temporary localized chromium plume spreading due to remedial activities), the analysis indicates the amount of plume bulging increases for Alternatives 4C-2 and 4C-3 as the in-situ flow rate increases over existing conditions; but it does not consider that the additional extraction for agricultural treatment in these alternatives should decrease the potential for bulging (similar to Comment 30-17).

Response: The discussion for Impact WTR-2d has been revised to clarify the potential for bulging in Alternatives 4C-2, 4C-3 and 4C-5 may be reduced by the addition of AUs. This does not change the conclusions in the Draft EIR.

Comment 30-41

Comment: The phrase “Freshwater injection for plume control would similar to increase conditions” is missing a word and suggests changing it to “Freshwater injection for plume control would be similar to existing conditions”

Response: The commenter is correct. This sentence occurs in the discussion for Impact WTR-2d (temporary localized chromium plume spreading due to remedial activities) and has been revised accordingly. This does not change the conclusions in the Draft EIR.

Comment 30-42

Comment: The discussion for Impact WTR-2d (temporary localized chromium plume spreading due to remedial activities) should include the influence of southern extraction wells in decreasing the potential for bulging for Alternatives 4C-2, 4C-3 and 4C-4 in comparison to Alternative 4B.

Response: The discussion for Impact WTR-2d has been revised to acknowledge the influence of southern extraction wells for Alternatives 4C-2, 4C-3 and 4C-4 may be reduced by the addition of AUs. This does not change the conclusions in the Draft EIR.

Comment 30-43

Comment: The phrase “Freshwater injection for plume control would similar to increase conditions” is missing a word and suggests changing it to “Freshwater injection for plume control would be similar to existing conditions”

Response: The commenter is correct. This sentence occurs in the discussion for Impact WTR-2d (temporary localized chromium plume spreading due to remedial activities) and has been revised accordingly. This does not change the conclusions in the Draft EIR.

Comment 30-44

Comment: In the discussion under Impact WTR-2e (Increase in Total Dissolved Solids, Uranium, and Other Radionuclides due to Agricultural Treatment), a 10% or 20% increase above MCLs may not be significant, and the text should be revised to add "and the increase is statistically significant."

Response: The discussion for Impact WTR-2e is not revised as recommended because the Water Board currently believes that the increase levels identified in the criteria constitute a significant change.

Comment 30-45

Comment: In the discussion under Impact WTR-2e (Increase in Total Dissolved Solids, Uranium, and Other Radionuclides due to Agricultural Treatment), the EIR does not acknowledge the duration of using reverse osmosis (RO) to address TDS and that it could take just as long as remediating the chromium in groundwater and would likely have additional impacts (e.g., biological, cultural, and greenhouse gas impacts from construction and operation of a RO system and disposing brine offsite). The additional impacts and mitigation measures need to be included in EIR.

Response: The EIR has been revised to further analyze the secondary environmental impacts of mitigation of TDS. As allowed by CEQA, the analysis of the impacts of mitigation can be at a more general level than analysis of the project impacts. The impacts of treatment of AU unit byproducts would also include those associated with pipelines and new facilities (such as reverse osmosis), which could include land disturbance, aesthetics, and traffic and disposal effects. The EIR has been revised in Section 3.1, *Water Resources and Water Quality*, to include expanded analysis of the secondary impacts of water quality mitigation. This does not change the conclusions in the Draft EIR.

Comment 30-46

Comment: In the discussion under Impact WTR-2e (Increase in Total Dissolved Solids, Uranium, and Other Radionuclides due to Agricultural Treatment), the discussion under *Uranium and Other Radionuclides* should indicate the reduced form of uranium is U[IV], not U[III].

Response: The discussion under Impact WTR-2e has been revised accordingly. This does not change the conclusions in the Draft EIR.

Comment 30-47

Comment: Figures 3.1-19 to 3.1-22 should be entitled area of "potential" impacts (not "likely" impacts) because the area is larger than where impacts are anticipated, so it's protective and conservative.

Response: Figures 3.1-19 to 3.1-22 have been revised accordingly and text references have been changed to "potential" accordingly. This does not change the conclusions in the Draft EIR.

Comment 30-48

Comment: In the discussions for Impact WTR-2f (Changes in Nitrate Levels due to Agricultural Treatment) and Impact WTR-2g (Increase in Other Secondary Byproducts - Dissolved Arsenic, Iron, and Manganese - due to In-Situ Remediation), the increases based on percentage should also be statistically significant to be considered a significant impact.

Response: The text in Impacts WTR-2f and WTR-2g has not been revised to add the term statistically significant as the Water Board considers the increases in the mitigation constitute a significant impact.

Comment 30-49

Comment: For Mitigation Measure WTR-MM-1 (Purchase of Water Rights to Comply with Basin Adjudication), the mitigation requirements should include modifying remediation operation in a manner sufficient to compensate for any loss in planned agricultural treatment, as an option to implementing above-ground treatment, in the unlikely event that PG&E is not able to obtain sufficient water rights.

Response: Mitigation Measure WTR-MM-1 has been revised to provide both options in the event PG&E is not able to obtain sufficient water rights because both achieve the same end goal. This does not change the conclusions in the Draft EIR.

Comment 30-50

Comment: The definition of affected wells in Mitigation Measure WTR-MM-2a should be revised to include a statistical basis, rather than a straight percentage that may not have a statistical significance.

Response: Mitigation Measure WTR-MM-2a (Mitigation Program for Water Supply Wells Affected by the Chromium Plume Expansion due to Remedial Activities) has been revised include statistical significance according to the Water Board. This does not change the conclusions in the Draft EIR.

Comment 30-51

Comment: In Mitigation Measure WTR-MM-2b (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts), a 10% increase in remedial byproduct concentrations above background levels may not be significant, and the text should be revised to add “and the increase is statistically significant.”

Response: Mitigation Measure WTR-MM-2b has not been revised as the Water Board is of the opinion that 10% increase would represent a significant impact.

Comment 30-52

Comment: In Mitigation Measure WTR-MM-2b (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts), the text does not provide the definition for “an affected monitoring well” and should be provided.

Response: Mitigation Measure WTR-MM-2b has been revised to provide a definition, but the criteria for affected monitoring well has been changed to read 20%, instead of 25%, above the maximum pre-remediation monitoring well concentration due to more conservative requirements for mitigation measures. This does not change the conclusions in the Draft EIR.

Comment 30-53

Comment: In Mitigation Measure WTR-MM-2b (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts), the phrase "water quality modeling" is unclear and should be changed to "groundwater flow and transport modeling."

Response: Mitigation Measure WTR-MM-2b has been revised accordingly. This does not change the conclusions in the Draft EIR.

Comment 30-54

Comment: In Mitigation Measure WTR-MM-2b (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts), the text should be revised to state the Water Board determines if an adequate alternate water supply is provided, not the well owner.

Response: Mitigation Measure WTR-MM-2b has been revised accordingly. This does not change the conclusions in the Draft EIR.

Comment 30-55

Comment: In Mitigation Measure WTR-MM-2b (Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts), the requirement for agricultural treatment unit byproduct monitoring to include any chemicals applied to fields (fertilizers, pesticides, etc.) is overly broad and should not be included.

Response: Mitigation Measure WTR-MM-2b has been revised to state that additional monitoring for agricultural inputs may be required, as the decision lies with the Water Board in proposed WDRs. This does not change the conclusions in the Draft EIR.

Comment 30-56

Comment: In Mitigation Measure WTR-MM-2c (Water Supply Program for Wells Affected by Groundwater Drawdown due to Remedial Activities), the definition of actually affected wells should be revised to include a statistical basis, rather than straight percentage.

Response: Mitigation Measure WTR-MM-2c has not been revised as the Water Board is of the opinion that the criteria in this mitigation represent a significant impact.

Comment 30-57

Comment: Mitigation Measure WTR-MM-3 (Boundary Control Monitoring, Enhancement and Maintenance of Hydraulic Control and Plume Water Balance to Prevent or Reduce Potential Temporary Localized Chromium Plume Bulging) includes very detailed specifications for requirements that will be included in the new CAO and associated WDRs. Such detailed requirements in the EIR may limit flexibility for drafting and amending the CAO and WDRs, and the EIR text should be revised.

Response: Comment noted. Mitigation Measure WTR-MM-3 has been revised to allow the Water Board to modify the specifications if the Water Board determines that alternative measures are more effective at control of plume bulging. This does not change the conclusions in the Draft EIR.

Comment 30-58

Comment: Mitigation Measure WTR-MM-4 (Mitigation Program for Restoring the Hinkley Aquifer Affected by Remedial Activities for Beneficial Uses) should be restructured to allow for larger-scale, more effective aquifer management strategies, as detailed in Attachment 2, Discussion of Alternate Mitigation Options for Effects due to Agricultural Treatment (located at the end of Comment 30 in Chapter 2 of this Final EIR Volume I).

Response: The comment is specific to mitigation for agricultural treatment secondary byproducts, including TDS and nitrate. Mitigation Measures WTR-MM-4 , WTR-MM-5, WTR-MM-6 have been modified to allow for the potential use of basin-wide approaches in Hinkley to address TDS and nitrate that could involve working with neighboring agricultural field and dairy operators to promote reductions in TDS and nitrate of benefit to the aquifer as a whole. This does not change the conclusions in the Draft EIR.

Comment 30-59

Comment: With regard to Mitigation Measure WTR-MM-4 (Mitigation Program for Restoring the Hinkley Aquifer Affected by Remedial Activities for Beneficial Uses), any new impacts from remedial activities in excess of assimilative capacity of the aquifer should be assessed for the ability to be naturally attenuated.

Response: Mitigation Measure WTR-MM-4 (Mitigation Program for Restoring the Hinkley Aquifer Affected by Remedial Activities for Beneficial Uses) has been revised to include an assessment of assimilative capacity, but cleanup has to be within the timeframe specified by the Water Board. This does not change the conclusions in the Draft EIR.

