Attachment F

Mitigation Monitoring and Reporting Program

Comprehensive Groundwater Cleanup Strategies for Historical Chromium Discharges from PG&E's Hinkley Compressor Station

(SCH# 2008011097)

California Regional Water Quality Control Board, Lahontan Region

December 2013

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Contents

Introduction

The California Regional Water Quality Control Board, Lahontan Region (Water Board), as Lead Agency under the California Environmental Quality Act (CEQA) and State CEQA Guidelines, has prepared and certified the Final Environmental Impact Report (EIR) for the Comprehensive Groundwater Cleanup Strategy for Historical Chromium Discharges from Pacific Gas & Electric Company's (PG&E's) Hinkley Compressor Station (proposed project) (SCH #2008011097). When a lead agency approves a project and makes findings on significant effects identified in an EIR, it must also adopt a program for reporting or monitoring mitigation measures that were adopted or made conditions of project approval (Public Resources Code [PRC] Section 21081.6[a]; State CEQA Guidelines Sections 15091[d], 15097).

CEQA requires the monitoring or reporting program to ensure implementation of the mitigation measures, but CEQA does not define the terms "reporting" or "monitoring" and does not specify how this should be done, instead leaving the format, contents, and complexity of the program to the interpretation of the lead agency.

As lead agency, the Water Board has developed this Mitigation Monitoring and Reporting Program (MMRP) to ensure implementation of the mitigation measures. "Monitoring" is the ongoing process of project oversight to ensure the mitigation measures are implemented, and "reporting" is the written review of mitigation activities. To facilitate mitigation monitoring and reporting, this MMRP includes a worksheet for each mitigation measure that identifies: 1) Mitigation measure, 2) Implementation timing, 3) Implementation responsibility, 4) Monitoring responsibility, 5) Monitoring requirements, 6) Frequency of monitoring or reporting, 7) Standards for completion or compliance, and 8) Agency verification of compliance ("sign off"). **Appendix A** includes a Monitoring and Reporting Record form, as well as a completed example, where monitoring and reporting notes can be documented. Some mitigation measures require separate, stand-alone memoranda or reports of verification, in which case the agency's receipt of those reports can be documented.

This MMRP includes all measures required to reduce potentially significant environmental impacts to a less-than-significant level, as well as measures that reduce impacts but not necessarily to a less-than-significant level.

Questions should be directed to Anne Holden, EIR Project Manager.

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Summary of Mitigation Measures

The mitigation measures, implementation timing, and responsible parties are summarized in **Table 1**. Additionally, **Appendix B** includes summary tables with the mitigation measures, the impacts they are addressing, and the applicable project alternatives.

The mitigation measures in the Table 1, Appendix B, and the Mitigation Measure Worksheets are presented by resource area as follows, using the same numerical order as presented in the Final EIR (Volume II).

- 3.1 Water Resources and Water Quality
- 3.2 Land Use, Agriculture, Population and Housing
- 3.3 Hazards and Hazardous Materials
- 3.4 Geology and Soils
- 3.5 Air Quality and Climate Change
- 3.6 Noise
- 3.7 Biological Resources
- 3.8 Cultural Resources
- 3.9 Utilities and Public Services (no mitigation measures)
- 3.10 Transportation and Traffic
- 3.11 Aesthetics
- 3.12 Socioeconomics

Table 1. Summary of Mitigation Measures with Responsible Parties

Mitigation Measure	Timing	Implementation Responsibility	Monitoring Responsibility	Applicable Remedial Action[1]				
				ALL	IRZ	AU	ATF	FWI
3.1 Water Resources and Water Quality								
WTR-MM-1: Purchase of Water Rights to Comply with Basin Adjudication	Annually	PG&E	Water Board			X		
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	During operation	PG&E	Water Board		X	X		
WTR-MM-2a: Mitigation Program for Water Supply Wells Affected by the Chromium Plume Expansion due to Remedial Activities	During operation	PG&E	Water Board		X	X		
WTR-MM-2b: Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts	One year prior to operation and during operation	PG&E	Water Board		X	X		
WTR-MM-2c: Water Supply Program for Wells Affected by Groundwater Drawdown due to Remedial Activities	One year prior to operation and during operation	PG&E	Water Board			X		
WTR-MM-3: Incorporate Measures to Prevent, Reduce and Control Potential Temporary Localized Chromium Plume Bulging Into Overall Plume Control and Monitoring	Prior to issuance of permits	Water Board and PG&E	Water Board		X			
WTR-MM-4: Mitigation Program for Restoring the Hinkley Aquifer Affected by Remedial Activities for Beneficial Uses	No later than 10 years prior conclusion of remediation project	PG&E	Water Board	X				

Mitigation Measure	Timing	Implementation Responsibility	Monitoring Responsibility	Applicable Remedial Action[1]				
				ALL	IRZ	AU	ATF	FWI
WTR-MM-5: Investigate and Monitor Total Dissolved Solids, Uranium, and Other Radionuclide Levels in relation to Agricultural Treatment and Take Contingency Actions	Prior to issuance of permits	Water Board and PG&E	Water Board			X		
WTR-MM-6: Monitor Nitrate Levels and Manage Agricultural Treatment to Avoid Significant Increases in Nitrate Levels and Provide Alternative Water Supplies As Needed	Prior to issuance of permits	Water Board and PG&E	Water Board			X		
WTR-MM-7: Construction and Operation of Additional Extraction Wells to Control Carbon Amendment In-situ Byproduct Plumes	Prior to issuance of permits	Water Board and PG&E	Water Board		X			
WTR-MM-8: Ensure Freshwater Injection Water Does Not Degrade Water Quality	Prior to issuance of permits	Water Board and PG&E	Water Board					X
3.2 Land Use								
LU-MM-1: Obtain Bureau of Land Management Permits in Compliance with California Desert Conservation Area Plan and the West Mojave Plan	Prior to remedial activities on federal land	PG&E with BLM	Water Board	X				
Note: Potential remediation actions on BLM land have not been specifically identified, but are likely to include monitoring wells, extraction wells, piping and access roads. Agricultural treatment units are not likely to be proposed on federal lands given AUs can be more efficiently placed in central locations on private lands.								
LU-MM-2: Acquire Agricultural Conservation Easements for any Important Farmland If Water Rights Are Acquired for Remediation	Prior to remedial activities on important farmland	PG&E	Water Board	X				

Mitigation Measure	Timing	Implementation Responsibility	Monitoring Responsibility	Applicable Remedial Action[1]				
				ALL	IRZ	AU	ATF	FWI
3.3 Hazards and Hazardous Materials								
HAZ-MM-1: Implement Contingency Actions if Contaminated Soil is Encountered During Ground Disturbance	During excavation activities	PG&E with qualified Professional Engineer or Professional Geologist	Water Board	X				
HAZ-MM-2: Implement Spill Prevention, Control, and Countermeasures Plan During Construction	Prior to and during construction activities	PG&E with San Bernardino County Fire Department	Water Board	X				
HAZ-MM-3: Implement Building Materials Survey and Abatement Practices	Prior to structure demolition or modification activities	PG&E with registered environmental assessor or California-registered professional engineer	Water Board	X				
3.4 Geology and Soils								
GEO-MM-1: Land Subsidence Monitoring, Investigation, and Repair (Recommended only)	Prior to and during remedial-induced groundwater drawdown	PG&E with landowner and qualified expert approved by Water Board	Water Board	X				
GEO-MM-2: Emergency Response Plan for Potential Remedial Pipeline or Storage Tank Rupture	Prior to operation of remedial pipeline or storage tank	PG&E	Water Board	X				
3.5 Air Quality and Climate Change								
AIR-MM-1: Utilize Clean Diesel-Powered Equipment during Construction	During construction	PG&E or their contractor	Water Board	X				

Mitigation Measure	Timing	Implementation Responsibility	Monitoring Responsibility	Applicable Remedial Action[1]				
				ALL	IRZ	AU	ATF	FWI
AIR-MM-2: Ensure Fleet Modernization for On-Road Material Delivery and Haul Trucks during Construction	During construction	PG&E or their contractor	Water Board	X				
AIR-MM-3: Implement Emission-Reduction Measures during Construction	Prior to and during construction	PG&E or their contractor	Water Board	X				
AIR-MM-4: Implement Dust Control Measures during Construction and Operations	During construction and operation	PG&E or their contractor	Water Board with MDAQMD	X				
AIR-MM-5: Utilize Clean Diesel-Powered Equipment for Operation of Agricultural Treatment	During operation	PG&E or their contractor	Water Board			X		
Note: This mitigation applies only to Alternative 4C-4 because it has substantially more agricultural units and thus diesel-related exhaust (diesel particulate matter), exceeding the MDAQMD cancer risk threshold, whereas the other alternatives do not.								
AIR-MM-6: Implement San Bernardino County GHG Construction Standards during Construction	During construction	PG&E or their contractor	Water Board with San Bernardino County	X				
AIR-MM-7: Implement San Bernardino County GHG Operational Standards for Operations	During operation of remedial activities	PG&E or their contractor with San Bernardino County	Water Board	X				
AIR-MM-8: Implement San Bernardino County GHG Design Standards	Prior to operation of remedial facilities	PG&E with San Bernardino County	Water Board with San Bernardino County				X	
3.6 Noise								
NOI-MM-1: Prepare a Noise/Vibration Control Plan and Employ Noise/Vibration-Reducing Construction Practices to Comply with County Noise Standards	Prior to and during construction	PG&E or their contractor	Water Board with County	X				

Mitigation Measure	Timing	Implementation Responsibility	Monitoring Responsibility	Applicable Remedial Action[1]				
				ALL	IRZ	AU	ATF	FWI
3.7 Biological Resources								
BIO-MM-1a: Implement Measures to Minimize, Reduce, or Mitigate Impacts on Desert Tortoise during Construction	Prior to and during construction	PG&E with authorized biologist CDFW, USFWS	Authorized biologist Water Board	X				
BIO-MM-1b: Limit Footprint of Disturbance Areas within Special-Status Species Habitats	Prior to construction During construction	PG&E, authorized biologist, environmental monitor	Authorized biologist/ environmental monitor Water Board	X				
BIO-MM-1c: Implement Pre-Construction and Ongoing Awareness and Training Program	Prior to construction During construction	PG&E, construction contractor with authorized biologist or environmental monitor	Authorized biologist/ environmental monitor Water Board	X				
BIO-MM-1d: Conduct Ongoing Biological Monitoring during Construction	During construction	PG&E and authorized biologist	Authorized biologist Water Board	X				
BIO-MM-1e: Minimize Potential Construction Hazards to Special-Status Species	During construction	PG&E or contractor with authorized biologist or environmental monitor	Authorized biologist/environmental monitor Water Board	X				
BIO-MM-1f: Implement Measures to Minimize and Prevent Attraction of Predators during Construction and Operation	Prior to and during construction and operation	PG&E or contractor with authorized biologist or environmental monitor	Authorized biologist/environmental monitor Water Board	X				
BIO-MM-1g: Reduction of Project-Related Spread of Invasive Plant Species	After construction	PG&E with qualified biologist	Qualified biologist Water Board	X				

Mitigation Measure	Timing	Implementation Responsibility	Monitoring Responsibility	Applicable Remedial Action[1]				
				ALL	IRZ	AU	ATF	FWI
BIO-MM-1h: Compensate Impacts on Desert Tortoise and Mohave Ground Squirrel Habitat	Prior to ESA permits Within 3 years of disturbance or earlier as defined in ESA permits	PG&E, CDFW, USFWS	Water Board, CDFW, USFWS	X				
BIO-MM-1i: Integrated Pest Management and Adaptive Management Plan for Agricultural Treatment Units	Prior to operation of agricultural units	PG&E	PG&E, Water Board	X				
BIO-MM-1j: Reduction of Night Light Spillover	Prior to operation of remedial activities with exterior lighting	PG&E with qualified biologist	Qualified biologist, Water Board	X				
BIO-MM-1k: Implement Other Measures to Minimize, Reduce, or Mitigate Impacts on Mohave Ground Squirrel	Prior to and during construction	PG&E with authorized biologist	Authorized biologist, Water Board	X				
BIO-MM-1l: Implement Other Measures to Minimize, Reduce, or Mitigate Impacts on Burrowing Owl	Prior to and during construction	PG&E or contractor with qualified biologist, CDFW	Qualified biologist Water Board	X				
BIO-MM-1m: Minimize Impacts on American Badger and Desert Kit Fox Occupied Dens	Prior to and during construction	PG&E with qualified biologist	Qualified biologist Water Board	X				
BIO-MM-1n: Avoid Impacts on Nesting Loggerhead Shrike, Northern Harrier, and Other Migratory Birds (including Raptors and excluding Burrowing Owls)	Prior to and during construction	PG&E with qualified biologist	Qualified biologist Water Board	X				
BIO-MM-1o: Implement Measures Required to Minimize, Reduce, or Mitigate Impacts on Special-Status Plants	Prior to and during construction	PG&E with qualified biologist, CDFW and USFWS (if listed plants)	Qualified biologist Water Board	X				

Mitigation Measure	Timing	Implementation Responsibility	Monitoring Responsibility	Applicable Remedial Action[1]				
				ALL	IRZ	AU	ATF	FWI
BIO-MM-1p: If Remedial Actions Affect Mojave Fringe-toed Lizard Habitat, than Compensate for Habitat Losses	Prior to and during construction	PG&E with qualified biologist and CDFW	Qualified biologist Water Board	X				
BIO-MM-2: Habitat Compensation for Loss of Sensitive Natural Communities	Prior to and during construction	PG&E with qualified biologist and possibly USFWS and CDFW (if listed species)	Qualified biologist Water Board	X				
BIO-MM-3: Measures Required to Minimize, Reduce, or Mitigate Impacts on Waters and/or Wetlands under the Jurisdiction of the State	Prior to and during construction	PG&E with qualified biologist, USACE, CDFW, Water Board	Qualified biologist Water Board	X				
BIO-MM-4: Implement West Mojave Plan Measures to Impacts on DWMAs on BLM Land	Prior to and during construction	PG&E with authorized biologist, and BLM	Authorized biologist BLM Water Board	X				
3.8 Cultural Resources								
CUL-MM-1: Determine Presence of Historic Resources as Defined by CEQA	Prior to construction	PG&E, qualified architectural historian	Water Board	X				
CUL-MM-2: Avoid Damage to Historic Resources Located in Project Areas through Project Modification	Prior to construction	PG&E with qualified architectural historian	Water Board and BLM	X				
CUL-MM-3: Record Historic Resources	Prior to construction	PG&E with qualified architectural historian	Water Board	X				
CUL-MM-4: Conduct an Archaeological Resource Survey to Determine if Historical Resources under CEQA or Unique Archaeological Resources under PRC 21083.2 are Present in Proposed Areas of Disturbance	Prior to construction	PG&E with qualified archaeologist	Water Board	X				

Mitigation Measure	Timing	Implementation Responsibility	Monitoring Responsibility	Applicable Remedial Action[1]				
				ALL	IRZ	AU	ATF	FWI
CUL-MM-5: Avoid Damaging Archaeological Resources through Redesign of Specific Project Elements or Project Modification	Prior to construction	PG&E with qualified archaeologist	Water Board	X				
CUL-MM-6: Evaluate Archaeological Resources and, if Necessary, Develop and Implement a Recovery Plan	Prior to and during construction	PG&E with qualified archaeologist	Water Board	X				
CUL-MM-7: Comply with State and County Procedures for the Treatment of Human Remains Discoveries	During construction	PG&E or contractor with County Coroner	Water Board	X				
CUL-MM-8: Conduct Preconstruction Paleontological Resource Evaluation, Monitoring, Resource Recovery, and Curation	Prior, during and potentially after construction	PG&E with appropriate qualified personnel (paleontologist and/or geologist)	Water Board	X				
3.9 Utilities and Public Services								
No mitigation measures required	--	--	--					
3.10 Transportation and Traffic								
TRA-MM-1: Implement Traffic Control Measures during Construction	During construction	PG&E or contractor	Water Board	X				
3.11 Aesthetics								
AES-MM-1: Screen Above-Ground Treatment Facilities from Surrounding Areas	During construction	PG&E or contractor	Water Board	X				
AES-MM-2: Use Low-Sheen and Non-Reflective Surface Materials on Visible Remediation Facilities and Infrastructure	During construction	PG&E or contractor	Water Board	X				
AES-MM-3: Apply Light Reduction Measures for Exterior Lighting	During construction	PG&E or contractor	Water Board	X				

Mitigation Measure	Timing	Implementation Responsibility	Monitoring Responsibility	Applicable Remedial Action[1]				
				ALL	IRZ	AU	ATF	FWI
3.12 Socioeconomics								
SE-MM-1: Manage Vacant Lands, Residences, and Structures to Avoid Physically Blighted Conditions	During construction and/or operation	PG&E	Water Board	X				

[1] Applicable Remedial Action:

ALL – All remedial activities (including ATF, AU, FWI, IRZ and monitoring wells)

ATF – Above ground treatment facility

AU – Agricultural (land) treatment units

FWI – Freshwater injection

IRZ – In-situ reduction zones (below ground treatment)

Mitigation Measure Worksheets

WTR-MM-1: Purchase of Water Rights to Comply with Basin Adjudication

Implementation Timing:	Annually
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Water Board (with the Mojave Water Agency)
Frequency of Monitoring:	See monitoring requirements in applicable WDRs
Frequency of Reporting:	See reporting requirements in applicable WDRs
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs
Agency Verification of Completion or Compliance:	As specified in applicable WDRs

Mitigation Measure:

Because regional groundwater drawdown from the project may reduce the availability of regional and state water supplies in the Centro Subarea, the Water Board will include requirements in the new CAO and/or associated WDRs issued for the remediation as follows:

- By January 31 of every year, PG&E will document its total water rights and its Free Production Allowance (FPA) for groundwater pumping relative to the remedial project to the Water Board.
- By December 31 of every year, PG&E will document the expected total amount of net agricultural treatment water use for the following year.
- At all times, PG&E will possess adequate water rights and FPA that meet or exceed the current expected agricultural treatment water use.
- If PG&E fails to acquire adequate water rights and FPA to support proposed agricultural treatment, PG&E will be required to implement above-ground treatment or modify existing remedial activities to adequately compensate for any loss in planned agricultural treatment.

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

Implementation Timing:	During operation
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	See monitoring requirements in applicable WDRs
Frequency of Reporting:	See reporting requirements in applicable WDRs
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs
Agency Verification of Completion or Compliance:	As specified in applicable WDRs

Mitigation Measure:

PG&E will implement a comprehensive program to determine residences and agricultural land owners whose wells may be adversely affected by remedial actions in relation to chromium plume expansion, remediation byproducts, or groundwater drawdown.

Implementation of the program described below is designed to provide advance warning before water supply well impairment occurs. Such a program will be designed to either expedite remediation before a water supply well becomes affected, or provide reliable water supply for the entire duration of well impairment due to remedial activities. For the purposes of the project and this EIR, water supply wells are those that provide water for agricultural, domestic, or industrial uses, and include those that are used for water supply for freshwater injections. Water supply wells do not include IRZ injection wells or monitoring wells.

The Mitigation Program will determine all "actually affected" and all "potentially affected" wells (defined for each sub-mitigation measure, WTR-MM-2a through 2c, below).

If a water supply well is determined to be an "actually affected" well, then PG&E will provide alternative water supply meeting the requirements described below.

If a water supply well is determined to be "potentially affected" well, then PG&E will either 1) expedite remediation of the conditions causing the well to be potentially affected such that actual impacts do not occur; or 2) provide alternative water supply. If PG&E chooses to remediate the triggering condition, it will provide a feasibility study and plan to the Water Board demonstrating feasible means to avoid actually affecting any domestic or agricultural well.

If expedited remediation is not feasible, PG&E will provide alternative water supply to all "potentially affected" wells prior to the wells being actually affected by chromium plume expansion, remedial byproducts or substantial groundwater drawdown. Because the definition of a "potentially affected" well includes any well that is projected to be affected in the next year, this provides adequate advanced warning to feasibly provide the alternative water supply before impacts to supply wells occur.

Water Quality Requirements for Alternative Water Supply

- Domestic Wells—For domestic wells affected by remedial activities, the alternative water supply will meet the following water quality requirements for interior household uses:
    - For chromium, alternative water supply shall be equal to or less than Water Board established maximum background levels.
    - Alternative water supply will meet all primary and secondary Maximum Contaminant Levels for any constituent, other than chromium, that is affected by remedial activities as defined in this mitigation.
    - For constituents not affected by remedial activities, the alternative water supply will be consistent with pre-project water quality.
    - California and federal requirements for public water systems will apply if the replacement water supply is defined as a public water system. Where the requirements in the three prior bullets are e stricter than public water system requirements, then the more restrictive requirement shall apply.[1]
- Domestic Wells—For domestic wells affected by remedial activities, PG&E will provide replacement water for outside non-potable household uses in an amount and quality sufficient to support existing outdoor non-potable water uses. Such outside non-potable uses include, but are not limited to, the following: irrigation for landscaping, gardening, provision of water for pets and livestock, and washing.
- Agricultural Wells—PG&E will provide replacement water suitable for agricultural use (including livestock) to all potentially affected agricultural wells, as defined below, in an amount and quality sufficient to support existing agricultural use.

