

RESPONSIVENESS SUMMARY
SOIL NON-TIME-CRITICAL REMOVAL ACTION
PG&E TOPOCK COMPRESSOR STATION
APRIL 9, 2021



U.S. Department of the Interior
Office of Environmental Policy and Compliance

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LIST OF ACRONYMS and ABBREVIATIONS

AM	Action Memorandum
AOC	Area of Concern
ARAR	applicable or relevant and appropriate requirements
BCW	Bat Cave Wash
BLM	U.S. Bureau of Land Management
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHPMP	Cultural and Historic Property Management Plan
CMS/FS	corrective measures study/feasibility study
COC	constituent of concern
Cr (T)	total chromium
Cr (VI)	hexavalent chromium
CSM	conceptual site model
CWG	Consultative Work Group
DOI	U.S. Department of the Interior
dioxins/furans	dioxins and furans
DTSC	California Department of Toxic Substances Control
EE/CA	Engineering Evaluation/Cost Analysis
HHERA	human health and ecological risk assessment
HNWR	Havasu National Wildlife Refuge
NCP	National Contingency Plan
NTCRA	non-time-critical removal action

PA	Programmatic Agreement
PAA	potential action area
PG&E	Pacific Gas and Electric Company
RAG	removal action goal
RAO	removal action objectives
RBRG	risk-based remedial goals
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RFI/RI	RCRA facility investigation/remedial investigation
Site	Topock Compressor Station Remediation Site
SWMU	solid waste management unit
TBC	to-be-considered
TCP	traditional cultural property
TCS	Topock Compressor Station
TEQ	toxicity equivalent
TWG	Technical Work Group
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

INTRODUCTION

This Responsiveness Summary of the Action Memorandum (“AM”) summarizes comments on the Engineering Evaluation/Cost Analysis (“EE/CA”) and supporting documentation received during the tribal consultation and public comment period on the proposed Soil Non-Time-Critical Removal Action (“NTCRA”) for the Pacific Gas and Electric (“PG&E”) Topock Compressor Station Remediation Site (“Site”) and the Department of the Interior’s (the “Department’s” or “DOI’s”) responses to those comments. The Responsiveness Summary was prepared in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”), as amended, 40 CFR Section 300.415(n)(iii) of the National Oil and Hazardous Substances Pollution Contingency Plan (“NCP”) and related guidance documents.

On October 30, 2018, DOI directed PG&E in an Approval Memorandum to conduct an EE/CA to evaluate the need for an NTCRA to address contaminated soil and to evaluate and select technologies and remedial alternatives. The EE/CA public/stakeholder comment period for the draft EE/CA was held from June 3, 2020 to August 5, 2020. No public meetings were held due to the COVID-19 pandemic restrictions on gatherings. Comments were received from DTSC and Metropolitan Water District of Southern California (MWD). On June 3, 2020, the Bureau of Land Management (“BLM”) initiated Section 106 consultation with nine tribes concerning the EE/CA. Comments were accepted from interested tribes through August 21, 2020. A consultation meeting between the Federal agencies and representatives from interested tribes was held on August 11, 2020 via conference call. Comments were received from the Fort Mojave Indian Tribe on August 20, 2020 with concurrence from the Fort Yuma Quechan Tribe on August 21, 2020. Final responses were provided to DTSC and MWD on November 3, 2020 and draft responses to the Tribes were provided on December 4, 2020. The agencies received responses to the DOI Response to Comment from Fort Mojave Indian Tribe on January 12, 2021, with concurrence from the Cocopah Indian Tribe Cultural Resource Department on January 13, 2021, the Quechan Indian Tribe Historic Preservation Office on January 14, 2021 and the Hualapai Department of Cultural Resources on January 19, 2021. Meetings were held between the Federal agencies and Tribes on February 12 and February 24, 2021 to discuss the remaining issues.

The Human Health and Ecological Risk Assessment (“HHERA”) was conducted for the Site, as part of the CERCLA process. The purpose of the HHERA was to use environmental sample data to identify constituents of concern (“COCs”), provide an estimate of how and to what extent human and ecological receptors might be exposed to these chemicals, and provide an assessment of the health effects associated with these chemicals (Arcadis, 2019). The HHERA was made available to the public and was accepted by the California Department of Toxic Substances Control (“DTSC”) and DOI on May 29, 2020.

Soil and related investigation activities covered fifteen areas located outside the Compressor Station fence line and twenty-seven areas located inside the Compressor Station fence line. The perimeter areas adjacent to the fence line and the storm drains leading from the Compressor Station to areas outside the fence line were also included in the investigation. Soil sampling and related soil investigation field work was completed between December 2015 and March 2016, January through March 2017, and the latter part of April 2017. The soil Resource Conservation and Recovery Act (“RCRA”) facility investigation/remedial investigation (“RFI/RI”) results are presented in the Draft RFI/RI Report Volume 3. The draft RFI/RI was made available to the agencies, stakeholders and tribes on December 09, 2019. PG&E received comments on the draft RFI/RI from DOI, DTSC, and the Fort Mojave Indian Tribe. Comment resolution meetings were held on December 9/10, 2020. PG&E is revising the document to address the comments and responses. The revised draft will then be submitted for a second agency, tribe and stakeholder review in 2021.