Comment 30-60

Comment: With regard to Mitigation Measure WTR-MM-4 (Mitigation Program for Restoring the Hinkley Aquifer Affected by Remedial Activities for Beneficial Uses), PG&E would like the Water Board to consider the following three points and the revisions as described in Attachment 2 (located at the end of Comment 30 in Chapter 2 of this Final EIR Volume I). 1) The mitigation should recognize that PG&E may be able to operate the remedy in a manner that avoids changes to the baseline conditions. 2) The requirement to return the aquifer to baseline is overbroad as the aquifer is not static with other farming operations in the valley; thus the mitigation should be limited to adverse changes attributable to the remedy. 3) The 10 year timeframe for restoration to baseline is arbitrary, doesn't appear to account for its practicality or potential secondary impacts of such an aggressive schedule, and may be unrealistic (i.e., TDS remediation could take longer). The time required should be determined when comparison to baseline is assessed.

Response: Mitigation Measure WTR-MM-4 has been revised in response to the first two parts of this comment. Regarding the 10-year timeframe, the mitigation measure has been revised to describe a "recommended timeframe of 10 years" to acknowledge the potential for the Water Board considering alternative timeframes. This does not change the conclusions in the Draft EIR.

Comment 30-61

Comment: Mitigation Measure WTR-MM-5 (Investigate and Monitor Total Dissolved Solids, Uranium, and Other Radionuclide Levels in relation to Agricultural Treatment and Take Contingency

Actions) is overly broad and should be revised to clarify that it will be imposed if the impacts it mitigates are due to remedial activities.

Response: Mitigation Measure WTR-MM-5 in the first bullet has been revised to read: "If TDS, uranium, and other radionuclides levels are determined to increase measurably due to agricultural treatment associated with remedial actions, then PG&E will propose remedial methods to restore the aquifer to pre-remediation conditions based upon monitoring of these levels in and adjacent to all agricultural treatment units." The proposed revisions in the second bullet have been included in the EIR. This does not change the conclusions in the Draft EIR.

Comment 30-62

Comment: In Mitigation Measure WTR-MM-6 (Monitor Nitrate Levels and Manage Agricultural Treatment to Avoid Significant Increases in Nitrate Levels and Provide Alternative Water Supplies As Needed), the definition of actually affected wells should be revised to include a statistical basis, rather than straight percentage.

Response: Mitigation Measure WTR-MM-6 has not been revised as the Water Board is of the opinion that the percentage in the mitigation represents a significant impact.

Comment 30-63

Comment: With regard to Mitigation Measure WTR-MM-6, nitrate levels in the aquifer should be treated on a basin-wide approach, similar to Mitigation Measure WTR-MM-4. Prior agricultural treatment has reduced nitrates, and any increases associated with remediation should be balanced against reductions. Agricultural management could result in more predictable plume hydraulic control, lower TDS and nitrate levels, and greater forage crop production.

Response: Mitigation Measure WTR-MM-6 has been modified to allow for the potential use of basin-wide approaches in Hinkley to address nitrate that could involve working with neighboring agricultural field and dairy operators to promote reductions in nitrate of benefit to the aquifer as a whole. This does not change the conclusions in the Draft EIR.

Comment 30-64

Comment: The comment states that, with regard to Mitigation Measure WTR-MM-6, the terms "background" and "baseline" concentrations are used interchangeably, and they are not. The comment also states this should be clarified elsewhere in the EIR as well.

Response: Mitigation Measure WTR-MM-6 has been revised to change "background" levels to "pre-remediation reference" levels. Throughout the document, it has been updated to use the following term definitions:

- Baseline: CEQA baseline (usually Q4 2012 existing conditions)
- Existing Conditions: Q4 2012 conditions
- Present Conditions: Q4 2012 conditions
- Background: Constituent levels unrelated to PG&E activities
- Maximum Background: Highest range of constituent levels unrelated to PG&E activities
- Pre-remedial reference levels: Constituent levels prior to implementation of remedial action.

- Naturally-occurring: Constituent levels due only to natural influences, not man-made sources.

This does not change the conclusions in the Draft EIR.

Comment 30-65

Comment: With regard to Mitigation Measure WTR-MM-7 (Construction and Operation of Additional Extraction Wells to Control Carbon Amendment In-situ Byproduct Plumes), the criteria should be revised to allow for increases to 25% above maximum baseline and is statistically significant, which is consistent with the thresholds in the current WDRs and Notice of Applicability for the IRZs.

Response: Mitigation Measure WTR-MM-7 has been revised, but the criteria for affected monitoring well has been changed to read 20%, instead of 25%, above the maximum pre-remedial reference levels due to more conservative requirements for mitigation measures. However, the phrase "and is statistically significant" is not added because the Water Board currently believes that a 20% or more increase constitutes a significant change. If other data exists that points to a different conclusion, the discharger can present that argument at that time. This does not change the conclusions in the Draft EIR.

Comment 30-66

Comment: The text should be revised to clarify "applicable" local land use requirements would apply to the project.

Response: Section 3.2.2.3, *San Bernardino County General Plan*, is revised to provide this clarification. This does not change the conclusions in the Draft EIR.

Comment 30-67

Comment: The discussion of potential secondary impacts of home acquisition is a private transaction that does not involve discretionary government approval and therefore is beyond the scope of CEQA and should be deleted from Section 3.2.6.3, *Population and Housing*.

Response: The comment is correct that home and land acquisition is a private transaction and that the Water Board is not specifically requiring or mandating such action. However, the remedial alternatives require additional land for wells, pipelines, access roads, agricultural units, and possibly water rights. Given that it appears likely that remedial actions will need to be scaled up from that shown in the PG&E feasibility studies (hence the scaling approach in the EIR), there is likely to be some level of land/home acquisition to implement the remedial actions. Thus, the EIR describes that potential to occur and examines the potential secondary impacts of such acquisition.

The EIR is not analyzing PG&E's prior or ongoing acquisition activities that are not related to implementation of remedial actions themselves. That activity does not have a nexus to the proposed project being analyzed in the EIR. The EIR analysis is limited to the potential for land/home acquisition necessary to implement remediation only.

No revisions to the Draft EIR are necessary.

Comment 30-68

Comment: The commenter suggests minor edits to Mitigation Measure LU-MM-1 (Obtain Bureau of Land Management Permits in Compliance with California Desert Conservation Area Plan and the

West Mojave Plan) regarding how the applicant will demonstrate remedial activities are consistent with BLM policies.

Response: The suggested revisions are minor and do not affect the intent of the mitigation. Mitigation Measure LU-MM-1 has been revised as suggested.

Comment 30-69

Comment: Mitigation Measure LU-MM-2 (Acquire Agricultural Conservation Easements for Any Important Farmland if Water Rights are Acquired for Remediation) should be revised to require such easements only if there has been a net loss of existing important farmland.

Response: Impact LU-2 (Conversion of Agricultural Land to Non-Agricultural Use) identifies a geographically specific concern that the project could result in long-term conversion of existing important farmland near the Mojave River. Because the conditions near the Mojave River are most favorable for agriculture (in large part due to water availability), the mitigation requires easements to prevent long-term conversion. Therefore, Mitigation Measure LU-MM-2 has not been revised.

Comment 30-70

Comment: Table 3.3-1, which summarizes the hazardous materials impacts, lists Impact Haz-1b (Potential Releases of Hazardous Materials or Waste Used or Generated During Remedial Operations) as both potentially significant and less than significant.

Response: The commenter is correct. As described in the impact discussion for Impact Haz-1b, the impact would be potentially significant during construction and less than significant from operation. Table 3.3-1 has been revised to remove the less than significant finding, and Impact Haz-1b has been revised to clarify potential impacts are from construction activities. This does not change the conclusions in the Draft EIR.

Comment 30-71

Comment: Mitigation Measure HAZ-MM-1 (Contingency Actions if Contaminated Soil is Encountered during Ground Disturbance) should be revised to remove the requirement to provide a resume of the qualified geologist to the Water Board for approval since the definition of "qualified" presumes relevant experience.

Response: Mitigation Measure HAZ-MM-1 has been revised to remove the requirement that a resume be provided to the Water Board, as a Professional Engineer or Geologist would already be bound by their licensure requirements with the state. This does not change the conclusions in the Draft EIR.

Comment 30-72

Comment: The items included in Mitigation Measure HAZ-MM-2 (Implement Spill Containment, Control, and Countermeasures Plan during Construction) cover operations and maintenance activities, and the text should be revised.

Response: The commenter is correct. Mitigation Measure HAZ-MM-2 is intended to address construction activities and has been revised accordingly. Additionally, the project description has been revised to clarify that operations and maintenance activities will be in compliance with

applicable state and federal regulations, and PG&E will prepare a Business Emergency/Contingency Plan that complies with all federal and state regulations, as required by San Bernardino County (refer to new Section 2.10.4.5 in Chapter 2, *Project Description*). This does not change the conclusions in the Draft EIR.

Comment 30-73

Comment: Mitigation Measure HAZ-MM-2 includes a Spill Prevention, Control and Countermeasures (SPCC) plan which is typically required for aboveground petroleum storage greater than 1,320 gallons, and they suggest revising the measure to specify "if required" by the San Bernardino County Fire Department to avoid conflict between requirements of the County and the EIR.

Response: Mitigation Measure HAZ-MM-2 is revised to clarify the SPCC plan "or equivalent as specified by and for approval by the County Fire Department," to avoid conflict between the requirements of the mitigation measure and the requirements of the County. This does not change the conclusions in the Draft EIR.

Comment 30-74

Comment: The text in Mitigation Measure HAZ-MM-2 (Implement Spill Prevention, Control, and Countermeasures Plan during Construction) should be revised to indicate a Business Contingency /Emergency Plan contents are "anticipated."

Response: The comment is correct in that the Fire Department will ultimately decide plan requirements. Mitigation Measure HAZ-MM-2 has been revised to indicate the plan contents are anticipated. This does not change the conclusions in the Draft EIR.

Comment 30-75

Comment: Section 3.4.3.3, *Soils*, rather than Section 3.4.3.2, *Faulting and Seismic Hazards*, should be referenced for additional discussion on landslides and land subsidence.

Response: The comment is correct. The text has been revised to reference Section 3.4.3.3, rather than Section 3.4.3.2. This does not change the conclusions in the Draft EIR.