Water Supply Options

In advance of implementing the project PG&E will provide a feasibility study and plan to provide alternative water supplies. Provision of alternative water supplies may be through one or more of the following methods:

- Deeper Well Option—PG&E may opt to drill supply wells deeper if the deeper well is shown to have sufficient water supply yield and to meet the water quality requirements (defined above) or be treatable to such levels through on-site treatment provided by PG&E. 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. Although PG&E has indicated that it is no longer offering the deeper well option as part of the current whole house water replacement program due to the inability to meet the Water Board order's standard for Cr[VI] of 0.06 ppb, the EIR mitigation standard for Cr[VI] is the maximum background level of Cr[VI] (currently 3.1 ppb), thus the deeper well option remains a feasible option for EIR mitigation.
- Storage Tank and Hauled Water Option—PG&E may opt to provide water storage tanks and haul water to the affected location provided water meets the water quality requirements (defined above)

[1] The federal Safe Drinking Water Act and derivative legislation define public water system as an entity that provides "water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year.

or be treatable to such levels through on-site treatment provided by PG&E. If a homeowner rejects this option for their residence, PG&E must offer them an alternative.

- Well Head Treatment Option—PG&E may opt to provide treatment systems at the well head to provide water that meets the water quality requirements.
- Well Modification—For wells only affected by groundwater drawdown due to remediation, existing wells may be modified to provide water, such as by lowering the well pump, provided that the modification provides adequate water supply and water quality to support domestic or agricultural use, as appropriate.
- Alternative Supply Option—PG&E may opt to provide an alternative water supply that draws water from a source of water that is not affected by the chromium plume, such as a community water system. This option can only be provided such that the water source is not projected to be affected by plume expansion, remedial byproducts, or groundwater drawdown for the lifetime of remediation and can meet the water quality requirements. There are several different options for a water supply system as follows:
    - Use of wells upgradient or otherwise unaffected by the chromium plume or remediation, combined with a system of pipelines to water recipients. For example, wells near the Mojave River are upgradient of the chromium plume, are consistently productive, and could be potential candidates for a well source. Based on experience with freshwater injection using PG&E's wells south of the Compressor Station, there may be naturally-occurring constituents, such as arsenic, that might require pre-treatment before providing as a drinking water system.
    - Use of a connection to Golden State Water Company which could involve an estimated 12-mile pipeline to tie in to the existing water treatment system.
    - Use of a connection to the MWA recharge pipeline located along Community Blvd. The MWA recharge pipeline derives water from the California aqueduct and MWA would have to acquire adequate rights to water to provide it as local water supply. If this water is unable to meet drinking water standards in its original state, it may require treatment before distribution as a water source.
    - As described below under Mitigation Measure WTR-MM-5, as the specifics of proposed water systems are developed, additional project-level CEQA analysis may be necessary.
- Bottled Water Option—If requested by the homeowner, PG&E may provide bottled water for consumptive uses. However, the provision of bottled water does not meet the full intent of this mitigation because full well water replacement would not be provided for all indoor and outside water uses. Therefore, bottled water would need to be supplemented with one of the other options described above to provide full well water replacement. If the homeowner only wants bottled water and not full well water replacement by the proposed methods, then PG&E shall document this to the Water Board.

Regarding a community water system, while technically feasible, there may be challenges to implementing such a system in Hinkley.

- According to the EPA, very small systems (those serving 25 to 500 people) have the largest number of violations (mostly monitoring/reporting violations), and they experience one maximum Contaminant Level Violation for every 80 people serve, which is the highest ratio of all system

service population categories. By comparison, large urban systems (serving more than 100,000 people) experience one Maximum Contaminant Level violation for every 200,000 people service (EPA 2012b)[2].

- The California Department of Public Health (CDPH) has regulatory authority over community water systems. Under the provisions of Section 116330 of the California Health and Safety Code, CDPH has delegated approval of small water systems with less than 200 connections to local primary agencies, which in this case would be the San Bernardino County Public Health Department, Division of Environmental Health Services. A permit application for a community water system would require comprehensive technical, managerial, and financial assessments to gain CDPH (if more than 200 connections) or San Bernardino County (if less than 200 connections) approval. In order to be approved, small water systems must demonstrate that they can be sustainable for the long term.
- An additional concern is the long lead time to implement a community water system, given the approval and review process, and more extensive construction activities than other options, which could take as long as 5 years.
- Hinkley is dominated by rural residences, many of which are highly dispersed, which increases the amount of piping, pumping, and associated cost and construction.
- Some individuals in Hinkley may prefer a community water system, but other individuals may prefer the independence of their own well, which may complicate the implementation of this option.

Monitoring

Water Quality Monitoring and Groundwater Modeling

- PG&E will monitor water quality and model groundwater conditions as required by Mitigation Measures WTR-MM-2a, -2b, and -2c below.

Reporting

- PG&E will incorporate reporting on water supply program implementation into annual reporting to the Water Board. Reporting will include descriptions of all completed and planned expedited remediation actions and alternative water supplies for the following year.

[2] See http://www.epa.gov/nrmrl/wswrd/dw/smallsystems/regulations.html.

WTR-MM-2a: Mitigation Program for Water Supply Wells Affected by the Chromium Plume Expansion due to Remedial Activities

Implementation Timing:	During operation
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	See monitoring requirements in applicable WDRs
Frequency of Reporting:	See reporting requirements in applicable WDRs
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs
Agency Verification of Completion or Compliance:	As specified in applicable WDRs

Mitigation Measure:

Defining Actually and Potentially Affected Domestic Supply Wells

"Actually affected domestic wells" will be defined as any domestic water supply well with chromium (hexavalent or total) concentrations that exceed any of the following criteria due to remedial actions:

- Maximum background levels (if the well previously had concentrations below maximum background levels); or
- concentrations increase by 10% or more (if the well previously had concentrations that exceed maximum background levels).
- "Potentially affected domestic wells" will be defined as domestic supply wells that have an increase in chromium concentrations due to remedial actions and which:
- are located within one-mile of the defined chromium plume; or
- are predicted to have any of the above conditions for an "actually affected domestic well" within one year as indicated by groundwater modeling.

Monitoring

Water Quality Monitoring

- PG&E will monitor Cr[VI] and Cr[T] in domestic wells (wherever allowed by well owners) within one mile down gradient or cross gradient of the previously defined chromium plume, on a quarterly basis.
- Monitoring requirements may be adjusted by the Water Board's Executive Officer based on contaminant concentration trends, plume geometry changes, or other factors.

Water Quality and Groundwater Modeling

- PG&E will annually model the movement of the chromium plume and will provide maps and descriptions of estimated plume movement for the following three years. The modeling effort will be provided to the Water Board by January 31 of each year.
- The results of the modeling will include predictions for wells that may become affected within the following year and such predictions will be used to plan for either changing remediation activities and/or the provision of alternative water supplies in advance of effects on domestic.
- The report will also define the down gradient and cross gradient monitoring program areas under this section for the following year. Monitoring areas may be modified over the course of the year as described in the water quality monitoring section above.

WTR-MM-2b: Water Supply Program for Water Supply Wells Affected by Remedial Activity Byproducts

Implementation Timing:	One year prior to operation and during operation
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	See monitoring requirements in applicable WDRs
Frequency of Reporting:	See reporting requirements in applicable WDRs
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs
Agency Verification of Completion or Compliance:	As specified in applicable WDRs

Mitigation Measure:

Defining Actually Affected and Potentially Affected Wells

"Actually affected domestic wells" will be defined as any domestic water supply well with remediation byproduct concentrations that exceed any of the following criteria due to remedial actions:

- concentrations above a California primary or secondary Maximum Contaminant Levels if the well currently contains concentrations that are less than California primary or secondary Maximum Contaminant Level or water quality objective; or
- a 10% increase above current levels if the well has concentrations that currently exceed a California primary Maximum Contaminant Level [3]; or
- a 20% increase above current levels if the well has concentrations that currently exceed a California secondary Maximum Contaminant Level or water quality objective[4]; or
- a 20% increase above current levels if the well has concentrations that currently are less a California primary or secondary Maximum Contaminant Level or water quality objective.[5]

"Potentially affected domestic wells" will be defined as wells that meet any of the following criteria:

- All wells located within one-half mile downgradient or one-quarter mile cross gradient of an "actually affected domestic well" or an affected monitoring well .
- All wells predicted to be within one-half mile downgradient or one-quarter mile cross gradient of an "actually affected domestic well" or an affected monitoring well in the next year by groundwater flow and transport modeling.

[3] As noted in the significance criteria, the discharger may submit evidence if it believes the increase in a specific instance is not statistically significant.

[4] Ibid.

[5] Ibid.

"Actually affected monitoring wells" will be defined using the criteria above for "actually affected domestic wells".

"Actually affected agricultural wells" will be defined as an agricultural well where the following has occurred:

- remedial action has caused an increase in TDS or otherwise affected water quality such that (1) agricultural yields are predicted to be reduced by at least 25% or (2) agricultural product is predicted to have substantial or likely reduction in quality or quantity. Examples of substantial changes in quality include changes in palatability, appearance, or other factors that would impede the ability to sell crops at prevailing crop prices.

"Potentially affected agricultural wells" will be defined as wells that meet any of the following criteria:

- Agricultural wells within one-half mile downgradient or one-quarter mile cross gradient of an "actually affected agricultural well" or an affected monitoring well (when no agricultural well exist within these intervals);
- All wells where any of the above conditions is predicted to occur through groundwater flow and transport modeling within one year.

Monitoring

Water Quality Monitoring

- PG&E will conduct an initial monitoring of domestic and agricultural wells within one-mile downgradient or cross-gradient of any proposed in-situ remediation or agricultural treatment unit commencing upon approval of a new order allowing expanded remediation. Where possible without delaying planned remediation efforts, initial monitoring will be done before operation of new in-situ remediation areas and agricultural treatment units for a minimum of one year on a quarterly basis. Where initial monitoring cannot be done for one year prior to operations without delaying planned remediation efforts, then initial monitoring can be done concurrently with commencement of operations of new in-situ remediation areas and agricultural treatment units. Groundwater elevations and constituents analyzed will include all potential remedial activity byproducts to ensure that pre-remediation water quality is defined, and that definition is approved by the Water Board, for all domestic and agricultural wells for which well owners provide permission for sampling.
- PG&E will monitor for remedial activity byproducts in domestic and agricultural wells (wherever the Water Board deems appropriate) within one-half mile down gradient and one-quarter-mile cross gradient of any in-situ or agricultural treatment unit, on a twice-yearly (semi-annual) basis.
- If any domestic or agricultural wells are found to be actually affected by remedial byproducts (as described above), PG&E will increase monitoring of the affected well to once per month until alternate water supply is provided to the satisfaction of the Water Board, after which monitoring can be reduced to twice yearly if nearby monitoring wells exist.
- In addition, if any domestic or agricultural wells are found to be actually affected by remedial byproducts (as described above), PG&E will further monitor for that byproduct in all domestic and agricultural wells (wherever the Water Board deems appropriate) within one-half mile downgradient/one-quarter mile cross gradient of that impacted well for the following two years on

a quarterly basis. This program is intended to expand the area of monitoring in advance of any potential byproduct plume, and to expand and contract the monitoring area in response to the observed byproducts and remedial progress.

- In-situ treatment byproduct monitoring will consist of iron, manganese, arsenic and total organic carbon.
- Agricultural treatment unit byproduct monitoring will consist of TDS, nitrates, uranium, and radionuclides. If the investigation required by Mitigation Measure WTR-MM-5 identifies that agricultural treatment would significantly affect or have the potential to affect uranium or gross-alpha levels in groundwater, then agricultural treatment unit byproduct monitoring will also include uranium, gross-alpha, and any other applicable radionuclide, such as radium, in addition to soil and plant samples. Additional monitoring for agricultural inputs may be required by the Water Board, if the Water board determines it is warranted.
- Monitoring requirements may be adjusted by the Water Board's Executive Officer based on contaminant concentration trends, byproduct plume geometry, or other factors.

Groundwater Flow and Transport Modeling

- PG&E will annually model the movement of any byproduct plumes and will provide maps and descriptions of estimated plume movement and groundwater level changes for the following three years. The modeling effort will be provided to the Water Board by January 31 of each year.
- The results of the modeling will include predictions for water supply wells that may be impacted within the following year and such predictions will be used to plan for either changing remediation activities and/or the provision of alternative water supplies in advance of effects on domestic and agricultural wells.
- The report will also define and confirm the down gradient and cross gradient monitoring program areas under this section for the following year. If there are insufficient wells within the monitoring areas, as determined by the Water Board in its review of the yearly reporting, then quarterly monitoring of areas of insufficiency will be required.

WTR-MM-2c: Water Supply Program for Wells Affected by Groundwater Drawdown due to Remedial Activities

Implementation Timing:	One year prior to operation and during operation
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	See monitoring requirements in applicable WDRs
Frequency of Reporting:	See reporting requirements in applicable WDRs
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs
Agency Verification of Completion or Compliance:	As specified in applicable WDRs

Mitigation Measure:

Defining Actually and Potentially Affected Wells

"Actually affected domestic wells" will be defined as follows:

- All wells where groundwater drawdown of more than 25% of the potentially affected wetted screen depth within the saturated zone has occurred due to remedial pumping compared to the pre-remedial reference levels, unless it can be demonstrated that the well remains capable of providing an adequate flow rate for domestic supply and the well owner concurs that the flow rate is adequate for their use.
- All wells where groundwater drawdown of at least 10 feet occurs and water quality sampling shows at least a 10% increase over pre-remedial reference conditions of arsenic, manganese, uranium, or gross alpha.[6]

"Potentially affected domestic wells" will be defined as follows:

- All wells where any of the above conditions is predicted to occur through groundwater modeling within one year.

"Actually affected agricultural wells" will be defined as follows:

- Agricultural wells where groundwater drawdown of more than 25% of the potentially affected wetted well screen depth has occurred due to remedial pumping.

"Potentially affected agricultural wells" will be defined as follows:

- All wells where any of the above conditions is predicted to occur through groundwater modeling within one year.

[6] Ibid.

Monitoring

Groundwater Drawdown Monitoring

- PG&E will conduct an initial monitoring of groundwater levels and water quality in all domestic and agricultural wells (wherever allowed by well owners) within one-half mile downgradient or cross-gradient of any existing or proposed groundwater extraction well upon approval of a new order allowing expanded remediation. Initial monitoring will be for a minimum of one year, will be done quarterly, and will include monitoring in March and October, if possible. Initial monitoring will be done prior to operation of groundwater extraction wells, where feasible, without unreasonably delaying planned remediation. Where initial monitoring cannot be done for a full year without delaying planned remediation, then monitoring may be done concurrently with extraction commencement.
- PG&E will monitor the groundwater levels in all domestic and agricultural wells (wherever allowed by well owners) within one-quarter mile of any groundwater extraction point for the duration of remedial pumping until groundwater levels have stabilized for a minimum of two years following commencement of groundwater extraction. If groundwater levels cannot be measured in domestic or agricultural wells, then monitoring wells located between water supply wells and the area of remedial action can be substituted.
- In addition, if any domestic or agricultural wells are found to be affected or potentially affected by excessive drawdown as described below, PG&E will (1) conduct byproduct monitoring (for arsenic, manganese, uranium and gross alpha) and (2) measure the groundwater levels in or adjacent to domestic and agricultural wells (wherever allowed by well owners) within one-quarter mile of that well until groundwater levels have stabilized for a minimum of two years. This program is intended to expand the area of monitoring in advance of any excessive drawdown, and to expand and contract the monitoring area in response to the observed drawdown.
- PG&E will monitor groundwater levels semi-annually in October (after peak irrigation months) and March (after winter rains and before peak irrigation months).
- Monitoring requirements may be adjusted by the Water Board's Executive Officer based on groundwater level conditions or other factors.

Groundwater Modeling

- PG&E will annually model predicted groundwater levels based upon the month with the greatest well water use and will provide maps and descriptions of estimated groundwater level changes for the following three years. The modeling effort will be provided to the Water Board by January 31 of each year.
- The results of the modeling will include predictions for wells that will be impacted within the following year and plans for the provision of alternative water supplies in advance of effects on domestic and agricultural wells.
- The report will also define the monitoring program area under this section for the following year.

WTR-MM-3: Incorporate Measures to Prevent, Reduce and Control Potential Temporary Localized Chromium Plume Bulging Into Overall Plume Control and Monitoring

Implementation Timing:	Prior to issuance of permits
Implementation Responsibility:	Water Board and PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	See monitoring requirements in applicable WDRs/CAO
Frequency of Reporting:	See reporting requirements in applicable WDRs/CAO
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs/CAO
Agency Verification of Completion or Compliance:	As specified in applicable WDRs/CAO

Mitigation Measure:

The Water Board shall include requirements in the new CAO and associated WDRs to address potential chromium plume bulging due to remedial activities. These requirements shall be incorporated into the overall plume boundary monitoring and hydraulic capture requirements. These requirements will be flexible to allow for expansion and contraction of the plume (only as authorized by the Water Board) over time as the entirety of the plume is addressed and remediated. The following minimum requirements shall be incorporated into the overall plume boundary monitoring and hydraulic capture requirements:

- Monitoring of plume boundaries in areas with new remedial injections or withdrawals for the potential for bulging.
- Measures to limit chromium plume bulges during operations. This can be achieved by maintaining hydraulic control and inward gradients by pumping of extraction wells. The plume can be allowed to move toward these extraction wells but not beyond the wells.
- Until the Water Board determines otherwise, PG&E will operate and maintain the existing groundwater extraction system to achieve and maintain hydraulic capture within targeted areas on a year-round basis consistent with CAO R6V-2008-0002A3, (Lahontan Regional Water Quality Control Board 2012). The Water Board may periodically modify hydraulic capture requirements as appropriate to address remedial priorities over time.
- Agricultural treatment units and/or treated water from above-ground treatment facilities can be used to assist with inward hydraulic gradients, plume water balance, and water quality restoration of the aquifer.
- PG&E will implement the Contingency Plan for AU Operations as described in the Feasibility Study Addendum No. 3 (Pacific Gas and Electric Company 2011c).

If the Water Board determines that alternative measures are more effective at control of plume bulging, the Water Board may modify the requirements mentioned above.

WTR-MM-4: Mitigation Program for Restoring the Hinkley Aquifer Affected by Remedial Activities for Beneficial Uses

Implementation Timing:	No later than 10 years prior conclusion of remediation project
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	See monitoring requirements in applicable WDRs/CAO
Frequency of Reporting:	See reporting requirements in applicable WDRs/CAO
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs/CAO
Agency Verification of Completion or Compliance:	As specified in applicable WDRs/CAO

Mitigation Measure:

This requirement holds PG&E responsible for restoring the Hinkley aquifer back to pre-remedial reference conditions (defined as conditions prior to the initiation of remedial actions included in the project defined in this EIR).

As described in **Mitigation Measure WTR-MM-5 and WTR-MM-6**, PG&E may implement two different approaches to meet this requirement:

- aquifer restoration through direct treatment of water; and/or
- basin-wide approaches to managing agricultural treatment remedial TDS and nitrate byproducts that may avoid the need for post-chromium remediation activities to address these remedial byproducts.
- No later than 10 years prior to the conclusion of the proposed chromium remediation project, PG&E shall conduct an assessment to evaluate adverse impacts or potential adverse impacts to the Hinkley aquifer from its remedial actions.
- If the assessment finds that the aquifer contains constituents exceeding pre-remedial reference conditions and are due to remedial action, and that these constituents are likely to be present upon the conclusion of remedial actions, PG&E will propose cleanup actions to restore the aquifer for beneficial uses as soon as possible, as approved by the Water Board. Aquifer water quality restoration to pre-remedial reference conditions will occur as soon as possible after completion of chromium remediation. The recommended timeframe for restoration is within 10 years of completion of chromium remediation but the Water Board will retain authority to determine the required duration for completion.
- If the assessment finds that the aquifer includes groundwater drawdown due to remedial actions such that domestic or agricultural wells were still experiencing water supply shortages and require alternative water supplies, and these excess levels are likely to exist upon the conclusion of remedial actions, PG&E will propose actions (which could include contributing to MWA's groundwater recharge program; temporary purchase of water allocations to help accelerate water level recovery,

or other measures) to restore the aquifer for beneficial uses as soon as possible, as approved by the Water Board or Mojave Water Agency. These actions will likely require future environmental analyses as the details of the action are defined. Groundwater levels will be restored to pre-remedial reference conditions as soon as possible after the completion of chromium remediation. The recommended timeframe for restoration of groundwater levels is within 10 years of chromium remediation, but Water Board will retain authority to determine the required duration for completion.

- Every year following preparation of the assessment and approval of restoration timeframes, PG&E must submit a status report of actions to restore the aquifer for beneficial uses. The status report will describe all actions taken over the course of the year and list proposed actions for implementation during the following year. An updated schedule will be provided predicting fulfillment of aquifer restoration.

The assessment described above can include analysis of the potential for natural attenuation to return pre-remedial reference conditions within an acceptable timeframe, as determined by the Water Board. This measure is limited to addressing the effects of PG&E remedial actions that cause changes above pre-remedial reference conditions. It is possible that water quality or groundwater baseline levels may be affected by non-PG&E actions (such as other agricultural or dairy activity not controlled by PG&E) during chromium remediation. PG&E will only be responsible to remediate the effects that it causes, not those that are due to the actions of other third-parties.