RESPONSES TO SIGNIFICANT COMMENTS

Below is a summary of comments received from the stakeholders and Tribes during the public comment period and DOI's response to those comments. Similar comments have been summarized and addressed together. The full text of all written comments received during the comment period, and DOI's responses to those comments, have been included in the Administrative Record. Comments submitted during the tribal consultation and public comment period addressing issues other than the NTCRA, while not specifically addressed in this Responsiveness Summary, are included in the Administrative Record for this removal action decision.

Comments have been organized into the following categories:

- Legal Issues (Policy Issues, Applicable or Relevant and Appropriate Requirements (“ARARs”), CERCLA Requirements and Issues)
- EE/CA (Removal Action Objectives, Risk-based Remedial Goals, Technology Evaluation and Alternative Development, Implementability)
- Potential Action Areas
- Contaminant Migration
- Tribal Concerns/Impacts

Legal Issues

Several DTSC comments identified that characterization and management of waste should be done in accordance with California hazardous waste regulations.

Response: California Code of Regulations (“CCR”), Title 22, Hazardous Waste Control Law and Regulations (22 CCR Division 4.5, Chapters 11, 12, 14, 18) are listed as ARARs and PG&E is responsible for adhering to these regulations in implementing the removal action.

The Fort Mojave Indian Tribe suggested that both the current Soils California Environmental Quality Act (“CEQA”) evaluation (identifying both total number of samples and soil sampling mitigation measures) and a proposed CEQA- equivalent evaluation on the EE/CA are BOTH ARARs as defined under CERCLA because the CEQA process is State of California-requirement.

Response: CEQA ensures California public agencies consider the environment when making decisions. CEQA is triggered when a California public agency must undertake or authorize a discretionary action that may cause a physical change to the environment. DTSC is not undertaking or authorizing the EE/CA or the proposed removal action; therefore, CEQA is not an ARAR for this action.

The Fort Mojave Indian Tribe suggested that federal laws protecting tribal interests; including but not limited to, The Historic Preservation Acts, Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act, Executive Order 11593, and any State of California requirements for the protection of Tribal Lands, were not adequately addressed in the EE/CA.

Response: The cited Acts and Orders are included as ARARs in the Topock Soil EE/CA. Any action proposed for implementation must satisfy ARARs or a waiver must be granted. Additionally, Topock documents developed between the Tribes, SHPO, ACHP and BLM, specifically the Programmatic Agreement and the Cultural and Historic Properties Management Plan, are TBCs and identify how these ARARs are implemented at the Site. Additional information regarding the application of ARARs/TBCs to the removal action will be described in the Removal Action Work Plan (RAWP). Tribal consultation on the RAWP will provide an additional opportunity for input on the application of ARARs and protection of cultural resources.

EE/CA

Several comments suggested that there was not sufficient evidence of risk posed by contaminants at the site to justify a soil removal action.

Response: The potential for unacceptable risk was identified in the HHERA as being driven by dioxin/furan and hexavalent chromium for human health; and by dioxin/furan, total chromium, and copper for ecological receptors in nine localized areas within Solid Waste Management Unit 1 (“SWMU 1”), Area of Concern (AOC) 9, and AOC 10.

Several comments suggested that there is insufficient information within the EE/CA to show that identified potential action areas (“PAAs”) are point sources for migration of contaminants.

Response: The Site Conceptual Model (“CSM”) and data found in the draft RFI//RI report provide support and evidence regarding the transport of material and contamination down the washes and toward the Colorado River. The CSM is summarized in Section 2.3.3 of the EE/CA and in Exhibit 2-1. Evidence of flooding and significant mass movement of material in washes

was highlighted by the damage to wells in Bat Cave Wash (“BCW”) and transport of material from upgradient areas and a nearby quarry. The continued scouring and mobilization of contamination from source areas (areas of high concentration of contaminants) to areas of less contamination qualifies as a release. The selected PAAs are considered potential sources for continued migration of contaminants and a threat of release to the Havasu National Wildlife Refuge (“HNWR”).

Several comments identified that the acceptable cancer risk ranges considered for cleanup criteria are 1×10^{-6} to 1×10^{-4} , which provides an allowable risk range for risk managers to use in making decisions. The comments noted that the EE/CA Report used the most conservative number, 1×10^{-6} , as a bright line for cleanup actions and requested that DOI explain how the use of the most conservative cleanup values represents Tribal interests at the Topock Site.

Response: U.S. Fish and Wildlife Service (“USFWS”) supports the soil clean-up efforts as determined by the 10^{-6} risk level. Reducing the target risk level for humans for hexavalent chromium (“Cr (VI)”) and dioxins and furans (“dioxins/furans”) would not significantly reduce the amount of soil removed as ecological risk-based remedial goals (“RBRGs”) for Total Chromium and dioxins/furans would then be used. The Federal agencies have considered Tribal interests in the EE/CA by only targeting areas of contamination that are considered significant sources rather than point by point cleanup thereby reducing the overall impact to the Site. Additionally, the preferred alternative (Alternative 3 – Excavation, Mechanical Separation, Offsite Disposal of Fines, and Reuse of Coarse Material) reduces the amount of soil removed from the Site, a factor which the Tribes have emphasized as important throughout the cleanup process.