Comment 30-76

Comment: The EIR inaccurately states that the northern part of the project area has a greater fraction of fine-grained silts and clays and references a technical memorandum prepared by Stantec in February 2012[18]. According to the comment, as shown in the cross sections of the report, there is no data suggesting the brown clay increases in thickness to the north. Also, there is no indication of a continuous section of clay materials 80-150 feet below surface near Red Hill, and there is data suggesting substantial thickness of A1 sandy deposits in the northern part of the valley.

Response: The statement in the EIR was in reference to general sedimentary grain size overall, rather than just for clay. USGS reports state that the groundwater aquifer in the Hinkley Valley is

[18] Pacific Gas and Electric Company (PG&E). 2012c. *Technical Memorandum—Update to Upper Aquifer Groundwater Investigation Activities—Pacific Gas and Electric Company's Hinkley Compressor Station, Hinkley, California*. Prepared by Stantec. February 8.

mostly composed of floodplain material from the Mojave River towards the Harper Valley. Standard principles of sedimentary processes and environments show that coarser sediments, such as sand, tend to fall out closer to a river where flow is faster. In general, the farther distance from a river, flooding results in settling of finer-grained material (very fine sand, silt, and clay) due to reduction water flow energy. Thus, the overall grain size of sediments in the northern Hinkley Valley would be expected to be finer in general than that of sediments closer to the Mojave River. The occurrence of coarser grains in general near the Mojave River explains why the transmissivity of the aquifers is greater and why more agricultural activities occur in this location versus farther north.

Regarding the assertion that there is no current data suggesting the brown clay increases in thickness to the north, in the Stantec report, cross-section B contains a brown clay layer that appears approximately 50 feet thick in the north and approximately 15 feet thick in the south, with a small portion of the middle-south area that is approximately 60 feet thick. Cross-section C contains a brown clay layer that appears approximately 40 feet deep in the north and 20 feet deep in the south. Thus, there is some variation, but there is not a clear pattern of a consistently thicker clay lenses in the north.

Regarding the assertion that there is no indication of continuous clay section near Red Hill, cross-section P shows that Red Hill interrupts the brown clay layer to the east of the hill, but it is not clear what happens to the clay layer west of Red Hill.

Regarding the thickness of A1 sandy deposits in northern valley, the thickness of the A1 sandy layer is approximately 75 feet, and the depth of the clay layer is approximately 20 feet.

The EIR has been updated to include this information concerning substrate conditions. Given the lack of consistently larger clay lenses in the north, based on the data reviewed, the EIR analysis now does not identify a greater risk of subsidence in the northern part of the plume compared to the southern part of the plume. In consideration of this change as well as review of historical drawdown data that indicated widespread groundwater drawdown from the Mojave River into the Harper lake Valley, and the lack of evidence of substantial subsidence in the past from this drawdown, the EIR now concludes that aquifer compaction is a less than significant impact due to its low likelihood of occurrence.

Separate from this comment, ICF examined additional data on historic groundwater drawdown from a study by California State Fullerton (Harper Lake Basin, San Bernardino County, California Hydrogeologic Report, September 2007), additional modeling of groundwater levels by PG&E (2013 Western Area Investigation Report), and also considered the lack of identified evidence of prior subsidence to revisit the analysis of the potential for aquifer compaction. In light of the lack of identified evidence of prior subsidence, the predominance of large amounts of sandy substrates throughout the project area, and the prior stressing of the aquifer through substantial groundwater drawdown in the entire aquifer, the project is no longer considered likely to have a significant impact relative to aquifer compaction and related land subsidence.

Thus the EIR has been changed in Section 3.1, *Water Resources and Water Quality,* to reflect this changed conclusion in terms of aquifer compaction and in Section 3.3, *Geology, Soils and Seismicity,* in terms of land subsidence. Mitigation Measure WTR-MM-2 is no longer mandated to address a significant impact regarding aquifer compactions, but is still required relative to groundwater drawdown effects and water quality effects. Mitigation Measure GEO-MM-1 is no longer mandated to address an identified significant impact regarding land subsidence, but remains recommended as a prudent measures to err on the side of caution.

Comment 30-77

Comment: With regard to Impact GEO-1c (Potential Risk of Structural Damage due to Land Subsidence from Remedial Groundwater Pumping), PG&E has comments regarding aquifer compaction similar to those provided for Section 3.1, *Water Resources and Water Quality*.

Response: Revisions have been made to the analysis for Impact GEO-1 to note that the groundwater drawdown estimates using scaling may overstate the level of impacts as the scaled flows may not be achieved in any one location and may not be sustainable and thus that the analysis of the potential for compaction may be overstated as well.

In consideration of review of substrate sediment conditions, historical drawdown data that indicated widespread groundwater drawdown from the Mojave River into the Harper Lake Valley, and the lack of evidence of substantial subsidence in the past from this drawdown, the EIR now concludes that subsidence is a less than significant impact due to its low likelihood of occurrence

Comment 30-78

Comment: The potential for substantial land subsidence is low, as stated in the discussion for Impact GEO-1c, and would like this reiterated later in the same discussion.

Response: The discussion for Impact GEO-1c is revised to reiterate that the potential for substantial land subsidence is low. This does not change the conclusions in the Draft EIR.

Comment 30-79

Comment: The risk of accidental exposure to chromium-laden water or remediation byproducts is not substantial because, as stated in Section 3.1.6.1, *Chromium*, there is the "one in one million" lifetime cancer risk level, which means that for every million people who drink two liters of water with that level of Cr[VI] daily for 70 years, no more than one person would be expected to develop cancer from exposure to Cr[VI]. Thus, the risk of a person being harmed from short-term accidental exposure is speculative and should be removed from the EIR.

Response: Impact GEO-2b and Mitigation Measure GEO-MM-2 have been revised to indicate that potential human exposure to chromium due to a seismic event pipeline rupture is a remote possibility. Mitigation Measure GEO-MM_2 is retained to control potential exposures to ethanol or other chemicals. Recommended measures to require appropriate control of any contaminated groundwater from ruptured pipelines are also included. This does not change the conclusions in the Draft EIR.

Comment 30-80

Comment: Spill, recovery and notification procedures should be included in the system operation and maintenance (O&M) manual and/or site Health and Safety Plan (HASP), rather than preparing a separate detailed emergency response plan. The comment also recommends specific mitigation measure changes to GEO-MM-2.

Response: Mitigation Measure GEO-MM-2 (Emergency Response Plan for Potential Pipeline Rupture) is revised to specify that the spill and recovery procedures will be included in the O&M manual and/or HASP and to include other suggested revisions. This does not change the conclusions in the Draft EIR.

Comment 30-81

Comment: Mitigation Measure GEO-MM-1 should be revised to specify a process for determining if subsidence is caused by remedial activities.

Response: Mitigation Measure GEO-MM-1 (Land Subsidence Monitoring, Investigation, and Repair) is revised to specify that PG&E will retain a qualified expert approved by the Water Board to determine if subsidence-related damage is due to remedial-induced groundwater drawdown. This does not change the conclusions in the Draft EIR.

Comment 30-82

Comment: The sentence appears to be missing the word "that."

Response: The commenter is correct. The sentence in the second paragraph of Section 3.5.1.1, *Summary of Significant Impacts*, has been revised for clarification. This does not change the conclusions in the Draft EIR.

Comment 30-83

Comment: The GHG emissions were calculated using URBEMIS, a model to calculate air emissions for land use projects; and that EPA methodologies, which were published in 2012 and provide guidance relevant to remediation, may be more appropriate.

Response: The URBEMIS model is based on emission factors published by the California Air Resources Board, which are specific to equipment used in California and reflect efforts by the California Air Resources Board's to reduce diesel-related emissions. Although the Mojave Desert Air Quality Management District does not explicitly require the use of URBEMIS (or the recently released CalEEMod, which is based on similar emission factors), other air districts, including the South Coast Air Quality Management District, have explicitly recommended URBEMIS (and CaEEMod) for land use projects.

Furthermore, the commenter does not identify any inadequacies with the methodology used to calculate GHG emissions and does not even provide the actual reference to EPA methodologies. Therefore, the comment provides no substantiation that the references EPA methodologies for quantifying exhaust-related emissions are more appropriate than California Air Resources Board methodologies for projects within California or that the methodology used is inappropriate.

No revisions to the Draft EIR are necessary.

Comment 30-84

Comment: This comment contains recommended changes to Table 3.5-9 (Estimated New Construction Quantities by Alternative).

Response: Table 3.5-9 has been revised to include the minor changes to construction quantities. Additionally, Table 3.5-11 (the resultant emission results), Table 3.5-12 (criteria pollutants), and Table 3.5-17 (greenhouse gases) have been revised to reflect the revised construction quantities. This does not change the conclusions in the Draft EIR.

Comment 30-85

Comment: Table 3.5-10 (Maintenance and Operations Sources of Emissions by Alternative) does not include emissions associated with existing harvesting and plowing at Desert View Dairy and has incorrect values in that monthly values are incorrectly labeled as daily values, worker commutes are overestimated, and annual ethanol trips are overestimated. The comment includes the recommended revisions.

Response: The recommended revisions to operational emissions quantities have been reviewed by the ICF air quality specialist. Table 3.5-10 has been revised accordingly. Additionally, Tables 3.5-13 and 3.5-14 (resultant emissions of criteria pollutants), Tables 3.5-15 and 3.5-16 (health risk assessment), and Tables 3.5-18 (greenhouse gases) have been revised to reflect the revised operational quantities. Also, a note has been added to Section 3.5.5.2, *Operations Emissions*, and to Table 3.5-10 denoting that monthly vehicle miles traveled (VMT) occurs on a maximum day (representing a worst case scenario when multiple vehicles are traveling concurrently). This changes the conclusions in the Draft EIR, reducing Impact AIR-1c (Exceed MDAQMD Threshold Levels for Criteria Pollutants from Project Operations) to less than significant with no mitigation; however, Mitigation Measure AIR-MM-4 is still required per MDAQMD rule 403 regardless of the level of emissions.

Comment 30-86

Comment: The URBEMIS model uses a default number of 549 horsepower for the generator that would be used at the ex-situ maintenance facilities, and it is recommended that a 400 horsepower generator be used in the model.