- Several options exist for treatment of agricultural treatment byproducts (TDS, nitrate, uranium and other radionuclides) if necessary:
    - *Aboveground Treatment*: Treatment technologies, including reverse osmosis, electrochemical treatment (such as electrocoagulation), ion exchange and possibly other methods can be used to remove TDS, nitrate and uranium from water.
    - *In-Situ Remediation*: In-situ remediation using carbon amendment, like that proposed in the high concentration portion of the chromium plume, has been used to remediate elevated uranium levels in groundwater.
    - *Basin-Wide Approach to TDS and Nitrate*: A basin-wide approach to reducing TDS and nitrate could involve fallowing of, or changes in farming practices at other agricultural fields within the basin that are not used for agricultural unit treatment and at area dairies. Since the project will increase agricultural fields and production of animal feed, a basin-wide approach may include an option to implement a "farm swap" to allow fallowing of other local agricultural fields to reduce TDS levels in the groundwater basin. There may also be options to improve irrigation techniques by using drag-drip irrigation instead of broadcast irrigation techniques (thus lowering irrigation amounts and TDS loading), and crop rotation (which may lower water demand). There may also be options to work with local Hinkley dairies to lower TDS and nitrate inputs through better site management practices of manure and runoff. Participation by owners/operators of other agricultural land and dairies would be voluntary and would be subject to private negotiation between PG&E and willing participants. 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 of TDS and nitrate. If a basin-wide approach is proposed by PG&E, the Water Board shall require the following:

- A basin-wide approach must show a benefit to the Hinkley Valley aquifer that equals or exceeds the impairment caused by remedial activities compared to pre-remedial reference conditions. For example, the basin-wide approach must avoid or remove an equal amount of TDS as the increased TDS loading resultant from agricultural treatment units. Potential ways of measuring the benefit and impairment can be in terms of the number of impaired wells due to TDS and/or nitrate, the area of aquifer impairment due to TDS and/or nitrate, and the overall annual TDS and/or nitrate loading. The discharger may proposed the means of measuring for Water Board review and approval.
- If the basin-wide benefit above is demonstrated to be equal to or greater than the remedial impairment, then the Water Board will require maintenance of the basin-wide actions for the benefit for the Hinkley aquifer until all areas significantly impaired by TDS and/or nitrate due to remedial actions return to pre-remedial reference conditions.
- If the basin-wide benefit above is demonstrated to be equal to or greater than the remedial impairment, then the Water Board may decide to not require PG&E to specifically remediate localized TDS and/or nitrate increases due to remedial actions provided that all affected domestic and agricultural wells are provided replacement water (per **Mitigation Measure WTR-MM-2**) until pre-remedial reference conditions return.
- The implementation of a basin-wide approach is limited to the project study area for this EIR at this time. If in the future, PG&E proposes basin-wide approaches involving farms outside the project study area, the Water Board will need to comply with CEQA and may need supplemental CEQA evaluation prior to inclusion of additional actions outside the current project study area.

- Several options also exist for treatment of IRZ byproducts (manganese, iron and arsenic) if necessary:
  - As necessary, manganese mitigation may be through the methods proposed in the manganese mitigation plan, such as extraction and capture of manganese-affected groundwater, aboveground aeration, and/or infiltration galleries or other measures determined to be effective by the Water Board. These methods can also be used for mitigation of iron levels, if necessary.
  - As necessary, arsenic mitigation may be through aboveground treatment using precipitation/coprecipitation, ion-exchange units, membrane filtration, electrochemical methods (such as electrocoagulation) or other means determined to be effective by the Water Board.

WTR-MM-5: Investigate and Monitor Total Dissolved Solids, Uranium, and Other Radionuclide Levels in relation to Agricultural Treatment and Take Contingency Actions

Implementation Timing:	Prior to issuance of permits
Implementation Responsibility:	Water Board and PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	See monitoring requirements in applicable WDRs
Frequency of Reporting:	See reporting requirements in applicable WDRs
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs
Agency Verification of Completion or Compliance:	As specified in applicable WDRs

Mitigation Measure:

The Water Board will include requirements in the new CAO and/or associated WDRs issued for the remediation as follows:

- PG&E will submit an investigation plan to the Water Board concerning TDS, uranium, and other radionuclides levels in relation to existing agricultural treatment by sampling water used for agricultural treatment and in groundwater upgradient, beneath and downgradient of agricultural treatment units. PG&E will submit the investigation plan within three months of Water Board approval of WDRs allowing new agricultural treatment units.
- After approval of the investigation plan by the Water Board, PG&E will conduct the investigation and provide the results to the Water Board along with an analysis of whether agricultural treatment is affecting uranium levels. The investigation shall be completed within one year of Water Board approval of WDRs allowing new agricultural treatment units.
- PG&E will monitor all new agricultural treatment units by establishing pre-remedial reference levels for TDS, uranium, and other radionuclides levels at the outset agricultural treatment and during operation. Monitoring data will be conducted for one year prior to establishment of new agricultural treatment units wherever feasible (if not feasible without undue remediation delay, monitoring will be done concurrently with startup of agricultural treatment units).
- If TDS, uranium, and other radionuclides levels are determined to increase due to agricultural treatment associated with remedial actions, then PG&E will monitor these levels in and adjacent to all agricultural treatment units for the duration of operation and propose remedial methods for Water Board approval to restore the aquifer to pre-remedial reference conditions.
- If the monitoring of agricultural units indicates that TDS, uranium, and other radionuclide concentrations increase due to agricultural treatment associated with remedial actions then corrective actions (which could include aboveground treatment, carbon amendment, or other methods) per **Mitigation Measure WTR-MM-4** will be implemented to restore aquifer beneficial uses after remediation is complete. Alternative water supplies will be provided per **Mitigation Measure WTR-MM-2** for any significantly affected water wells until beneficial uses are restored.

WTR-MM-6: Monitor Nitrate Levels and Manage Agricultural Treatment to Avoid Significant Increases in Nitrate Levels and Provide Alternative Water Supplies As Needed

Implementation Timing:	Prior to issuance of permits
Implementation Responsibility:	Water Board and PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	See monitoring requirements in applicable WDRs
Frequency of Reporting:	See reporting requirements in applicable WDRs
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs
Agency Verification of Completion or Compliance:	As specified in applicable WDRs

Mitigation Measure:

Agricultural treatment will likely reduce nitrate levels in the groundwater aquifer overall. However, if groundwater is extracted from an area of higher nitrate concentrations and then treated in an area with much lower nitrate concentrations, it is possible that nitrate concentrations could increase in those localized areas. The Water Board will include requirements in the new CAO and/or associated WDRs issued for the remediation as follows:

- Given that prior agricultural treatment at the Desert View Dairy has been shown to reduce nitrate levels substantially, it is possible that use of irrigation water with higher nitrate levels may not result in increased nitrate levels in groundwater beneath new agricultural treatment locations. In order to confirm if this is occurring, PG&E will monitor nitrate levels for one year before creating new agricultural treatment units (as feasible without delaying remediation), monitor at the start of new agricultural treatment, and continue monitoring nitrate levels during implementation of all new agricultural treatment units. If nitrate levels do not: 1) increase above 10 ppm (as N), or 2) by more than 10% (if current levels are already above 10 ppm as N), or 3) by more than 20% compared to existing levels (if current levels are less than 10 ppm as N) then no further action, other than monitoring, will be required.
- If monitoring indicates that nitrate levels exceed 10 ppm (as N) or increasing by more than the criteria noted above, then PG&E will implement a contingency plan for managing nitrate levels which may include some combination of the following:
    - Extraction source water will be shifted from application where it would raise concentrations substantially to locations with existing higher concentrations of nitrate, provided it would not cause an exceedance of nitrate levels at any domestic well.
    - Extraction source water will be blended before application to agricultural treatment units so as to avoid exceedance of 10 ppm as N and avoid increases in existing levels that exceed the criteria noted above.
    - Above-ground treatment may be used as necessary to meet the concentration levels described above.

- If control of nitrate cannot meet these requirements, PG&E may request permission from the Water Board to allow temporary increases in nitrate conditions at certain agricultural treatment units, if and only if, the following can be demonstrated:
  - no domestic wells will contain nitrate concentrations above 10 ppm or an increase in nitrate levels exceeding the criteria above; or
  - PG&E will provide replacement water for any affected domestic well until such a time as nitrate concentrations return to existing concentrations at the affected well, and
  - PG&E will be held accountable for implementing remedial methods to restore the aquifer to pre-remedial reference conditions after remediation is complete.
- PG&E will estimate the duration of nitrate impairment of water quality due to remedial activities and will identify how long before affected groundwater nitrate levels will return to pre-remedial reference conditions. The duration of nitrate impairment due to remedial activities may possibly extend beyond the time necessary to remediate the chromium plume; the goal of remedial operation in the later stages of the cleanup should be to minimize the duration of all impacts.
- The Water Board will retain the authority to approve or deny temporary impairment of the aquifer due to nitrate contamination and will make determinations on a case by case basis taking into account information on remedial progress, the affected wells and community, the certainty of returning affected groundwater to pre-remedial reference water quality conditions over time and any other relevant considerations.

Alternatively this mitigation measure may be met through basin-wide approaches described in **Mitigation Measure WTR-MM-4**.

WTR-MM-7: Construction and Operation of Additional Extraction Wells to Control Carbon Amendment In-situ Byproduct Plumes

Implementation Timing:	Prior to issuance of permits
Implementation Responsibility:	Water Board and PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	See monitoring requirements in applicable WDRs
Frequency of Reporting:	See reporting requirements in applicable WDRs
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs
Agency Verification of Completion or Compliance:	As specified in applicable WDRs

Mitigation Measure:

Increased in-situ remediation could result in increased levels of byproducts, such as dissolved arsenic, iron, and manganese in the groundwater compared to current levels.

The Water Board will include requirements in the new CAO and/or associated WDRs issued for the remediation as follows:

- PG&E will monitor secondary byproducts in groundwater as required by **Mitigation Measure WTR-MM-2**.
- PG&E shall complete an investigation of manganese and arsenic in the area west of the defined chromium plume (as of Q4/2012) and demonstrate to the satisfaction of the Water Board that the detection of these constituents in domestic wells is not related to IRZ operations. This demonstration shall occur before the Water Board will allow further expansion of IRZ operations.
- If arsenic, iron, or manganese concentrations at designated monitoring wells increase to more than 20 percent above the maximum pre-remedial reference monitoring well concentration, 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.
    - Extraction wells may be used to intercept elevated concentrations of byproducts and prevent downgradient migration.
    - As necessary, manganese mitigation may be through the methods proposed in the current manganese mitigation plan, such as extraction and capture of manganese-affected groundwater, aboveground aeration, and/or infiltration galleries or other measures determined to be effective by the Water Board. These methods can also be used for mitigation of iron levels, if necessary.
    - As necessary, arsenic mitigation may be through aboveground treatment using precipitation/coprecipitation, ion-exchange units, membrane filtration, electrochemical methods (such as electrocoagulation) or other means determined to be effective by the Water Board.

- If control of byproduct plumes cannot be achieved without compromising the pace of cleanup such that domestic wells may be affected by byproduct plumes, then PG&E will request permission from the Water Board to allow byproduct plume migration provided the following are implemented:
    - PG&E will provide fate and transport modeling of byproduct plume migration, in absence of complete boundary control, including identification of all affected domestic and agricultural wells.
    - PG&E will demonstrate the duration of byproduct plume impairment of water quality and will identify how/when affected groundwater will return back to pre-remedial reference conditions. The duration of byproduct plume impairment may possibly extend beyond the time necessary to remediate the chromium plume. The goal of remedial operation in the later stages of the cleanup should be to minimize the duration of all impacts.
    - PG&E will provide alternative water supplies to all wells proposed to be affected, per **Mitigation Measure WTR-2**.
    - The Water Board will retain the authority to approve or deny temporary impairment of the aquifer due to byproduct generation and will make determinations on a case by case basis taking into account information on remedial progress, the affected wells and community, the certainty of returning affected groundwater to pre-remedial reference water quality over time and any other relevant considerations.

WTR-MM-8: Ensure Freshwater Injection Water Does Not Degrade Water Quality

Implementation Timing:	Prior to issuance of permits
Implementation Responsibility:	Water Board and PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	See monitoring requirements in applicable WDRs
Frequency of Reporting:	See reporting requirements in applicable WDRs
Standard for Completion or Compliance:	Mitigation incorporated into applicable WDRs
Agency Verification of Completion or Compliance:	As specified in applicable WDRs

Mitigation Measure:

The Water Board will include requirements in the new CAO and/or associated WDRs issued for the remediation as follows:

- PG&E will sample all water sources proposed for use in freshwater injection for all basic water quality parameters and will specifically monitor for chromium (total and hexavalent chromium), TDS, uranium, other radionuclides (including gross alpha), nitrate, arsenic, manganese, iron and sulfate. Data will be provided to the Water Board for review.
- Concentrations of all constituents in freshwater injected for plume control must either be 1) less than the applicable primary or secondary Maximum Contaminant Level or 2) if the concentrations of certain constituents at the injection point already exceed a Maximum Contaminant Level, then the injection water must have concentrations of the constituent equal to or less than that in the ambient groundwater at the injection point.
- PG&E will identify to the Water Board the filtration or pretreatment necessary to meet the water quality levels described above. After approval of the water source for use for freshwater injection, PG&E will sample the treated water on a semi-annual basis (twice per year) at a minimum to demonstrate that the water source is still acceptable for use for freshwater injection. If it is found that the water source is not acceptable for use for freshwater injection, freshwater may need to draw from different area where water quality levels are met.

LU-MM-1: Obtain Bureau of Land Management Permits in Compliance with California Desert Conservation Area Plan and the West Mojave Plan

Implementation Timing:	Prior to remedial activities on federal land
Implementation Responsibility:	PG&E with BLM
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	As needed prior to remedial activities on federal land
Frequency of Reporting:	Before remedial activities on federal land
Standard for Completion or Compliance:	Copies of BLM submittals, approvals, and permits
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will obtain any required approvals from BLM for any proposed remedial activities on federal land. PG&E will provide copies of BLM submittals and approvals to the Water Board to keep them informed of any proposed remedial activities on federal land.

LU-MM-2: Acquire Agricultural Conservation Easements for any Important Farmland If Water Rights Are Acquired for Remediation

Implementation Timing:	Within one year of acquiring water rights from important farmland
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	As part of annual monitoring
Frequency of Reporting:	As part of annual reporting
Standard for Completion or Compliance:	Record of agricultural conservation easement
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will either avoid acquiring water rights from existing important farmland (prime, unique, statewide importance) or will acquire and record an agricultural conservation easement over such important farmland from which it acquires water rights for remedial purposes, if there has been a net loss of such important farmland that have occurred as a result of implementation of the project. The conservation easement will prohibit all future conversion of the land to non-agricultural land for the duration that PG&E retains water rights associated with such land. The agricultural conservation easement will be recorded within one year of purchase or acquisition of any water rights associated with the subject property. The easement will be revocable upon return of the water rights to the agricultural landowner.

Alternatively, PG&E may obtain an agricultural conservation easement on other important farmland in the project area, if it chooses not to obtain an easement over important farmland for which it acquires water rights. If this option is selected, PG&E shall obtain, on a 1:1 basis, an agricultural conservation easement on designated important farmland over an acreage that corresponds to the acreage from which it acquires water rights. This easement may be revocable upon return of the water rights to the original agricultural landowner, provided that there are no intervening impediments to the potential to return the original land to agricultural use.

HAZ-MM-1: Implement Contingency Actions if Contaminated Soil is Encountered During Ground Disturbance

Implementation Timing:	During soil excavation and grading activities
Implementation Responsibility:	PG&E (with qualified Professional Engineer or Professional Geologist)
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	As needed, to be determined by PE or PG
Frequency of Reporting:	As needed, to be determined by PE or PG g
Standard for Completion or Compliance:	Annually: Annual Report As needed: A memorandum of evidence that PG&E consulted with an approved PE or PG regarding the risk of encountering contaminated soils and committing to be available for consultation during soil excavation and grading. If potentially contaminated soil is unearthed, a report with the recommended course of action will be prepared by the PE or PG and provided to the Water Board (and to San Bernardino County if remediation is required). Annually: Annual Report with memorandum of evidence
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will work with an experienced and qualified Professional Engineer or Professional Geologist, subject to approval by the Water Board, who will be available for consultation during soil excavation and grading activities.

If potentially contaminated soil is unearthed during excavation as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Professional Engineer or Professional Geologist will inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and file a written report to the project owner and to the Water Board stating the recommended course of action.

Depending on the nature and extent of contamination, the Professional Engineer or Professional Geologist will have the authority to temporarily suspend further activity at that location for the protection of workers or the public. If, in the opinion of the Professional Engineer or Professional Geologist, significant remediation may be required, the PG&E will contact the Water Board and representatives of the Hazardous Materials Division of San Bernardino County's Environmental Health Services Department for guidance and possible oversight.

HAZ-MM-2: Implement Spill Prevention, Control, and Countermeasures Plan During Construction

Implementation Timing:	Prior to and during construction activities
Implementation Responsibility:	PG&E (with San Bernardino County Fire Department)
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Before construction: Ensure SPCC Plan or equivalent completed and approved During construction: Periodically as identified in SPCC Plan or equivalent
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Annually: Annual Report Before construction: Approval of SPCC Plan or equivalent Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

To prevent accidental spills and contain spills of hazardous substances that might occur, PG&E will prepare a Spill Prevention, Control, and Countermeasure Plan (SPCC Plan) or equivalent if required by the San Bernardino County Fire Department, prior to commencement of construction activities. The SPCC plan will be in accordance with all federal and state laws that addresses procedures to (1) properly handle, use, store, and/or transport potentially flammable and/or other chemical hazardous wastes; (2) emergency response protocols to contain these substances in the event of an accidental spill or release; (3) specify worker safety training; and (4) reporting requirements in the event of an accidental spill or release. If the SPCC Plan is required, it is anticipated it will include the following features:

- Hazardous materials storage and usage will be in accordance with the requirements of the San Bernardino County Fire Code, Articles 79 and 80. A Business Contingency/Emergency Plan will be prepared in accordance with San Bernardino County Fire Department requirements for chemicals stored on-site for more than 30 days in excess of the regulatory thresholds (55 gallons, 500 pounds, or 200 standard cubic feet of gas). It is anticipated the plan will list hazardous materials handled and include procedures for emergency response, training, and inspections. Hazardous wastes will be managed in accordance with the requirements of Title 22, California Code of Regulations, Division 4.5.
- All spills and corrective actions will be recorded in the field log by the site manager.
- Any accidental spill that releases hazardous materials to soil outside the spill containment pads in amounts exceeding reportable quantities will be reported to the appropriate regulatory agency.

- Treatment plants will be constructed on a concrete foundation and provided with secondary containment to contain drips and spills and tanker offloading areas as necessary.

HAZ-MM-3: Implement Building Materials Survey and Abatement Practices

Implementation Timing:	Prior to structure demolition or modification activities
Implementation Responsibility:	PG&E (with registered environmental assessor or California-registered professional engineer)
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Prior to demolition/modification of any structure
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Prior to structure demolition/modification: Signed report or documentation by registered environmental assessor or California-registered professional engineer. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

For activities involving demolition or modification of existing or future new facilities, PG&E will retain a registered environmental assessor or a California-registered professional engineer to perform a hazardous building materials survey prior to demolition or modification activities. If any asbestos-containing materials, lead-containing materials, or hazardous components of building materials are identified, adequate abatement practices, such as containment and/or removal, will be implemented prior to demolition or renovation. Any components containing PCBs, di (2-ethylhexyl) phthalate (DEHP), or mercury will also be removed and disposed of properly.

GEO-MM-1: Land Subsidence Monitoring, Investigation, and Repair

The Final EIR identifies this as a recommended, but not required, measure. The Water Board recommends that PG&E implement this measure, but is not mandating its implementation as the source impact was identified as less than significant in the EIR. If PG&E chooses to implement this measure, the Water Board would request reporting as described below.

Implementation Timing:	Prior to and during remedial-induced groundwater drawdown
Implementation Responsibility:	PG&E (with landowner and qualified expert approved by Water Board)
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Recommended at least every three years
Frequency of Reporting:	Recommended annually: Annual Report
Standard for Completion or Compliance:	Not Applicable/Measure is voluntary
Agency Verification of Completion or Compliance:	Not Applicable/Measure is voluntary

Mitigation Measure:

It is recommended that PG&E monitor groundwater drawdown per **Mitigation Measure WTR-MM-2**. In all areas of predicted groundwater drawdown, PG&E should document existing ground surface elevations prior to remedial-induced drawdown. As drawdown occurs, PG&E should monitor surface elevations every 3 years, at a minimum, in order to document whether land subsidence may be occurring. Surveys should be done on all lands affected by groundwater drawdown of more than 10 feet wherever allowed by landowners. Initial and periodic elevation surveys should be provided to the Water Board for review.

Where changes in ground surface elevations greater than 1 foot are identified or where structural damage is identified by PG&E or reported by a landowner, PG&E should investigate site structures for subsidence-related damage. If damage is identified by PG&E and/or landowners, PG&E should retain a qualified expert approved by the Water Board to evaluate whether the damage is due to remedial-induced groundwater drawdown. If the expert determines that the damage is due to remedial-induced groundwater drawdown, then PG&E should identify proposed remedial actions to the Water Board and, once approved by the Water Board, should repair, replace, and/or reimburse for any damaged structures (e.g., buildings, garages, barns) or infrastructure (e.g., pipelines, septic systems, supply wells).