The Federal agencies recognize that the area outside the compressor station will continue to be used for recreation and Tribal uses. We also acknowledge that the Tribes’ goal is to reduce, to the greatest extent possible, impacts to the Site during remedial activity. In consideration of the Tribes comments, USFWS will agree to reduce the human health cleanup level to 10^{-5} for the PAAs for contamination below 2’. For these locations, the cleanup numbers will then be based on the human health risk level of 10^{-5} for Cr(VI), the ecological RBRGs for dioxin/furans, Cr(T) and Cu and the RBCs for lead, mercury, molybdenum, and zinc. Clean up of the top two feet of the PAAs to the 10^{-6} human health standard for Cr(VI) and dioxin/furan and the ecological cleanup values for Cr(T) and Cu will remain. This action will address those locations identified in the HHERA as posing the most risk. The Federal agencies will continue to seek ways to address Tribal interests during the development and implementation of the RAWP.

Several comments were raised regarding the No Action Alternative, requesting that consideration be given to the remedial process currently underway for soil and modifying the No Action Alternative to include soil cleanup within the RFI/RI.

Response: The No Action alternative is clearly defined in guidance and regulation. Under this alternative, the Federal agencies would undertake no activity toward cleanup or risk mitigation. The No Action alternative analysis provides a benchmark or baseline to allow decision makers and the public to compare the levels of environmental effects of the alternatives. The No Action

alternative would also be included within the alternative analysis in a soil Corrective Measures Study/Feasibility Study. Although a no-action alternative may include some type of environmental monitoring, actions taken to reduce the potential for exposure are not included as a component of the no-action alternatives.

The Fort Mojave Indian Tribe requested that an additional removal action alternative be included and evaluated in the EE/CA Report. This alternative would be “Removal of Visible Debris”.

Response: The proposed alternative of removal of visible debris, associated with hazardous substances as required under CERCLA, was included as suggested by the Tribe. This alternative received the same analysis as the original alternatives. The EE/CA identifies that alternative was not carried forward as it does not satisfy Removal Action Objectives (“RAOs”) 1 or 2 since it does not reduce human and ecological risk related to the contaminants in locations identified in the HHERA nor does it address significantly elevated concentrations of contaminants outside the TCS in or adjacent to wash areas that are within, or have the potential to migrate to, the HNWR.

Conflicting comments were identified regarding the preference of alternatives. DTSC believes Alternative 2 would be the most effective in reducing the Toxicity, Mobility and Volume of the contaminants because all potential contaminants above the Removal Action Goals would be removed but acknowledges that Alternative 3 appears to provide a balance by reducing the amount of material to be disposed off-site and the Tribal cultural preference. The Fort Mojave Indian Tribe suggests that they would support removal of debris only to minimize the disruption and impacts to the site, an area known to be culturally significant to several Tribes.

Response: Although complete removal of contaminated soil in the PAAs (Alternative 2) would be the most effective alternative and ensure that the maximum amount of soil above the RAGs is removed from the Site, it does not take Tribal interests and values into consideration. As noted in the above response, removal of debris only does not significantly reduce human and ecological risk nor the potential for continued migration of contamination. Alternative 3 (Excavation, Mechanical Separation, Offsite Disposal of Fines, and Reuse of Coarse Material) minimizes the volume of soil removed from the Site while reducing contaminant levels to below RAGs.

Potential Action Areas

Several DTSC comments identified additional sample locations or AOCs to include in the PAAs based on high concentrations of hexavalent chromium, copper, or dioxins/furans.

Response: DOI evaluated the suggested sample locations or areas and agreed to include the following locations within the PAAs:

- AOC 16 – Former Sand Blast shelter has high concentrations of copper. It is easily identifiable, located on the perimeter of the fence line, and can easily migrate offsite towards BCW. Additionally, AOC 16 concentrations of copper (1,500 mg/kg) are greater than 10 times the RAG for copper. AOC 16 will be identified for removal in the EE/CA under RAO 3.

- SWMU1-29 and SSB-5 (SWMU1 PAA#1), AOC10-c1 (AOC-10, PAA#2), PA-18 (AOC10, PAA#1), AOC 27-50 (AOC 27, PAA#1) are at the edges of the of the previously defined PAAs and will be included in the EE/CA for assessment during the removal action implementation.
- SWMU1-WP-6h will be included in the EE/CA and removed under RAO 3 criteria if white powder is present.

The other seven identified locations were not considered to be significant sources based on considerations regarding potential volume of soil, low factors of exceedance (< 10x) in comparison to the Removal Action Goal (“RAG”), or current Site conditions. Additionally, the removal of AOC 13 is beyond the scope of this NTCRA due to the need for stabilization analysis for the slope and the proximity to TCS infrastructure.

Contaminant Migration

Conflicting concerns regarding the potential for contaminant migration to the Colorado River were identified during the comment period.

Response: With respect to AOC 1/SWMUI 1, the presence of thick vegetation, the widening of BCW channel, and the partial blockage of flow by National Trails Highway greatly reduces the energy of flow during runoff events, resulting in deposition of entrained soil within the vegetated area at the downstream end of BCW. Soil sampling was performed in the area of dense vegetation near the mouth of BCW (Tamarisk area) and dioxins/furans were detected indicating contamination has migrated from inland sources. Sediment sampling was performed at the mouth of BCW where it meets the Colorado River and no exceedances of preliminary screening levels were detected. Removal of significant sources upstream of the Tamarisk area will further ensure protection of the river as a source of drinking water.