Response: The analysis has been revised to assume a 400 horsepower generator. Tables 3.5-13 and 3.5-14 (criteria pollutants), Tables 3.5-15 and 3.5-16 (health risk assessment), and Tables 3.5-18 (greenhouse gases) have been revised to reflect the change. This does not change the conclusions in the Draft EIR.

Comment 30-87

Comment: It is not necessary for PG&E to hire a third party monitor to ensure compliance of Mitigation Measures AIR-MM-3, AIR-MM-4, and AIR-MM-5 because PG&E will be required to comply with all mitigation measures.

Response: The comment is correct in that PG&E will be required to comply with all mitigation measures, which are legally binding. As such Mitigation Measures AIR-MM-3, AIR-MM-4, and AIR-MM-5 have been revised to clarify the measures will be included in construction specifications and to omit the requirement for a third party monitor, but that operation and maintenance shall be completed by qualified personnel. This does not change the conclusions of in the Draft EIR.

Comment 30-88

Comment: PG&E would like to revise Mitigation Measure AIR-MM-6 to state their activities to reduce greenhouse gas emissions, rather than submitting a separate plan for review and approval by San Bernardino County Planning Department.

Response: Mitigation Measure AIR-MM-6 specifies that PG&E will either submit a plan for review and approval or submit a signed letter agreeing to include specific requirements. The text has been

revised to specify that PG&E will submit a signed letter agreeing to the requirements outlined in the mitigation measure. This does not change the conclusions of in the Draft EIR.

Comment 30-89

Comment: The requirement to submit a separate Coating Restriction Plan (CRP) to the County for approval should be removed because it is not a greenhouse gas reduction measure as it is primarily used to reduce Volatile Organic Compounds (VOC) emissions, which do not exceed thresholds.

Response: VOCs have some direct global warming effects; however, they may also be considered greenhouse gases due to their indirect effects. VOCs react chemically in the atmosphere to increase concentrations of ozone and may prolong the life of methane. The magnitude of the indirect effect of VOCs is poorly quantified and depends on local air quality. Ozone formation exacerbates global warming because ozone absorbs infrared radiation. Consequently, reducing VOCs to make progress towards meeting California air quality standards for ozone will help reduce global warming (BAAQMD 2009)[19]. For this reason, San Bernardino County included a coatings plan in their best management practices for reduction of GHGs.

Mitigation Measure AIR-MM-6 is thus not revised to omit the Coating Restriction Plan requirement because it is listed in the County's GHG reduction plan as a required commercial/industrial Performance Standard for construction. The County's plan states that Performance Standards "establish the minimum level of compliance that development must meet to assist in meeting the 2020 GHG reduction target identified in the County GHG Emissions Reduction Plan." As such, while the project's VOC emissions do not exceed thresholds and thus do not require mitigation to reduce VOC emissions per se, the Coating Restriction Plan requirement is specifically a GHG reduction measure employed to assist the project in maintaining compliance with the CAP.

Therefore, it is recommended that the requirement to "implement a County approved Coating Restriction Plan" remain as a GHG performance standard in the EIR. No changes to the Draft EIR are necessary.

Comment 30-90

Comment: The commenter recommends a text revision concerning County review and approval that GHG performance standards have been installed and implemented to avoid potential conflicts between County requirements and the EIR.

Response: Mitigation Measure AIR-MM-8 has been revised as suggested. The suggested text revisions are minor and do not change the requirements for PG&E to implement GHG performance standards. This does not change the conclusions in the Draft EIR.

Comment 30-91

Comment: PG&E recommends a text revision concerning County review/approval to avoid potential conflicts between County requirements and the EIR. Instead of reducing emissions by a minimum of 31%, PG&E would like to work with the County to determine the appropriate amount.

[19] Bay Area Air Quality Management District, 2009. Staff Report. BAAQMD Regulation 8, Rule 3: Architectural Coatings. http://hank.baaqmd.gov/pln/ruledev/8-3/2008/0803_stfrpt_052109.pdf

Response: Mitigation Measure AIR-MM-8 (Implement San Bernardino County GHG Design Standards) has been revised to allow PG&E to work with County Planning on determining the necessary reductions to be consistent with the County's GHG Plan, but the mitigation states that unless the County determines, in writing to the Water Board, that a different standard is acceptable, the performance standard of reducing emissions by a minimum of 31% remains. This does not change the conclusions in the Draft EIR.

Comment 30-92

Comment: The comment suggests adding a statement to the regulatory setting in Section 3.6, *Noise,* that the San Bernardino County General Plan would apply to the project only if the project requires local permits.

Response: As listed in Table 1-1 in Chapter 1, *Introduction*, of the Draft EIR, the project would require encroachment, drilling, grading and building permits from the County. The noise analysis uses County noise standards to determine level of significance. No text revisions are made in response to this comment.

Comment 30-93

Comment: The text should be revised to clarify that Table 3.6-10 shows the number of wells, not pumps associated with the existing remedial program.

Response: The text in Section 3.6.3.2, *Existing Noise Levels*, has been revised as suggested to clarify that Table 3.6-10 shows the number of wells associated with the existing remedial program. This does not change the conclusions in the Draft EIR.

Comment 30-94

Comment: Rather than submitting a separate noise/vibration control plan as part of Mitigation Measure NOI-MM-1, noise/vibration control measures should be included in the construction specifications.

Response: Mitigation Measure NOI-MM-1 (Prepare a Noise/Vibration Control Plan and Employ Noise/Vibration-Reducing Construction Practices to Comply with County Noise Standards) has been revised to include requiring noise/vibration control measures as construction specifications, rather than a noise/vibration control plan. This does not change the conclusions in the Draft EIR.

Comment 30-95

Comment: Impact BIO-4 (Conflicts with Wildlife Movement) should be changed to "Less than Significant". Comment 30-101 states that there are no studies to substantiate the statement in the Draft EIR (Section 3.7.6.4, *Wildlife Movement*) that there is an east-west movement corridor for the desert tortoise north of Thompson Road or south of State Route 58, and that SR 58 and the railroad are barriers to movement in the area assumed to be an east-west corridor.

Response: The text in Section 3.7.6.4 states: "areas of suitable habitat for east-west movement north (north of Thompson Road) and south of the existing agricultural treatment units (south of SR 58)" was not intended to imply there is a defined specific east-west movement corridor for the desert tortoise. Rather, due to the presence of suitable desert tortoise habitat, desert tortoise could move east to west or vice versa. As described in Section 3.7, *Biological Resources*, desert tortoise

movement occurs in a diffused pattern across the landscape unless there are unsuitable features present. Therefore, for the purposes of the analysis, all potentially suitable habitat was also considered potential movement habitat. At the time of the analysis, a systematic protocol desert tortoise survey report was not available to refine the analysis, so the best existing biological information was used. The desert tortoise locations (largely based on incidental sightings) to date suggest desert tortoise are widely distributed throughout the project area including both south and north of SR58.

The impact remains significant because the project could result in a continuous agricultural landscape across Hinkley Valley with agricultural treatment units (particularly with an upscaled Alternative 4C-4) that could be there for 75 years or more. No revisions to the Draft EIR are necessary.

Comment 30-96

Comment: The existing agricultural units support Bermuda grass and sudan grass, in addition to alfalfa.

Response: The text in Section 3.7.3.1, *Vegetation Communities*, has been revised to state that Bermuda grass and sudan grass are present as well. This does not change the conclusions in the Draft EIR.

Comment 30-97

Comment: The word "biologists" is redundant and should be deleted.

Response: The commenter is correct. The text under "Mohave Ground Squirrel" in Section 3.7.3.4, *Biological Resources with Special Status*, has been revised. This does not change the conclusions in the Draft EIR.

Comment 30-98

Comment: Impacts from Alternatives 4C-2, 4C-3, 4C-4, and 4C-5 should be considered less than significant for desert tortoise movement.

Response: Please refer to response to **Comment 30-95**.

Comment 30-99

Comment: Harm to burrowing owls from exposure to waterborne hexavalent chromium (Impact BIO-1c) is exceedingly speculative and unsupported by data and should be deleted.

Response: The discussion for Impact BIO-1a (under "Operations and Maintenance" in Section 3.7.6.1, *Special-Status Species*) states: "At present, there is no data on long-term exposure of wildlife to waterborne hexavalent chromium and potential adverse effects. Impact on animals has only been demonstrated in laboratory studies where the exposure has been in the range of 20,000 parts per billion, which is many thousands of times more concentrated than any concentration of chromium which might appear for a short time in any irrigation water used for agricultural treatment. Given the lack of evidence for this impact, it is not identified as a significant impact."

Therefore, the text in the discussion for Impact BIO-1c has been revised to remove the statement that burrowing owls may become exposed to waterborne hexavalent chromium. This does not change the conclusions of the Draft EIR.

Comment 30-100

Comment: The comment states that, in the Impact BIO-1d discussion, Mitigation Measure BIO-MM-1n is paraphrased incorrectly.

Response: The text in the last paragraph under Impact BIO-1d has been revised to correctly describe Mitigation Measure BIO-MM-1n. This does not change the conclusions in the Draft EIR.

Comment 30-101

Comment: There are no studies to substantiate the statement in the Draft EIR (Section 3.7.6.4, *Wildlife Movement*, in Section 3.7, *Biological Resources*) that there is an east-west movement corridor for the desert tortoise north of Thompson Road or south of State Route 58. The comment also states that SR 58 and the railroad are barriers to movement in the area assumed to be an east-west corridor. Several text revisions are suggested.

Response: Refer to response to **Comment 30-95** concerning desert tortoise movement.

The comment also states that to avoid potential conflicts between CEQA mitigation in the EIR with requirements from consultation with USFWS and CDFG that language should clarify that the requirements from USFWS and CDFG shall supersede the CEQA mitigation in the case of direct conflicts.

Mitigation Measure BIO-MM-1a has been revised to state that USFWS and CDFG requirements shall only supersede the CEQA mitigation requirements if the CEQA mitigation directly conflicts with or impede the requirements of CDFG or USFWS. This does not change the conclusions in the Draft EIR.