GEO-MM-2: Emergency Response Plan for Potential Remedial Pipeline or Storage Tank Rupture

Implementation Timing:	Prior to operation of remedial pipeline or storage tank
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Prior to operation of remedial pipeline or storage tank
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Prior to operation of remedial pipeline or storage tank: Completion of Emergency Response Plan, as a section in the treatment system operation & maintenance manual and/or Health and Safety Plan. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will prepare a section in the treatment system operation and maintenance (O&M) manual and/or Health and Safety Plan (HASP) that describes the specific procedures to be followed in a major seismic event, including:

- Shut-down of remedial pumping.
- Visual inspection of project pipelines and above-ground tanks to determine if any leakage has occurred.
- Spill containment and recovery procedures for any chemicals that may have spilled from project pipelines or aboveground tanks.
- Pressure test of project pipelines or above-ground storage tanks to determine integrity prior to resuming system operation.
- Communication requirements for notifying the Water Board of spills and releases will be specified in the Water Board's Waste Discharge Requirements (WDRs) for the project.

AIR-MM-1: Utilize Clean Diesel-Powered Equipment during Construction

Implementation Timing:	During construction
Implementation Responsibility:	PG&E or their contractor
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Monthly when construction equipment is operating
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	During construction: Field report confirming appropriate equipment is being used. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E or their contractor will ensure that all off-road diesel-powered equipment used during construction will be equipped with an EPA Tier 4 Final or cleaner engine, except for specialized construction equipment in which an EPA Tier 4 engine is not available. This will achieve the emission reductions compared to an average Tier 2 engine shown in Table 3.5-18 (South Coast Air Quality Management District 2010). For purposes of a conservative analysis, mitigated reductions assume the lowest of the NO_X Final (93%), reactive organic gases (42%), and particulate matter (90%) reductions applied to all off-road equipment. Note that Tier 4 standards for carbon monoxide are unchanged from Tier 2. Therefore, there will be no carbon monoxide reductions associated with Tier 4 standards herein.

Table 3.5-18. Off-Road Engine Emission Rates, Percent Reductions from Tier 2 to Tier 4 Interim and Tier 4 Final Engines

Engine Size (horsepower)	Percent Emissions Reduction Tier 2 to Tier 4 Interim and Tier 4 Final			
	NO_X (Interim)	NO_X (Final)	ROG	PM
75–99	53	94	50	95
100–174	46	94	43	93
175–299	68	94	43	90
300–600	67	93	42	90

Source: South Coast Air Quality Management District 2010.

Italic values indicate the percent reductions assumed in the mitigated analysis.

Note that the off-road engine reductions shown herein are summarized by SCAQMD, but are based on ARB and EPA standards for diesel equipment. Therefore, while the proposed project area is not within SCAQMD jurisdiction, the reductions herein are applicable to the proposed project alternatives.

AIR-MM-2: Ensure Fleet Modernization for On-Road Material Delivery and Haul Trucks during Construction

Implementation Timing:	During construction
Implementation Responsibility:	PG&E (or their contractor)
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Monthly when construction equipment is operating
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	During construction: Field report confirming appropriate equipment is being used. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E or its contractor will ensure that all on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating (GVWR) 19,500 pounds or greater, including those for all material deliveries and soil hauling, will comply with EPA 2007 on-road emission standards for PM10 and NO_X (0.01 grams per brake horsepower-hour [g/bhp-hr] and 0.20 g/bhp-hr, respectively).

The above EPA Standards measures will be met, unless one of the following circumstances exists, and the contractor is able to provide proof that any of these circumstances exists:

- A piece of specialized equipment is unavailable in a controlled form within the state of California, including through a leasing agreement. ("Controlled form" refers to an equipment piece that has emission-control technology included.)
- A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the proposed project, but the application is not yet approved, or the application has been approved, but funds are not yet available.
- A contractor has ordered a control device for a piece of equipment planned for use on the proposed project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the proposed project has the controlled equipment available for lease.

AIR-MM-3: Implement Emission-Reduction Measures during Construction

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E (or their contractor)
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Before construction: Upon completion of construction specifications During construction: Monthly when construction equipment is operating
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Before construction: Complete construction specifications. During construction: Field report confirming appropriate equipment is being used. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E or its contractor will include the following emission-reducing measures in the construction specifications to ensure implementation during construction.

- Haul and delivery truck idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to less than 3 minutes (greater than that required by the California airborne toxics control measure, 13 CCR 2485). Clear signage will be provided for construction workers at all access points.
- All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified mechanic and determined to be running in proper condition prior to operation.

AIR-MM-4: Implement Dust Control Measures during Construction and Operations

Implementation Timing:	Prior to and during construction and operation
Implementation Responsibility:	PG&E (or their contractor)
Monitoring Responsibility:	Water Board (with MDAQMD)
Frequency of Monitoring:	Before construction: Upon completion of construction specifications Before operation: Upon completion of Operations & Maintenance manual During construction: Monthly During operation: Annually
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Before construction: Approved construction specifications Before operation: Approved Operations & Maintenance manual During construction and operation: Field report confirming appropriate measures are being implemented Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E or its contractor will include the following dust control measures per MDAQMD Rule 403.2 in the construction specifications to ensure implementation during construction and in the Operations & Maintenance manual to ensure implementation during operation.

- Use periodic watering for short-term stabilization of disturbed surface area to minimize visible fugitive dust emissions. For purposes of this rule, use of a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes will be considered sufficient to maintain compliance.
- Take actions sufficient to prevent project-related trackout onto paved surfaces.
- Cover loaded haul vehicles while operating on publicly maintained paved surfaces.
- Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than 30 days, except when such a delay is attributable to precipitation that dampens the disturbed surface sufficiently to eliminate visible fugitive dust emissions.
- Cleanup project-related trackout or spills on publicly maintained paved surfaces within 24 hours.

- Reduce nonessential earth-moving activity under high wind conditions. For purposes of this rule, a reduction in earth-moving activity when visible dusting occurs from moist and dry surfaces from wind erosion will be considered sufficient to maintain compliance.

Additionally, projects disturbing more than 100 acres per day will comply with the following rules, also to be included in the construction specifications and the Operations & Maintenance manual.

- Prepare and submit to the MDAQMD, prior to commencing earth-moving activity, a dust control plan that describes all applicable dust control measures that will be implemented at the project. With respect to the proposed project, it was assumed that specific dust control measures would include limiting travel speeds to 15 miles per hour on unpaved roads, watering exposed surfaces three times daily, and applying soil stabilizers to inactive areas.
- Provide stabilized access route(s) to the project site as soon as is feasible. For purposes of this rule, as soon as is feasible will mean prior to the completion of construction/demolition activity.
- Maintain natural topography to the extent possible.
- Construct parking lots and paved roads first, where feasible.
- Construct upwind portions of project first, where feasible.

AIR-MM-5: Utilize Clean Diesel-Powered Equipment for Operation of Agricultural Treatment (Alternative 4C-4 only)

Implementation Timing:	During operations
Implementation Responsibility:	PG&E (or their contractor)
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	During operation: Annually to ensure appropriate equipment in use
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	During operation: Field report confirming appropriate equipment is being used. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E or its contractor will ensure that all off-road diesel-powered equipment used during operations of agricultural land treatment (Alternative 4C-4 only) will be equipped with an EPA Tier 4 Interim or Final or cleaner engine, except for specialized construction equipment in which an EPA Tier 4 engine is not available. This will be included in the construction specifications.

AIR-MM-6: Implement San Bernardino County GHG Construction Standards during Construction

Implementation Timing:	During construction
Implementation Responsibility:	PG&E (or their contractor)
Monitoring Responsibility:	Water Board (with San Bernardino County)
Frequency of Monitoring:	Monthly
Frequency of Reporting:	Prior to construction: submittal of compliance plan Monthly during construction Annually: Annual Report
Standard for Completion or Compliance:	Prior to construction: Submittal of agreement to condition contracts. During construction: Report or memorandum of evidence documenting that all applicable GHG performance standards have been installed and implemented properly, and that specified performance objectives are being met to the satisfaction of County Planning and County Building and Safety. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E or its contractor will submit a signed letter to San Bernardino County and the Water Board agreeing to include as a condition of all construction contracts/subcontracts requirements to reduce GHG emissions and submit documentation of results. PG&E or its contractor will do the following:

- Implement a County-approved Coating Restriction Plan.
- Select construction equipment based on low GHG emissions factors and high-energy efficiency. Where feasible, diesel-/gasoline-powered construction equipment will be replaced, with equivalent electric or compressed natural gas (CNG) equipment.
- Because it may not be feasible to use electric or CNG equipment per the County performance standard, the project will use biodiesel fuel if the following applies:
    - Biodiesel fuel becomes available within 20 miles of the project site.
    - The California Air Resources Board has certified that the locally available biodiesel results in reduction of GHG emissions.
    - Biodiesel fuel is approved by the manufacturer for use in diesel trucks or equipment used for remedial activities, including farm equipment and construction equipment.
    - The cost of biodiesel is not more than 125% above the price of regular diesel fuel, then

  - As biodiesel comes in blended amounts (B5 = 5% biodiesel; B20 = 20% biodiesel; B100 = 100% biodiesel), PG&E will use the highest biodiesel blend that is approved for use in site trucks or equipment, available, and within the price limitation noted above.

- Grading contractor will implement the following when possible:
  - Training operators to use equipment more efficiently.
  - Identifying the proper size equipment for a task can also provide fuel savings and associated reductions in GHG emissions.
  - Replacing older, less fuel-efficient equipment with newer models.
  - Using global positioning system (GPS) for grading to maximize efficiency.
- Grading plans will include the following statements:
  - "All construction equipment engines will be properly tuned and maintained in accordance with the manufacturers specifications prior to arriving on site and throughout construction duration."
  - "All construction equipment (including electric generators) will be shut off by work crews when not in use and will not idle for more than 5 minutes."
- Recycle and reuse construction and demolition waste (e.g., soil, vegetation, concrete, lumber, metal, and cardboard) per County Solid Waste procedures.
- Educate all construction workers about the required waste reduction and the availability of recycling services.

PG&E or its contractor will submit for review and obtain approval from County Planning of evidence that all applicable GHG performance standards have been installed and implemented properly, and that specified performance objectives are being met to the satisfaction of County Planning and County Building and Safety.

AIR-MM-7: Implement San Bernardino County GHG Operational Standards for Operations

Implementation Timing:	During operation of remedial activities
Implementation Responsibility:	PG&E or their contractor (with San Bernardino County Planning)
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Periodically, as determined by County Planning
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Periodically: Report or memorandum of evidence, reviewed and approved by County Planning, that all applicable GHG performance standards are being employed, and that specified performance objectives are being met to the satisfaction of County Planning and County Building & Safety. Annually: Annual Report with memorandum of evidence.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E or its contractor will implement the following as GHG mitigation during the operation of the approved project.

- Waste Stream Reduction. PG&E will provide to all employees County-approved informational materials about methods and the need to reduce the solid waste stream, with a list of available recycling services. The education and publicity materials/program will be submitted to County Planning for review and approval.
- Landscape Equipment. If landscaping is added for the above-ground treatment facilities, PG&E will require that a minimum of 20% of the landscape maintenance equipment will be electric-powered.
- Biodiesel Fuel. Because there are limited to no options to reduce vehicle emissions given the remote location of the site, PG&E will use biodiesel in operations when the following conditions apply as an alternative means to reduce GHG emissions:
    - Biodiesel fuel becomes available within 20 miles of the project site.
    - The California Air Resources Board has certified that the locally available biodiesel results in reduction of GHG emissions.
    - Biodiesel fuel is approved by the manufacturer for use in diesel trucks or equipment used for remedial activities, including farm equipment and construction equipment.
    - The cost of biodiesel is not more than 125% above the price of regular diesel fuel, then
    - As biodiesel comes in blended amounts (B5 = 5% biodiesel; B20 = 20% biodiesel; B100 = 100% biodiesel), PG&E will use the highest biodiesel blend that is approved for use in site trucks or equipment, available, and within the price limitation noted above.

PG&E will submit for review and obtain approval from the San Bernardino County Planning Department of evidence that all applicable GHG performance standards are being employed, and that specified performance objectives are being met to the satisfaction of County Planning and County Building and Safety.

AIR-MM-8: Implement San Bernardino County GHG Design Standards

Implementation Timing:	Prior to operation of aboveground treatment plants
Implementation Responsibility:	PG&E (with San Bernardino County)
Monitoring Responsibility:	Water Board (with San Bernardino County)
Frequency of Monitoring:	Prior to the operation of aboveground treatment plants
Frequency of Reporting:	Once prior to operation
Standard for Completion or Compliance:	Only applies to aboveground treatment plants, if proposed. Prior to operation: Report or memorandum of evidence that all applicable GHG performance standards have been installed and implemented properly, and that specified performance objectives are being met to the satisfaction of County Planning and County Building and Safety. If any alternative is confirmed to be more than 3,000 MTCO2e per year, report or memorandum of evidence that emissions are being reduced by required amounts (anticipated to be at least 31%).
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will submit for review and obtain approval from County Planning that the following measures have been incorporated into the design of the project, as applicable. These are intended to reduce potential project GHGs emissions. Proper installation of the approved design features and equipment will be confirmed by County Building and Safety prior to final inspection of each structure.

1. Title 24 + 5%. PG&E will document that the design of the proposed above-ground treatment structures exceed the current Title 24 energy-efficiency requirements by a minimum of 5%. County Planning will coordinate this review with County Building and Safety. Any combination of the following design features may be used to fulfill this mitigation, provided that the total increase in efficiency meets or exceeds the cumulative goal (105%+ of Title 24) for the entire project (Title 24, Part 6 of the California Code of Regulations; Energy Efficiency Standards for Residential and Non Residential Buildings, as amended October 1, 2005; Cool Roof Coatings performance standards as amended September 11, 2006):
    a. Incorporate dual paned or other energy efficient windows.
    b. Incorporate energy efficient space heating and cooling equipment.
    c. Incorporate energy efficient light fixtures, photocells, and motion detectors.
    d. Incorporate energy efficient appliances.
    e. Incorporate solar panels into the electrical system.
    f. Incorporate cool roofs/light colored roofing.

g. Incorporate other measures that will increase energy efficiency.

h. Increase insulation to reduce heat transfer and thermal bridging.

i. Limit air leakage throughout the structure and within the heating and cooling distribution system to minimize energy consumption.

2. Plumbing. All plumbing will incorporate the following:

3. All showerheads, lavatory faucets, and sink faucets will comply with the California Energy Conservation flow rate standards.

   a. Low flush toilets will be installed where applicable as specified in California State Health and Safety Code Section 17921.3.

   b. All hot water piping and storage tanks will be insulated. Energy efficient boilers will be used.

4. Lighting. Lighting design for building interiors will support the use of the following:

   a. Compact fluorescent light bulbs or equivalently efficient lighting.

   b. Natural day lighting through site orientation and the use of reflected light.

   c. Skylight/roof window systems.

   d. Light colored building materials and finishes that reflect natural and artificial light with greater efficiency and less glare.

   e. A multi-zone programmable dimming system to control lighting and maximize the energy efficiency of lighting requirements at various times of the day.

   f. Onsite solar panels that provide a minimum of 2.5% of the project's electricity needs.

5. Building Design. Building design and construction will incorporate the following elements:

   a. Orient building locations to best utilize natural cooling/heating with respect to the sun and prevailing winds/natural convection to take advantage of shade, day lighting, and natural cooling opportunities.

   b. Utilize natural, low maintenance building materials that do not require finishes and regular maintenance.

   c. Install roofing materials that have a solar reflectance index of 78 or greater.

   d. Seal and leak test all supply duct work. Use oval or round ducts for at least 75% of the supply duct work, excluding risers.

   e. Install Energy Star or equivalent appliances.

   f. Control heating, vent, and air conditioning units with a building automation system that includes outdoor temperature/humidity sensors.

6. Landscaping. If landscaping is used at the above-ground treatment facilities, PG&E will submit for review and obtain approval from County Planning landscape and irrigation plans that are designed to include drought tolerant and smog tolerant trees, shrubs, and groundcover to ensure their long-term viability and to conserve water and energy. If the above-ground treatment facilities are heated

or cooled, then the landscape plans will include shade trees around main buildings, particularly along southern and western elevations, if practical.

7. Irrigation. PG&E will limit irrigation used for agricultural treatment to the minimum necessary to support remedial action.
8. Recycling. Exterior storage areas for recyclables and green waste will be provided. Where recycling pickup is available, adequate recycling containers will be located in public areas. Construction and operation waste will be collected for reuse and recycling.

PG&E will work with County Planning and submit any required reports for evidence that all applicable GHG performance standards have been installed and implemented properly, and that specified performance objectives are being met to the satisfaction of County Planning and County Building and Safety.

If any alternative is confirmed to be more than 3,000 $MTCO_2e$ per year, then instead of the requirements above in **Mitigation Measure AIR-MM-7** and the requirements described above, PG&E will be responsible to reduce emissions by at least 31 percent. In this case, PG&E will work with County Planning and submit any required evidence that emissions will be reduced by required amounts, anticipated to be a minimum of 31 percent.

NOI-MM-1: Prepare a Noise/Vibration Control Plan and Employ Noise/Vibration-Reducing Construction Practices to Comply with County Noise Standards

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E or their contractor
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Before construction: Once, prior to the initiation of construction activities. During construction: Monthly
Frequency of Reporting:	Annually: Annual Report Prior to construction: Once prior to the initiation of construction activities
Standard for Completion or Compliance:	Before construction: Construction specifications with measures submitted to Water Board During construction: Periodic field review verifying control measures are being implemented to reduce noise and vibration to a level that is in compliance with County noise standards. Annually: Annual Report with annual summary of monitoring and reporting activities, including all field reports or a final summary report.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E or its contractor will ensure that noise/vibration-reducing construction practices are implemented so that construction noise does not exceed applicable County standards. As part of the construction specifications, the project contractor will identify feasible measures that can be employed to reduce construction noise/vibration. These may include the measures listed below.

- Scheduling substantial noise-generating/vibration activity during exempt daytime hours
- Requiring construction equipment to be equipped with factory-installed muffling devices and all equipment to be operated and maintained in good working order to minimize noise generation
- Locating noise/vibration-generating equipment as far as practical from noise-sensitive uses including avoiding vibration-generation within 25 feet of any residence, wherever feasible
- Using temporary noise/vibration-reducing enclosures around noise-generating equipment
- Placing temporary barriers between noise/vibration sources and noise-sensitive land uses or taking advantage of existing barrier features (e.g., terrain, structures, edge of trench) to block sound transmission

Per the construction specifications, control measures will be implemented to reduce noise and vibration to a level that is in compliance with County noise standards.

BIO-MM-1a: Implement Measures to Minimize, Reduce, or Mitigate Impacts on Desert Tortoise during Construction

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	Prior to construction: PG&E (with CDFW and USFWS) During construction: PG&E (with CDFW and USFWS-authorized biologist)
Monitoring Responsibility:	Field: Authorized biologist (hired by PG&E) Overall: Water Board
Frequency of Monitoring:	Daily
Frequency of Reporting:	Before construction: Survey Reports During construction: Immediate reporting of sightings/injuries/mortalities Annually: Annual Report
Standard for Completion or Compliance:	Before construction: Submittals of desert tortoise focused survey results report; desert tortoise preconstruction clearance survey result letter report; desert tortoise translocation plan report, if required, to be approved by CDFW and USFWS; documentation where desert tortoise fencing was installed, if required. During construction: Map and immediate reporting (within 24 hours) of desert tortoise sightings and any injuries/fatalities plus an annual report summary; daily biological construction monitoring by a USFWS and CDFW authorized biologist and submittal for reporting would consist of a daily monitoring log. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

The following measures shall be implemented to reduce construction impacts to the desert tortoise. These measures shall be implemented in a manner consistent with any incidental take authorization issued by CDFW and USFWS. If the requirements below exceed those required by CDFW or USFWS, they shall still be implemented unless they directly conflict with or impede the requirements of CDFW or USFWS.

- Protocol-level surveys for desert tortoise will occur prior to construction either in April through May or September through October per the most recent protocol issued by the USFWS (U.S. Fish and Wildlife Service 2010b). The surveys will be conducted in the area proposed to be disturbed by the project and 1,500 meters from the edge of the proposed disturbance area to confirm the use of that

area by desert tortoise. Any variation from this protocol would require approval by USFWS and CDFW. A report will be prepared at the end of each survey period.