Conflicting issues regarding the potential for Cr (VI) migration to groundwater were identified during the review of comments from stakeholders and Tribes.

Response: Vadose zone modeling concluded that soil contamination does not pose a current or future threat to groundwater in BCW. However, a current Technical Working Group (“TWG”) discussion topic is exploring the potential for soil contamination to act as a continuous source to groundwater from areas on the TCS and BCW.

Tribal Concerns/Issues

Several comments discuss whether Tribal concerns were considered.

Response: The Tribes have been engaged in the cleanup process, including development and implementation of the Soil Investigation Work Plan, the HHERA development, review of the Draft EE/CA, and participation in the three EE/CA Consultation meetings. The Tribes are also active in regular Consultative Work Group (“CWG”) and TWG meetings, often presenting information to regulators for consideration during these meetings. The Federal agencies have an understanding of the importance of the area to the Tribes and recognize that reducing physical impacts to the Site should be considered throughout the cleanup process. BLM has determined

that a traditional cultural property (“TCP”) or property of traditional religious and cultural significance lies within the Site Area of Potential Effect and is eligible for inclusion on the National Register of Historic Places. Efforts to minimize the amount of disturbance were considered in the selection of the PAAs, analysis of the alternatives within the EE/CA, and selection of the preferred alternative. Additionally, in consideration of the Tribes comments, USFWS will agree to reduce the human health cleanup level from 10^{-6} to 10^{-5} for the PAAs for Cr(VI) and dioxin/furan contamination below two feet. Continued efforts to reduce other physical impacts during the NTCRA will occur during the development and implementation of the RAWP. The Federal agencies will seek additional input from the Tribes throughout this process.

CONCLUSION

DOI and USFWS sincerely appreciate the comments submitted by the stakeholders and Tribes and the opportunities that the Federal agencies had to meet with Tribal representatives and consultants to receive input regarding the EE/CA and to discuss Site issues and responses to comments received on the EE/CA. DOI and USFWS believe this responsiveness summary addresses the significant comments regarding the EE/CA and meets the requirements of the NCP and CERCLA.

In summary, DOI/USFWS believe that the comments received do not substantively alter the conclusion of the EE/CA insofar as the recommended alternative, Alternative 3 – Excavation, Mechanical Separation, Offsite Disposal of Fines, and Reuse of Coarse Material, is the most protective alternative with respect to human health and the environment and compliance with ARARs, is the highly implementable, and cost effective long-term action to address the identified soil contamination.

Table 1. Identified Applicable or Relevant and Appropriate Requirements (ARARs)

Category	Item No.	Citation	Determination	Description and Applicability
Location-Specific	1	Federal Land Policy and Management Act (FLPMA) (43 USC § 1701, et seq.)	Applicable	In managing public lands, BLM is directed to take any action necessary to prevent unnecessary or undue degradation of the lands. Actions taken on the public land (i.e., BLM-managed land) portions of the Topock Site should provide the optimal balance between authorized resource use and the protection and long-term sustainability of sensitive resources. Figure 2-1 shows property managed by BLM.
	2	National Wildlife Refuge System Administration Act (16 USC § 668dd-ee, 50 CFR § 27)	Applicable	This Act governs the use and management of the Havasu National Wildlife Refuge portion of the Topock Site. It requires that the USFWS evaluate ongoing and proposed activities and uses to ensure that such activities are appropriate and compatible with the mission of the National Wildlife Refuge System, as well as the specific purposes for which the HNWR was established. Prior to the selection of a removal action by DOI/USFWS, that removal action must be found by the Refuge Manager to be both an appropriate use of the HNWR and compatible with the mission of the HNWR and the Refuge System as a whole. Any removal action proposed to be implemented on the HNWR that was not selected by DOI/USFWS would be subject to the formal appropriate use/compatibility determination process. Portions of the Site are located in the HNWR (Figure 2-1).
	3	Fish and Wildlife Conservation Act (16 USC §§ 2901-2911)	Relevant and Appropriate	Federal departments and agencies are encouraged to utilize their authority to conserve nongame fish and wildlife and their habitats and assist States in the development of their conservation plans.
	4	Fish and Wildlife Coordination Act (16 USC § 661-667e)	Applicable	This Act requires that any federally-funded or authorized modification of a stream or other water body must provide adequate provisions for conservation, maintenance, and management of wildlife resources and their habitat. Necessary measures should be taken to mitigate, prevent, and compensate for project-related losses of wildlife resources.
	5	National Historic Preservation Act (54 USC § 300101, et seq., 36 CFR Part 800)	Applicable	This statute and the implementing regulations require that a federal agency undertaking a removal action at or near historic properties must take into account the effects of such undertaking on the historic properties. The federal agency must determine, based on consultation, if an undertaking's effects would be adverse and seek ways that could avoid, mitigate, or minimize such adverse effects on a National Register eligible property. The agency must then specify how adverse effects will be avoided or mitigated or acknowledge that such effects cannot be avoided or mitigated. Measures to avoid or mitigate adverse effects of any selected removal action that are adopted by the agency through federal consultation must be implemented by the removal action to comply with the National Historic Preservation Act. Properties on and near the Site that are eligible for or listed on the National Register of Historic Places include Native American cultural resources and elements of the historic "built environment." In recognition of this, all removal activities will be conducted in ways that avoid, minimize, or mitigate adverse effects to cultural and historic properties within the Area of Potential Effects in accordance with the Programmatic Agreement (BLM, 2010, as amended 2016), the Cultural and Historic Properties Management Plan (BLM, 2012), the Cultural and Historic Properties Treatment Plan (AE, 2018), and in consultation with the Tribes.