Comment 30-102

Comment: Rather than specifying a separate raven management plan be developed (as part of Mitigation Measure BIO-MM-1f), the specific requirements for such a plan should be included in any incidental take authorizations issued by CDFG and USFWS.

Response: The purpose of including the raven management plan as part of the CEQA mitigation measure is to provide assurances that potential indirect impacts of raven depredation on desert tortoise are monitored and that remedial action is taken if predefined triggers are met. This cannot be deferred to a later action by USFWS and CDFG with the assumption that any incidental take authorization will include the necessary mitigation to address impacts identified in the CEQA document. To make it clearer that it is intended as a stand-alone CEQA measure, Mitigation Measure BIO-MM-1f has been revised to remove the statement that the raven management plan must be approved by the BLM. This does not change the conclusions in the Draft EIR.

Comment 30-103

Comment: Compensatory mitigation for loss of habitat would be determined through consultation with CDFG and USFWS, so the text should be revised to say proposed ratios “could be” or “may be” applicable as minimum compensation.

Response: The EIR identifies minimum mitigation ratios to address the identified impacts. CDFG or USFWS may require higher mitigation ratios, but should they identify lower mitigation ratios, then the EIR minimum ratios would still apply. It should be noted that CDFG reviewed all the proposed mitigation and in its comment letter on the EIR took no issue with the ratios proposed in the document.

Mitigation Measure BIO-MM-1h (Compensate Impacts to Desert Tortoise and Mohave Ground Squirrel Habitat) states that mitigation ratios will be determined through consultation with USFWS and CDFG and then presents the minimum mitigation ratios in present tense (i.e., The minimum compensation ratios are 3:1 for permanent impacts….). Thus there is no need to change the verb tense, except where the text states that the minimum compensation ratio for impacts within a Desert Wildlife Management Area will be 5:1 for permanent impacts; and this is revised to read "is 5:1." This does not change the conclusions in the Draft EIR.

Comment 30-104

Comment: Rather than specifying a separate integrated pest management (IPM) plan and adaptive management plan for agriculture treatment units (Mitigation Measure BIO-MM-1i), the specific requirements should be included in any incidental take authorizations issued by CDFG and USFWS. Extensive revisions to Mitigation Measure BIO-MM-1i are suggested.

Response: The purpose of the integrated pest management (IPM) plan and adaptive management plan for agriculture treatment units (Mitigation Measure BIO-MM-1i), as part of the CEQA mitigation measure, is to provide assurances that potential indirect impacts to wildlife from management activities at the agricultural units, should they be observed in the project area or drawn to the project area, are addressed with specific avoidance and minimization measures. The EIR cannot defer to a later action by USFWS and CDFG and assume it will include the necessary mitigation to address impacts identified in the CEQA document.

However, in light of this comment, Mitigation Measure BIO-MM-1i has been revised to delete mention of dust control as dust control is not relevant to protection of wildlife. This does not change the conclusions in the Draft EIR.

Comment 30-105

Comment: The comment suggests adding qualifying language to Mitigation Measure BIO-MM-1l to ensure the most recent CDFG protocol for surveys is used.

Response: Mitigation Measure BIO-MM-1l (Implement Other Measures to Minimize, Reduce, or Mitigate Impacts to Burrowing Owl) has been revised to specify that the survey will utilize the most recent CDFG protocol - including any variations in that protocol that may be approved by CDFG for the survey. This does not change the conclusions in the Draft EIR.

Comment 30-106

Comment: Rather than submitting a separate avian protection plan (as part of Mitigation Measure BIO-MM-1l), the specific requirements for protecting burrowing owls can be included in any incidental take authorizations issued by CDFG and USFWS.

Response: Burrowing owls are not listed species and thus are not regulated under state or federal endangered species regulations. Burrowing owls are protected as a migratory species under federal

law from disturbance to nests or eggs, but not to habitat. Under state law, burrowing owls are protected under the raptor act from take, but the state definition of take does not include impacts to habitat. Under CEQA, burrowing owls are a rare species and thus CEQA is an appropriate venue in which to address impacts, including habitat impacts.

The purpose of including the avian protection plan as part of the CEQA mitigation measure is to provide assurances that potential indirect impacts of agricultural unit management be specifically assessed and addressed with specific avoidance and minimization measures for the burrowing owl, which would also benefit more common species, to achieve a finding of less than significance. This cannot be deferred to a later action by other agencies with only partial jurisdiction with the assumption that it will include the necessary mitigation to address impacts identified in the CEQA document. Therefore, no revisions were made to Mitigation Measure BIO-MM-1l per this comment.

Comment 30-107

Comment: The text related to preparing a brief analysis to determine if removal of non-listed special status plant species would be significant under CEQA (part of Mitigation Measure BIO-MM-1o, Implement Measures Required to Minimize, Reduce, or Mitigate Impacts to Special-Status Plants) should be removed because it is not required for species not listed.

Response: As stated in Section 3.7.3.4, *Biological Resources with Special Status*, plants listed on California Native Plant Society (CNPS) List 1A, 1B, or 2 meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (CESA) of the California Fish and Game Code. Thus, for the purposes of this EIR, plants on CNPS List 1A, 1B, or 2 are considered "rare" plants for the purposes of impact evaluation. Special-status species are thus also defined as including plant species with California Rare Plant Ranks (CRPR) of 1A, 1B, or 2 species. The text in Mitigation Measure BIO-MM-1o has been revised to clarify that only non-listed special-status plants that are CRPR rank 1A, 1B or 2 are included for the analysis of significance. This does not change the conclusions in the Draft EIR.

Comment 30-108

Comment: The specific requirements in Mitigation Measure BIO-MM-2 (Habitat Compensation for Loss of Sensitive Natural Communities) should be specified by appropriate agencies, rather than through development of a separate compensatory mitigation program or plan. Specific text revisions are suggested.

Response: The purpose of including development of a program or plan as part of the CEQA mitigation measure is to provide assurances that potential habitat loss be specifically assessed and addressed with specific compensation developed, in consultation with CDFG and USFWS, to achieve a finding of less than significance. This cannot be deferred to a later action with the assumption that it will include the necessary mitigation to address impacts identified in the CEQA document. Therefore, there are no revisions to Mitigation Measure BIO-MM-2.

Comment 30-109

Comment: There is updated information from surveys conducted by the Far Western Anthropological Research Group (FWARG) survey and requests the section be revised to include the updated information.

Response: Section 3.8.3.4, *Identified Cultural Resources*, and Section 3.8.6.2, *Archaeological Resources*, has been revised to include information from the updated FWARG survey. This does not change the conclusions in the Draft EIR.

Comment 30-110

Comment: Mitigation Measure CUL-MM-4 (Evaluate Archaeological Resources to Determine if the Historical Resources under CEQA or Unique Archaeological Resources under PRC 21083.2) should be deleted because any necessary evaluation of archaeological resources is covered under Mitigation Measure CUL-MM-6 (Evaluate Archaeological Resources and, if necessary, Develop and Implement a Recovery Plan).

Response: The Water Board does not believe Mitigation Measure CUL-MM-4 should be deleted; however, it has been revised to clarify that an archaeological resource survey will be conducted to determine if resources are present in the area and to remove the evaluation discussion that is redundant with that included in Mitigation Measure CUL-MM-6. This does not change the conclusions in the Draft EIR.

Comment 30-111

Comment: Mitigation Measure CUL-MM-4 should be limited to the identification of sites since it is redundant with CUL-MM-6.

Response: Refer to response to **Comment 30-110**.

Comment 30-112

Comment: The comment states that the "3" at the end of the sentence should be deleted.

Response: The "3" is referencing a footnote and should be retained but should be in superscript font (small and raised). The text under Impact AES-1c (Permanent Degradation of Visual Character or Quality from Above-ground Treatment Facility) has been revised to change the "3" from regular font to superscript. This does not change the conclusions in the Draft EIR.

Comment 30-113

Comment: The screening mitigation measures should only apply to major above-ground treatment facilities.

Response: Mitigation Measure AES-MM-1 (Screen Above-Ground Treatment Facilities from Surrounding Areas) has been revised to clarify that it applies to Alternatives 4C-3 and 4C-5 only because they are the only alternatives that include major above-ground treatment facilities.

Comment 30-114

Comment: Section 3.12, *Socioeconomics*, generally overstates the potential for blight resulting from remediation. The commenter suggests a specific text revision to clarify that physical deterioration could result if there is a substantial number of vacant lots and homes.

Response: The text in Section 3.12.1.1, *Summary of Impacts*, has been revised to clarify that a substantial number of homes and lots left vacant could contribute to physical blight. This does not change the conclusions in the Draft EIR.

Comment 30-115

Comment: It is speculative to suggest there is a causal link between groundwater drawdown and water quality changes due to the project and blight. The commenter suggests adding a phrase that it would "not likely" result in blighted conditions, rather than it "might" result in blighted conditions.

Response: The discussion for Impact SE-1 (Secondary Physical Impacts due to Project-Related Socioeconomic Effects) states in the first introductory paragraph that there is a possibility that groundwater drawdown and water quality changes from remediation could result in blighted conditions and, thus, correctly uses the term "might." The text has been revised to clarify that the blighted condition would be associated with vacated property. The subsequent paragraphs explain why this would be unlikely or less than significant. The discussion states that with implementation of Mitigation Measures WTR-MM-2 through WTR-MM-8, remedial actions would not contribute to further socioeconomic decline and associated blight. No further text revisions are necessary.

Comment 30-116

Comment: The word "local" appears to be out of place in the second paragraph under Impact SE-1.

Response: The commenter is correct. The text has been revised to delete the word "local." This does not change the conclusions in the Draft EIR.

Comment 30-117

Comment: There is no basis for asserting the properties could be subject to arson in the second paragraph under Impact SE-1.

Response: The possibility that vacated properties could be subject to arson is within the "other physical hazards" possibility stated in the previous sentence. Therefore, the last sentence which specifies arson as a possibility has been deleted. This does not change the conclusions in the Draft EIR.

Comment 30-118

Comment: The discussion of the PG&E land acquisition program should not be part of the No Project Alternative discussion and that land acquisition is not part of any of the alternatives.

Response: The commenter is correct that the No Project Alternative does not include land acquisition and correct that land acquisition that may be necessary to implement the other action alternatives is a private action. However, for the action alternatives, although the Water Board will not mandate land acquisition, given the additional remedial facilities necessary to address the entire plume, it is possible that remediation will necessitate land acquisition and thus is a reasonably foreseeable impact of the project. This is separate from PG&E's current and ongoing home purchase program.

The text has been revised to remove discussion of land acquisition under the No Project Alternative and to clarify why land acquisition for remedial facilities is included as a reasonably foreseeable impact. This does not change the conclusions in the Draft EIR.

Comment 30-119

Comment: With regard to Impact BIO-4 (Conflicts with Wildlife Movement), it is speculative and highly unlikely that east-west desert tortoise movement corridors exist and would be substantially impeded by agricultural units. Therefore, developing agricultural units in this area does not contribute to a potentially significant cumulative impact.

Response: Refer to response to **Comment 30-95**.

Comment 30-120

Comment: Regarding the Table 4-4 (Summary Comparison of Potentially Significant Environmental Impacts of Project Alternatives), Alternatives 4C-2, 4C-3 and 4C-5 should be ranked with less severity than Alternative 4B for potential plume spreading because the increased extraction in OU1 for additional southern agricultural units would decrease the potential.

Response: The rankings in Table 4-4 have been changed to note the contribution of increased extraction in OU1 for Alternatives 4C-2, 4C-3, and 4C-5. This does not change the conclusions in the Draft EIR.

Comment 30-121

Comment: Regarding the Table 4-4 (Summary Comparison of Potentially Significant Environmental Impacts of Project Alternatives), Alternatives 4B, 4C-2, 4C-3 and 4C-4 should have similar rankings for in-situ byproduct impacts, rather than Alternative 4C-3 ranked less severe, because the amount of in-situ remediation would similar and thus amount of byproduct impacts would be similar.

Response: In Section 4.6.4.1, *Water Resources,* under *Increased Iron, Manganese, and Arsenic due to In-Situ Remediation* (page 4-52, lines 26-28), the text states: "Implementation of Alternatives 4B, 4C-2, 4C-3, and 4C-4 all have similar amounts of in-situ remediation associated with each alternative and would have the most severe impacts. Thus the rankings in Table 4-4 have been changed to reflect this. This does not change the conclusions in the Draft EIR.

Comment 30-122

Comment: In Section 4.6.4 *Evaluation of Project Alternatives*, Alternatives 4C-2, 4C-3 and 4C-5 should be ranked with less severity than Alternative 4B for potential plume spreading because the increased extraction in OU1 for additional southern agricultural units would decrease the potential.

Response: The text in Section 4.6.4 has been changed to note that increased extraction in OU1 for Alternatives 4C-2, 4C-3, and 4C-5 will help to reduce the magnitude of potential plume bulging. This does not change the conclusions in the Draft EIR.

Comment 30-123

Comment: In Section 4.6.5 *Identifying the Environmentally Superior Alternative*, the conclusion that Alternative 4B would take "much longer" to treat the plume than Alternatives 4C-2, 4C-3 and 4C-4 overstates the magnitude of time difference because the time differentials are not substantial, and there are uncertainties in the modeling assumptions that generated the numbers.

Response: The time difference ranges from 29 years (Alternative 4C-4) to 40 years (Alternative 4B). The text in Section 4.6.5 has been revised to state "slightly longer," rather than "much longer." This does not change the conclusions in the Draft EIR.

Response to Comment Letter 31 (Pitts)

Comment 31-1

Comment: The commenter asks if water replacement is available for livestock as well.

Response: As described in Section 3.1, *Water Resources and Water Quality*, of the Draft EIR, if the remediation project causes water to be unusable for agricultural use (which includes livestock), then PG&E would be required to provide replacement water for agricultural purposes (including for livestock). Mitigation Measure WTR-MM-2 is revised to clarify that agricultural purposes includes livestock. This does not change the conclusions in the Draft EIR.

Comment 31-2

Comment: The commenter asks if the beef and milk from the dairy is safe to consume.

Response: A prior Health Risk Assessment (ATSDR 2000)[20] examined this issue by testing the cow feed, cow milk and cow flesh. Although the cow is harmed by the Cr[VI], the Cr[VI] is converted to Cr[III] before it would be consumed by humans; thus, no health risk associated with beef or milk from local dairies relative to chromium was identified. Also refer to **Master Response 3** regarding health risk assessments. This comment does not concern the adequacy of the Draft EIR. No revisions to the Draft EIR are necessary.

Comment 31-3

Comment: The commenter asks how safe is exposure to swamp coolers.

Response: As stated in the Draft EIR (in Section 3.1.6.1 *Chromium*), the Office of Environmental Health Hazard Assessment (OEHHA) concurred with the conclusion that swamp coolers do not constitute an inhalation health risk based on findings in scientific literature that swamp coolers would not increase the concentration of airborne Cr[VI] (OEHHA 2011)[21]. No revisions to the Draft EIR are necessary.

Comment 31-4

Comment: The commenter asks how long water replacement will last and states it should be for a lifetime.

Response: Mitigation Measure WTR-MM-2 (Mitigation Program for Water Supply Wells Affected by Remedial Activities, including Impacts Due to Chromium Plume Expansion, Remediation Byproducts and Groundwater Drawdown) requires PG&E to provide water replacement as long as the water

[20] U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR). 2000. *Public Health Assessment, Pacific Gas and Electric (a/k/a Hinkley Site), Hinkley, San Bernardino County, CA, EPA Facility ID CA0000206656*. December.

[21] Office of Environmental Health Hazard Assessment (OEHHA). 2011. *August 17, 2011, Letter to Lahontan Water Board*. August.

quality is significantly impaired by remedial actions as defined by the significance criteria in the EIR. Under CEQA, mitigation can only be mandated for the duration of a project's significant impact. No revisions to the Draft EIR are necessary.

Response to Comment Letter 32A (Quass)

Comment 32A-1

Comment: The comment is an introduction stating that the commenter reviewed the EIR and is submitting comments on arsenic and manganese in the groundwater.

Response: Comment noted. The comment is introductory material only. No revisions to the Draft EIR are necessary.

Comment 32A-2

Comment: The "Key Areas of Controversy and Issues to Be Resolved" discussion in the EIR summary should include increases in secondary byproducts.

Response: As stated in Section ES.6, *Key Areas of Controversy and Issues to Be Resolved*, the section includes a summary of key issues raised during the scoping and outreach process, and this is not an exhaustive list. The EIR analyzes the issue of secondary byproducts extensively in Section 3.1, *Water Resources and Water Quality*.

Significant controversy about secondary byproducts was raised at the public meetings held after the Draft EIR was released particularly related to manganese and arsenic detections in domestic wells in summer and fall of 2012. Section ES.6 is revised to include secondary byproducts as an area of controversy. This does not change the conclusions in the Draft EIR.

Comment 32A-3

Comment: The environmental setting, which is normally the baseline condition against which a project's impacts are measured, should be the physical conditions in the project area at the time the Notice of Preparation is released. The EIR attempts to set the baseline for "Concentrations of Other Constituents" such as arsenic and manganese; however, the EIR's description of the environmental setting contains several significant problems under CEQA and cannot be certified until the issues are corrected.

Response: As described in Section 3.1.4.3, *Hinkley Valley Groundwater Quality* (in Section 3.1, *Water Resources and Water Quality*, of the Draft EIR), existing levels of other constituents are based on water quality assessments and site sampling, representing the best available information at the time. Additional research has been conducted, and the information included in the Final EIR on existing concentrations of secondary byproducts such as arsenic and manganese. Refer to **Master Response 4** regarding remediation byproducts.

Comment 32A-4

Comment: The EIR relied on studies conducted in 2001 and 2007 to determine background levels of arsenic so they reflect levels prior to in-situ remediation. The Water Board should conduct an independent study to determine current background levels of arsenic and should consider the

Mojave Water Agency's 1997 study entitled "Concentrations for Total Dissolved Solids, Arsenic, Boron, Fluoride and Nitrite-Nitrate for Wells Sampled….".

Response: Figure 3.1-9 in the Draft EIR showed levels of arsenic both within and outside the chromium plume as of 4th Quarter 2011 and 1st Quarter 2012. This figure has been updated with available data from the 3rd and 4th Quarter of 2012. The EIR has been updated to more fully discuss levels of arsenic outside and inside within the chromium plume.

Refer to **Master Response 4** regarding remediation byproducts.

Comment 32A-5

Comment: The EIR relied on a study conducted in 2007 to determine background levels of manganese so they reflect levels prior to in-situ remediation. The Water Board should conduct an independent study to determine current background levels of manganese in the project area.

Response: Figure 3.1-11 in Section 3.1, *Water Resources and Water Quality*, the Draft EIR showed levels of manganese both within and outside the chromium plume as of 4th Quarter 2011 and 1st Quarter 2012. This figure (now called Figure 3.1-11a) has been updated with available data for 3rd and 4th Quarter 2012. In addition, a new figure (Figure 3.1-11b) has been added to show community and Water Board sampling result from the 3rd and 4th Quarter 2012 for the area west of the chromium plume. The EIR has been updated to more fully discuss levels of manganese outside and inside within the chromium plume.

Refer to **Master Response 4** regarding remediation byproducts.

Comment 32A-6

Comment: The EIR states that carbon-amendment injections to groundwater result in an increase in arsenic and manganese; thus the EIR's depiction of the environmental setting as it relates to arsenic and manganese does not reflect the increases that have occurred as a result of carbon-amendment injections.

Response: The comment is mistaken as the EIR clearly identifies in the characterization of existing conditions that IRZ operations have resulted in increased arsenic and manganese concentrations in the IRZ area and shows this clearly in Figure 3.1-9 and 3.1-11. The section on arsenic and manganese clearly distinguished between background levels and concentrations within the IRZ Areas (see pages 3.1-31 to 3.1-32 for arsenic and page 3.1-33 for manganese).

Also refer to **Master Response 4** regarding remediation byproducts.

Comment 32A-7

Comment: The EIR claims project impacts to water supply from dissolved manganese and arsenic can be reduced to a less than significant level with Mitigation Measures WTR-MM-2 (alternative water supply), WTR-MM-4 (remediation of byproduct plumes) and WTR-MM-7 (byproduct plume control). However, the Water Board cannot assume the mitigation is effective unless current levels of arsenic and manganese are disclosed. Thus the EIR is insufficient for failure to determine existing setting.

Response: As noted above, the Draft EIR did discuss existing levels of manganese and arsenic both within the IRZ remediation area as well as outside. The Final EIR has been updated to present

additional information on manganese and arsenic. The EIR discussion of secondary byproducts fully disclosed the potential impacts of remediation and describes mitigation to control significant impacts. The comment does not provide any evidence as to why the proposed mitigation will not be effective.

Also please refer to **Master Response 4** regarding remediation byproducts.

Response to Comment Letter 32B (Quass)

Comment 32B-1

Comment: If the Water Board approves the EIR, it should be amended as new information comes forward, and the commenter supports it being passed based on what he's read thus far.

Response: Comment noted. Refer to response to **Master Response 1** regarding purpose and use of EIR including the flexibility in the EIR and the procedure to supplement it, if necessary. This does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 32B-2

Comment: The commenter requests a 15 day extension on the 45-day public review period.

Response: The public review period was extended from the required 45 days to 76 days. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 33 (Shirkey)

Comment 33-1

Comment: The commenter describes her property and life in Hinkley and states that the community has been destroyed by the inactions and actions of PG&E. The comment states that the plume has spread instead of being contained, and now their property is in the plume. She is concerned about the water quality and effects of remediation, and that the community won't survive since it's been 17 years and still not fixed, unless we go with the suggestion made by the two gentlemen (regarding electrocoagulation).

Response: The comments are noted. The EIR analyzes the impacts of remediation on water quality and other resource areas. Refer to **Master Response 6** regarding EIR alternatives including electrocoagulation. The comments do not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 33-2

Comment: The legacy to Hinkley should be to fix the problem with the least damage to the environment, and recommends Alternative 4C-5, perhaps with electrocoagulation.

Response: Comment noted regarding preference of alternative. Refer to **Master Response 6** regarding EIR alternatives, including electrocoagulation.

Comment 33-3

Comment: The commenter asks Ian Webster (Community Advisory Committee Independent Review Panel Manager) what year the sweet point hits.

Response: Comment noted. The comment was a question to Ian Webster about his presentation, not a question or comment about the EIR.

Comment 33-4

Comment: The commenter regrets not paying attention sooner and would have been active in the Community Advisory Committee.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 34 (Turner)

Comment 34-1

Comment: The EIR is great, but there's going to be large effects on all areas of Hinkley, including areas outside the project study area; and the plume needs to be addressed.

Response: The EIR discusses the impacts of remediation on Hinkley area for multiple subjects including water quality, biological resources, aesthetics and other areas. Refer to **Master Response 2** regarding chromium plume boundary and project study area boundary. Refer to **Master Response 4** concerning secondary byproducts.

Comment 34-2

Comment: The EIR mentions "contaminated chromium" 30 times but we don't know where it is, and they say we're going to get it down to background levels which the EIR states is an open issue.

Response: Actually, the EIR only refers to the term "contaminated chromium" or contaminated Cr[VI] groundwater to refer to chromium contamination of the aquifer that originates from the PG&E Compressor Station. As described in the EIR, there are natural and man-made sources of chromium.

As to the delineation of the contaminated please refer to **Master Response 2** regarding chromium plume boundary and project study area boundary. As to reducing chromium levels down to background levels that is the goal of the cleanup and the EIR presents estimates of how long the proposed technologies will take to reach that goal.

Comment 34-3

Comment: In looking at the EIR and seeing we don't have a defined plume, PG&E has an open book to do whatever they want. The plume needs to be defined.

Response: Refer to **Master Response 2** regarding chromium plume boundary and project study area boundary. The plume is defined by exceedances of the maximum background levels as defined by the Water Board. The plume is not static and has changed in contour over time. PG&E is regulated in this matter by the Water Board and cannot "do whatever they want." The Water Board continues

to require PG&E to conduct further delineation of the plume given that the plume has changed it configuration over time.

Comment 34-4

Comment: The commenter states that they heard from four different Community Advisory Committee (CAC) members tonight, and he liked what he heard and wonders why he hasn't heard that from any CAC meeting.

Response: Comment noted. This comment is about the CAC meetings not the EIR. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 35 (Walker)

Comment 35-1

Comment: Many people in the community have concerns about the Community Advisory Committee (CAC) and the way PG&E directs the course of every meeting. Direct questions are never really answered, and people are intimidated to speak their concerns because of PG&E's presence. Why is there a PG&E employee on the CAC?

Response: Comment noted. PG&E is involved in the CAC so information on PG&E's remediation activities can be conveyed directly and questions answered. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 35-2

Comment: The commenter asks why there isn't an independent facilitator on the CAC when they asked for one. PG&E isn't allowing them to receive an ion exchange unit if they want to discuss ion exchange with PG&E although it's under order by the Water Board.

Response: Refer to **Master Response 7** regarding independent facilitation of CAC meetings.

Regarding the ion exchange unit, it is unclear what the commenter is referring to as a restriction on receiving an ion exchange unit. The Water Board would request the commenter to submit more information concerning their inability to receive an ion exchange unit.

Response to Comment Letter 36 (Webster)

Comment 36-1

Comment: The comment is an introduction, stating that commenter Ian Webster is the CAC's Independent Review Panel (IRP) manager.

Response: Comment noted. The comment in introductory material only and does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 36-2

Comment: The EIR is much needed, and the CAC understands the critical path and that we can't get to plume definition until the document is approved.

Response: Comment noted. Refer to **Master Response 2** regarding the chromium plume boundary and project study area boundary. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 36-3

Comment: The CAC is an independent body intended to provide technical input to PG&E, so the commenter's role is to try and understand what PG&E is doing, translate it to the community, and provide feedback to PG&E. Although not perfect, the CAC process is working.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 36-4

Comment: The community has been waiting for the EIR for a long time. Although the final cleanup goal is not yet adopted, the EIR is a flexible, living document that can be amended later to meet the eventual clean up goal.

Response: Comment noted. Refer to response to **Master Response 1** regarding purpose and use of EIR. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 36-5

Comment: The community will probably come forth in allegiance saying clean water as fast as possible and pick a protective remedy.

Response: Comment noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 36-6

Comment: The community wants progress. The EIR has reviewed several alternatives in trying to balance cleanup speed and protection of the environment, competently assessed and mitigated impacts, and it needs to be a flexible document.

Response: Comment noted. Refer to response to **Master Response 1** regarding purpose and use of EIR and the flexibility of the EIR. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 36-7

Comment: PG&E's engineering approach is "adaptive management" which means that remedial approach is flexible enough to change as information is gathered.

Response: Comment noted. Refer to response to **Master Response 1** regarding purpose and use of EIR. As described in the EIR, remediation will need to take into account information as it is developed over time. The EIR mitigation uses a similar approach of requiring additional information to be gathered and application of specific requirements in light of that information.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 36-8

Comment: The commenter requests 15 extra days to review the EIR.

Response: The public review period was extended from the required 45 days to 76 days. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 36-9

Comment: One of the major remediation techniques are the agricultural units (AU) for land treatment, and more AUs provides faster cleanup (referencing a Water Board graph presented) but more environmental impact. The EIR is trying to balance an engineering judgment between cleanup speed and environmental impacts.

Response: Comment noted. The commenter describes a key finding of the EIR analysis which is that there are notable tradeoffs in terms of the speed of cleanup and the level of environmental effects, in particular in relation to the amount of groundwater drawdown and the area of physical disturbance from agricultural treatment units as well as other impacts, such as agricultural unit impacts on total dissolved solids. The intent of the EIR is to disclose the impacts so the decision makers can make an informed decision about the project. It is up to the Water Board to decide how to balance different impacts as it crafts its WDRs and CAO which will determine the remedial parameters.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 36-10

Comment: Hopefully the comment period is 75 days. Probably 8-12 AUs is the appropriate acreage that is the sweet spot the EIR should be heading towards.

Response: Comment noted. The review period was extended from the required 45 days to 76 days. Comments about preference for a "sweet spot" are noted. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 37A (White)

Comment 37A-1

Comment: The community would like the ethanol treatment in all IRZs to stop, the freshwater pumping to continue to keep containment of the arsenic and manganese plume, and electrolysis to be put to use as pump and treatment system for containment.

Response: Comment noted. Please refer to **Master Response 4** which discusses ethanol use, remediation byproducts, such as arsenic and manganese, and the request to cease IRZ operations. Please refer to **Master Response 6** regarding EIR alternatives, including electrocoagulation.

Comment 37A-2

Comment: It is unsafe to use alfalfa fields for chromium (remediation) because it will bring unsafe toxic water to the surface, and most levels of toxins will be above federal standards, and Hinkley will be the ones to suffer.

Response: The commenter is correct that agricultural units use alfalfa fields to treat chromium contamination. As described in the EIR in Section 3.1, *Water Resources and Water Quality*, through microbial reactions in the soil, Cr[VI] is reduced to Cr[III], which precipitates out of the water. Cr[III] is stable and a much lower toxicity than Cr[VI]. PG&E uses drag drip irrigation which avoids broadcast irrigation of the chromium-laden water thus avoiding potential for human exposure to the treatment water. As discussed in the EIR, agricultural treatment could result in increased total dissolved solids but the EIR proposes mitigation to address secondary byproducts of this remediation method.

Comment 37A-3

Comment: The commenter would like to see more sample wells in place north of the plume and south and east of the compressor station so the plume is defined.

Response: The Water Board has an ongoing effort to require PG&E to define the plume and has recently ordered additional sampling in the north where the boundary of the plume is not fully defined. PG&E continues to sample monitoring wells south and east of the plume as well. Refer to **Master Response 2** regarding chromium plume boundary and project study area boundary.

Response to Comment Letter 37B (White)

Comment 37B-1

Comment: The community wants to have a Community Advisory Committee (CAC) without PG&E on it, and they want a different facilitator appointed by the Water Board. Regardless, the commenter will volunteer time to the CAC.