- A preconstruction clearance survey will be completed for desert tortoise within each project area to ensure that all tortoise are absent, or that any tortoises that present are moved off site and out of harm's way per the most recent protocol issued by the USFWS (currently this is USFWS 2009). The protocol (USFWS 2009) states that two consecutive surveys would be conducted immediately prior to surface disturbance at each site within the project area.
- Desert tortoise found within the construction areas will be either allowed to move passively away or be physically relocated by an authorized handler to a location out of harm's way, but within their home range (defined by USFWS 2009 as less than 1,000 feet). If relocating desert tortoise, a translocation plan will need to be approved by CDFW and USFWS.
- Where possible, desert tortoise exclusion fencing will be placed along the perimeter of the proposed work areas prior to surface disturbance to prevent encounters with desert tortoise during construction activities. The specifications of the desert tortoise exclusion fencing will follow USFWS (Desert Tortoise Field Manual: Chapter 8. Desert Tortoise Exclusion Fence 2009c). Daily preconstruction sweeps within the proposed project area will be conducted before construction to ensure that desert tortoise are absent from the project area. Desert tortoise exclusion fencing will also be placed around all permanent buildings and structures where entrapment or negative interactions with tortoises could occur.
- All desert tortoise sighted within the proposed project area must be immediately reported and construction activity jeopardizing the tortoise must be halted until the approved USFWS and CDFW biologist is able to relocate the animal. If a desert tortoise is injured or killed, the authorized biologist must be notified, the injury or death documented, and the animal taken to a qualified veterinarian or the carcass removed by the biologist.
- An annual report submitted to CDFW and USFWS will document desert tortoise seen, injured, killed, excavated, and/or handled, along with all pertinent details.
- Ongoing construction monitoring will ensure that desert tortoise observed within 100 feet of construction are actively monitored for a negative qualitative response from vibration.
- Any authorized biologist needs to be approved by USFWS and CDFW, and any monitors need to be approved by CDFW.

BIO-MM-1b: Limit Footprint of Disturbance Areas within Special-Status Species Habitats

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E (with authorized biologist or environmental monitor)
Monitoring Responsibility:	Field: Authorized biologist or environmental monitor Overall: Water Board
Frequency of Monitoring:	Before construction: Documentation of project footprint review and delineated work areas During construction: Daily biological monitoring logs
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Before construction: Documentation of the biologist working with the design/construction team showing that project footprints were reduced to avoid special-status species habitat or moved to overlap previously disturbed areas; this will include original draft work areas as submitted and finalized, field verified, work areas. Other documentation shall be in the form of focused survey reports that show that work areas were delineated in the field to avoid any environmentally sensitive areas. During construction: Biological monitoring logs that show work occurred within delineated areas and environmentally sensitive areas were avoided. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

The area of disturbance will be confined to the smallest practical area, considering topography, placement of facilities, location of occupied desert tortoise, Mohave ground squirrel, and burrowing owl habitat, public health and safety, and other limiting factors, and will be located in previously disturbed areas to the extent possible. An Authorized Biologist or Environmental Monitor will assist the project foreman in locating such areas to avoid desert tortoise, Mohave ground squirrel, and burrowing owl mortality, minimize impacts to habitat, and ensure compliance with this measure and other pertinent regulatory documents. In areas where the project sponsor is unable to install exclusionary fencing, work area boundaries and access roads will be delineated with flagging or other marking to minimize surface disturbance outside of the approved work area. All disturbance limits need to be confirmed by the construction monitor. Special habitat features, such as burrows, identified by the Authorized Biologist will be avoided to the extent possible.

BIO-MM-1c: Implement Pre-Construction and Ongoing Awareness and Training Program

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E (with authorized biologist or environmental monitor)
Monitoring Responsibility:	Field: Authorized biologist or environmental monitor Overall: Water Board
Frequency of Monitoring:	Before and during construction as needed: Training log documenting new contractors on site received training (may be as frequently as daily).
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Before construction and as needed: Training log documenting that any new contractors on site received the standard Awareness and Training Program presented by a biologist and including the sign-in sheet. A hard hat sticker will be worn to verify the work has completed training. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

All employees, subcontractors, and others who work on-site will participate in a desert tortoise, Mohave ground squirrel, burrowing owl, American badger, Mojave River vole, desert kit fox, and sensitive plant species awareness program prior to initiation of construction activities. PG&E is responsible for ensuring that the awareness program is presented prior to conducting activities. Hard hat stickers to identify personnel who have attended the training and wallet-sized cards listing key best management practices are required. At a minimum, the awareness program will emphasize the following information relative to these species: (a) distribution on the job site; (b) general behavior and ecology; (c) sensitivity to human activities; (d) legal protection; (e) penalties for violating State or federal laws; (f) reporting requirements; and (g) project protective mitigation measures. The Authorized Biologist and/or Environmental Monitor will work with the project proponent to ensure that all workers have received the awareness program and understand the various components. Interpretation will be provided for non-English speaking construction workers.

BIO-MM-1d: Conduct Ongoing Biological Monitoring during Construction

Implementation Timing:	During construction
Implementation Responsibility:	PG&E (with authorized biological monitors)
Monitoring Responsibility:	Field: Authorized biological monitors Overall: Water Board
Frequency of Monitoring:	Before and during construction: Daily during ground disturbance and Weekly after clearing/grubbing
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Before and during construction: All biological construction monitoring shall be documented with the completion and submittal of a standard daily biological monitoring log. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

Biological monitors approved by CDFW will conduct daily construction monitoring of the desert tortoise exclusion fencing, as well as during clearing and grubbing (initial ground disturbance) of the work area. Biological monitors will be familiar with desert tortoise, Mohave ground squirrel, and burrowing owl, as well as nesting birds. Once clearing and grubbing is complete, a biological monitor will conduct, at minimum, weekly spot checks to document compliance with the mitigation measures presented in this EIR and elsewhere. An on-call desert tortoise handler will be available should desert tortoise be encountered during construction activities.

BIO-MM-1e: Minimize Potential Construction Hazards to Special-Status Species

Implementation Timing:	During construction
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Field: Authorized biologist or environmental monitor Overall: Water Board
Frequency of Monitoring:	During construction: Daily biological monitoring log
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	During construction: The measures below will be included as check boxes on the standard daily biological monitoring log. Completion and submittal of these logs will show whether compliance with these measures was achieved. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will ensure the following measures are implemented to minimize construction hazards to special-status species:[7]

- No hazards to special-status species, particularly desert tortoise, such as open trenches and holes, will be left overnight without fencing or covering,
- No firearms or pets will be allowed at the work area. Firearms carried by authorized security and law enforcement personnel are exempt from this term and condition.
- Dust will be controlled. If water trucks are to be used, pooling of water will be avoided so to minimize the potential to attracting common ravens or potential predators of the desert tortoise.
- Except on paved roads with posted speed limits, vehicle speeds will not exceed 10 miles per hour through desert tortoise and Mohave ground squirrel habitat during travel associated with the authorized activity.

[7] Introductory text in italics added after Final EIR.

BIO-MM-1f: Implement Measures to Minimize and Prevent Attraction of Predators during Construction and Operation

Implementation Timing:	Prior to and during construction and operation
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Field: Authorized biologist or environmental monitor Overall: Water Board
Frequency of Monitoring:	Before and during construction and operation: Daily
Frequency of Reporting:	Prior to construction: Raven Management Plan During construction and operation: Daily biological monitoring log Annually: Annual Report
Standard for Completion or Compliance:	Before construction: A Raven Management Plan, which includes the measures listed below, must be prepared and approved. During construction and operation: The daily biological monitoring log will include the measures identified in the Raven Management Plan as check boxes. Completion and submittal of these logs will show whether compliance with these measures was achieved. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will ensure the following measures are implemented to minimize and prevent attraction of predators:[8]

- Litter control measures will be implemented. Trash and food items will be contained in closed containers and removed daily to reduce the attractiveness or the area to opportunistic predators such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs.
- If water trucks are to be used, pooling of water will be avoided so to minimize the potential to attracting common ravens or other potential predators.
- Potential perches and nest substrates for the common raven will be reduced to the greatest extent practicable within permanent project facilities.
- A raven management plan will be developed by the project proponent that will include at a minimum establishing a common raven population pre-remedial reference level, with ongoing and post-construction monitoring of common raven populations, and triggers for adaptive management

[8] Introductory text in italics added after Final EIR.

actions if ravens are occurring above pre-remedial conditions and observed to be utilizing facilities and structures built as part of this project.

BIO-MM-1g: Reduction of Project-Related Spread of Invasive Plant Species

Implementation Timing:	After construction
Implementation Responsibility:	PG&E (with biologist)
Monitoring Responsibility:	Plan Review: Qualified biologist Overall: Water Board
Frequency of Monitoring:	Periodically, with each submittal of seeding, planting, and/or landscape plans
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Periodically: With each submittal of seeding, planting and/or landscape plans, a biologist will submit a memorandum of evidence that the plans were reviewed and indicate if the review was satisfactory. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

If reseeding of temporary disturbance areas or ornamental landscaping is proposed, the proposed seed palette will be reviewed by a biologist to ensure it does not contain plants that are considered invasive in California (based on the California Invasive Plant Inventory Database).

BIO-MM-1h: Compensate Impacts on Desert Tortoise and Mohave Ground Squirrel Habitat

Implementation Timing:	Mitigation amount determined prior to issuance of Section 7, 10, and or 2081 permits. Securing compensatory land to be done by timeframe established in Section 7, 10 or 2081 permits. At a minimum, required compensation shall be acquired/implemented within 3 years of corresponding habitat disturbance.
Implementation Responsibility:	PG&E (with USFWS and CDFW)
Monitoring Responsibility:	CDFW, USFWS and Water Board
Frequency of Monitoring:	Before construction: Confirm mitigation amounts and timing During construction: Keep mitigation amounts current
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Before and during construction: This mitigation can be implemented in phases corresponding to the phasing of disturbance due to remedial activities. PG&E shall provide confirmation that mitigation credits have been purchased, or that restoration, enhancement, and/or creation credits have been secured or provided no later than 36 months after corresponding habitat disturbance. Confirmation from CDFW and/or USFWS that the compensatory requirements for the current phase of remediation have been satisfied should be provided to the Water Board. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

Compensatory mitigation for the loss of desert tortoise and Mohave ground squirrel habitat will be determined through consultation with CDFW and USFWS. The minimum compensation ratios for moderate to high quality habitat suitable to desert tortoise and Mohave ground squirrel are 3:1 for permanent impacts and 1:1 for temporary impacts (although no temporary impacts have been identified). For impacts to low quality desert tortoise and Mohave ground squirrel habitat, the minimum compensation ratio is 1:1 for permanent impacts. The minimum compensation ratio for impacts within a Desert Wildlife Management Area (DWMA) is 5:1 for permanent impacts. Final mitigation ratios will be determined during consultation with the appropriate resource agency, in accordance with the requirements of a Section 7 or Section 10 permit and/or a Section 2081 permit. Mitigation may include purchase, restoration, enhancement, and/or creation of desert tortoise and Mohave ground squirrel habitat.

Lands provided as mitigation for desert tortoise and Mohave ground squirrel may also be used to provide mitigation for any loss of burrowing owl habitat, if the land in question includes suitable habitat for the burrowing owl.

BIO-MM-1i: Integrated Pest Management and Adaptive Management Plan for Agricultural Treatment Units

Implementation Timing:	Prior to operation of agricultural units (AU)
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Field: PG&E Overall: Water Board
Frequency of Monitoring:	To be determined in the IPM/AM Plan
Frequency of Reporting:	Before new AU construction (IPM/AM Plan) Annually: Annual Report
Standard for Completion or Compliance:	Before new AU construction: Completion, approval, and implementation of an Integrated Pest Management and Adaptive Management Plan (IPM/AU Plan). A checklist or standard form should be made of the implementable elements of the IPM/AU Plan so that compliance monitoring can be completed. Updates of the IPM/AU Plan need to be made for new AUs as appropriate (if conditions or contingencies differ from AU to AU). Annually: Annual Report with copy or verification of IPM/AU Plan
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

An agricultural unit integrated pest management (IPM) plan will be developed and implemented for all new (and existing) agricultural units, and will be compliant with the California Statewide IPM year-round program for alfalfa and any other crops that may be proposed for use. The plan will explicitly detail an integrated pest management plan to ensure that risks of any proposed use of herbicides, pesticides, or rodenticides will pose a negligible risk to wildlife species. Herbicides, pesticides, or rodenticides will only be used at new agricultural units if specifically authorized by USFWS and CDFW in the take permits for the desert tortoise and the Mohave ground squirrel. The adaptive management plan will detail the predicted harvest of the agricultural crops and how harvest will be conducted in such a manner to reduce potential impacts to nesting birds. The adaptive management plan will provide other population monitoring guidelines for predatory species such as brown-headed cowbird, with management actions that will be required if fields are found to be supporting these species. The adaptive management plan will also outline irrigation control to avoid pooled water.

BIO-MM-1j: Reduction of Night Light Spillover

Implementation Timing:	Prior to design of any night lighting for the operation of remedial activities.
Implementation Responsibility:	PG&E (with qualified biologist)
Monitoring Responsibility:	Field: Qualified biologist Overall: Water Board
Frequency of Monitoring:	Prior to operation: A plan check that shows the amount of night lighting spillover (Lighting Plan)
Frequency of Reporting:	Prior to operation: Lighting Plan Annually: Annual Report
Standard for Completion or Compliance:	Prior to operation: For remedial activities with exterior lighting, a biologist will confirm that the light plans have been inspected and that night lighting spillover has been minimized and is not expected to result in indirect impacts to special-status species. This can be a memorandum of evidence prepared by the biologist. Annually: Annual Report with memorandum of evidence
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

Exterior light fixtures and standards will be designed to be fully shielded, directing light downward below the horizontal plane of the fixture height. A detailed lighting plan will be inspected by a biologist to ensure that the expected light spillover has no potential to impact special-status species.

BIO-MM-1k: Implement Other Measures to Minimize, Reduce, or Mitigate Impacts on Mohave Ground Squirrel

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E (with authorized biologist)
Monitoring Responsibility:	Field: Authorized biologist Overall: Water Board
Frequency of Monitoring:	As needed
Frequency of Reporting:	Before construction: Survey Reports During construction: Documentation of Occurrences Annually: Annual Report
Standard for Completion or Compliance:	Before construction: Submittal of Survey Report with Mohave ground squirrel focused survey results. If greater than 180 acres is to be disturbed, documentation of special survey protocols agreed upon by the agencies is required. During construction: Document occurrences with map/report (within 24 hours) of Mohave ground squirrel sightings and any injuries/fatalities, plus an annual report summary. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will ensure the following measures are implemented to minimize, reduce and mitigate impacts on Mohave ground squirrel:[9]

- A Mohave ground squirrel focused protocol survey will be completed prior to construction in the project study area where construction is proposed following protocol established by CDFW (2003). For habitat loss of greater than 180 acres, the Department requires special survey protocol(s) to be developed through its consultation with either the project proponent or the local lead agency (if appropriate) or both entities.
- If any Mohave ground squirrels are uncovered by excavation during construction, work must stop in the immediate area and the project biologist will be immediately notified.
- If any Mohave ground squirrels are injured or killed during the course of construction, work must stop in the immediate area and the project biologist will be immediately notified. Only the authorized biologist will handle, and transport injured animal to a qualified veterinarian.

[9] Introductory text in italics added after Final EIR.

BIO-MM-1l: Implement Other Measures to Minimize, Reduce, or Mitigate Impacts on Burrowing Owl

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E (with qualified biologist for preconstruction survey and with CDFW for avian protection plan)
Monitoring Responsibility:	Field: Qualified biologist Overall: Water Board
Frequency of Monitoring:	Daily and periodic depending on activity
Frequency of Reporting:	Before construction: Survey Reports, Avian Protection Plan During construction: Daily monitoring logs Annually: Annual Report
Standard for Completion or Compliance:	Before construction: Submittal of Survey Reports with burrowing owl focused survey results report. If burrowing owls are present, an Avian Protection Plan will be developed in consultation with CDFW to address burrowing owl avoidance, minimization, and relocation measures as needed. During construction: Daily biological monitoring logs will be used to document the establishment of minimum construction buffers around occupied burrows. Annually: Annual Report with annual summary of monitoring and reporting activities.

Mitigation Measure:

PG&E will ensure the following measures are implemented to minimize, reduce and mitigate impacts on burrowing owl:[10]

- To confirm the current existing condition for burrowing owls in the project study area, a focused nesting season survey for burrowing owl will be completed for all potential disturbance limits and a minimum 400 feet buffer area, where accessible, prior to construction. This focused survey will utilize the most recent CDFW protocol (including any variations in that protocol that may be approved by CDFW for the survey).
- A preconstruction survey for burrowing owls will occur no greater than 14 days and a second preconstruction survey will occur 24 hours prior to commencing ground disturbing or construction activities. The limits of this preconstruction survey will include the disturbance area and a 400-foot buffer.
- Avoid disturbing occupied burrows during the nesting period, from February 1 through August 31 unless it is verified that the birds have not begun egg-laying. Work may only commence when it is

[10] Introductory text in italics added after Final EIR.

determined that juvenile owls from those burrows are foraging independently and capable of independent survival.

- Avoid impacting burrows occupied during the non-breeding season (September 1–January 31) by migratory or non-migratory resident burrowing owls.
- An avian protection plan will be developed in consultation with CDFW to address burrowing owls or signs of burrowing owls should they be found on site during the focused nesting or preconstruction surveys. Unless otherwise approved by CDFW, the minimum no construction buffers will be 160 feet for occupied burrows during the non-breeding season of September 1 through January 31 and 250 feet during the breeding season of February 1 through August 31.
- If burrowing owls and their habitat can be protected in place on or adjacent to a project area, the use of buffer zones, visual screens (such as hay bales) or other feasible measures while project activities are occurring will be used to minimize disturbance impacts. These will be outlined in the avian protection plan.
- On-site passive relocation will be avoided to the greatest extent practicable, and only implemented if avoidance cannot be met. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows. A passive relocation plan will be detailed in the avian protection plan.
- Compensation provided for desert tortoise and Mohave ground squirrel will also provide habitat for burrowing owls should there be an unavoidable impact to this species.

BIO-MM-1m: Minimize Impacts on American Badger and Desert Kit Fox Occupied Dens

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Field (qualified biologist) Overall (Water Board)
Frequency of Monitoring:	Daily biological monitoring logs
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Before and during construction: Submittal of preconstruction reports will document the presence of badger and/or kit fox burrows for avoidance. Avoidance of burrows would be documented in the daily biological monitoring logs. If a burrow requires removal, coordination and agreements with CDFW will be documented. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

If there is evidence that a burrow may be occupied by a badger or a kit fox during preconstruction surveys (see **Mitigation Measure BIO-MM-1a**), all construction activities will cease within a 100-foot buffer of the burrow during the natal season (February–July) unless otherwise authorized by CDFW. Removal of an occupied American badger or desert kit fox burrow at any time of the year will require coordination with CDFW.

BIO-MM-1n: Avoid Impacts on Nesting Loggerhead Shrike, Northern Harrier, and Other Migratory Birds (including Raptors and excluding Burrowing Owls)

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E (with qualified biologist)
Monitoring Responsibility:	Field: Qualified biologist Overall: Water Board
Frequency of Monitoring:	As needed during nesting season (February 1–August 31), but as often as daily
Frequency of Reporting:	Before construction: Survey Report During construction: Daily biological monitoring log Annually: Annual Report
Standard for Completion or Compliance:	Before construction: Submittals of nesting bird preconstruction survey results letter report to document nests. Monitoring will occur when construction occurs near nests. Appropriate flagging and avoidance of nests would be documented with biological construction daily monitoring logs. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

Pursuant to the federal Migratory Bird Treaty Act and CDFW code, impacts to bird nests will be avoided. To avoid any impacts on migratory birds, resulting from construction activities that may occur during the nesting season, February 1 through August 31, the following measure will be implemented:

- A qualified biologist will conduct a preconstruction survey of the proposed construction site and 250 foot buffer area around the site. This preconstruction survey will commence no more than 7 days prior to the onset of construction, such as clearing and grubbing and initial ground disturbance.
- If a nest is observed, an appropriate buffer will be established. For nesting passerine birds the minimum buffer will be 50-feet. For nesting raptors, the minimum buffer will be 250 feet. These minimum buffers could be reduced with approval by CDFW based on the field conditions and disturbance tolerance of each species.
- All no-construction activity buffer areas will be clearly demarcated in the field with stakes and flagging that are visibility to construction personnel.

BIO-MM-1o: Implement Measures Required to Minimize, Reduce, or Mitigate Impacts on Special-Status Plants

Implementation Timing:	Prior to and during to construction
Implementation Responsibility:	PG&E (with qualified biologist), USFWS and CDFW (if listed plants)
Monitoring Responsibility:	Field: Qualified biologist Overall: Water Board
Frequency of Monitoring:	As needed in blooming season (March-July) in allscale and creosote scrub habitats, desert dune habitat, and the Mojave River wash habitat, but as frequently as daily.
Frequency of Reporting:	Before construction: Survey Reports During construction: Daily biological monitoring logs, Mitigation Plan (as needed) Annually: Annual Report
Standard for Completion or Compliance:	Before and during construction: Submittals of special-status plant survey results report to document any locations. Monitoring will occur when construction occurs near identified plant locations. Appropriate flagging and avoidance of special-status plant would be documented with biological construction daily monitoring logs. If any listed plants cannot be avoided, consultation with the agencies will occur. If non-listed CRPR rank 1A, 1B, or 2 plant species cannot be avoided, a brief analysis will be completed and submitted to determine if any additional mitigation is warranted based on the overall status of the plant in the region. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will ensure the following measures are implemented to minimize, reduce and mitigate impacts on special status plants:[11]

- To confirm the presence/absence and quantify of special-status plant species populations (such as Lane Mountain milk-vetch, Mojave monkeyflower, Clokey's cryptantha, desert cymopterus, Barstow woolly sunflower, Mojave menodora, creamy blazing star, beaver dam breadroot, and Parish's phacelia) in specific areas where remedy facilities may be constructed, a special-status plant survey will be completed prior to construction in the limits of disturbance and a 100-foot buffer that are proposed in allscale and creosote scrub habitats, desert dune habitat, and the Mojave River wash habitat. The focused survey for these species should be conducted by a qualified biologist during the

appropriate blooming period (approximately March–July), or when the plant is readily identifiable, prior to the initiation of construction.

