Topock Project Executive Abstract					
Document Title: Final Technical Memorandum: PG&E Topock Photo Documentation Plan Submitting Agency: BLM, USFWS, DTSC, and CDFW Final Document? Yes No	Date of Document: May 24, 2018 Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) –PG&E				
Priority Status: HIGH MED LOW Is this time critical? Yes No Type of Document: Draft Report Letter Memo Other / Explain:	Action Required: Information Only Review & Comment Return to: By Date: Other / Explain: Approved without comments or changes by BLM and USFWS via 4/24/18 email to Virginia Strohl				
What does this information pertain to? Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA) RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment) Corrective Measures Study (CMS)/Feasibility Study (FS) Corrective Measures Implementation (CMI)/Remedial Action California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR) Interim Measures Other / Explain: 2014 PBA Requirement GPMM 32 and CIMP (CUL-1a-8e)	Is this a Regulatory Requirement? Yes No If no, why is the document needed?				
What is the consequence of NOT doing this item? What is the consequence of DOING this item? Non-compliance with FEIR, 2014 PBA, and CIMP if this plan is not reviewed prior to implementation.	Other Justification/s:				
Brief Summary of attached document: This final PG&E Topock Photo Documentation Plan for the Final Groundwater Remediation Project presents the objectives of the photo documentation effort: 1) pre-construction photo documentation; 2) post-construction photo documentation; 3) document changes in vegetation over time in the work areas, including natural regeneration and recovery of native plants; and 4). Restoration planting photo documentation. Sub-objectives are also described as they pertain to the CIMP (CUL-1a- 8e) for Key Views 5 and 11 described in the FEIR. This final memorandum describes the methodologies that will be employed to accomplish the aforementioned objectives. Attachment A contains a map book that presents existing photo points from the HNWR Habitat Restoration Plan and Habitat Restoration Plan for Riparian Vegetation and Other Sensitive Habitats, as well as additional proposed photo points to capture Phase 1 and Phase 2 groundwater remedy infrastructure and mitigation planting areas. Attachment B provides an example field sheet for recording conditions at the proposed photo points. Written by: PG&E Recommendations: BLM and USFWS reviewed this plan for acceptability prior to implementation of the pre-construction photo documentation. How is this information related to the Final Remedy or Regulatory Requirements: This memorandum presents the plan for pre-construction photodocumentation for the <i>Final Topock Groundwater</i>					
Remediation Project. Other requirements of this information?	·				
None					



FINAL TECHNICAL MEMORANDUM

JACOBS ch2m

PG&E Topock Photo Documentation Plan

PREPARED FOR:

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DATE: May 24, 2018

Introduction

The requirements for photo documentation originates from the 2014 Programmatic Biological Assessment (2014 PBA)(CH2M HILL, 2014), Construction/Remedial Action Work Plan(C/RAWP) for the Final Groundwater Remedy, PG&E Topock Compressor Station (TCS)(CH2M HILL, 2015), CIMP (CUL-1a-8e), and the Final Environmental Impact Report (FEIR) (DTSC 2011) (Department of Toxic Substances Control [DTSC], 2011). The requirements from the 2011 FEIR triggered the preparation of three separate habitat restoration plans that were included as appendices in the C/RAWP, including one each for the Havasu National Wildlife Refuge (HNWR) (E2 Consulting Engineers and CH2M HILL, 2015); Riparian Vegetation and Other Sensitive Habitats (CH2M HILL and E2 Consulting Engineers, 2014), and the Aesthetics and Visual Resources Protection and Revegetation Plan (E2 Consulting Engineers and CH2M HILL, 2014).

General Project Management Measure (GPMM) 32 in the 2014 PBA (CH2M HILL, 2014). The GPMM states: To document existing conditions prior to construction, a photo documentation plan will be written for the project and reviewed by BLM and USFWS. The plan will include photo points and a methodology. The plan will be implemented prior to any disturbance on site.

Section 4.2.4.2 Photograph Documentation of the C/RAWP states: *Photographs will be taken to document the pre-construction site conditions of the work areas and will be referenced when assessing requirements for post-construction site conditions, and biological restoration.*

Section 2.5.2 Restoration Areas of the CIMP (CUL-1a-8e) states: Areas to be restored are those that were disturbed by the construction, operation, or decommissioning of the groundwater remediation facilities. The pre-construction condition of these areas will be documented using various tools, including aerial photographs, ground-level photographs, topographical surveys, disturbed area mapping, archeological surveys, historical resource surveys, and biological surveys.