Response: Comment noted. Refer to response to **Comment 35-1** regarding PG&E's participation in CAC meetings. Refer to **Master Response 7** regarding independent facilitation of CAC meetings. The comment concerns the CAC not the EIR. No revisions to the Draft EIR are necessary.

Comment 37B-2

Comment: The commenter asks about the human risk assessment (HRA) that the Water Board said in the last meeting they would provide to the CAC.

Response: The comment concerns a statement made at a CAC meeting about providing a prior HRA. Please refer to **Master Response 3** concerning Health Risk Assessment (HRA), which describes the HRA done by the Agency for Toxic Substances and Disease Registry (ATSDR) in 2000. All available public health information regarding Hinkley is available on the Water Board's Hinkley project webpage at http://www.waterboards.ca.gov/lahontan/water_issues/projects/pge/index.shtml.

Comment 37B-3

Comment: The community wants to see cross-grade testing on laboratory animals to see effects of full toxic cocktail on video because too many people are dying of cancer.

Response: Comment noted. Laboratory testing on animals is not necessary in order to inform the evaluation of environmental impacts of remediation in the EIR. The EIR discloses the potential health effects of different groundwater contaminants related to remediation including chromium, arsenic, manganese, iron, total dissolved solids, and nitrate as well as drinking water standards and

public health goals all of which are discussed in Section 3.1, *Water Resources and Water Quality*. This is an adequate basis on which to assess impacts and identify mitigation. No revisions to the Draft EIR are necessary.

Comment 37B-4

Comment: The community wants the USGS involved.

Response: Comment noted. Please refer to **Master Response 7** concerning third party involvement, including the USGS.

Comment 37B-5

Comment: The Water Board needs to take the lead and stick up to these people and the community will follow.

Response: Comment noted. The Water Board's intent is for full cleanup of the chromium to be completed as soon as possible while balancing and controlling environmental effects of remediation. The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 38 (Anonymous)

Comment 38-1

Comment: The commenter states that ppb (parts per billion) is .000000002 and asks why is this being downplayed and anyone over .01 is over the legal drinking limit for Cr[VI].

Response: One part per billion (ppb) is 0.000000001 and is equivalent to one microgram per liter (µg/l) in water. As disclosed in the EIR, the legal drinking water limit for total chromium is 50 ppb (California Maximum Contaminant Limit). There is no specific legal drinking water standard for Cr[VI], so the standard for total chromium applies. The EIR also describes that the California Department of Public Health (CDPH) has issued a Public Health Goal (PRG) for Cr[VI] of 0.02 ppb, but the PHG is not a regulatory or cleanup levels.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Response to Comment Letter 39 (Anonymous)

Comment 39-1

Comment: PG&E is the perpetrator in this situation so it is difficult for the community to trust their data, and the Water Board relies on PG&E for answers, which fuels the mistrust.

Response: Comment noted. The Water Board required PG&E, as the responsible party, to conduct investigations using approved state and federal methods and document the results which are reviewed by the Water Board. The Water Board requires additional investigation and study when the data provided by PG&E is insufficient to make conclusions regarding various aspects of the chromium plume and remediation. The commenter does not provide any evidence to indicate specific problems with the quality of PG&E's data.

The comment does not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Comment 39-2

Comment: We need to move forward with the EIR, but there are no concrete answers.

Response: Comment noted. The EIR discloses the likely effects of remediation activities on the environment as required by CEQA. No revisions to the Draft EIR are necessary.

Comment 39-3

Comment: If the Water Board hands are tied, we need a solution to find answers, whether it's a federal authority or other entity not influenced by PG&E, because PG&E has too much control. They are a business and that is how they are approaching contamination.

Response: Comment noted. Please refer to **Master Response 7** concerning third-party involvement.

Questionnaire

The public questionnaires from the Lahontan Water Board asked the following questions. Five questionnaires were returned. The questionnaires concerned remedial alternative preferences and did not concern the adequacy of the EIR and thus no responses are required.

The responses received are summarized below.

1. Do you plan to read the Draft EIR?
    a. Yes, most or all. **2**
    b. Yes, only the Summary or Fact Sheet. **0**
    c. Maybe. **2**
    d. No. **1**
2. Would you rather the chromium-contamination cleanup time be:
    a. As quick as possible regardless of the environmental impacts (lower water table, byproducts created, chromium left in aquifer, habitat loss, etc., with most offset by mitigation measures). **0**
    b. Equally balanced between speed and environmental impacts. **3**
    c. Take as long as necessary to avoid most or all environmental impacts. **1**
    d. Not sure. **0**
    e. Don't care. **0**
3. Which cleanup option in the Draft EIR affecting the entire plume do you prefer (rank #1 for most favorite and #6 for least favorite).
    a. No Project—only activities occurring today to be continued in future (in-situ treatment for chromium at and near source (Compressor Station) plus 3 agricultural (ag) fields for lower chromium levels to the north (one crop)—yields longest cleanup time of >1,000 years. **#6 (2 people)**
    b. 4B—Same as No Project but with 6 ag fields operating 8 months per year (one crop)—yields cleanup time of 40 years to 3.1 ppb Cr[VI] and 95 years to 1.2 ppb Cr[VI]. **#2 (1 person), #3 (1 person)**
    c. 4C-2—Same as No Project but with 10 ag fields operating year round (two crops)—yields cleanup time 39 years to 3.1 ppb Cr[VI] and 90 years to 1.2 ppb Cr[VI]. **#2 (1 person), #3 (1 person)**
    d. 4C-3—In-situ treatment for chromium at and near source plus 10 ag fields operating 8 months per year (one crop) plus an above-ground treatment facility to remove chromium from groundwater in north during winter months and disposal of chromium elsewhere—yields cleanup time of 36 years to 3.1 ppb Cr[VI] and 85 years to 1.2 ppb Cr[VI]. **#1 (2 people), #5 (1 person)**

e. 4C-4—Same as No Project but with 26 ag fields operating year round (two crops)—yields fastest cleanup time of 29 years to 3.1 ppb Cr[VI] and 75 years to 1.2 ppb Cr[VI]. **#2 (1 person), #4 (2 people)**

f. 4C-5—An above ground treatment facility at and near source to remove chromium from groundwater and disposal of chromium elsewhere plus 10 ag fields operating 8 months per year (one crop) for lower chromium levels to the north—yields second slowest cleanup time of 50 years to 3.1 ppb Cr[VI] and 95 years to 1.2 ppb Cr[VI]. **#1 (2 people), #5 (1 person)**

4. The environmental impact(s) you are willing to accept as part of the final chromium cleanup strategy:

a. Lots of lowering of water table with possible permanent aquifer compaction and land subsidence, and changes in water chemistry (arsenic or uranium) in wells. Mitigation to be provided: alternate water supply, and water table and water quality restored in future—water yield likely not restored if compaction occurs. **2 people**

b. Loss of use of domestic well for indoor use and given alternate water supply; domestic well can still be used for outdoor uses, such as landscaping. Mitigation would be alternate water supply, with water table restored in future. **0 people**

c. Loss of endangered desert tortoise and Mohave ground squirrel habitat in the project area, with possible land swap elsewhere for habitat. **1 person**

d. Lots of temporary byproducts (manganese, iron, arsenic) to groundwater due to in-situ remediation, with water quality to be restored in future. Mitigation until aquifer is restored will be monitoring and possible alternate water supply until water quality if restored in future. **1 person**

e. Some temporary lowering of water table, to be restored in future. **0 people**

f. Lots of temporary byproducts (manganese, iron, arsenic) to groundwater due to in-situ remediation, with water quality to be restored in future. Mitigation until aquifer is restored will be monitoring and possible alternate water supply until water quality if restored in future. **1 person**

g. Some temporary TDS (total dissolved solids) increase in groundwater from additional agricultural fields, with water quality to be restored in the future. **0 people**

h. Lots of temporary TDS (total dissolved solids) increase affecting groundwater quality from many additional agricultural fields. Mitigation will be to provide alternate water supply until water quality is restored in future. **0 people**

i. Leaving chromium in the aquifer at the source area as solid Cr[III]. **0 people**

j. Leaving chromium in the soil at the agricultural unit areas as solid Cr[III]. **0 people**

The questionnaire results do not concern the adequacy of the EIR. No revisions to the Draft EIR are necessary.

Survey

A Hinkley community member distributed a survey that addressed the following.

- Three choices for speed of remediation: 1) Quick regardless of environmental impacts, 2) Balance between cleanup speed and environmental impacts, or 3) Long and avoid impacts.
- Three choices regarding leaving Cr[III] in the soil/aquifer post remediation: (1) Remove Cr[III], (2) Leave Cr[III], or (3) Not sure.

The specific questions are presented below, with the results from the 88 surveys returned in bold.

1. Choose one of the three options for cleaning up the chromium plume based on the Water Board's Draft EIR.
    a. Choice 1: **22**
    As quick as possible regardless of the environmental impacts like: lower water table (less water in the aquifer), byproducts created in our aquifer and, maybe, in our wells such as TDS, manganese, arsenic, and uranium, requiring PG&E to provide us with a different clean water source. Chromium 3 left in aquifer after changing from chromium 6. Includes habitat loss, which effects part of what makes Hinkley great is nature. With this choice, there are some unknowns and concerns. But chemicals created in aquifer will be cleaned up by project end. Choice 1 will still be nearly three decades (30 years) to clean up and be more than our children's lifetime to clean completely.
    b. Choice 2: **6**
    A balance between speed and some environmental impacts .Choosing this option will take longer than Option 1 (about 40 years) but have less effect on the environment. PG&E will still be injecting ethanol but include more alfalfa fields.
    c. Choice 3: **30**
    Take as long as necessary to avoid most or all effects on the environment, such as low water table, byproducts in aquifer, and tortoise habitat. This will take a long time (about 50 years) but will create the lease amount of effects on Hinkley.
2. Should PG&E be required to remove chromium 3 from our plume after they change it from chromium 6 or leave chromium 3 in the soil?
    a. Remove Cr[III]: **46**
    b. Leave Cr[III]: **11**
    c. Not sure: **25**

The survey concerns remedial alternative preferences and did not concern the adequacy of the EIR and thus no responses are required. No revisions to the Draft EIR are necessary.