- If any listed plant species are observed during focused surveys of the work areas, the extent of the population will be clearly demarcated in the field by protective fencing, lath stakes, and/or flagging, as appropriate, for avoidance and the regulatory agencies will be notified. If project related impacts to a listed plant species will occur, initiation of consultation with CDFW and or USFWS will be required. Avoidance of listed species is the first priority; disturbance shall only be approved if the Water Board, CDFW and/or USFWS all determine that complete avoidance is infeasible.
- If any plant species that are not listed under CESA or ESA but are identified as special-status species ("non-listed plant species") are observed during focused surveys of the work areas, the extent of the population will be clearly demarcated in the field by protective fencing, lath stakes, and/or flagging, as appropriate, for avoidance. Avoidance will occur to the maximum extent feasible. If impacts are proposed to non-listed CRPR rank 1A, 1B, or 2 plant species, a brief analysis will be completed to determine the appropriate mitigation. Additional measures as a result of this analysis may be required, such as seeding, transplanting, collection of seeds to be used for the future conservation of the species, and/or compensatory mitigation habitat. Avoidance of non-listed, but rare species is the first priority; disturbance shall only be approved if the Water Board and CDFW both determine that complete avoidance is infeasible.
- A biological monitor who has observed the location of the listed and non-listed plant species to be avoided will conduct a tailgate session, informing the work crew of the appearance and location of the plant species prior to initiation of work activities.

[11] Introductory text in italics added after Final EIR.

BIO-MM-1p: If Remedial Actions Affect Mojave Fringe-toed Lizard Habitat, than Compensate for Habitat Losses

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E (with qualified biologist)
Monitoring Responsibility:	Field: Qualified biologist Overall: Water Board
Frequency of Monitoring:	As needed prior to construction activities
Frequency of Reporting:	Before and during construction: Habitat/Impact Assessment, Mitigation Plan (if needed) Annually: Annual Report
Standard for Completion or Compliance:	Before and during construction: An analysis of whether final work areas overlap Mojave fringe-toed lizard habitat (wind-blown sand areas) will be completed and submitted by a biologist. If unavoidable impacts are to occur, quantification of impacts will be required and CDFW must be consulted. Documentation of the satisfaction of this measure from CDFW will be required. Compensation (Mitigation Plan) must be provided within no more than 3 years of habitat disturbance. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will ensure the following measures are implemented to mitigate impacts on Mojave fringe-toed lizard habitat:[12]

- Compensatory mitigation for the loss of Mojave fringe-toed lizard habitat will be determined through consultation with CDFW. The minimum compensation ratio for Mojave fringe-toed lizard habitat will be 3:1.

[12] Introductory text in italics added after Final EIR

BIO-MM-2: Habitat Compensation for Loss of Sensitive Natural Communities

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E (with qualified biologist), CDFW and USFWS (if listed species issues)
Monitoring Responsibility:	Field: Qualified biologist Overall: Water Board
Frequency of Monitoring:	As needed prior to construction activities
Frequency of Reporting:	Before construction: Habitat/Impact Assessment, Mitigation Plan (if needed) Annually: Annual Report
Standard for Completion or Compliance:	Before and during construction: PG&E's biologist shall complete an analysis of whether final work areas overlap California joint fir scrub, desert dune habitat and dune land soils that will be submitted to CDFW and the Water Board. If unavoidable impacts are to occur, PG&E's biologist shall provide a quantification of impacts and a proposal for compensatory mitigation (Mitigation Plan) to CDFW and the Water Board. Documentation of the satisfaction of this measure from CDFW will be required. Annually: Annual Report, with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will ensure the following measures are implemented to mitigate impacts on sensitive natural communities:[13]

Avoidance of California joint fir scrub, desert dune habitat and dune land soils is the first priority; encroachment shall only occur if the Lahontan Water Board, USFWS, and CDFW all concur that complete avoidance is infeasible. If new remediation activities result in the permanent removal and loss of sensitive natural communities such as the California joint fir scrub and desert dunes habitat and dune land soils, a compensatory mitigation program or plan will be developed and implemented through consultation with the USFWS, CDFW, and the Lahontan Water Board. Compensatory mitigation may include a fee-based program and/or direct habitat replacement on a minimum 1:1 basis and in accordance with those agencies' recommendations.

Lands provided as mitigation for desert tortoise, Mohave ground squirrel, Mojave fringe-toed lizard, and burrowing owls may also be used to provide mitigation for any loss of sensitive nature community habitat, if the land in question includes sensitive natural communities.

[13] Introductory text in italics added after Final EIR

BIO-MM-3: Measures Required to Minimize, Reduce, or Mitigate Impacts on Waters and/or Wetlands under the Jurisdiction of the State

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E (with qualified biologist)
Monitoring Responsibility:	Field: Qualified biologist Overall: Water Board
Frequency of Monitoring:	As needed prior to construction activities.
Frequency of Reporting:	Before construction: Wetland/Water Impact Identification, Relevant permits (as needed), Harper Lake playa mitigation plan (as needed) Annually: Annual Report
Standard for Completion or Compliance:	Before construction: An analysis of whether final work areas overlap jurisdiction of the U.S. Army Corps of Engineers (USACE), Lahontan Water Board, and/or CDFW (including the Harper Lake playa) must be completed and submitted by a biologist/regulatory specialist. If unavoidable impacts are to occur, appropriate permits from USACE, Lahontan Water Board, and/or CDFW must be received prior to construction in these areas. Annually: Annual Report with annual summary of monitoring and reporting activities.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will ensure the following measures are implemented to minimize, reduce and mitigate impacts on waters or wetlands under the jurisdiction of the state:[14]

- Construction activity and access roads will be avoided in all drainages, streams, dry lake beds, pools, or other features that could be under the jurisdiction of the U.S. Army Corps of Engineers (USACE), Lahontan Water Board, and/or CDFW, if feasible. If impacts to these features are identified, a formal jurisdictional delineation for submittal to the agencies may be required.
- If impacts to USACE, RWQCB, and/or CDFW jurisdiction waters or wetlands are identified, the project applicant will comply with the permitting requirements imposed by USACE, Lahontan Water Board, and/or CDFW, as appropriate.
- Remedial actions shall avoid encroachment on the Harper Lake playa itself to the maximum extent feasible. If encroachment is necessary on the playa, PG&E shall demonstrate the rationale why encroachment is unavoidable to the Water Board and CDFW. If the Water Board and CDFW determine that the encroachment is necessary, PG&E shall mitigate for all temporary or permanent

[14] Introductory text in italics added after Final EIR

disturbance on a minimum 3:1 ratio (3 acres mitigation to 1 acre impact). Plans for mitigation must be approved by RWQCB and CDFW.

BIO-MM-4: Implement West Mojave Plan Measures to Impacts on DWMAs on BLM Land

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E (with biologist), BLM
Monitoring Responsibility:	Field: BLM Overall: Water Board
Frequency of Monitoring:	As needed prior to construction activities in DWMAs on BLM Land
Frequency of Reporting:	Before construction in BLM areas: BLM concurrence with DWMA measures Within 3 years of initial disturbance in BLM areas: Compensatory mitigation Annually: Annual Report
Standard for Completion or Compliance:	Before construction in BLM areas: Record of coordination and agreement with BLM for work in DWMAs to satisfy the measures below to Water Board including submittals of desert tortoise, burrowing owl, and plant focused and preconstruction survey results reports to BLM. Within 3 years of initial disturbance: Documentation of satisfaction of the compensatory requirements for DWMAs on BLM Land. Anytime: Map and immediate reporting (within 24 hours) of desert tortoise sightings and any injuries/fatalities plus any non-compliance issues to BLM. Annually: Annual Report, with daily monitoring logs and any records of coordination/agreement with BLM and with any mapped sightings
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

Pertinent measures contained within the Final Environmental Impact Report and Statement for the West Mojave Plan (BLM 2005) will be implemented to minimize potential impacts to special-status species within conservation areas located on federal land, if and where project activities would infringe on their suitable habitat. Consultation with BLM will be required prior to implementation of any activities. According to the FEIR for the West Mojave Plan, these activities will generally include the following (the detailed list of mitigation measures can be found in the FEIR for the West Mojave Plan):

- Avoid construction activities (particularly linear projects through Tortoise Survey Areas) when tortoises are most likely to be active, which generally occurs between February 15 and November 15.
- Conduct pre-construction surveys (according to approved BLM guidelines [2005] and USFWS' Guidelines for Handling Desert Tortoises [USFWS 2009]) for presence or absence of species and

monitor and report any violations of protective stipulations. Only authorized biologists may conduct surveys and handling of any live individuals.

- Authorize biologists and environmental monitors will monitor and report any violations of protective stipulations, record and report any instances where tortoises or other covered species were encountered, upon completion of construction activities report on the effectiveness and practicality of mitigation measures (including information on collected, killed or injured individuals) and the acres of habitat that were removed or disturbed.
- Pay compensatory fee. Within the Habitat Conservation Areas on BLM land, the compensatory fee will be based on a ratio of 5:1 (five times the average value of an acre of land within the habitat conservation area).
- Conduct burrowing owl survey. For burrowing owl habitat within the DWMAs, a burrowing owl survey utilizing the four-visit CDFW protocol will be conducted. The applicant will provide to all construction personnel an informational brochure with an illustration of a burrowing owl, a description of its burrows and how they can be recognized, and a summary of the bird's life history. If at any time prior to grading the applicant becomes aware of burrowing owls on the site, he will be instructed to call a number where a biologist can respond quickly by instituting the minimization measures.
- Conduct botanical surveys. For Desert cymopterus, if disturbance within suitable habitat located within the Superior Cronese DWMA is proposed, the Applicant will be required to perform botanical surveys for this species, and if the plant is located, to avoid all occurrences to the maximum extent practicable. Incidental take will be limited to 50 acres.

CUL-MM-1: Determine Presence of Historic Resources as Defined by CEQA

Implementation Timing:	Prior to construction
Implementation Responsibility:	PG&E (with qualified architectural historian)
Monitoring Responsibility:	Field: Qualified Architectural Historian Overall: Water Board
Frequency of Monitoring:	After construction activities are designed: Historical Resource Survey
Frequency of Reporting:	After construction activities are designed: Historical Resource Survey Annually: Annual Report
Standard for Completion or Compliance:	Before construction: Historic Resources Survey report(s) and memorandum of evidence that the Water Board (and BLM for federal lands) accepts the findings of the report. Historic resources surveys should be prepared according to National Register Bulletin 24, *Guidelines for Local Surveys: A Basis for Preservation Planning* and the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation*. Directions for completing DPR 523 forms are found in Instructions for Recording Historical Resources. Annually: Annual Report
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

Prior to construction and potential future construction activities, PG&E will retain a qualified architectural historian to conduct surveys in areas where construction will occur to determine if historical resources, as definite in State CEQA Guidelines Section 15064.5, exist within the project area. The survey will be conducted and written according to standards set forth in the Historic Structures Report Format from the Office of Historic Preservation (Office of Historic Preservation 2003). The survey will be provided to the Water Board (and to the BLM for federal lands if required by BLM) for review prior to construction.

The qualified architectural historian also will evaluate the resources identified during the Architectural Resources Survey and will consult with the Water Board to determine if they are eligible for the CRHR or otherwise meet the definition of a historical resource under CEQA. If it meets the definition, the architectural historian will determine if the construction or operation of the proposed remediation activities would affect the qualities of the resource that contribute to the eligibility for listing on the CRHR, and will evaluate if the potential change(s) to the resource is considered significant. The evaluation will be documented in a report will be written according to standards set forth in the Historic Structures Report Format from the Office of Historic Preservation (Office of Historic Preservation 2003). The report will be provided to the Water Board for review prior to construction.

CUL-MM-2: Avoid Damage to Historic Resources Located in Project Areas through Project Modification

Implementation Timing:	Prior to construction
Implementation Responsibility:	PG&E (with qualified architectural historian)
Monitoring Responsibility:	Water Board, BLM (if federal lands)
Frequency of Monitoring:	Prior to construction
Frequency of Reporting:	Prior to construction Annually: Annual Report
Standard for Completion or Compliance:	After remediation activities are designed, reviewed, and/or modified: Letter Report(s) by qualified architectural historian will summarize potential damage proposed by the PG&E-designed remediation elements (including construction and staging) and include any suggestions for project modifications. If there are project modifications, a follow-up Letter Report will be prepared to summarize the effectiveness of the design changes. All Letter Reports will be submitted to the Water Board (and to the BLM for federal lands if required by BLM) for review and concurrence. Annually: Annual Report, with Letter Reports
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

If the PG&E-designed remediation elements (including construction and staging) are likely to significantly impact qualities of a historical resource as identified by a professionally qualified architectural historian (per **Mitigation Measure CUL-MM-1**), PG&E will consult with a qualified architectural historian to redesign, reroute, or relocate the proposed elements in such a way that will not result in significant impacts to the resource. Barrier fencing or another visual cue may be installed around identified resources as required to protect against inadvertent damage during construction. PG&E will document the avoidance measures prior to construction and submit the report to the Water Board (and to the BLM for federal lands if required by BLM) to demonstrate compliance.

CUL-MM-3: Record Historic Resources

Implementation Timing:	Prior to construction
Implementation Responsibility:	PG&E (with qualified architectural historian)
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	If historic resources are identified, prior to construction
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	If historic resources are identified, preparation of documentation to the Historic American Building Survey (HABS)/Historic American Engineering Record (HAER) standards. Documentation will be submitted to the Water Board (and to the BLM for federal lands if required by BLM) for review and then to the National Park Service HABS/HAER historian for review and acceptance into the nationwide recordation program. In accordance with National Park Service standards, archival final submissions will be sent to the National Park Service HABS/HAER historian for final acceptance and sent to the Library of Congress HABS Collection for inclusion. Two copies of the document, including archival prints, will be submitted to regional historical repositories for inclusion in their research collection. If preservation or reuse measures are identified in Documentation a Preservation Plan shall be prepared. If preservation or reuse are pursued, PG&E will consult with a qualified architectural historian to write a Preservation Plan for submittal to the Water Board (and to the BLM for federal lands if required by BLM) for review and acceptance. If interpretive or educational measures are identified in Documentation: Mitigation Report. If interpretive and educational mitigation measures are pursued, then a Mitigation Report will be written and submitted to the Water Board (and to the BLM for federal lands if required by BLM) for review and acceptance. Annually: Annual Report, with all relevant documentation
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

If historical resources are identified and cannot be avoided through **Mitigation Measure CUL-MM-2**, PG&E will retain a professionally qualified architectural historian to conduct research and to adequately record the resources to Historic American Building Survey (HABS)/Historic American Engineering Record (HAER) standards. Adequate recordation of a built environment resource will include:

- Development of site-specific history and appropriate contextual information regarding the particular resource, in addition to archival research and comparative studies;

- Accurate mapping of the noted resources, scaled to indicated size and proportion of the structures;
- Architectural descriptions of the structures;
- Photo documentation of designated resources; and
- Recordation utilizing measured architectural drawings.

Mitigation of a built environment resource may also take place in the form of preservation or reuse of a building or structure. The preservation and/or reuse of an eligible structure will include abiding by the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.

If the architectural historic resource is eligible for the CRHR under Criteria 1 (association with important events in history), 2 (association with important people in history), 3 (an important example of historic architecture), or 4 (has yielded or may be likely to yield information important in prehistory or history), PG&E will attempt to physically retain the building or structure. If the building or structure cannot physically be retained, then PG&E, in coordination with a qualified architectural historian, will pursue measures to retain and make easily available the historic memory of the resource. To this end, educational resources such as web media, static displays, interpretive signs, use of on-site volunteer docents, or informational brochures can supplement HABS/HAER. PG&E will submit a mitigation report to the Water Board upon complete implementation of the approved mitigation measures to document compliance.

CUL-MM-4: Conduct an Archaeological Resource Survey to Determine if Historical Resources under CEQA or Unique Archaeological Resources under PRC 21083.2 are Present in Proposed Areas of Disturbance

Implementation Timing:	Prior to construction
Implementation Responsibility:	PG&E, qualified archaeologist
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Prior to construction: Once in each area to be disturbed
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Prior to construction: Archaeological Survey Report (ASR) and record of Water Board's acceptance of the ASR findings Annually: Annual Report, with ASR and record of acceptance
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

Prior to the start of construction or future construction activities, PG&E will retain qualified archaeologists to conduct a pedestrian archaeological survey to determine the prehistoric, ethnographic, and historic archaeological resources within areas proposed for disturbance within the project area. The survey and report will be conducted and written according to standards set forth by the Office of Historic Preservation (Office of Historic Preservation 2003). The report will be provided to the Water Board for review prior to construction.

If prehistoric, ethnographic, and/or historic archaeological resources are identified within the proposed disturbance areas within the project area, then the evaluation and treatment of such resources will be conducted according to the measures set forth in **Mitigation Measures CUL-MM-5, CUL-MM-6, and CUL-MM-7**.

CUL-MM-5: Avoid Damaging Archaeological Resources through Redesign of Specific Project Elements or Project Modification

Implementation Timing:	Prior to construction
Implementation Responsibility:	PG&E, qualified archaeologist
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Once for each remedial activity
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Once for each remedial activity: Documentation by qualified archaeologist identifying the resource anticipated to be disturbed and any avoidance and/or protection measures Annually: Annual Report, with any documentation
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

If the PG&E-designed remediation elements (including construction and staging) disturb prehistoric, ethnographic, or historic-era archaeological resources as identified by the qualified archaeologist (per **Mitigation Measure CUL-MM-4**), PG&E will consult with a professionally qualified archaeologist to determine if the proposed remediation activities would affect the qualities of the archaeological historical resource that contribute to the eligibility for listing in the CRHR. If the proposed activities are likely to significantly impact those qualities, PG&E will consult with a professionally qualified archaeologist to redesign, reroute or relocate the proposed element in such a way that will not result in significant impacts to the resource, because preservation in place is the preferred manner of mitigating impacts to archaeological sites under CEQA. Barrier fencing or another visual cue will be installed around identified resources to protect against inadvertent damage during construction if the resources cannot be seen from at least 5 feet away or heavy machinery will be used within 15 feet of the resources. PG&E will document the avoidance measures prior to construction and submit the report to the Water Board (and to the BLM for federal land) to demonstrate compliance.

CUL-MM-6: Evaluate Archaeological Resources and, if Necessary, Develop and Implement a Recovery Plan

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E, qualified archaeologist
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Once for each remedial activity
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Once for each remedial activity: Archaeological Evaluation and Data Recovery Report Annually: Annual Report, with any documentation
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

If archaeological resources cannot be avoided (per **Mitigation Measure CUL-MM-5**), PG&E will retain a professionally qualified archaeologist to evaluate the resource for its eligibility on the NRHP and CRHR. Evaluation of an archaeological resource will likely consist of historical research and/or physical excavations of the site to determine site content and integrity. Evaluations will be documented in a report written according to standards set forth by the Office of Historic Preservation (Office of Historic Preservation 2003). PG&E will submit this document to the Water Board for concurrence on eligibility determinations.

If the resource is determined to be a historical resource, a data recovery plan (California Code of Regulations, Title 14, Section 15126.4(b)(3)(C)), will be developed and implemented. The data recovery plan will include background research, physical excavation, lab analysis, and a report summarizing results. This mitigation measure will minimize loss of information by procuring, processing, and analyzing a suitable sample of materials from the affected portions of the sites. It will also address the impacts of damage to the sites hindering or eliminating the resources' potential to yield information about the prehistory and history of the Hinkley area. PG&E is responsible for implementing the physical excavation portion of the data recovery program prior to construction.

In some cases, data recovery excavation might not provide an adequate mitigation measure to reduce impacts to a less than significant level and might not be an appropriate mitigation measure for some resources, particularly when the archaeological historic resource is eligible for the CRHR under Criteria 1 (association with important events in history), 2 (association with important people in history), or 3 (embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values). Mitigation will capture the history of a resource and share it with the public so that the public can continue to feel a connection with common heritage. If the archaeological site cannot physically be retained, then PG&E, in coordination with a qualified archaeologist, will pursue ways that the memory of the resource is retained and made easily available. To this end, educational resources such as web media, static

displays, interpretive signs, use of on-site volunteer docents, or informational brochures can supplement data recovery excavations.

If the archaeological resource qualifies as a unique archaeological site but does not qualify as a historical resource under CEQA, the site will be treated in accordance with the provisions of Section 21083.2. Other than avoidance, mitigation measures will include deeding archaeological sites into permanent conservation easements, capping or covering archaeological sites with a layer of soil before building on the sites, or planning parks, green space, or other open space to incorporate archaeological sites.