Category	Item No.	Citation	Determination	Description and Applicability
	6	National Archaeological and Historical Preservation Act (16 USC § 469, et seq.)	Applicable	This statute requires the evaluation and preservation of historical and archaeological data that might otherwise be irreparably lost or destroyed through any alteration of terrain as a result of federal construction projects or a federally licensed activity.
	7	Archaeological Resources Protection Act (16 USC § 470aa-ii, et seq., 43 CFR Part 7)	Applicable	This statute provides for the protection of archeological resources located on public and tribal lands. The Act establishes criteria that must be met for the land manager's approval of any excavation or removal of archaeological resources if a proposed activity involves soil disturbances.
	8	Historic Sites Act (54 USC § 320101 et seq., 36 CFR Part 65)	Applicable	Pursuant to this Act, federal agencies must consider the existence and location of historic sites, buildings, and objects of national significance, using information provided by the National Park Service, to avoid undesirable impacts upon such landmarks. There are no designated historic landmarks within the Site, although Public Law 106-45, 113 Stat. 224 (1999), provides for a cooperative program "for the preservation of the Route 66 corridor" through grants and other measures.
	9	Native American Graves Protection and Repatriation Act (25 USC § 3001 et seq., 43 CFR Part 10)	Applicable	This Act regulates the removal and trafficking of human remains and cultural items, including funerary and sacred objects. If removal activities result in the discovery of Native American human remains or related objects, these requirements must be met. Portions of the Site contain archaeological areas that may contain human remains.
	10	Religious Freedom Restoration Act (42 USC § 2000bb, et seq.)	Relevant and appropriate	Under this Act, the government shall not substantially burden a person's exercise of religion, unless the application of the burden is in furtherance of a compelling government interest, and it is the least restrictive means of furthering that compelling interest. To constitute a "substantial burden" on the exercise of religion, a government action must (1) force individuals to choose between following the tenets of their religion and receiving a governmental benefit or (2) coerce individuals to act contrary to their religious beliefs by the threat of civil or criminal sanctions. If any removal action selected imposes a substantial burden on a person's exercise of religion, it must be in furtherance of a compelling government interest and be the least restrictive means of achieving that interest.
	11	American Indian Religious Freedom Act (42 USC § 1996, et seq.)	Relevant and appropriate	This Act requires that the United States protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise their traditional religions.
	12	Resource Conservation and Recovery Act (42 USC § 6901, et seq., 40 CFR § 264.18)	Applicable	These regulations promulgated under RCRA establish Seismic and Floodplain considerations which must be followed for treatment, storage, or disposal facilities constructed, operated, or maintained within certain distances of fault lines and floodplains. Portions of the Topock Site are located on or near a 100-year floodplain.
	13	Floodplain Management and Wetlands Protection (40 CFR § 6.302(a) & (b))	Applicable	Before undertaking an action, agencies are required to perform certain measures in order to avoid the long- and short- term impacts associated with the destruction of wetlands and the occupancy and modification of floodplains and wetlands. The regulation sets forth requirements as means of carrying out the provisions of Executive Orders 11988 and 11990.

Category	Item No.	Citation	Determination	Description and Applicability
Action-Specific	14	Clean Water Act. Stormwater Management (33 U.S.C. § 1342, 40 CFR Part 122, 40 CFR Part 125)	Relevant and appropriate	These regulations define the necessary requirements with respect to the discharge of stormwater under the National Pollutant Discharge Elimination System (NPDES) program. These regulations will apply if proposed removal actions disturb more than 1 acre of soil and result in stormwater runoff that comes in contact with any removal activity, or if proposed removal actions involve specified industrial activities. NPDES requirements regulate discharges of pollutants from any point source into waters of the United States.
	15	Federal Water Pollution Control Act (Clean Water Act) (33 USC § 1344, 40 CFR § 230.10)	Applicable	<p>This section of the Clean Water Act prohibits certain activities with respect to on-site wetlands and waterways. No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed activity which would have less adverse impact to the aquatic ecosystem.</p> <p>Minimization measures will be implemented to minimize impacts to wetland and non-wetland waters of the United States within the PAAs. All efforts will be taken to avoid jurisdictional resources to the extent practicable. Although the USACE did not provide a list of measures that may be taken to reduce impacts to jurisdictional waters and wetlands for the Topock groundwater remedy, the CDFW requires compliance with Avoidance and Minimization Measures (AMMs) in lieu of a Lake or Streambed Alteration Agreement pursuant to CERCLA Section 121(e) for all work conducted in CDFW jurisdictional washes (CDFW, 2013).</p> <p>Any soil removal action in CDFW jurisdictional washes will adhere to the same AMMs.</p>
	16	Endangered Species Act (16 USC § 1531, et seq., 50 CFR Part 402)	Applicable	<p>The Endangered Species Act and its implementing regulations makes it unlawful to remove or "take" threatened and endangered plants and animals and protects their habitats by prohibiting certain activities.</p> <p>Examples of endangered species in or around the Topock Site may include, but are not limited to, southwestern willow flycatcher, desert tortoise, Colorado pikeminnow, razorback sucker, and bonytail chub. Removal action selected for the Site will not result in the take of, or adverse impacts to, threatened and endangered species or their habitats, as determined based on consultation with the U.S. Fish and Wildlife Service under section 7 of the Endangered Species Act. Mitigation measures will be implemented in accordance with the Programmatic Biological Assessment (CH2M, 2007b) and the Bird Impact Avoidance and Minimization Plan (BIAMP) (CH2M, 2014d) to avoid project-related risks to endangered species that could result from removal actions.</p>
	17	Migratory Bird Treaty Act (16 USC §§ 703-712)	Applicable	<p>This Act makes it unlawful to "take, capture, kill" or otherwise impact a migratory bird or any nest or egg of a migratory bird. The Havasu National Wildlife Refuge, part of which makes up the Topock Site, was created as a refuge and breeding ground for migratory birds and other wildlife; therefore, there is potential for contact with migratory birds during proposed removal activities.</p> <p>The BIAMP specifies measures to avoid project-related risks to avian wildlife that could result from project activities. The BIAMP will be implemented during removal action.</p>
	18	California Code of Regulations (CCR) Title 27, Environmental Protection	Applicable	<p>Title 27 regulates discharges of wastewater to land, including but not limited to, evaporation ponds, percolation ponds, or subsurface leach fields.</p> <p>Any disposal of wastewater to the existing TCS evaporation ponds must meet the Waste Discharge Requirements (WDRs) Order No. R7-2018-0022. If it becomes necessary to amend the WDRs for the ponds to accept wastewater from the proposed removal action, a revised Report of Waste Discharge (ROWD) would be required.</p>