The field protocol in the Methods section below is intended to describe, in more detail, the approach that will be taken for photo documentation for the PG&E Topock Groundwater Remediation Program.

Objectives

The objectives of this photo documentation effort will be to:

1. Document the pre-construction site conditions of the project work areas

- 2. Document the post-construction site conditions of the project work areas in areas addressed in the HNWR Habitat Restoration Plan, Habitat Restoration Plan for Riparian Vegetation and Other Sensitive Habitats, and the Aesthetics and Visual Resources Protection and Revegetation Plan.
- 3. Document changes in vegetation over time in the work areas, including natural regeneration and recovery of native plants in areas addressed in the Havasu National Wildlife Refuge Habitat Restoration Plan, Habitat Restoration Plan for Riparian Vegetation and Other Sensitive Habitats, and the Aesthetics and Visual Resources Protection and Revegetation Plan.
- 4. Document transplant and plant replacement areas, including vegetation changes over time as well as general qualitative documentation of plant cover and vegetation condition.

The following are sub-objectives are from the Aesthetics and Visual Resources Protection and Revegetation Plan and would be implemented within Key Views 5 & 11 as discussed in that plan:

- 1a. Document the pre-construction site conditions of the Project work areas in areas where vegetation impacts are considered potentially significant in terms of visual quality and aesthetics
- 2a. Document the post-construction site conditions before revegetation and mitigation of the Project work areas where vegetation impacts are considered potentially significant in terms of visual quality and aesthetics
- 3a. Document natural regeneration and recovery of native plant species where the aboveground portion of trees and shrubs was removed but the root systems were left intact in areas where vegetation impacts are considered potentially significant in terms of visual quality and aesthetics
- 4a. Document landscape conditions in the construction sites including vegetation changes over time as well as general qualitative documentation of plant cover and vegetation condition in areas where vegetation impacts are considered potentially significant in terms of visual quality and aesthetics

More details about the specifics of each objective are provided below:

Objective 1: Pre-construction Photo Documentation

This objective is intended to document pre-construction site conditions in the work areas in the Project Area. It should be noted that separate pre-construction photo documentation will be done for both the Phase 1 construction and for the Phase 2 construction (anticipated to begin around November 2021). The intent for the two separate pre-construction photo documentation events is to have photographs that are representative of pre-construction conditions, recognizing that conditions for Phase 2 construction would not accurately be reflected by baseline photographs that were taken several years before construction begins on these particular features. Proposed photo points for the Phase 1 and Phase 2 construction are presented on the map book included in Attachment A. Pre-existing photo points shown on these maps are those that were included in the Havasu National Wildlife Refuge Habitat Restoration Plan and the Habitat Restoration Plan for Riparian Vegetation and Other Sensitive Habitats.

The following proposed protocol for photo documentation of the project area is intended to serve two purposes: 1) document the pre-construction site conditions of the work areas for later restoration after decommissioning, and 2) provide a photographic baseline prior to construction that can be used to measure vegetative changes that that occur during and after construction.

In January 2017, PG&E commissioned an overflight of the Project Area using Light Detection and Ranging (LiDAR) technology that produced a detailed topographic survey of current ground surface conditions and existing perennial vegetation and will provide a record of the pre-construction ground surface and

vegetation conditions. PG&E chose to use this technology to document the pre-construction conditions of the project area but a LiDAR survey will not be flown again to document post-construction conditions.

As previously mentioned, this Photo Documentation Plan includes a set of maps that show the proposed photo points for the upcoming baseline documentation for Phase 1 construction and Phase 2 construction (Attachment A). The maps are shown on an aerial photographic base together with the proposed groundwater remedy features (e.g., wells, buildings, pipelines) and access roadways. The color coding of the proposed photo point indicates different types of proposed photo points, as follows: red for access roadways characterization; blue for pipeline alignments; and black for construction footprint 'edge' photo points.

It should be recognized that the proposed photo points may be altered immediately prior to construction in order to optimize coverage once the exact construction footprint is delineated in the field by the construction team.

Locations for photo points occurring in HNWR were previously selected and documented in the Topock Compressor Station Groundwater Remediation Project, Havasu National Wildlife Refuge, Habitat Restoration Plan (HNWR Plan). Pre-construction photographs included in Appendix A of the HNWR Plan will be updated if pre-construction site conditions have changed since the photographs were taken in August 2014 or it was realized that the existing photo point didn't capture a planned facility or vegetation removal.