PG&E will submit all mitigation plans to the Water Board for concurrence prior to mitigation implementation. PG&E will submit a Mitigation Report to the Water Board upon complete implementation of the approved mitigation measures to document compliance.

CUL-MM-7: Comply with State and County Procedures for the Treatment of Human Remains Discoveries

Implementation Timing:	During construction
Implementation Responsibility:	PG&E, qualified archaeologist
Monitoring Responsibility:	Field: County Coroner and qualified archaeologist (if human remains are found) Overall: Water Board (and BLM if on BLM land)
Frequency of Monitoring:	Daily (if human remains are found)
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Daily (if human resources are found): Memorandum of evidence that required procedures have been followed Annually: Annual Report, with any documentation
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

If human remains are found as a result of ground disturbance, in a project location other than a dedicated cemetery, PG&E will notify the Water Board and the San Bernardino County Coroner (and BLM if on federal land). If human remains are discovered, State Health and Safety Code 7050.5 states that further disturbances and activities will cease in the area and nearby areas, and the County Coroner will be contacted immediately. Pursuant to PRC 5097.98, if the coroner determines that the remains are of Native American origin, the coroner must contact the NAHC within 24 hours (California Health and Safety Code 7050(c)).

The NAHC will identify and notify the most likely descendants (MLDs) of the interred individuals, who then will make a recommendation for means of treating or removing, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code 5097.98. Further provisions of Public Resources Code 5097.98 will be implemented as applicable. Under these provisions, MLDs will have at least 48 hours from completing their examination of the remains in which to make recommendations for the disposition of the remains. If the NAHC is unable to identify an MLD, if the identified MLD fails to make a recommendation, or if the landowner rejects the MLD's recommendation, the landowner will inter the human remains and associated grave goods with appropriate dignity on the property in a location not subject to further and future subsurface disturbance.

In the event that human remains are discovered, a PG&E qualified archaeologist and the Water Board will be contacted immediately. If the discovery is on federal land, BLM will also be notified upon discovery and included in any determinations for the disposition of remains.

CUL-MM-8: Conduct Preconstruction Paleontological Resource Evaluation, Monitoring, Resource Recovery, and Curation

Implementation Timing:	Prior to, during and potentially after construction
Implementation Responsibility:	PG&E (with qualified paleontologist and/or geologist)
Monitoring Responsibility:	Field: Qualified paleontologist Overall: Water Boar
Frequency of Monitoring:	Once for each remedial activity
Frequency of Reporting:	Before construction: Once for each ground-disturbing remedial activity Annually: Annual Report
Standard for Completion or Compliance:	Before construction: Paleontological Resource Evaluation report, prepared by qualified paleontologist and/or geologist, that identifies site-specific measures for monitoring, avoiding, protecting, recovering, and/or curating resources. Annually: Annual Report
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

Prior to construction and future construction activities, PG&E will confirm all geologic units potentially affected by each segment of the project, including Quaternary and bedrock units. This information will be used to guide mitigation requirements on a site-specific basis during construction and during maintenance activities that require ground disturbance.

All ground-disturbing construction and maintenance activities will require Measure 8a (although this measure will likely only need to be implemented once during project design), and Measures 8b, 8c, 8d, and 8e.

All ground-disturbing construction activities that affect geologic units identified as highly sensitive for paleontological resources and all maintenance activities that involve new or extended ground disturbance in highly sensitive units will require Mitigation Measure CUL-MM-8f.

Measure 8a: Further Evaluation of Geologic Units with "Undetermined" Sensitivity. Before ground-disturbing activities begin, PG&E will retain a qualified paleontologist as defined by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995) or other appropriate personnel (e.g., California licensed professional geologist with appropriate experience and expertise) to conduct further literature review and discussion with subject area experts to resolve the paleontological sensitivity of the geologic units identified in Table 3.8-5 as "undetermined." If site-specific geologic or geotechnical studies for the project identify additional units likely to be affected by project construction and not included in Table 3.8-5, they will also be evaluated for paleontological sensitivity under this measure. The results of the evaluation conducted for this mitigation measure will

be used to guide the application of mitigation during project construction and maintenance activities. The evaluation will be provided to the Water Board (and to BLM for federal lands) prior to construction.

Measure 8b: Evaluation of Site-Specific Impact Potential in Areas of Holocene Substrate. PG&E will retain appropriately qualified and licensed personnel (e.g., California licensed professional geologist with appropriate experience and expertise) to evaluate the potential for impacts on paleontologically sensitive strata across the project area. The evaluation will be based on available geologic and geotechnical information; project design; proposed construction and/or maintenance methods, including anticipated depth of disturbance; and existing site conditions, including pre-existing disturbance, if any. In areas where highly sensitive strata will be involved in project-related ground disturbance, Measures 8c, 8d, 8e, and 8f will apply and will be implemented. The evaluation will be provided to the Water Board (and to BLM for federal lands) prior to construction.

Measure 8c: Preconstruction Meeting and Worker Awareness Training. PG&E will ensure that all construction and maintenance personnel receive paleontological resources awareness training that includes information on the possibility of encountering fossils during construction; the types of fossils likely to be seen, based on finds in the site vicinity; and proper procedures in the event fossils are encountered. Worker training will be prepared and presented by a qualified paleontologist as defined by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995) or other appropriate personnel (e.g., California licensed professional geologist with appropriate experience and expertise) experienced in teaching non-specialists. It may be delivered at the same time as other pre-planned construction worker education, or it may be presented separately.

Measure 8d: Paleontological Monitoring. Paleontological monitoring will be conducted for all ground-disturbing activities in portions of the proposed disturbance with substrate materials identified as highly sensitive for paleontological resources (see Table 3.8-5). Monitoring may also be required where Holocene materials overlie highly sensitive strata and site-specific investigations have identified the potential for project activities to involve the underlying sensitive strata. A trained paleontological monitor will oversee all ground-disturbing activities that affect highly sensitive substrate materials, including vegetation removal, site preparation, construction grading and excavation. Monitoring may be required for any initial land clearing or grading for well installation in sensitive areas but is not required for well drilling itself. Paleontological monitoring will consist of observing operations and periodically inspecting disturbed, graded, and excavated surfaces. The monitor will have authority to divert grading or excavation away from exposed surfaces temporarily in order to examine disturbed areas more closely, and/or recover fossils. The responsible paleontologist will coordinate with the construction manager to ensure that monitoring is thorough but does not result in unnecessary delays. If additional personnel are needed for effective monitoring, the responsible paleontologist may train other consultant or in-house staff in paleontological monitoring. Once training is complete, individuals trained by the qualified paleontologist may then monitor the proposed project construction independently, and will have the same responsibilities as described above. Annual reporting will be provided to Water Board (and to BLM for federal lands, if required by BLM) documenting compliance with this measure.

Measure 8e: Stop Work Requirement. If fossil materials are discovered during any project-related activity, including but not limited to project grading and excavation, all ground-disturbing work in the vicinity of the find will stop immediately until the responsible paleontologist can assess the nature and importance of the find and recommend appropriate treatment. Assessment will occur in a timely manner, and recommendations for treatment will be consistent with SVP guidelines (Society of

Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995). Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may also include preparation of a report for publication describing the finds. If no report is required, PG&E will nonetheless ensure that information on the nature, location, and depth of all finds is readily available to the scientific community. The responsible paleontologist and all paleontological monitors will be empowered to temporarily halt or redirect the excavation equipment away from fossils to be salvaged.

Measure 8f: Fossil Recovery and Curation. If fossil materials are discovered during project-related activities, the responsible paleontologist will determine whether recovery and curation is warranted, and will be empowered to confer with local area experts as needed to arrive at a determination. All materials warranting recovery will be stabilized on the site and then salvaged consistent with currently accepted procedures and the prevailing standard of care for paleontological excavations. The responsible paleontologist will coordinate with the construction manager to ensure that specimen recovery proceeds in a timely manner. Recovered fossils will be prepared for identification consistent with currently accepted procedures and the prevailing standard of care. They will then be identified by competent specialists, potentially including, but not necessarily limited to, the responsible paleontologist. If possible, identification will include genus, species, and, if applicable, subspecies. If species-level identification is not feasible, the maximum feasible level of specificity will be provided. The fossil assemblage will then be analyzed by stratigraphic occurrence and any other applicable parameters (size, taxa present, and/or taphonomic conditions). A faunal list will be developed.

Any specimens (fossils) of paleontological significance found during construction will be temporarily housed in an appropriate museum or university collection. If curation is required, the responsible paleontologist will develop appropriate curation agreements, consistent with applicable protocols and the prevailing standard of care.

The responsible paleontologist will prepare a final report that includes at least the following components:

- information on site geology and stratigraphy, including a stratigraphic column;
- a description of field and laboratory methods;
- a faunal list, with stratigraphy ranges/occurrences for each taxon;
- a concise discussion of the significance of the site and its and relationship to other nearby and/or similar fossil localities;
- a list of references consulted during the project, including published geologic maps for the site and vicinity; and
- a complete set of field notes, field photographs, and any new geologic maps developed for or during the project.

Full copies of the final report, including any appended materials, will be put on file with any repository institution(s). Depending on the nature of the materials recovered, it may also be appropriate to prepare a report for publication in an appropriate peer-reviewed professional journal. Such publication will be at the discretion of the responsible paleontologist.

TRA-MM-1: Implement Traffic Control Measures during Construction

Implementation Timing:	Prior to and during construction
Implementation Responsibility:	PG&E with contractor
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Prior to construction During construction: Periodic
Frequency of Reporting:	Prior to construction During construction: Periodic Annually: Annual Report
Standard for Completion or Compliance:	Prior to construction: Documentation of proposed access routes in construction specifications or requirements. During construction: Construction monitoring logs Annually: Annual Report
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

To minimize impacts on traffic along SR 58 and surface streets in the project area, PG&E will ensure that construction contractors implement the following traffic control measures during construction of the remediation facilities and associated infrastructure. These measures include:

- Re-route delivery trucks with materials or equipment to use the signalized intersection at Lenwood Road to access project area roads from and to SR 58 wherever feasible. To the southern part of the project area, access can be from Lenwood Road to Community Road and then to other local roadways. To the northern part of the project area, access can be from Lenwood Road to Santa Fe Road to Mountain View Road and other local roadways.
- Notify emergency personnel, including the San Bernardino County Sheriff-Coroner's Department (Barstow Station) and the San Bernardino County Fire Department (North Desert Division), of the construction schedule when it involves vehicles that could slow or block traffic.
- Use personnel as necessary to direct traffic and prevent vehicles from lining up on county roads and highways during construction.

AES-MM-1: Screen Above-Ground Treatment Facilities from Surrounding Areas

Implementation Timing:	Prior to and after construction
Implementation Responsibility:	PG&E with contractor
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Prior to and after construction
Frequency of Reporting:	Prior to and after construction
Standard for Completion or Compliance:	Documentation that security fencing, landscaping and architectural features meet measure requirements. Prior to construction: Submission of design documents for aboveground treatment plants (and any other facilities with new sources of light and glare) demonstrating compliance. After construction: Photodocumentation of aboveground treatment plant (and any other facilities with new sources of light and glare) demonstrating compliance
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will install security fencing with privacy slats, as currently proposed, and/or landscaping around the major above-ground treatment facilities, included as part of Alternatives 4C-3 and 4C-5 and as a contingency for all alternatives. The privacy slates will be neutral shades of brown to minimize landscape intrusion from remediation infrastructure. Any landscaping would be drought-tolerant, native and in adequate abundance to screen the facility from distant views. Additionally, PG&E will design structures to include architectural features that reduce the bulk and scale.

AES-MM-2: Use Low-Sheen and Non-Reflective Surface Materials on Visible Remediation Facilities and Infrastructure

Implementation Timing:	Prior to and after construction
Implementation Responsibility:	PG&E with contractor
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Prior to and after construction
Frequency of Reporting:	Prior to and after construction
Standard for Completion or Compliance:	Documentation of light and glare treatments that meet measure requirements. Prior to construction: Submission of design documents for aboveground treatment plants (and any other facilities with new sources of light and glare) demonstrating compliance. After construction: Photodocumentation of aboveground treatment plant (and any other facilities with new sources of light and glare) demonstrating compliance.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will ensure that visible, above-ground remediation facilities and infrastructure (e.g., a 35-foot tall process building) will be designed and constructed to use a low-sheen and non-reflective surface material. Wall finishes will have low-sheen and non-reflective surfaces to reduce potential for glare. The use of smooth-trowelled surfaces and glossy paint will be avoided. At a minimum, infrastructure materials will be non-reflective, such as earth-toned concrete or galvanized steel that would naturally oxidize a short time after installation and would not cause reflective daytime glare. The paint type will have a dull, flat, or satin finish only and will ensure long-term durability of the painted surfaces to the extent practicable. The paint color will be two to three shades darker than the general surrounding area. PG&E will maintain the paint color over time. (This measure does not apply to the agricultural irrigation infrastructure that is consistent with existing uses and aesthetics in the Hinkley area.)

AES-MM-3: Apply Light Reduction Measures for Exterior Lighting

Implementation Timing:	Prior to and after construction
Implementation Responsibility:	PG&E with contractor
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Prior to and after construction
Frequency of Reporting:	Prior to and after construction
Standard for Completion or Compliance:	Documentation of light treatments that meet measure requirements. Prior to construction: Submission of design documents for aboveground treatment plants (and any other facilities with new sources of light) demonstrating compliance. After construction: Photodocumentation of aboveground treatment plant (and any other facilities with new sources of light) demonstrating compliance.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

PG&E will apply the following light reduction measures.

- Exterior lights will be installed at the lowest allowable height and will use the low-pressure sodium lamps with the lowest allowable wattage (less than 2,000 lumens [150 watts]).
- Exterior lights will be shielded and directed downward.
- The amount and duration of nighttime light use will be minimized to the greatest degree possible (i.e., minimal amount needed to provide required security).

SE-MM-1: Manage Vacant Lands, Residences, and Structures to Avoid Physically Blighted Conditions

Implementation Timing:	Within one year of acquisition of lands containing aboveground structures
Implementation Responsibility:	PG&E
Monitoring Responsibility:	Water Board
Frequency of Monitoring:	Annually
Frequency of Reporting:	Annually: Annual Report
Standard for Completion or Compliance:	Annual reporting will describe any properties acquired that contain aboveground structures and measures taken by PG&E to secure properties and avoid physically blighted conditions. PG&E will document annually any new actions (such as structural removal) on properties purchased to support remedial actions that contain structures.
Agency Verification of Completion or Compliance:	_____

Mitigation Measure:

If properties are acquired as part of project implementation, PG&E will ensure that existing buildings on these properties will be razed or maintained along with other properties in the project area as part of the normal operations and maintenance activities. Retained structures will be secured to prevent unauthorized access. Litter and debris will be removed from vacant properties acquired by PG&E. PG&E will monitor structures to ensure that they are not used by trespassers or wildlife. Prior to proposed demolition of structures, PG&E will assess the structures for cultural resource significance (see Section 3.8, *Cultural Resources*, in Final EIR Volume II) and follow all procedures for protection of significant cultural resources accordingly. For demolitions, PG&E will follow all state and federal requirements for addressing lead-based paint, asbestos, or other hazardous materials, including proper containment and disposal. PG&E will work with property sellers to ensure that all pets are removed from the property upon acquisition. If pets are abandoned on vacant properties, PG&E will work with San Bernardino County Animal Care & Control to remove such animals from the properties accordingly and place in animal shelters, where appropriate.

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Acronyms and Abbreviations

af	acre-feet
afy	acre-feet per year
AG	Agriculture
ARB	California Air Resources Board
AU	agricultural units
BLM	U.S. Bureau of Land Management
BMPs	Best Management Practices
CAO	Cleanup and Abatement Order
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNG	compressed natural gas
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
County	San Bernardino County
Cr	chromium
Cr[T]	total chromium
Cr[VI]	hexavalent chromium
CRHR	California Register of Historic Resources
CRPR	California Rare Plant Rank
CWA	Clean Water Act
DEHP	di 2-ethylhexyl phthalate
DWMAs	Desert Wildlife Management Areas
EC	electrocoagulation
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
ESA	federal Endangered Species Act
FPA	free production allowance

g/bhp-hr	grams per brake horsepower-hour
GHG	greenhouse gas
GPS	global positioning system
GVWR	gross vehicle weight rating
HASP	Health and Safety Plan
IBC	International Building Code
IPM	integrated pest management
IRZ	in-situ reduction zones
MDAQMD	Mojave Desert Air Quality Management District
MLDs	most likely descendants
MMRP	mitigation monitoring and reporting program
MT	metric tons
MWA	Mojave Water Agency
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
O&M	operation and maintenance
PCB	polychlorinated biphenyls
PG&E	Pacific Gas and Electric Company
PM	particulate matter
PM10	PM 10 microns in diameter or less
PM2.5	PM 2.5 microns in diameter or less
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
PRC	Public Resources Code
ROGs	reactive organic gases
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
SR	State Route
State Water Board	State Water Resources Control Board
SVP	Society of Vertebrate Paleontology
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
USEPA	U.S. Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
Water Board	California Regional Water Quality Control Board, Lahontan Region
WDRs	waste discharge requirements

Appendix A
Monitoring and Reporting Record

Monitoring and Reporting Record:

Mitigation Measure:			
Date	**Action**	**Compliance**	
		___ Acceptable	___ Not Acceptable
Notes:			
		___ Acceptable	___ Not Acceptable
Notes:			
		___ Acceptable	___ Not Acceptable
Notes:			
		___ Acceptable	___Not Acceptable
Notes:			

Monitoring and Reporting Record:

Mitigation Measure:			
Date	**Action**	**Compliance**	
		___ Acceptable	___ Not Acceptable
Notes:			
		___ Acceptable	___ Not Acceptable
Notes:			
		___ Acceptable	___ Not Acceptable
Notes:			
		___ Acceptable	___ Not Acceptable
Notes:			

Monitoring and Reporting Record:

Mitigation Measure:			
Date	**Action**	**Compliance**	
		___ Acceptable	___ Not Acceptable
Notes:			
		___ Acceptable	___ Not Acceptable
Notes:			
		___ Acceptable	___ Not Acceptable
Notes:			
		___ Acceptable	___ Not Acceptable
Notes:			

EXAMPLE

Monitoring and Reporting Record:

WTR-MM-1: Purchase of Water Rights to Comply with Basin Adjudication			
Date	**Action**	**Compliance**	
2/15/2014	*Compared PG&E's January 31, 2014 report on its total water rights and FPA for 2013 with the December 31, 2013 total projected water use for agricultural treatment in 2014 (X acre-feet per year) to ensure PG&E has adequate water rights for the upcoming year.*	_X_ Acceptable	___ Not Acceptable
		Monitor: _____ (Name/Title)	
Notes: *Total 2013 water rights and FPA = X acre-feet per year* *Total 2014 projected water use for agricultural treatment = X acre-feet per year*			
3/2/2014	*Compared PG&E's total 2013 project treatment water use in the Annual Summary Monitoring Report (received on February 23, 2014) and compared to PG&E's January 31, 2014 report on its total water rights and FPA for 2013 to ensure that the PG&E's water use volume did not exceed its FPA for 2013.*	_X_ Acceptable	___ Not Acceptable
		Monitor: _____ (Name/Title)	
Notes: *Total 2013 project treatment water use = X acre-feet per year* *Total 2013 water rights and FPA = X acre-feet per year*			
3/15/2014	*Verified PG&E's 2013 FPA in the PG&E's January 31, 2014 report with their FPA in the 2012-2013 MWA Watermaster Report.*	_X_ Acceptable	___ Not Acceptable
		Monitor: _____ (Name/Title)	
Notes: *Total 2013 water rights and FPA = X acre-feet per year* *2012-2013 MWA Water Master Report FPA for PG&E = X acre-feet per year* *The MWA FPA was slightly lower than PG&E's FPA due to the fact that it did not include recent water rights acquired from land purchases as part of the PG&E Buyout Program. The MWA FPA should be updated in the Watermaster report for next year.*			

EXAMPLE

Monitoring and Reporting Record:

WTR-MM-2a: Mitigation Program for Water Supply Wells Affected by the Chromium Plume Expansion due to Remedial Activities			
Date	**Action**	**Compliance**	
10/8/2013	*Reviewed PG&E's Q2 2013 monitoring report which identified 1 actually and 1 potentially affected well (see attached summary).*	___ Acceptable	_X_ Not Acceptable
Notes: *Actually affected wells: Increase of 10% or more to previously Background-exceeded well. In DOM-XX, Cr6 increased 18% from 3.40 ppb (Q1 2013) to 4.02 ppb (Q2 2013).* *Potentially affected wells: Increase in CrT concentrations near chromium plume. In DOM-YY, CrT increased from 1.4 ppb (Q1 2013) to 2.8 ppb (Q2 2013). DOM-YY is located X (< 1) mile from the chromium plume at lat/long location shown in Figure X of quarterly monitoring report.*			
02/15/2014	*Reviewed PG&E's 2013 annual summary report. Provided activities implemented to address potential and actual affected wells from the previous year (see attached summary).*	_X_ Acceptable	___Not Acceptable
Notes: *Actually affected wells: PG&E began providing alternative water supply (storage tank and hauled water option) to residential users of DOM-XX on October 15, 2013, and is continuing to do so until Cr6 reaches levels below 3.1 ppb (Cr6 MCL). PG&E will continue to report DOM-XX concentrations on a quarterly basis.* *Potentially affected wells: PG&E conducted targeted IRZ-injections near DOM-YY. Q3 2013 monitoring report showed CrT concentration of 1.02 ppb (which is below the originally-detected concentration of 1.4ppb).*			
02/15/2014	*Reviewed PG&E's 2013 annual groundwater modeling report. Two domestic wells were identified as being potentially affected (see attached maps and modeling results).*	_X_ Acceptable	___Not Acceptable
Notes: *DOM-XX and DOM-YY showed predicted increases in Cr6 from <3.1ppb to>3.1ppb and <10ppb within the following year based maps and modeling results. PG&E submitted a plan for provision of alternative water supply for domestic well users via the bottle water option, as requested by homeowners (names, addresses).*			

Appendix B
Summary Tables with Impacts, Alternatives, and Mitigation Measures

This appendix includes summary tables with the impact of the proposed project, the alternative(s) to which the impact applies, and mitigation measures identified to avoid, minimize or reduce the impact. There summary are presented by resource area as follows, using the same numerical order as presented in the Final EIR (Volume II).