Category	Item No.	Citation	Determination	Description and Applicability
	19	Hazardous Waste Control Law and Regulations (22 CCR Division 4.5, Chapters 11, 12, 14, 18)	Applicable	<p>The California Hazardous Waste Control Law and Regulations establish requirements for hazardous waste generators; operators of hazardous waste treatment, storage, or disposal units; and for corrective action taken in response to releases of hazardous waste from regulated units. Hazardous waste generators must determine if their waste is hazardous, manage the waste in accordance to specified requirements for accumulation in tanks and containers, use a hazardous waste manifest for offsite transportation of hazardous waste, send hazardous waste to an appropriately permitted offsite treatment or disposal facility, and retain specified records. These requirements will apply to all hazardous waste generated by onsite remedial activities. Units constructed to treat hazardous waste as part of the remediation must comply with additional operational and closure requirements.</p> <p>The management of excavated or displaced materials will be in accordance with the Groundwater Remedy Soil Management Plan (CH2M, 2015b).</p>
	20	Mohave Desert Air Quality Management District, Rule 403 – Fugitive Dust	Applicable	<p>This rule sets the standards to minimize fugitive dust emissions from remedial actions. For example,</p> <ul style="list-style-type: none"> • Must take “every reasonable precaution” to minimize dust emissions from soil disturbing activities (e.g., excavation, grading, land clearing). • Must take “every reasonable precaution” to keep their operations from depositing visible particulate matter on public roadways (clean equipment prior to travel on paved streets, remove any deposited material promptly). • If peak winds are less than 25 miles per hour (mph) and 15-minute average wind speed is less than 15 mph: <ul style="list-style-type: none"> – Must not conduct transport, handling, construction or storage activities that cause fugitive dust that remains visible beyond the property line, and – Must not cause PM concentrations in excess of 100 micrograms per cubic meter, measured as the difference between upwind and downwind samples collected on high volume samplers at the property line for a minimum of 5 hours.
	21	Requirement for Land Use Covenants (22 CCR § 67391.1)	Relevant and Appropriate	<p>This regulation requires appropriate restrictions on use of property in the event that a proposed remedial alternative results in hazardous materials remaining at the property at levels that are not suitable for unrestricted use of the land. This is an ARAR with respect to privately-owned land at the Topock Site.</p> <p>A Land Use Covenant and Agreement was made between PG&E and DTSC for PG&E property (APN 0650-161-08) at the Site. Removal action selected for the Site will be conducted in compliance with the Environmental Restrictions of the Covenant.</p>
	22	Clean Air Act (42 USC §§ 7401, et seq.) National Ambient Air Quality Standards (40 CFR § 50)	Relevant and Appropriate	<p>These ambient air quality standards define levels of air quality to protect the public health. National Ambient Air Quality Standards are not enforceable in and of themselves, but they may be used as guidance if removal activities create potential air quality impacts.</p>

Category	Item No.	Citation	Determination	Description and Applicability
	23	Federal Noxious Weed Act of 1974 Public Law 93-629 (7 USC 2801, et seq.)	Applicable	Requires the use of integrated management systems to control or contain undesirable plant species. Applicable to on-Site response activities to control, eradicate, or prevent or retard the spread of such weeds.