A complete set of the pre-construction photographs will be included in an electronic appendix to this document once completed.

Objective 1a: Pre-construction Photo Documentation within Key Views 5 & 11

Photo points discuss in Objective 1 that occur within Key Views 5 & 11 will be located specifically where vegetation impacts are considered to be potentially significant in terms of visual quality and aesthetics.

Objective 2. Post-construction Photo Documentation

This objective is intended to document post-construction site conditions in the work areas addressed in the HNWR Habitat Restoration Plan, Habitat Restoration Plan for Riparian Vegetation and Other Sensitive Habitats, and the Aesthetics and Visual Resources Protection and Revegetation Plan. On the proposed photo points, map book included as Attachment A, the areas where post-construction monitoring will be required only are indicated by the yellow-cross-hatch areas for HNWR lands, gray highlighted area for Section 1600 jurisdictional areas (Riparian Vegetation and Other Sensitive Habitats) and diagonal cross-hatched areas for Aesthetics and Visual Resources Protection. It should be noted that separate post-construction photo documentation will be done for both the end of the Phase 1 construction and for the end of the Phase 2 construction. Similar to Objective 1, the intent for the two separate post-construction photo documentation events in Objective 2 is to have photographs that are representative of post-construction conditions associated with the particular construction phase.

Immediately after the particular phase of the remedy construction is completed, a second round of photo documentation will occur that will duplicate the same pre-construction (baseline) photographs that were taken in the first round in areas of the project addressed in the habitat restoration plans. The pre-construction and the post-construction photographs will be paired together and incorporated into the Post-Construction (Year 1) Photo Documentation Report. A complete set of the paired photographs for the construction footprint areas addressed in the restoration plans can be included in the Post-Construction report as an appendix or electronic attachment. Photographs may otherwise be available for viewing on the web-based platform.

Objective 2a: Post-construction Photo Documentation in Key Views 5 & 11

Photo documentation of the post-construction site conditions will be completed within Key Views 5 & 11 before any potential revegetation of the project work areas where vegetation impacts are considered potentially significant in terms of visual quality and aesthetics.

Objective 3. Document changes in vegetation over time in the work areas, including natural regeneration and recovery of native plants.

This objective is intended to document vegetation changes, including natural regeneration and recovery of native plants, over a five-year period (Years 2, 3 and 5) beginning immediately following construction (Year 1). This type of photo documentation will follow the photo-documentation that is described in Objectives 2 above at locations where vegetation impacts have occurred. Ongoing monitoring of select photo points will be completed only within construction footprint areas that are addressed in the three restoration plans (HNWR, Riparian Vegetation and Other Sensitive Habitats, and Aesthetics and Visual Resources Protection). On the proposed photo points, map book included as Attachment A, the areas where post-construction monitoring will be required are indicated by the yellow cross-hatch areas for HNWR lands, gray highlighted area for Section 1600 jurisdictional areas (Riparian Vegetation and Other Sensitive Habitats) and diagonal cross-hatched areas for Aesthetics and Visual Resources Protection.

The photographs from ongoing monitoring photo points will be collected in years 2, 3, and 5 following construction. Pre-construction, immediate post-construction, and follow-up photographs will be grouped together and incorporated into the Post-Construction (Years 2, 3, and 5) Photo Documentation Reports.

Each of the ongoing photo points used for monitoring stations will have a field form completed for the location that describes: the photo point Station; date and time established; observer, coordinates and datum; location description (including landmarks); photograph direction and compass bearing; and a description of the setting (plant species, ground cover, disturbance, vegetation conditions, etc.). An example of the field form was included in the previously cited Revegetation and Restoration plans and is attached to this memorandum in Attachment B.

Objective 3a: Document natural regeneration and recovery of native plant species within Key Views 5 & 11

Document natural regeneration and recovery of native plant species where the aboveground portion of trees and shrubs was removed but the root systems were left intact in areas where vegetation impacts are considered potentially significant in terms of visual quality and aesthetics

Objective 4. Restoration Planting Photo Documentation.