- 3.1 Water Resources and Water Quality
- 3.2 Land Use, Agriculture, Population and Housing
- 3.3 Hazards and Hazardous Materials
- 3.4 Geology and Soils
- 3.5 Air Quality and Climate Change
- 3.6 Noise
- 3.7 Biological Resources
- 3.8 Cultural Resources
- 3.9 Utilities and Public Services (no mitigation measures)
- 3.10 Transportation and Traffic
- 3.11 Aesthetics
- 3.12 Socioeconomics

Table 3.1. Summary of Water Resource Impacts and Mitigation Measures

Impact	Applicable Alternative	Mitigation Measures
Groundwater Drawdown		
WTR-1a: Groundwater Drawdown Effects on the Regional Water Supply	No Project Alternative	N/A
	All Action Alternatives	WTR-MM-1: Purchase of New Water Rights to Comply with Basin Adjudication
WTR-1b: Groundwater Drawdown Effects on the Local Water Supply	No Project Alternative	N/A
	All Action Alternatives	WTR-MM-2: Water Supply Program for Wells that are Affected by Remedial Activities
WTR-1c: Groundwater Drawdown Effects on Aquifer Compaction	No Project Alternative	N/A
	All Action Alternatives	N/A
Water Quality		
WTR-2a: Containment and Treatment of Existing Chromium Contamination	All Alternatives	N/A
WTR-2b: Conversion of Hexavalent Chromium to Trivalent Chromium	All Alternatives	N/A
WTR-2c: Water Quality Effects due to use of Tracer Compounds	All Alternatives	N/A
WTR-2d: Temporary Localized Chromium Plume Expansion ("Bulging") due to Remedial Activities	No Project Alternative	N/A
	All Action Alternatives	WTR-MM-2 (see above)
		WTR-MM-3: Incorporate Measures to Prevent, Reduce and Control Potential Temporary Localized Chromium Plume Bulging Into Overall Plume Control and Monitoring
WTR-2e: Increase in Total Dissolved Solids, Uranium and other Radionuclides due to Agricultural Treatment	All Alternatives	WTR-MM-2 (see above)
	All Action Alternatives	WTR-MM-4: Restoration of the Hinkley Aquifer Affected by Remedial Activities for Beneficial Uses
		WTR-MM-5: Investigate and Monitor Total Dissolved Solids, Uranium and Other Radionuclide levels in relation to Agricultural Treatment and Take Contingency Actions
WTR-2f: Change in Nitrate Levels due to Agricultural Treatment	No Project Alternative	N/A
	All Action Alternatives	
		WTR-MM-6: Monitor Nitrate Levels and Manage Agricultural Treatment to Avoid Significant Increases in Nitrate Levels

Table 3.2. Summary of Land Use, Agriculture, and Population and Housing Impacts and Mitigation Measures

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
LU-1a: Physically Divide a Community	All Alternatives	Less than Significant	None Required	–
Impact LU-1b: Disruption of Surrounding Land Uses during Construction	All Alternatives	Less than Significant	None Required	—
LU-1c: Incompatibility with or Substantial Disruption of Surrounding Land Uses during Operations	No Project Alternative	Less than Significant	None Required	–
	All Action Alternatives	Potentially Significant	WTR-MM-2: Water Supply Program for Wells that Are Affected by Remedial Activities	Less than Significant
LU-1d: Potential Inconsistency with San Bernardino County Land Use/Zoning Designations and General Plan Policies	All Alternatives	Less than Significant	None Required	–
LU-1e: Potential Inconsistency with the California Desert Conservation Plan and/or the West Mojave Plan	No Project Alternative	Less than Significant	None Required	–
	All Action Alternatives	Potentially Significant	LU-MM-1: Obtain Bureau of Land Management Permits BIO-MM-1a: Construction Measures Required to Minimize, Reduce, or Mitigate Impacts to Desert Tortoise BIO-MM-1b: Limit Footprint of Disturbance Areas within Special-Status Species Habitats BIO-MM-1c: Implement Pre-Construction and Ongoing Awareness and Training Program BIO-MM-1d: Conduct Ongoing Biological Construction Monitoring BIO-MM-1e: Minimize Potential Construction Hazards to Special-Status Species BIO-MM-1f: Minimize Construction and/or Operational Practices and/or Facilities to Prevent Attraction of Project-Related Predators BIO-MM-1g: Reduction of Project-Related Spread of Invasive Plant Species	Less than Significant

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
			BIO-MM-1h: Compensate Impacts to Desert Tortoise and Mohave Ground Squirrel BIO-MM-1i: Integrated Pest Management and Adaptive Management Plan for Agricultural Treatment Units BIO-MM-1j: Reduction of Night Light Spillover BIO-MM-1k: Other Measures Required to Minimize, Reduce, or Mitigate Impacts to Mohave Ground Squirrel BIO-MM-1l: Other Measures Required to Minimize, Reduce, or Mitigate Impacts to Burrowing Owl BIO-MM-1m: Minimize Impacts to American Badger Natal Dens and Desert Kit Fox Occupied Dens BIO-MM-1n: Avoid Impacts to Nesting Loggerhead Shrike, Northern Harrier, and Other Migratory Birds BIO-MM-1o: Implement Measures Required to Minimize, Reduce, or Mitigate Impacts to Special-Status Plants BIO-MM-1p: If Remedial Actions Affect Mojave Fringe-toed Lizard Habitat, then Compensate for Habitat Losses BIO-MM-4: Implement West Mojave Plan Measures to Impacts to DWMAs on BLM Land	
LU-2: Conversion of Agricultural Land to Non-Agricultural Use, Including FMMP-Designated and Williamson Act Lands	No Project Alternative	Less than Significant	None Required	–
	All Action Alternatives	Potentially Significant	LU-MM-2: Acquire Agricultural Conservation Easements for Important Farmland; WTR-MM-2 (see above)	Less than Significant
LU-3: Population and Housing Changes due to Remedial Activities	All Alternatives	Less than Significant	None Required	–

Table 3.3. Summary of Hazards and Hazardous Materials Impacts and Mitigation Measures

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
HAZ-1a: Potential to Encounter Hazardous Materials in Soil and Groundwater during Construction	All Alternatives	Potentially Significant	HAZ-MM-1: Implement Contingency Actions if Contaminated Soil is Encountered During Ground Disturbance	Less than Significant
HAZ-1b: Potential Releases of Hazardous Materials or Waste Used or generated from Construction Activities and during Remedial Operations	All Alternatives	Potentially Significant	HAZ-MM-2: Implement Spill Prevention, Control, and Countermeasures Plan During Construction	Less than Significant
HAZ-1c: Exposure to Hazardous Building Materials during Demolition	No Project Alternative	Less than Significant	None required	–
	All Action Alternatives	Potentially Significant	HAZ-MM-3: Implement Building Materials Survey and Abatement Practices	Less than Significant
HAZ-2: Conflict with or Impede Emergency Response Plan, Evacuation Plan or Access	All Alternatives	Less than Significant	None required	–
HAZ-3: Increased Risk of Fire Hazards during Construction and Operation and Maintenance	All Alternatives	Less than Significant	None required	–

Table 3.4. Summary of Geology and Soils Impacts and Mitigation Measures

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
GEO-1a: Increased Soil Erosion or Loss of Topsoil during Construction	All Alternatives	Less than Significant	None Required	--
GEO-1b: Increased Soil Erosion or Loss of Topsoil from Operation and Maintenance	All Alternatives	Less than Significant	None Required	--
GEO-1c: Potential Risk of Structural Damage due to Land Subsidence from Remedial Groundwater Pumping	No Project	Less than Significant	None Required	--
	All Action Alternatives	Less than Significant	Recommended Only: GEO-MM-1: Land Subsidence Monitoring, Investigation, and Repair	Less than Significant
GEO-2a: Increase Risk of Infrastructure Damage due to Seismic Activity	All Alternatives	Less than Significant	None Required	--
GEO-2b: Increase Risk of Human Exposure due to Seismic Activity	All Alternatives	Potentially Significant	GEO-MM-2: Emergency Response Plan for Potential Remedial Pipeline or Storage Tank Rupture	Less than Significant

Table 3.5. Summary of Significant Air Quality and GHGs Impacts and Mitigation Measures

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
AIR-1a: Conflict with or Obstruct Implementation of Mojave Desert Air Quality Management District Attainment Plans for Criteria Pollutants	All Alternatives	Less than Significant	None Required	--
AIR-1b: Exceed MDAQMD Threshold Levels for Criteria Pollutants during Project Construction	No Project, 4B, 4C-2, 4C-4	Less than Significant	AIR-MM-4: Implement Dust Control Measures during Construction and Operations	Less than Significant
	4C-3, 4C-5	Potentially Significant	AIR-MM-1: Utilize Clean Diesel-Powered Construction Equipment during Construction AIR-MM-2: Ensure Fleet Modernization for On-Road Material Delivery and Haul Trucks during Construction AIR-MM-3: Implement Emission-Reduction Measures during Construction AIR-MM-4	Less than Significant
AIR-1c: Exceed MDAQMD Threshold Levels for Criteria Pollutants from Project Operations	All Alternatives	Less than Significant	AIR-MM-4	Less than Significant
AIR-2a: Expose Nearby Receptors to Increased Health Risk Associated with Toxic Air Contaminants during Construction	All Alternatives	Potentially Significant	AIR-MM-1 AIR-MM-2 AIR-MM-3	Less than Significant
AIR-2b: Expose Nearby Receptors to Increased Health Risk Associated with Toxic Air Contaminants from Operations	No Project, 4B, 4C-2, 4C-3, 4C-5	Less than Significant	None Required	--
	4C-4	Potentially Significant	AIR-MM-5: Utilize Clean Diesel-Powered Equipment for Operation of Agricultural Treatment and Above-Ground Treatment Facilities	Less than Significant
AIR-3a: Create Objectionable Odors at Nearby Receptors during Construction	All Alternatives	Less than Significant	None Required	--
AIR-3b: Create Objectionable Odors at Nearby Receptors during Operation	All Alternatives	Less than Significant	None Required	--

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
AIR-4a: Generate GHG Emissions, Either Directly or Indirectly, That May Have a Significant Impact on the Environment or Conflict with the Goals of AB 32	No Project	Less than Significant	None Required	--
	4B, 4C-2, 4C-4	Potentially Significant	AIR-MM-6: Implement San Bernardino County GHG Construction Standards during Construction AIR-MM-7: Implement San Bernardino County GHG Operational Standards for Operations	Less than Significant
	4C-3, 4C-5	Potentially Significant	AIR-MM-6 AIR-MM-7 AIR-MM-8:Implement San Bernardino County GHG Design Standards	Less than Significant
AIR-4b: Expose Property or Persons to the Physical Effects of Climate change	All Alternatives	Less than Significant	None Required	--

Table 3.6. Summary of Noise Impacts and Mitigation Measures

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
NOI-1a: Exposure of Noise-Sensitive Land Uses to Excessive Construction Noise	No Project	Less than Significant	None Required	--
	All Action Alternatives	Potentially Significant	NOI-MM-1: Prepare a Noise/Vibration Control Plan and Employ Noise/ Vibration-Reducing Construction Practices to Comply with County Noise Standards	Less than Significant
NOI-1b: Exposure of Noise-Sensitive Land Uses to Excessive Ground Vibration from Construction Activities	All Alternatives	Potentially Significant	NOI-MM-1	Less than Significant
NOI-2: Exposure of Noise-Sensitive Land Uses to Excessive Noise from Remediation Operations	All Alternatives	Less than Significant	None Required	--

Table 3.7. Summary of Biological Resources Impacts and Mitigation Measures

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
BIO-1a: Disturbance, Mortality, and Loss of Habitat for Desert Tortoise	All Alternatives	Significant	BIO-MM-1a: Implement Measures Required to Minimize, Reduce, or Mitigate Impacts on Desert Tortoise during Construction BIO-MM-1b: Limit Footprint of Disturbance Areas within Special-Status Species Habitats BIO-MM-1c: Implement Pre-Construction and Ongoing Awareness and Training Program BIO-MM-1d: Conduct Ongoing Biological Monitoring during Construction BIO-MM-1e: Minimize Potential Construction Hazards to Special-Status Species BIO-MM-1f: Implement Measures to Minimize and Prevent Attraction of Predators during Construction and Operation BIO-MM-1g: Reduction of Project-Related Spread of Invasive Plant Species BIO-MM-1h: Compensate Impacts on Desert Tortoise and Mohave Ground Squirrel Habitat BIO-MM-1i: Integrated Pest Management and Adaptive Management Plan for Agricultural Treatment Units BIO-MM-1j: Reduction of Night Light Spillover	Less than Significant (other than desert tortoise movement) Less than Significant (No Project Alternative, desert tortoise movement) Potentially Significant (all action alternatives, desert tortoise movement)
BIO-1b: Disturbance, Mortality, and Loss of Habitat for Mohave Ground Squirrel	All Alternatives	Potentially Significant	BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1g, BIO-MM-1h, BIO-MM-1i, BIO-MM-1j, BIO-MM-1k: Implement Other Measures to Minimize, Reduce, or Mitigate Impacts on Mohave Ground Squirrel	Less than Significant
BIO-1c: Disturbance, Mortality, and Loss of Habitat for Burrowing Owl and American Badger, and Mortality of Desert Kit Fox	All Alternatives	Potentially Significant	BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1g, BIO-MM-1h, BIO-MM-1i, BIO-MM-1j, BIO-MM-1l: Implement Other Measures to Minimize, Reduce, or Mitigate Impacts on Burrowing Owl BIO-MM-1m: Minimize Impacts on American Badger and Desert Kit Fox Occupied Dens	Less than Significant

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
BIO-1d: Disturbance, Mortality, and Loss of Habitat to Loggerhead Shrike and Northern Harrier	No Project	Less than Significant	None Required	--
	All Action Alternatives	Potentially Significant	BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1i, BIO-MM-1n: Avoid Impacts on Loggerhead Shrike, Northern Harrier, and Other Nesting Migratory Birds (including Raptors)	Less than Significant
BIO-1e: Potential Loss of Habitat to Mojave River Vole	All Alternatives	Less than Significant	None Required	--
BIO-1f: Mortality and Loss of Habitat for Mojave Fringe-Toed Lizard	All Alternatives	Less than significant	BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1g, BIO-MM-1p: If Remedial Actions Affect Mojave Fringe-toed Lizard Habitat, then Compensate for Habitat Losses BIO-MM-2: Habitat Compensation for Loss of Sensitive Natural Communities	Less than Significant
BIO-1g: Loss of Other Special-Status Birds	All Alternatives	Potentially Significant	BIO-MM-1i, BIO-MM-1n	Less than Significant
BIO-1h: Loss of Individual Plants or Disturbance to Special-Status Plants	All Alternatives	Potentially Significant	BIO-MM-1g, BIO-MM-1o: Implement Measures Required to Minimize, Reduce, or Mitigate Impacts on Special-Status Plants	Less than Significant
BIO-2: Reduction or Loss of Function of Riparian Habitat or Sensitive Natural Communities	All Alternatives	Potentially Significant	BIO-MM-2	Less than Significant
BIO-3: Loss or Disturbance of Federal and/or State Jurisdictional Waters (including wetlands)	All Alternatives	Potentially Significant	BIO-MM-3: Measures Required to Minimize, Reduce, or Mitigate Impacts on Waters and/or Wetlands under the Jurisdiction of the State	Less than Significant
BIO-4: Conflicts with Wildlife Movement	No Project Alternative	Less than Significant	None Required	--
	All Action Alternatives	Potentially Significant	BIO-MM-1a, BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1h, BIO-MM-1j, BIO-MM-4: Implement West Mojave Plan Measures to Impacts on DWMAs on BLM Land	Less than Significant Potentially Significant (desert tortoise only)

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
BIO-5: Removal of Protected Trees	All Alternatives	Less than Significant	None Required	--
BIO-6: Conflicts with West Mojave Plan Conservation Requirements on BLM Land	No Project Alternative	No Impact	None Required	--
	All Action Alternatives	Potentially Significant	BIO-MM-1a, BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1g, BIO-MM-1h, BIO-MM-1i, BIO-MM-1j, BIO-MM-1k, BIO-MM-1l, BIO-MM-1o BIO-MM-4	Less than Significant

Table 3.8. Summary of Significant Cultural Resources Impacts and Mitigation Measures

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
CUL-1: Change in Significance of Historical Architectural Resources	No Project Alternative	Less than Significant	None required	—
	All Action Alternatives	Potentially Significant	CUL-MM-1: Determine Presence of Historical Resources as Defined by CEQA CUL-MM-2: Avoid Damage to Historical Resources Located in Project Areas through Project Modification CUL-MM-3: Record Historical Resources	Less than Significant
CUL-2: Change in Significance of Archaeological Resources	All Alternatives	Potentially Significant	CUL-MM-4: Conduct an Archaeological Resource Survey to Determine if Historical Resources under CEQA or Unique Archaeological Resources under PRC 21083.2 are Present in the Proposed Areas of Disturbance CUL-MM-5: Avoid Damaging Archaeological Resources through Redesign of Specific Project Elements or Project Modification CUL-MM-6: Evaluate Archaeological Resources and, if Necessary, Develop and Implement a Recovery Plan	Less than Significant
CUL-3: Potential Disturbance of Buried Human Remains	All Alternatives	Potentially Significant	CUL-MM-7: Comply with State and County Procedures for the Treatment of Human Remains Discoveries	Less than Significant
CUL-4: Direct or Indirect Destruction a Unique Paleontological Resource	All Alternatives	Potentially Significant	CUL-MM-8: Conduct Preconstruction Paleontological Resource Evaluation, Monitoring, Resource Recovery, and Curation	Less than Significant

Table 3.9. Summary of Utilities and Public Services Impacts

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
UPS-1a: Disruption to Utility Lines during Trenching, Excavation, and Earthwork	All Alternatives	Less than Significant	None Required	–
UPS-1b: Increased Electricity Consumption	All Alternatives	Less than Significant	None Required	–
UPS-1c: Increased Contributions to Local Landfills Beyond Allowable Capacity	All Alternatives	Less than Significant	None Required	–
UPS-2: Disruption to Emergency Services	All Alternatives	Less than Significant	None Required	–

Table 3.10. Summary of Transportation and Traffic Impacts and Mitigation Measures

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
TRA-1a: Increase in Traffic Volumes or Roadway Congestion from Construction	All Alternatives	Potentially Significant	TRA-MM-1: Implement Traffic Control Measures during Construction	Less than Significant
TRA-1b: Increase in Traffic Volumes or Roadway Congestion from Operations and Maintenance	All Alternatives	Less than Significant	None required	—
TRA-2a: Create Significant Roadway Hazards from Construction Truck Traffic	All Alternatives	Potentially Significant	TRA-MM-1	Less than Significant
TRA-2b: Impede Emergency Access during Construction	All Alternatives	Potentially Significant	TRA-MM-1	Less than Significant

Table 3.11. Summary of Aesthetics Impacts and Mitigation Measures

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
AES-1a: Degradation of Visual Character or Quality from Construction	All Alternatives	Less than Significant	None Required	–
AES-1b: Permanent Degradation of Visual Character or Quality from Wells, In-Situ Treatment, and Agricultural Treatment	All Alternatives	Less than Significant	None Required	–
AES-1c: Permanent Degradation of Visual Character or Quality from Above-ground Treatment Facility	Alternatives 4C-3 and 4C-5	Potentially Significant	AES-MM-1: Screen Above-Ground Treatment Facilities from Surrounding Areas AES-MM-2: Use Low-Sheen and Non-Reflective Surface Materials on Visible Remediation Facilities	Less than Significant
	All Other Alternatives	No Impact	None Required	–
AES-2: New Source of Light or Glare	All Alternatives	Potentially Significant	AES-MM-1 AES-MM-2 AES-MM-3: Apply Light Reduction Measures for Exterior Lighting	Less than Significant

Table 3.12. Summary of Socioeconomic Impacts and Mitigation Measures

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
SE-1: Secondary Physical Impacts due to Project-Related Socioeconomic Effects	No Project Alternative	Less than significant	None Required	Less than Significant
	All Action Alternatives	Potentially Significant	SE-MM-1: Manage Vacant Lands, Residences, and Structures to Avoid Physically Blighted Conditions WTR-MM-2 to 8	Less than Significant