Notes:

AMM = Avoidance and Minimization Measures
 ARAR = applicable or relevant and appropriate requirements
 BIAMP = Bird Impact Avoidance and Minimization Plan
 BLM = U.S. Bureau of Land Management
 CCR = California Code of Regulations
 CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
 CFR = Code of Federal Regulations
 COPC = constituent of potential concern
 CrVI – hexavalent chromium
 DOI = U.S. Department of the Interior
 DTSC = California Department of Toxic Substance Control
 ECV = ecological comparison values
 ESL = environmental screening level
 FLPMA = Federal Land Policy and Management Act
 HERO = DTSC Human and Ecological Risk Office
 HHRA = human health and risk assessment
 HNWR = Havasu National Wildlife Refuge
 mph = miles per hour
 NCP = National Oil and Hazardous Substance Pollution Contingency Plan
 NPDES = National Pollutant Discharge Elimination System
 PAH = polycyclic aromatic hydrocarbons
 PG&E = Pacific Gas and Electric Company
 RBRG = risk-based remediation goals
 RCRA = Resource Conservation and Recovery Act
 ROWD = Report of Waste Discharge
 TBC = to-be-considered
 TCS = Topock Compressor Station
 TEQ = toxicity equivalent
 USC = U.S. Code
 USEPA = U.S. Environmental Protection Agency
 USFWS = U.S. Fish and Wildlife Service

Table 2. Other Advisories, Criteria, or Guidance To Be Considered (TBCs)

Category	Item No.	Citation	Description and Applicability
Chemical-Specific	1	Risk-Based Remediation Goals (RBRGs) for Risk Drivers in Soil at Topock Site ^a	Final Human Health and Ecological RBRGs were estimated for two significant contributors to soil risks at the Topock Site, namely total chromium, CrVI, copper, and dioxin/furan TEQ.
	2	Risk-Based Concentrations (RBCs) for Soil Management Purposes ^a	Final Human Health and Ecological RBCs were estimated for purposes of soil management at the Topock Site.
	3	Soil Ecological Comparison Values (ECVs) ^b	Soil ECVs were developed for Topock COPCs (metals and polycyclic aromatic hydrocarbons [PAHs]) using both lowest observed adverse effect levels or concentrations and no-adverse effect levels or concentrations based on target toxicity values (i.e., values below which no unacceptable risk is expected) for the protection of the ecological receptors at the PG&E Topock Site based on the representative receptors selected for the ecological risk assessment.
	4	Ambient or Background Soil Concentrations at Topock Site ^{c,d,e}	Ambient or background levels of inorganic chemicals in soils in/around the PG&E Topock Site were calculated to assist in remedial planning, risk assessment, as well as remedial and soil management decision making.
	5	DTSC HHRA Note Number 2, Dioxin-TEQ Soil Remediation Goals for Sites in California ^f	The DTSC Human and Ecological Risk Office (HERO) recommends the following remedial goal for soils contaminated by dioxins and dioxin like-compounds: <ul style="list-style-type: none"> • Dioxins/furans TEQ Humans – 50 ng/kg
	6	DTSC HHRA Note Number 3, DTSC-modified Screening Levels ^g	The DTSC HERO HHRA Note Number 3 presents recommended screening levels for constituents in soil, tap water, and ambient air.
	7	USEPA “Regional Screening Levels for Chemical Contaminants at Superfund Sites” ^h	Establishes comparison values for residential and commercial/industrial exposures to soil, air, and tap water for screening chemicals at Superfund sites.
	8	San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels for residential direct exposure	Conservative screening levels for chemicals found at sites with contaminated soil and groundwater. These levels are intended to help expedite the identification and evaluation of potential environmental concerns at contaminated sites. ESLs address a range of media (soil, groundwater, soil gas, and indoor air) and a range of concerns (e.g., impacts to drinking water, vapor intrusion, and impacts to aquatic habitat).
	9	Occupational Safety and Health Act (29 U.S. Code (USC) § 651, et seq.; 29 CFR § 1910.1026)	Sets standards for workers engaged in activities associated with remedial actions under the National Contingency Plan, including occupational exposure to hexavalent chromium. Pursuant to the NCP preamble, Occupational Safety and Health Act standards are not ARARs but may be included as TBCs.
Location-Specific	10	U.S. Department of Interior, Bureau of Land Management, <i>Approved Resource Management Plan and Final Environmental Impact Statement</i> , May 2007	The Resource Management Plan provides further direction on how FLPMA requirements will be satisfied.
	11	Executive Order 8647 (6 CFR 593)	This Executive Order establishes the HNWR for the primary purpose of providing migratory bird habitat. Any response action selected must be appropriate and compatible with this purpose, as determined by the Refuge Manager.
	12	Appropriate Use Policy 603 FW 1	This policy elaborates on the appropriate uses of a National Wildlife Refuge, ensuring that such uses contribute to fulfilling the specific refuge’s purposes and the National Refuge System’s mission.
	13	Compatibility Policy 603 FW 2	This policy specifies the guidelines for determining the compatibility of proposed uses of a National Wildlife Refuge. This determination is done once a proposed use is deemed appropriate.

Category	Item No.	Citation	Description and Applicability
	14	Lower Colorado River National Wildlife Refuges, Comprehensive Management Plan (1994-2014)	The Comprehensive Management Plan provides further direction on how compliance with the National Wildlife Refuge System Administration Act, as amended, shall be achieved.
	15	Programmatic Agreement and Amendment among the Bureau of Land Management, Arizona Historic Preservation Officer, California State Historic Preservation Officer, and the Advisory Council on Historic Preservation for the Topock Remediation Project in San Bernardino County, California and Mohave County, Arizona (BLM, 2010, 2016)	<p>The Programmatic Agreement (PA) is a Topock-specific document that requires the Federal Agencies, in consultation with the Tribes, State Historic Preservation Offices of Arizona and California, Advisory Council on Historic Preservation, PG&E, and other interested parties to ensure that PG&E shall conduct all removal activities in ways that avoid, minimize, or mitigate adverse effects to cultural and historic properties within the Area of Potential Effects (APE) to the maximum extent practicable. In addition, the Federal Agencies will ensure that PG&E shall restore the areas affected by all removal activities to the conditions existing prior to the removal to the extent practicable. During a removal action, the Discovery Protocol (Stipulations IX(A)-(D)) and the Monitoring Protocol (Appendix C) of the PA shall be implemented.</p> <p>In addition, Tribal access to areas within the APE for religious, cultural, or spiritual purposes shall be implemented in accordance with the Tribal Access Plan for lands under federal management and with the Access Plan for the lands not under federal management.</p>
	16	Cultural and Historic Properties Management Plan, PG&E Topock Compressor Station, Needles, California (BLM, 2012)	The CHPMP is a Topock-specific document prepared under the PA that specifies measures to avoid or mitigate adverse effects to cultural and historic properties within the APE. PG&E shall conduct all removal activities in compliance with these specified measures.
	17	Draft Cultural and Historic Property Treatment Plan for the Topock Compressor Station Groundwater Remediation Project, San Bernardino County, California and Mojave County, Arizona (AE, 2018)	The Cultural and Historic Property Treatment Plan is a Topock-specific document prepared under the PA that identifies measures to avoid, minimize, or mitigate adverse effects to the maximum extent practicable on the Topock Maze, the Traditional Cultural Property, and individual sites that have been determined eligible for listing on the National Register of Historic Places (NRHP), such as the trail site (CA-SBR-29943). PG&E shall implement the Treatment Plan contemporaneously with all removal activities. All unevaluated sites are treated as eligible for the NRHP and shall be avoided to the maximum extent practicable. In accordance with the PA, should unanticipated adverse effects occur as a result of a removal action, the Treatment Plan shall be modified to include measures to minimize or mitigate the adverse effects.
	18	National Register Bulletin 38	Guidelines for evaluating and documenting traditional cultural properties.
	19	Preservation Brief 36	Guidelines for planning, treating, and managing historic landscapes.
	20	Executive Order 11593	This Order directs the Federal Agencies to initiate measures for the protection and enhancement of the cultural environment. These measures include assuring that steps are taken to make records, drawings, and/or maps and have such items deposited in the Library of Congress when, as the result of a federal action, a property listed on the National Register of Historic Places is to be substantially altered.
	21	Executive Order 13175	Federal Agencies are to conduct regular and meaningful consultation and collaboration with tribal officials in the development and implementation of federal policies that have tribal implications.
	22	Executive Order 12898	Federal agencies shall conduct "activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities, because of their race, color, or national origin."

Category	Item No.	Citation	Description and Applicability
	23	Executive Order 13352	The Department of Interior shall, to the extent permitted by law, “implement laws relating to the environment and natural resources in a manner that promotes cooperative conservation.”
	24	Indian Sacred Sites (Executive Order 13007)	In managing federal lands, the United States “shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and (2) avoid adversely affecting the physical integrity of such sacred sites.”
	25	Executive Order 11988 – Floodplain Management	Executive Order 11988 requires evaluation of the potential effects of actions that take place in a floodplain to avoid, to the extent possible, adverse impacts.
	26	Executive Order 11990 – Responsibilities of Federal Agencies to Protect Wetlands	Executive Order 11990 requires that potential impacts to wetlands be considered, and as practical, destruction, loss, or degradation of wetlands be avoided.
Action-Specific	27	Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds	This Order directs executive departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act, including supporting the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.
	28	Executive Order 13112 – Management of Invasive Species	Requires that each Federal agency whose action may affect the status of invasive species to take certain actions to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

Notes:

^a Arcadis. 2019. Final Soil Human Health and Ecological Risk Assessment Report, Topock Compressor Station, Needles, California. October.

^b Arcadis. 2018. Topock Compressor Station – Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil. May 28.

^c CH2M. 2009c. Final Soil Background Investigation at Pacific Gas and Electric Company Topock Compressor Station, Needles, California.

^d CH2M. 2017a. Ambient Study of Dioxins and Furans at PG&E Topock Compressor Station, Needles, California, October 13.

^e CH2M. 2019. Determination of Thallium Ambient/ Background Concentration at PG&E Topock Compressor Station, Needles, California, August 13.

^f DTSC. 2017. Human Health Risk Assessment (HHRA) Note Number 2: Soil Remedial Goals for Dioxins and Dioxin-like Compounds for Consideration at California Hazardous Waste Sites – (April 2017).

^g DTSC. 2019. [Human Health Risk Assessment \(HHRA\) Note Number 3: DTSC-modified Screening Levels \(DTSC-SLs\)](https://dtsc.ca.gov/human-health-risk-hero/) – (April 2019). <https://dtsc.ca.gov/human-health-risk-hero/>

^h USEPA. 2019. [Regional Screening Levels \(RSLs\) for Chemical Contaminants at Superfund Sites](https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables). May. <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>