This objective is intended to document site conditions within the mitigation planting sites to provide a qualitative documentation of plant cover, vegetation conditions, and changes over time. In addition to the previously discussed vegetation changes that may occur within the construction footprint over time due to natural regeneration and recovery of native plants, the restoration planting areas will also require initial and follow-up monitoring once plants are planted. As described in the three restoration plans (HNWR, Aesthetics and Visual Resources Protection and Riparian Vegetation and Other Sensitive Habitats), restoration monitoring is required for a minimum period of five years with additional years required if restoration goals are not achieved. Transplant and replacement planting photo points will be added to the map book once these specific areas to receive plantings are identified for use.

Ethnobotanical plants that are small enough to survive transplanting, will be transplanted from within the construction footprint prior to the beginning of construction.

Photo documentation of pre-planting (i.e., baseline or Year 0) conditions will be completed for all identified mitigation planting areas. These mitigation areas will then be photographed immediately after mitigation plantings have occurred (Year 1) and then again in Years 2, 3, and 5. Additional yearly monitoring may be required until mitigation goals have been achieved. The mitigation area photographs will be incorporated into the mitigation planting monitoring plans for each respective year of monitoring.

Objective 4a: Documentation of landscape conditions in the construction sites in Key Views 5 & 11

Document landscape conditions in the construction sites including vegetation changes over time as well as general qualitative documentation of plant cover and vegetation condition in areas where vegetation impacts are considered potentially significant in terms of visual quality and aesthetics

Methods

The following general approaches will be employed for all photographs in the photo documentation program:

- Capture known groundwater remedy features (e.g., wells, pipelines, buildings, laydown areas, and mitigation planting areas) and potential remedy features within the Future Activity Allowance if identified that are within the groundwater remedy construction footprint. This plan shows planned and provisional features that will be built during the Phase 1 construction and will be photographed in the initial photo-documentation effort. It also includes planned and provisional features that will be built during in November 2021). These Phase 2 features would have their baseline photographs taken within the year prior to their construction.
- Using the map book of the proposed photo points, complete the pre-construction photo documentation of the groundwater remedy construction footprint. While photo point may be revised in the field, the map book will be used to make the initial decisions for photo locations prior to going in the field in order to remove bias and to speed up the data collection process.
- The proposed Phase 1 or Phase 2 photo points are based upon the latest remedy design. Should any proposed feature location be changed from what is shown, the corresponding photo points will be modified to account for the change.
- Use the same camera and Global Positioning System (GPS) tracking device throughout the program
- Always take photographs in the same direction with the appropriate direction based on the orientation of the features themselves. Protocol-driven photograph directions are described in more detail below.
- Always take photographs from a specified height (e.g., 5 feet or eye level) with no magnification.
- Take photographs at consistent time of day if possible. This objective will be best achieved by establishing a consistent manner and order of conducting the photographic survey in various segments.
- For linear features, plan the survey using knowledge of the predominant direction of the linear and expected location of the sun at the time of the survey to avoid taking photographs in the direction

of the sun. Make note of the best times of the day to do certain segments and adopt them consistently. Use a sun shield whenever necessary to prevent sunlight from impinging directly on the camera lens.

Guidance on Photograph Directions for Linear Features (such as pipelines and new or expanded access roadways):

Of the two linear features mentioned above, pipeline features will take precedent because of the greater potential for ground disturbing activities. This means that whenever a pipeline and access route are coincident, then the default photo point will focus on the pipeline alignment, with the understanding that the surrounding, adjacent roadway will also be documented.

Linear feature photo points are color coded in the proposed photo documentation points map book included as Attachment A: blue for pipeline photo points and red for access roadways. Similarly, Phase 1 and Phase 2 photo points use two different symbols: solid dots for Phase 1 features to be photographed prior to construction; and solid triangles for Phase 2 features to be photographed prior to construction.

The following general approaches will be used for linear features:

- Document all new roadways and existing access routes that will be improved or constructed. Existing paved roads or existing dirt roads proposed to be used as is by the project, will not be photo documented (see C/RAWP Figure 4.2-3).
- For pipelines, photo documentation will begin at furthest point from the TCS. Photographs will be taken along the alignment in the forward (i.e., facing toward TCS) as well as in the backward (facing in the direction from which the photo documentation transect originated).
- Use a small orange cone within the photograph to show the alignment of linear feature; straddle alignment for the photos.
- Pipeline and access roadways will also be used to capture pre-construction and post construction conditions for point features, such as wells. To do this, the following general approaches will be used:
- Use a small plastic cone to identify the point (well) location within the photograph
- For wells, photo points to be located approximately 50 feet from the well location from the rough center of main access route (or proposed pipeline route) with the photograph looking toward the proposed well location to document what one sees when approaching the well location.

Guidance on Photograph Directions for Broad Features (such as staging areas, benches with buildings, evaporation ponds, etc.)

Broad areas will be photographed using perimeter photographs with two photo directions. In general, these photographs will be taken roughly 15 feet outside of the unit being photographed so that the bottom of the photograph will include the transition from the disturbed feature to the undisturbed surrounding area. The proposed perimeter photo points shown on the map book in Attachment A, are located approximately 15 feet outside of the broad feature. In some cases, the perimeter photo point will need to be taken immediately at the edge of the feature because offsetting 15 feet would place the photographer on a steep slope or within dense vegetation

Similar to the linear features discussed above, Phase 1 and Phase 2 photo points use two different symbols: solid dots for Phase 1 features to be photographed prior to construction; and solid triangles for Phase 2 features to be photographed prior to construction.

The following general approaches will be used for broad features:

- As much as feasible, take the photographs from the corners of the broad feature. From each perimeter photo point, take two photograph directions so that as much of the area of concern is captured.
- Durable location markers will be used as appropriate outside of the construction footprint to provide a backup to GPS locations for repeated photo points.

Attachment A – Map Book



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Water Supply Well

NEEDLES, CALIFORNIA CH2MHILL



+

Water Supply Well

NEEDLES, CALIFORNIA CH2MHILL



+

Phase 2 Photo Point

Water Supply Well

PG&E TOPOCK COMPRESSOR STATION NEEDLES, CALIFORNIA CH2MHILL





FIGURE 1 PHOTO DOCUMENTATION LOCATIONS (PAGE 4 OF 11) GROUNDWATER REMEDY CONSTRUCTION/







PHOTO DOCUMENTATION LOCATIONS (PAGE 5 OF 11) GROUNDWATER REMEDY CONSTRUCTION/







FIGURE 1 PHOTO DOCUMENTATION LOCATIONS (PAGE 6 OF 11) GROUNDWATER REMEDY CONSTRUCTION/ REMEDIAL ACTION WORK PLAN



Phase 1 Photo Point Injection Well -Jurisdictional Waters and Wetlands Monitoring Well • Phase 2 Photo Point + Water Supply Well

Extraction Well

Pipeline

Area within Key Views 5 and 11

Existing Wells:

Revegetation Area 1 inch = 300 feet

Disturbed

Vegetated

Unpaved Access Area



300

Feet

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Pipeline Locations

Phase 2 Photo Point



(PAGE 7 OF 11) GROUNDWATER REMEDY CONSTRUCTION/

REMEDIAL ACTION WORK PLAN PG&E TOPOCK COMPRESSOR STATION NEEDLES, CALIFORNIA CH2MHILL







FIGURE 1 PHOTO DOCUMENTATION LOCATIONS (PAGE 8 OF 11) GROUNDWATER REMEDY CONSTRUCTION/



FIGURE 1 PHOTO DOCUMENTATION LOCATIONS (PAGE 9 OF 11) GROUNDWATER REMEDY CONSTRUCTION/

FIGURE 1 PHOTO DOCUMENTATION LOCATIONS (PAGE 10 OF 11) GROUNDWATER REMEDY CONSTRUCTION/ REMEDIAL ACTION WORK PLAN

Photo Doc	umentation Locations Existing Photo Point	Perimeter Area	Provisional Wells: (Items in Pink are Provisional)	Planned Wells: Extraction Well Injection Well	SEIR Boundary Construction Footprint HNWR Boundary	
¥ ¥	Phase 1 Photo Point Phase 2 Photo Point	 Phase 2 Photo Point Pipeline Locations Phase 1 Photo Point Phase 2 Photo Point 		 Remedy Monitoring Well Recirculation Well Pipeline Area within Key Views 5 and 11 Jurisdictional Waters and Wetlands 	Disturbances Developed Unpaved Access Area 0 Disturbed 0 Vegetated Feet Revegetation Area 1 inch = 300 feet	

FIGURE 1 PHOTO DOCUMENTATION LOCATIONS

Attachment B – Example Field Form

Pacific Gas and Electric Company Topock Compressor Station Photo Point Monitoring Data Sheet

Date:	
	Datum:
N Compass Bearing:	Mag. or True North
n, substrate and disturbance):	
	Date: