



**Pacific Gas and
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December 1, 2017

Mr. Jason West
U.S. Department of the Interior
Assistant Field Manager
Bureau of Land Management
1785 Kiowa Avenue
Lake Havasu City, Arizona 86403-2847

Subject: Request for Reinitiation of Informal Consultation under Section 7 of the Endangered Species Act regarding Pacific Gas and Electric Topock Compressor Station AESO/SE 02EAAZ00-2014-I-0335 Final Groundwater Remedy

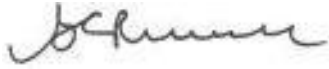
Dear Mr. West:

Pacific Gas and Electric Company (PG&E) would like to request that the Bureau of Land Management (BLM) reinitiate informal consultation with US Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act for the Programmatic Biological Assessment for PG&E's Topock Compressor Station Final Groundwater Remedy (CH2M HILL, 2014) (2014 PBA), to update the impact assessment based on the Final (100 percent) Groundwater Remedy Basis of Design (BOD), to update the Action Area, to update the listing status of the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) along with its proposed critical habitat, to change the frequency for western yellow-billed cuckoo surveys and to update the federal listing status for Morafkai's (Sonoran) desert tortoise (*Gopherus morafkai*). The attached addendum provides additional information on these items.

In its July 7, 2014 (USFWS 2014a) letter, the USFWS concurred with the Programmatic Biological Assessment (2014 PBA) finding that the proposed groundwater remedy activities at the Topock site were not likely to adversely affect the southwestern willow flycatcher (*Empidonax traillii extimus*), western yellow-billed cuckoo, Yuma clapper rail (*Rallus longirostris yumanensis*), Agassiz's desert tortoise (*Gopherus agassizii*), Morafkai's desert tortoise, razorback sucker (*Xyrauchen texanus*), and bonytail chub (*Gila elegans*) and its critical habitat in the Colorado River. Then in its January 31, 2017 letter, the USFWS concurred with BLM's request for reinitiation and amendment to the existing 2014 consultation and determination that the project may affect, but is not likely to adversely affect the northern Mexican gartersnake (*Thamnophis eques megalops*).

PG&E appreciates your consideration of the attached information. If you have any questions, please do not hesitate to contact me at (760) 791-5884 or Virginia Strohl at (559) 263-7417.

Sincerely,

A handwritten signature in dark ink, appearing to read "Curt Russell", with a stylized, cursive script.

Curt Russell
Topock Remediation Project Manager

Enclosures (1)

cc:

Shari Ketcham/BLM

Pam Innis/DOI

Carrie Marr/USFWS

Jessica Gwinn/USFWS

Kevin Russell/USFWS

Addendum to the 2014 Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Final Groundwater Remedy

In its July 7, 2014 (USFWS 2014a) letter, the U.S. Fish and Wildlife Service (USFWS) concurred with the *Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Final Groundwater Remedy* (CH2M HILL, 2014) (2014 PBA) finding that the proposed groundwater remedy activities at the Topock site were not likely to adversely affect the southwestern willow flycatcher (*Empidonax traillii extimus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), Yuma clapper rail (*Rallus longirostris yumanensis*), Agassiz's desert tortoise (*Gopherus agassizii*), Morafkai's desert tortoise (*Gopherus morafkai*), razorback sucker (*Xyrauchen texanus*), and bonytail chub (*Gila elegans*) and its critical habitat in the Colorado River. Then in its January 31, 2017 letter, the USFWS concurred with the Bureau of Land Management's (BLM) request for reinitiation and amendment to the existing 2014 consultation and determination that the project may affect, but is not likely to adversely affect the northern Mexican gartersnake (*Thamnophis eques megalops*).

The following sections provide information for the request to reinitiate informal consultation with the USFWS under Section 7 of the Endangered Species Act for the Final Groundwater Remedy associated with Pacific Gas and Electric's Topock Compressor Station.

Update to the Impact Assessment

The 2014 PBA was based upon information available at the time that included the Intermediate (60 percent) Basis of Design (BOD) document and the latest information on the Evaluation of Alternative Freshwater Sources Implementation Program. The groundwater remedy design progressed from the Intermediate (60 percent), through the Pre-Final (90 percent), to the Final (100 percent) design stage. The design process included changes at each stage resulting from comments from agencies and project stakeholders and the corresponding Pacific Gas and Electric (PG&E) responses. Figure 1 shows proposed groundwater remedy features in the Updated Action Area. Table 1, attached to this addendum, provides a list of items that changed in the Final BOD from what was presented in the Intermediate BOD. Those items have been edited accordingly in the attached revised Table 2, Summary of Planned Activities for the Final Groundwater Remedy, from the 2014 PBA.

The impact analysis for the 2014 PBA was done using design information available at that time to create a construction footprint that encompassed all project facilities and also provided the space to build them. This construction footprint was adjusted based on detailed mapping of sensitive resources and site-specific knowledge in order to minimize project impacts. The footprint has been adjusted to accommodate all changes noted in Table 1 and the impact analysis was redone for the final remedy design (as summarized in Table 3- attached to this addendum).

While Table 2 updates the text based on the changes in facilities described in Table 1, it does not provide individual updated impact areas for different types of project features. Rather, these area changes are captured in the overall impact analysis provided in Table 3 that uses the Final Groundwater Remedy construction footprint.

Updated Action Area

The Action Area was increased in certain areas to accommodate design changes for the project. Areas known to not be required for the project in the 100% Design stage were removed to limit the Action Area where possible. Figure 2 depicts the Updated Action Area compared to the previous Action Area.

Update for Western Yellow-billed Cuckoo

Update for Listing of Western Yellow-billed Cuckoo

Since the 2014 PBA, the federal listing status for the western yellow-billed cuckoo (YBCU) changed from proposed for listing to Federal Threatened on October 3, 2014 (79 FR pages 59991-600380). Since the status of the cuckoo changed, but the effects to the cuckoo remain unchanged, the effects of the action on the cuckoo may affect, but are not likely to adversely affect the cuckoo.

Update for Western Yellow-billed Cuckoo Habitat in the Action Area

As required by the 2014 PBA, protocol-level surveys for YBCU were completed in 2014 and 2015 by Jeff Steinman of Garcia and Associates (GANDA). Those reports were provided to the USFWS and to the BLM and identified two potential YBCU breeding habitats in Arizona (i.e., the western portion of Topock Marsh and Sacramento Wash), but none within the Action Area in California. Based on this new information, the YBCU habitat in the Action Area is proposed to be revised as shown in Figure 3 with breeding habitat existing in Arizona only and foraging habitat existing in California.

While not the particular focus of protocol surveys within the Action Area, incidental observations of YBCU have been made as part of annual protocol surveys that were conducted for southwestern willow flycatcher (SWFL) between 2005 through 2010 and in 2012 (GANDA, 2005, 2006, 2007, 2008, 2009, 2010, 2012, and 2014b). Throughout these surveys, a single YBCU individual was detected in three consecutive years between 2008 and 2010 and again in 2014 (but not in 2012) at the same call point location within the western portion of Topock Marsh in Arizona (GANDA, 2014a).

The incidental sighting results at the same location seem to indicate that, even though no YBCU pairs were observed, there is potentially suitable nesting habitat in Arizona along the western margin of the Topock Marsh. The topography along this peninsula from west to east consists of rolling sand dunes increasing in elevation from the levee road to an additional 20 feet and decreasing to tamarisk thicket and eventually to marsh habitat. Presumably, these areas may also contain sufficient willow shrubs (but not cottonwood trees) in addition to the tamarisk, which could support the nesting by YBCU. The floristic survey (GANDA and CH2M HILL, 2013) indicated the presence of sand-bar willow in the southern portions of Topock Marsh that were surveyed within the Action Area. Based on this information, potentially suitable YBCU nesting habitat is presumed to occur along the western and southern margin of Topock Marsh.

In 2014, no YBCU were detected during the protocol surveys; however, a single YBCU was detected visually and auditorily on July 16 during the protocol SWFL survey (GANDA, 2014a,b). During the 2015 survey, a single, but unconfirmed, auditory YBCU observation was noted in Arizona (Site 1 Call Point A-5) at a time when YBCU could be expected to be transient and migrating through the area. While this single observation did not indicate that YBCU was breeding in the area, it confirmed the previous conclusion that YBCU has the potential to breed in the survey area in the future. This conclusion was

reached because of this bird's cryptic nature, the quality of the habitat, and the fact that YBCU had been incidentally observed during four separate years in the Action Area as part of SWFL surveys and in 2015 during protocol surveys. The updated assessment of breeding habitat in the Action Area still supports the initial determination in the 2014 PBA that the effects of the action on the cuckoo may affect, but are not likely to adversely affect the cuckoo.

Update for Proposed Critical Habitat for Western Yellow-billed Cuckoo in the Action Area

Critical habitat for YBCU was proposed on December 2, 2014 (79 FR pages 71373-71375). Proposed critical habitat is found within the Action Area and includes Topock Marsh and the Colorado River to the north of Interstate 40 as depicted in Figure 3. A brief analysis of critical habitat was included in section 5.2.2.7 in our 2014 PBA. Constituent elements that are part of the critical habitat designation include dense riparian areas that are dominated by willow, cottonwood, and mesquite. These areas have shallow groundwater levels that support the trees and create humid conditions. They also have a suitable prey base of large insects. While these particular conditions are present within Arizona (i.e., Topock Marsh), they are not present within the California portion of the Action Area and, given the current hydrological management of the Colorado River, they are unlikely to become present. Proposed activities in Arizona are outside of designated breeding habitat. The nearest facility, a proposed monitoring well, is more than 250 feet from the designated breeding habitat. The proposed activities would not affect the suitable resources mentioned above for proposed critical habitat. Since the effects of the action remain unchanged, the proposed critical habitat is not likely to be adversely modified by the groundwater remedy.

Update for Yellow-billed Cuckoo Survey Frequency

Based on the 2014 PBA, protocol-level surveys for YBCU were completed in 2014 and 2015 by Jeff Steinman of Garcia and Associates (GANDA). Those reports were provided to the USFWS and to the BLM. A single, but unconfirmed, auditory YBCU observation was noted during the 2015 survey at a time when YBCU could be expected to be transient and migrating through the area. While this single observation did not indicate that YBCU was breeding in the area, it was concluded that YBCU has the potential to breed in the survey area in the future because of this bird's cryptic nature, quality of the habitat, and the fact that YBCU have been incidentally observed during five separate years in the Action Area.

It was recommended by Mr. Steinman that future protocol surveys for YBCU be conducted on the same survey schedule (every 3 years) that was adopted for the SWFL in the 2014 BPA. Because SWFL and YBCU surveys cannot be done in the same year, future YBCU surveys should occur in 2018, 2021, 2024, etc. in order to avoid concurrent surveys with the scheduled SWFL surveys in 2017, 2020, 2023, etc.

Morafkai's (Sonoran) desert tortoise

When the 2007 PBA was written, the Morafkai's (Sonoran) desert tortoise was not considered as a separate species from the Mojave desert tortoise. In December 2010, the USFWS determined the Sonoran population of desert tortoise, found only to the east of the Colorado River, warranted protection under the ESA, but that listing was precluded by higher priority listing needs, placing the Sonoran desert tortoise as a Candidate species for listing (USFWS 2010).

In 2011, a collaborative study with the USGS confirmed that the desert tortoise, thought to be one species for the past 150 years, now included two separate and distinct species (Murphy et al. 2011). The newly recognized species, Morafkai's desert tortoise, was formerly considered the Sonoran population of the desert tortoise. The study's finding that the Morafkai's desert tortoise is a new species confirmed the USFWS's decision to evaluate this population independently from the Agassiz's desert tortoise, and did not change the status of the species under the ESA.

In October 2015, the USFWS concluded that listing of Morafkai's (Sonoran) desert tortoise was not warranted, and so, the species currently has no federal listing status.

This species was added to the 2007 PBA during the 2012 reinitiation as a candidate species. Now that the species has no federal listing status, it is requested that the species be removed from the consultation.

Summary

BLM requests to reinitiate informal consultation with the USFWS for the revised impact assessment and Action Area for the 2014 PBA for the Topock groundwater remediation project. As shown on Table 3, the revised impact assessment for project changes between the 2014 PBA and the current, final groundwater remedy design did not increase the disturbance of the current floodplain, historical floodplain or upland habitats.

Based on the revised impact assessment, the project changes will not result in any new effects to listed federal species that include the YBCU and its proposed critical habitat, SWFL, Yuma clapper rail, Agassiz's desert tortoise, northern Mexican gartersnake, razorback sucker, and bonytail chub and its critical habitat in the Colorado River. BLM also requests to change the frequency for YBCU surveys and to update the federal listing status for Morafkai's (Sonoran) desert tortoise.

References:

CH2M HILL, Inc. 2014. Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Final Groundwater Remedy. April 28.

CH2M HILL, Inc. 2015. Basis of Design Report/Final (100%) Design for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California. November 15.

Garcia and Associates (GANDA). 2014a. *Southwestern Willow Flycatcher Presence/Absence Surveys for the PG&E Topock Compressor Station*. October 29.

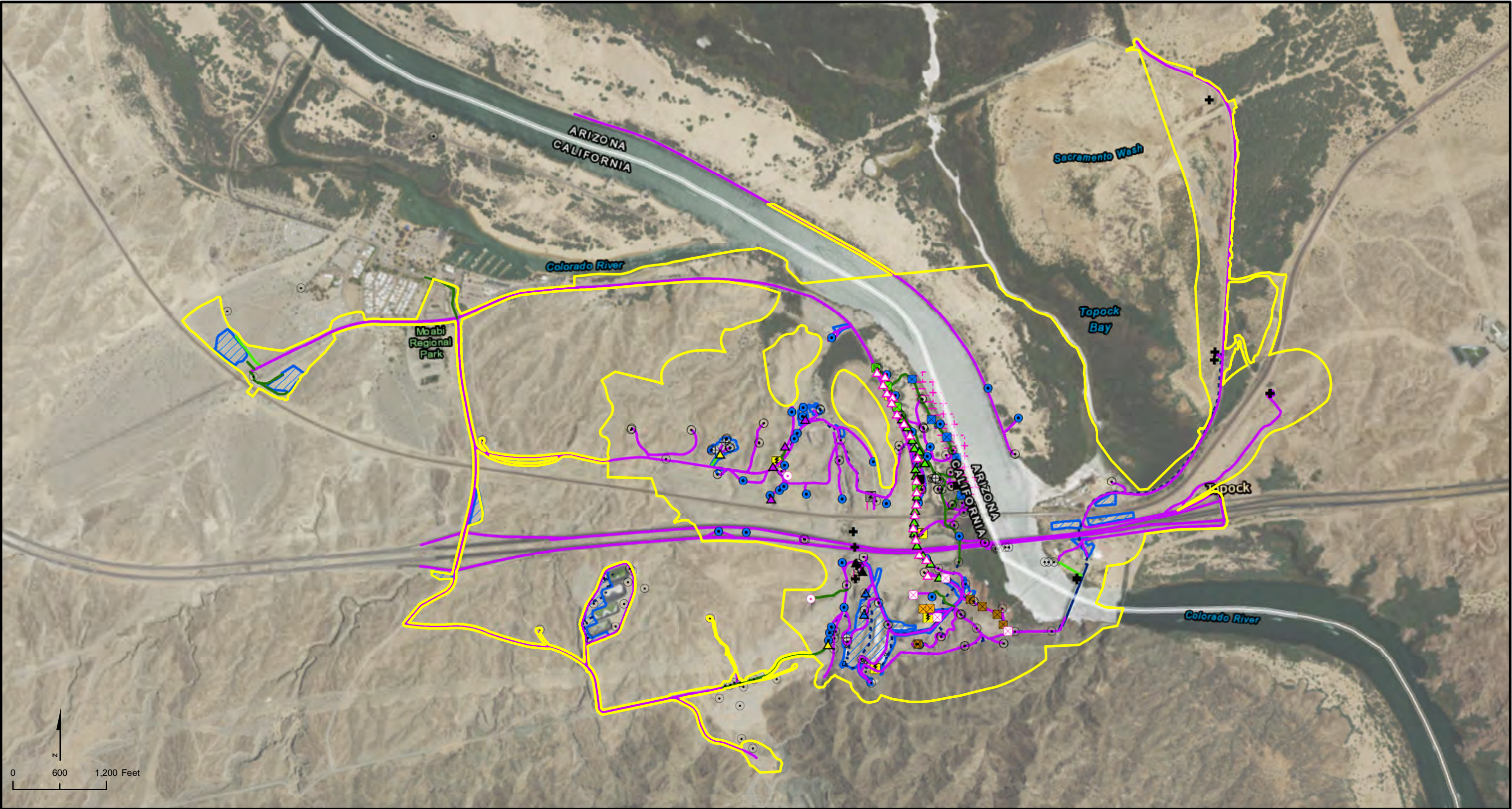
Garcia and Associates (GANDA). 2014b. *Western Yellow-Billed Cuckoo Presence/Absence Surveys for the PG&E Topock Compressor Station*. December 22.

Garcia and Associates (GANDA). 2015. *Western Yellow-Billed Cuckoo Presence/Absence Surveys for the PG&E Topock Compressor Station*. November 30.

Garcia and Associates (GANDA). 2017. *Southwestern Willow Flycatcher Presence/Absence Surveys for the PG&E Topock Compressor Station*. October 31.

Garcia and Associates (GANDA) and CH2M HILL. 2013. *Revised Final Floristic Survey Report*. Topock Groundwater Remediation Project. August 19. Hughes, J. M. 1999. Yellow-billed Cuckoo (*Coccyzus americanus*). In *The Birds of North America*. No 418 (A. Poole and F. Gill, eds.). Philadelphia: The Birds of North America, Inc.

Murphy, R.W., K.H. Berry, T. Edwards, A.E. Leviton, A Lathrop, and J. D. Reidle. 2011. *The dazed and confused identity of Agassiz's land tortoise, Gopherus agassizii (Testudines, Testudinidae) with the description of a new species, and its consequences for conservation*. Zookeys (113): 39-71.



LEGEND

- Transformers
Remedy Facilities
- Planned Transformer
 - Future Provisional Transformer
- Provisional Wells:
- Extraction Well
 - Injection Well
 - Monitoring Well

- Existing Wells:
- Extraction Well
 - Injection Well
 - Monitoring Well
 - Water Supply Well
- Planned Wells:
- Extraction, East Ravine

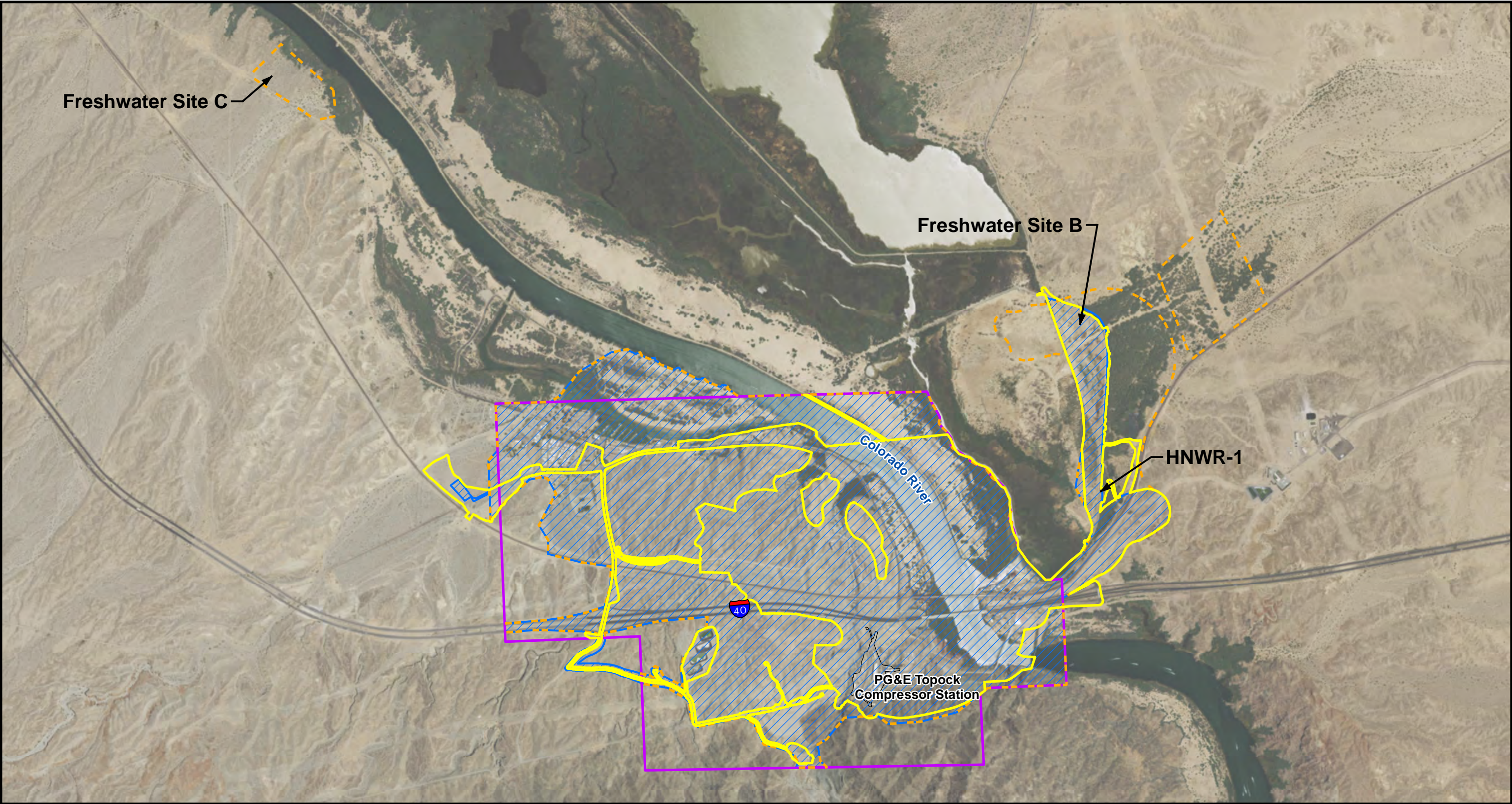
- Extraction, NTH IRZ
- Extraction, Riverbank
- Extraction, Transwestern Bench
- Injection, Freshwater
- Injection, Inner Recirculation Loop
- Injection, NTH IRZ
- Injection, Topock Compressor Station

- Remedy Monitoring Well
- Recirculation Well
- Roads to be Improved or Constructed for Groundwater Remedy Use
- Existing Access Route (will continue to be used for remedial activities)
- Existing Route (proposed to be used as is for access to remedial activities)





- Pipeline Corridor for Remedy
- Aboveground Pipe
 - Underground Pipe/Conduit
 - Proposed Remedy Structure
 - Contingent Freshwater Pre-injection Treatment System
 - New Compressor Station buildings (not part of Remedy)
 - 2017 Updated Action Area
 - Staging Area

- Well Areas
- Planned
- Area for Monitoring Well MW-T
- Provisional
- Area for East Ravine (ER) Wells and Piezometer
 - Area for Potential Slant Well Screens
 - Area for Inner Recirculation Loop (IRL) Wells
 - Area for River Bank Extraction Wells

FIGURE 1
UPDATED ACTION AREA
2014 PBA REINITIATION LETTER
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA



LEGEND

-  2007 PBA Area of Potential Effect (APE)
-  2012 PBA Re-Initiation Action Area
-  2014 Final PBA Action Area
-  2017 Updated PBA Action Area

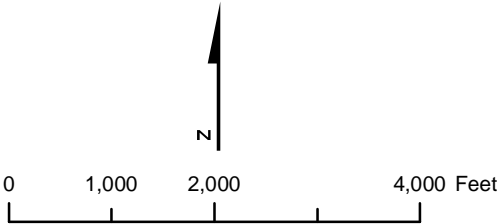
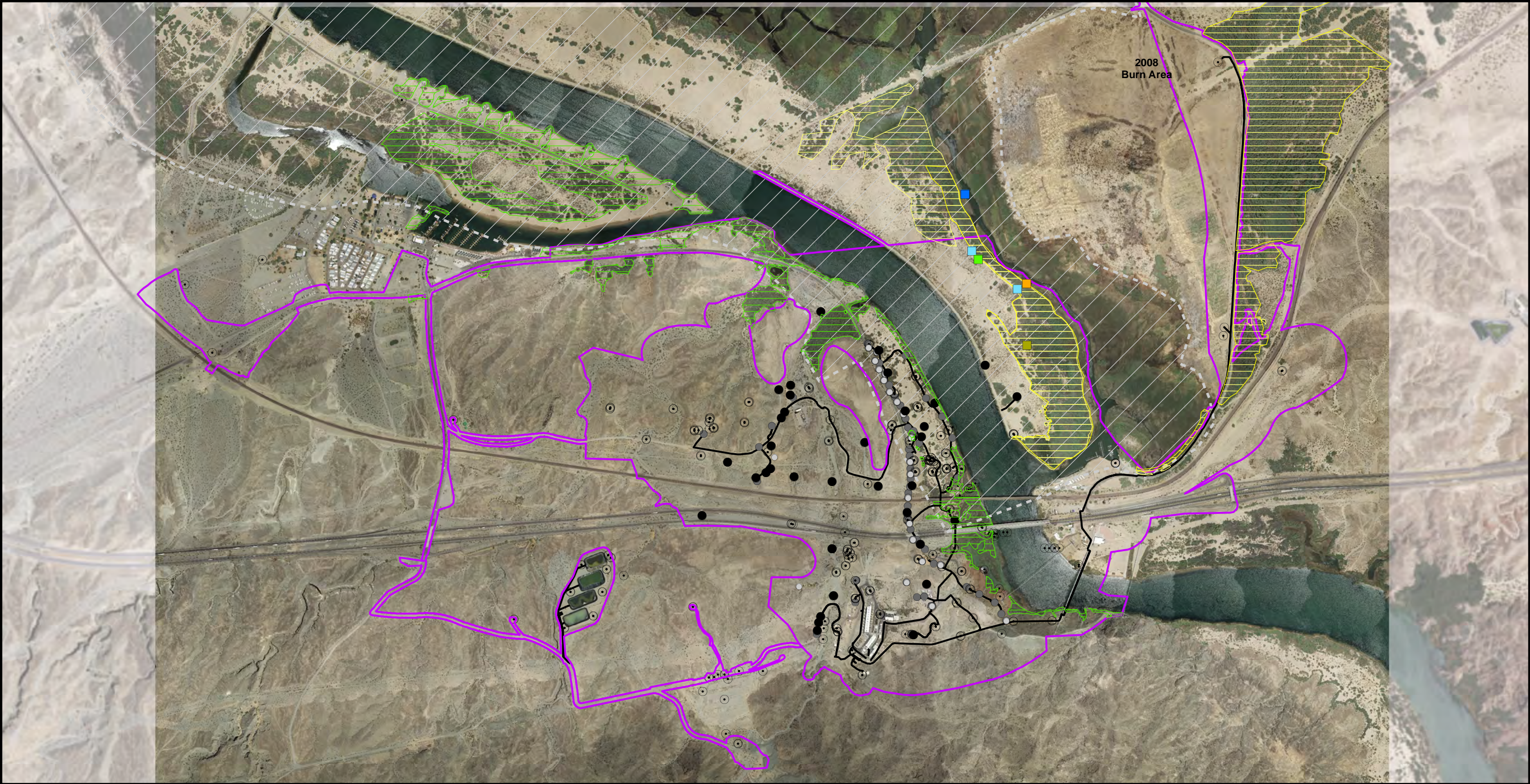


FIGURE 2
PBA ACTION AREA
PROGRESSION
2014 PBA REINITIATION LETTER
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA



LEGEND

- | | | |
|-------------------------------------|---------------------|--------------------------------------------------------------|
| Action Area | 2008 YBCU Detection | Western Yellow-Billed Cuckoo Breeding Habitat |
| Final Groundwater Remedy Facilities | 2009 YBCU Detection | Western Yellow-Billed Cuckoo Migration/Foraging Habitat |
| Existing Well | 2010 YBCU Detection | Proposed Western Yellow-billed Cuckoo Critical Habitat (FWS) |
| Remedy Monitoring Well | 2014 YBCU Detection | |
| Provisional Wells | 2015 YBCU Detection | |
| Planned Wells | | |
| Remedy Pipeline | | |

FIGURE 3
WESTERN YELLOW-BILLED
CUCKOO HABITAT
2014 PBA REINITIATION LETTER
PG&E TOPECO COMPRESSOR STATION,
NEEDLES, CALIFORNIA

TABLE 1

Summary of Selected Items Changed Within the Construction Footprint from the Intermediate BOD to the Final BOD since the 2014 PBA

| |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction |
| Remediation Wells -Addition of up to 4 provisional Riverbank Extraction wells -Change from 1 future provisional to up to 6 provisional East Ravine Extraction wells |
| Monitoring Wells -Increase from 19 to 36 new monitoring well locations -Addition of 2 identified future provisional wells -Addition of up to 10 unidentified future provisional wells |
| Carbon Amendment and Carbon Storage Facilities -Removed the 3,000-gallon above-ground storage tank and carbon amendment facility at the Transwestern Bench |
| Freshwater Source/Supply wells -Primary freshwater supply from existing well HNWR-1A -Secondary source supply from nearby existing well HNWR-1 -Contingent use of existing Topock 2/3 well (primary) or Site B well (secondary) |
| Piping Corridors Approximately 43,200 linear feet of trenches. The trenches would contain the following: -Approximately 92,000 feet for fluid conveyance piping, 29,000 feet of spare pipes, 1,400 feet of piping at Moabi Regional Park facilities, 4,900 feet for future Moabi Regional Park utility connections, and 200 feet of sampling tubing for certain monitoring wells, for a total of 127,500 feet of fluid piping. -Approximately 80,900 feet for electrical/fiber optic conduit, 15,450 feet of spare conduit, 4,700 feet of conduits at Moabi Regional Park facilities, 23,000 feet of conduits for future monitoring well telemetry system, for a total of 124,000 feet of conduits. |
| Supporting Facilities -Change in Transwestern Bench Operations Building size from 10,000 sq. ft. to 1,480 sq. ft. |
| Access Pathways and Roadways -Improve existing access routes for FW-2, and for Construction Headquarters in Moabi Regional Park -Access pathways/roads needed to access remedy facilities in California |
| Other Ancillary Facilities -Two above-ground pipe bridges across Bat Cave Wash now replaced by direct burial of pipelines through the wash. |
| Construction Headquarters/Soil Management Area/Staging Areas -Change 20 areas in California from an estimated 22.95 acres to 27.97 acres total -Change total area for four Arizona staging areas from approximately 3.18 acres to 3.14 acres -Construction Yard in Moabi Regional Park is approximately 1.88 acres -Soil Management Area in Moabi Regional Park is approximately 2.56 acres |

TABLE 2
Summary of Planned Activities for the Final Groundwater Remedy

| Final Remedy Item | Planned Activity Description (Refer to Figure 6 in 2014 PBA for locations of these features, unless otherwise noted) | Estimated Future Habitat Loss ^c |
|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction ^a | | |
| Remediation Wells | <p>National Trails Highway In Situ Reactive Zone (IRZ): -Twenty-four (24) IRZ Injection wells (plus 30 future provisional wells) -Four (4) IRZ Extraction wells (plus one future provisional well)</p> <p>Inner Recirculation Loop (IRL): -Four (4) Injection wells (plus 3 future provisional wells) -Five (5) Riverbank Extraction wells (plus up to 4 future provisional wells)</p> <p>Topock Compressor Station (TCS) Recirculation Loop: -Two (2) TCS Injection wells -Five (5) East Ravine Extraction wells (plus 1 future provisional) -Two (2) Transwestern (TW) Bench Extraction wells (plus two future provisional wells)</p> <p>Freshwater Injection: -Two (2) Freshwater Injection wells</p> | <p>Required Additional Current Floodplain^d Acreage: 0.1 acres Required Additional Historical Floodplain^d Acreage: 1.6 acres Required Additional Upland Acreage: 0.2 acres Required Additional Wells: 48 planned and 37 provisional</p> <p>Primary floodplain habitat impacts will be for the Riverbank Extraction wells, pipelines, and access routes which will be placed to the extent possible outside of dense vegetation areas.</p> <p>Primary upland habitat impacts will be for new wells, pipelines and access routes in previously undeveloped or undisturbed areas. The locations will avoid perennial vegetation and shrubs to the extent possible.</p> <p>Note that approximately 95 percent of the current and historical floodplain acreage impacts are associated with tamarisk and arrow weed vegetation units.</p> |
| Monitoring Wells | <p>Thirty-six (36) new monitoring well locations (plus 2 identified future provisional wells and up to 10 additional, unidentified provisional wells) Re-use existing monitoring wells where possible</p> | <p>Required Additional Current Floodplain Acreage: None Required Additional Historical Floodplain Acreage: 0.9 acres Required Additional Upland Acreage: 0.1 acre Required Additional Wells: 36 planned and 2 identified and up to 10 unidentified wells. Primary historical floodplain habitat impacts will be for the monitoring wells (A, B, C, D, H, and O) and access routes which will be placed to the extent possible outside of dense vegetation areas. The floodplain impacts are limited to the historical river floodplain and there are no expected impacts within current river floodplain.</p> <p>Primary upland habitat impacts will be for new wells, pipelines and access routes in previously undeveloped or undisturbed areas. The locations will avoid perennial vegetation and shrubs to the extent possible.</p> |
| Carbon Amendment and Carbon Storage Facility | <p>One 15,000-gallon aboveground carbon storage tank and carbon amendment facility at the MW-20 Bench</p> | <p>Required Additional Current Floodplain Acreage: None Required Additional Historical Floodplain Acreage: None Required Additional Upland Acreage: None Required Additional Wells: None</p> <p>No additional habitat impacts are expected because these facilities will be placed within previously developed upland areas. Any unavoidable impacts to individual native trees will be addressed through established salvage or replacement approaches.</p> |
| Freshwater Source/Supply wells/Pre-injection Treatment/Storage Facilities | <p>Freshwater supply will be primarily from the existing well HNWR-1A, located on the Refuge in Arizona. Fresh water can also be supplied from the existing, nearby well HNWR-1 as a secondary source and from the existing Topock-2/3 and Site B wells as contingent sources. Provision is included in the final design to allow for connecting to HNWR-1, Topock-2/-3 (primary contingency), and Site B (secondary and a contingency of last resort) wells.</p> <p>Space is reserved for a Contingent Freshwater Pre-Injection Treatment System (FWPTS)¹ and associated tanks/chemical storage at the Compressor Station (see Section 3.3.3.4 for details). An equipment decontamination pad will be installed in the footprint of the Contingent FWPTS building.</p> <p>One 10,000-gallon freshwater storage tank for use by the remedy.</p> | <p>Required Additional Current Floodplain Acreage: 1.1 acres Required Additional Historical Floodplain Acreage: 0.1 acres Required Additional Upland Acreage: 0.2 acre Required Additional Well: One potential future well near HNWR-1.</p> <p>Well HNWR-1 was already constructed by the USFWS and lies within the 100-year floodplain of the Colorado River. Similarly, HNWR-1A and the Site B Well have also been already constructed and lie within the floodplain. A future supply well near HNWR-1 would also be within the floodplain. The contingency pre-injection treatment facilities would be located within previously developed upland areas, if required. Estimate above is based on pipelines only.</p> |
| Piping Corridors | <p>Approximately 43,200 linear feet of trenches. The trenches would contain the following:</p> <p>a) Approximately 92,000 feet for fluid conveyance piping, 29,000 feet of spare pipes, 1,400 feet of piping at Moabi Regional Park facilities, 4,900 feet for future Moabi Regional Park utility connections, and 200 feet of sampling tubing for certain monitoring wells, for a total of 127,500 feet of fluid piping.</p> <p>b) Approximately 80,900 feet for electrical/fiber optic conduit, 15,450 feet of spare conduit, 4,700 feet of conduits at Moabi Regional Park facilities, 23,000 feet of conduits for future monitoring well telemetry system, for a total of 124,000 feet of conduits.</p> | <p>Required Additional Current Floodplain Acreage: 1.7 acres Required Additional Historical Floodplain Acreage: 4.7 acres Required Additional Upland Acreage: 0.5 acre Required Additional Wells: None</p> <p>Portions of the freshwater pipeline along Oatman-Topock Highway in AZ will be within the 100-year floodplain of the Colorado River. There is another segment of freshwater conveyance line that crosses along the edge of the floodplain beneath the Interstate 40 bridge. No additional floodplain impacts because the pipeline will cross the Colorado River on an existing pipe bridge that spans the floodplain. These acreages are included in remediation and freshwater impacts above.</p> |

TABLE 2
Summary of Planned Activities for the Final Groundwater Remedy

| Final Remedy Item | Planned Activity Description (Refer to Figure 6 in 2014 PBA for locations of these features, unless otherwise noted) | Estimated Future Habitat Loss ^c |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supporting Facilities | <p>The primary power supply source for remedy facilities in California will be power generated by the TCS. Secondary power supply will be power generated from small photovoltaic solar panels at various locations such as at the Construction Headquarters and at select remote well locations. Power will be transmitted at 480 VAC to 12K VAC along pipeline corridor.</p> <p>For the primary freshwater supply well (HNWR-1A), the secondary supply well (HNWR-1), and the contingent wells (Topock-2/-3 and Site B) in Arizona, the power supply source will be power provided by Mohave Electric Cooperative.</p> <p>Remedy-produced Water Conditioning System and associated tanks will be located at the Compressor Station</p> <p>One Operations Building (approx. 1,480sq.ft.) to house all essential functions for long-term O&M (Supervisory Control and Data Acquisition [SCADA] system, programmable logic controllers (PLCs), uninterruptible power supply, communications, etc.) at the TW Bench. Space is reserved in the Operations Building for a small, packaged drinking/potable water system.</p> | <p>Required Additional Current Floodplain Acreage: None expected</p> <p>Required Additional Historical Floodplain Acreage: None expected</p> <p>Required Additional Upland Acreage: None expected</p> <p>Required Additional Wells: None</p> <p>One power transformer location north of Bat Cave Wash outlet is in the historical floodplain. Additional upland habitat needs are limited to the area needed for power facilities at or near HNWR-1 or at Site B well as well as other power transformer locations. Other facilities will be constructed in previously developed upland areas.</p> |
| Access Pathways and Roadways | <p>Reuse all existing access pathways and roadways in the project area. Make improvements to the existing routes for access to FW-2 (Bat Cave Wash) and to the areas proposed for remedy use in Moabi Regional Park.</p> <p>Two new graded access roads are needed in the Upland area to allow for installation and maintenance of wells IRL-2 and IRL-4.</p> <p>To allow for shared use of the TW Bench between PG&E and Transwestern during construction and O&M of the remedial facilities, one new access road east of the TW Bench is needed for access to Transwestern’s gas transmission equipment.</p> <p>A new road in the historical floodplain is needed for the construction and maintenance of the IRZ/RB wells, future provisional wells, and associated piping.</p> <p>Access pathways/roads to remedy infrastructure on private properties in Arizona are needed to access the remedy features.</p> <p>In addition to access pathways/roads, access to certain areas will continue to be needed, after construction is complete, for O&M of the installed remedy infrastructures.</p> | <p>Required Additional Current Floodplain Acreage: None expected</p> <p>Required Additional Historical Floodplain Acreage: None expected</p> <p>Required Additional Upland Acreage: 0.09 acre</p> <p>Required Additional Wells: None</p> <p>New roadway impacts estimated for new roadways to IRL-2 (estimated at 150 feet) and IRL-4 (estimated at 350 feet long). Assumes a 50-foot-wide disturbance corridor.</p> |
| Other Ancillary Facilities | <p>Small photovoltaic solar panels at various locations, such as the Moabi Regional Park facilities and at select remote well locations. Small communication radios at remote monitoring well locations, freshwater supply well in Arizona, and equipment at the TCS ponds to allow for remote data collection.</p> <p>Security equipment (e.g., fencing, gate, security cameras) for Transwestern bench and remote staging areas or other facilities.</p> | <p>Required Additional Current Floodplain Acreage: None expected</p> <p>Required Additional Historical Floodplain Acreage: None expected</p> <p>Required Additional Upland Acreage: 0.1 acre</p> <p>Required Additional Wells: None</p> <p>There will be no additional historical floodplain or upland acreage due to the remote communication installations because they will be located immediately adjacent to the wells within existing disturbed areas. The upland disturbance for the two aerial bridge crossings over Bat Cave Wash will consist of concrete anchor points at either end of the bridges estimated at 25 by 30 feet each.</p> |
| Construction Headquarter/Soil Management Area /Staging Areas | <p>Within the Updated Action Area, sixteen staging areas have been proposed in California and four staging areas have been proposed in Arizona (refer to Figure 4.2-3 in C/RAWP).</p> <p>Twenty areas (totaling 27.97 acres) in the Updated Action Area will be for staging only while one 2.56-acre area near the northwest corner of the Action Area is proposed for a soil management area.</p> <p>A 1.88-acre construction yard (to be located in Moabi Regional Park) will also be required which will include at a minimum: multiple trailers serving as a work place for personnel, a central check-in/out location for site visitors, a place for daily briefings/project meetings, etc.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>None of the proposed construction staging and soil storage areas are located within the historical floodplain or in undisturbed areas within the uplands.</p> |
| Operation and Maintenance | | |
| Operation of Final Remedy Facilities | <p>Normal operation of the previously described Final Remedy facilities which includes the groundwater extraction and recirculation wells and pipelines carbon substrate storage and deliveries; carbon substrate injections, and regularly scheduled maintenance and repairs of the remedy system.</p> <p>Normal operation and maintenance of the freshwater supply, conveyance, and storage system.</p> <p>Normal operation and maintenance of the Remedy Produced Water Treatment system.</p> <p>Normal operation and maintenance of the Pre-Injection Arsenic Treatment system (if required).</p> <p>Normal operation and maintenance of the power supply and distribution system.</p> | <p>Required Additional Current Floodplain Acreage: None expected</p> <p>Required Additional Historical Floodplain Acreage: None expected</p> <p>Required Additional Upland Acreage: None expected</p> <p>Required Additional Wells: None</p> <p>The operation of the IRZ facilities will not expand the project footprint beyond what has already been used during construction.</p> |

TABLE 2
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| Final Remedy Item | Planned Activity Description (Refer to Figure 6 in 2014 PBA for locations of these features, unless otherwise noted) | Estimated Future Habitat Loss ^c |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Well Maintenance and Decommissioning | <p>Routine maintenance that can be conducted without intrusive modifications to the wellhead or well including regular surging and pumping techniques. A more aggressive routine maintenance technique uses AquaGard™ that injects cryogenic liquid carbon dioxide (CO₂) into existing well access tubes and requires all or some of the following: a CO₂ injection trailer, CO₂ storage vessel, support truck, pump rig and/or crane (if a pump or pipe needs to be installed/removed), and a support truck.</p> <p>Non-routine maintenance are intrusive methods requiring removal of existing equipment from well and include drop-pipe replacement; submersible pump repair/replacement; and well repair and well rehabilitation methods. Depending on the specific plan for well rehabilitation, some or all of the following equipment may be required: a pump rig and/or crane, support or pipe truck, generator(s), air compressor, chemical trailer (mixing tanks and pumps), neutralization trailer (mixing tanks and pumps), support truck, video van, vacuum or tanker truck, forklift, and 20,000-gallon frac tanks.</p> <p>The general approach for well decommissioning was developed by a subgroup that includes PG&E, DTSC, DOI, and Interested Tribes and was provided in the 100% Design O&M manual.</p> | <p>Required Additional Current Floodplain Acreage: None expected</p> <p>Required Additional Historical Floodplain Acreage: None expected</p> <p>Required Additional Upland Acreage: None expected</p> <p>Required Additional Wells: None</p> <p>The operation of the IRZ facilities will not expand the project footprint beyond what will have already been used during construction.</p> |
| Pipeline Maintenance and Repair | <p>A Clean-In-Place (CIP) system will operate as a closed loop system to use approved chemicals to remove biological films and mineral scale deposits within remedy pipelines. Spent CIP solutions will be collected and managed as liquid wastes.</p> <p>Sections of direct burial HDPE pipe requiring repairs will need to be exposed by excavation; whereas, belowground pipe section inside precast concrete trench can be accessed via maintenance manhole(s).</p> <p>Aboveground pipeline repairs will be done according to manufacturer’s recommendations.</p> <p>Aboveground pipeline will need to be periodically repainted for upkeep and aesthetic reasons.</p> | <p>Required Additional Current Floodplain Acreage: None expected</p> <p>Required Additional Historical Floodplain Acreage: None expected</p> <p>Required Additional Upland Acreage: None expected</p> <p>Required Additional Wells: None</p> <p>No additional habitat impacts are expected because repairs will occur along corridors and work zones that have already been already been used during the pipeline installation.</p> |
| Waste Management Practices | <p>Different waste streams include remedy produced water and CIP; displaced soil; solids and filters from remedy-produced water treatment system; dewatered sludge from contingency arsenic removal system; used PPE; miscellaneous waste; universal waste; recoverable materials; and sanitary waste.</p> <p>Liquid and solid wastes will be analyzed to determine if they are hazardous or not, and how the waste will be managed.</p> <p>Waste materials will be managed onsite in demarcated waste management areas that will be selected from the proposed staging areas shown in Figure 7.</p> <p>Wastes will be segregated, containerized and labeled before they are shipped off site in accordance with local, state, and federal transportation requirements.</p> <p>Recoverable materials will be recycled or re-used as feasible.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>Upland areas that will be used for waste management and temporary storage will be limited to previously disturbed and unvegetated locations.</p> |
| Storm Water Pollution Prevention | <p>Storm water pollution prevention has two major objectives: Identifying and evaluating sources of pollutants associated with industrial activities that may affect the quality of storm water discharges and authorized non-storm water discharges from the facility; and Identifying and implementing site-specific best management practices (BMP) to reduce or prevent pollutants from being released in storm water discharges and/or authorized non-storm water discharges that may affect receiving water quality.</p> <p>The O&M SWPPP identifies BMPs as required by law, and establish a monitoring and sampling plan (including visual inspections and an annual comprehensive review). The annual comprehensive review is required to evaluate the effectiveness of the BMPs and to determine whether modifying BMPs or implementing additional BMPs is required.</p> | <p>Required Additional Current Floodplain Acreage: None expected</p> <p>Required Additional Historical Floodplain Acreage: None expected</p> <p>Required Additional Upland Acreage: None expected</p> <p>Required Additional Wells: None</p> <p>BMPs established by the O&M SWPPP are expected to be contained within existing project work areas or designated soil storage areas. SWPPP actions are not expected to expand the project footprint, except in the case of a possible response to a BMP failure during a storm event.</p> |
| Fuel Storage and Fueling Practices | <p>Two types of fuels are currently expected for use during the final Groundwater Remedy, diesel and gasoline, which shall meet the applicable California standards.</p> <p>There are existing diesel and gasoline bulk storage tank at the Topock Compressor Station that will be used by Final Remedy personnel.</p> <p>Alternate fuels, if used in the future, will comply will all local, state, or federal regulations related to their bulk storage and management.</p> <p>The Hazardous Materials Business Plan and SOPs will include procedures for properly storing and handling fuels on site; equipment and procedures for spill containment; required PPE; and measures to reduce the likelihood of spills during fueling or maintenance activities.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>Fueling practices are not expected to expand the project footprint, except in the case of an unlikely spill.</p> |

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| Access Road and Pathway Maintenance | <p>Access roadway and footpath are expected to deteriorate over time, so maintenance activities will need to be tailored to the specific cause and repair need.</p> <p>For footpaths, pruning of overgrowth will be done using hand tools or mechanical-powered tools. Soil stabilization for disturbed areas may be accomplished by applying approved soil stabilizing agents (e.g., SoilTac), erosion control matting, silt fencing, etc.</p> <p>Access roadways can be loose or compact dirt; gravel; or paved surfaces. Manual or mechanical grading may be required; as well as filling and soil stabilization. Ditches and culverts will be inspected and cleaned but may require replacement or ditch reshaping to increase capacity. Erosion control measures; addition of base fill or gravel; or re-paving of the roadways are all activities that may be required depending on the need.</p> | <p>Required Additional Current Floodplain Acreage: To Be Determined</p> <p>Required Additional Historical Floodplain Acreage: To Be Determined</p> <p>Required Additional Upland Acreage: To Be Determined</p> <p>Required Additional Wells: None</p> <p>The project footprint may be expanded in cases where roadway repairs require modifications of ditches or placement of fill to address erosion or deterioration issues. The added habitat acreage for this activity cannot be reasonably estimated; however, it is expected to be negligible because the likely repair areas will be alongside roadways, which have already been disturbed,</p> |
| Contingency Plans | <p>Contingency Plans have been provided as part of the 60100% Design Submittal in the form of the Draft Operation and Maintenance Manual – Volume 3 (CH2M HILL, 2012c2015) and consider the following unacceptable conditions: unacceptable remedy performance where the RAOs are not met; schedule failures where the time to cleanup is extended more than 5 to 15 years; cost failures; significant change to impact; and significant H&S or compliance incident.</p> <p>Contingency planning has been prepared for five key elements of the groundwater remedy: In-Situ Remediation System; Remedy-produced Water Management System; Freshwater Supply; Power Supply; and SCADA System. Various failures and corrective actions are considered.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>ESA consultation will be required for any unacceptable condition that leads to a longer time frame for achievement of the RAOs and continued activities for a longer period of time than contemplated in this consultation or results in potential impacts on any of the PBA-listed species not addressed here. However, should additional operational time be required, it will not expand the footprint of the Final Remedy beyond what was used during construction.</p> |
| IM No. 3 Lay-up | <p>Prior to startup of the Final Groundwater Remedy, the IM No. 3 system will be shut down and prepared for lay-up. When the IM No. 3 is in a lay-up condition, the system will be left in a safe, secure, and preserved state and will not operate again until agency approval is received for decommissioning and removal of the system. Procedures for shutting down IM No. 3 are included in the existing IM No. 3 Treatment and Extraction System Operations and Maintenance Plan (O&M) (CH2M HILL, 2006d). The IM No. 3 system will remain in a lay-up condition until PG&E receives approval for closure and decommissioning of IM No. 3, as appropriate.</p> <p>During the lay-up period, equipment maintenance is required to keep the equipment in good condition and under active equipment warranties, because most major equipment will likely be recovered for reuse. Electricity will be required for equipment maintenance. In addition, weekly inspections of the following equipment will be conducted:</p> <ul style="list-style-type: none">• Storage tanks that formerly contained hazardous materials.• Pressurized (compressed air) tank.• Onsite chemical storage areas. (Excess chemicals will be removed from site during lay-up preparation.)• Emergency shower and eye wash station and potable water cooling system.• Fire water tank.• Aboveground injection well pipeline and instrumentation conduit. <p>Maintenance will also be conducted on the access road to the IM No. 3 Treatment Plant and injection wells as well as watering the road for dust control pursuant to EIR mitigation measures. Periodic filling of the potable water tank, and possibly the fire water tank at the IM No. 3 Treatment Plant, as well as regular pest control will also be required. Telecommunications and plant communications will continue to be maintained for safety, security, and maintenance requirements.</p> <p>Because personnel will be onsite during work days, the potable water system at the IM No. 3 Treatment Plant will stay in service to provide water to the sinks and toilet in the IM No. 3 Treatment Plant trailer. The sewage holding tank for the IM No. 3 Treatment Plant trailer will stay in service. The sewage holding tank will need to be serviced; the service frequency will be on an as needed basis.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>These actions are not expected to have impacts outside of the existing project footprint; however, ESA coverage would be additional inspection/maintenance site visits to the IM No. 3 facilities during the lay-up phase.</p> |
| Sampling and Monitoring Plan | | |
| Monitoring well sampling locations and frequency | <p>Remedy Compliance Monitoring and Process Control Monitoring Plan (RCM/PCMP) will include the planned additional 36 monitoring wells as well as any existing monitoring wells and surface water samples from the current GMP that are deemed necessary during the Final Remedy operations. It also includes the additional future 2 identified and 10 unidentified future provisional wells. The RCM/PCMP sample locations, analytes, and frequencies will be adapted in an ongoing manner to meet the needs of the Final Remedy. An initial RCM/PCMP for groundwater and surface water sampling are provided in the 100% Design Draft O&M Manual (Volume 2).</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>Well sampling activities will make use of existing routes established during the well installations so no additional habitat impacts are anticipated. Associated impacts to wildlife resources are related to the periodic visits for well sampling during operation of the Final Remedy, which will be a function of the well sampling frequency and well characteristics (e.g., required purge volumes). Additional wells may also be required but the additional impact for this is accounted for in the provisional monitoring wells in the Construction section of this table.</p> |

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|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sampling Methods | <p>SOPs for groundwater and surface water sampling are provided in Appendix A of the 100% Design Draft O&M Manual (Volume 2) (CH2M HILL, 2012d).</p> <p>The SOPs provide detailed method descriptions for purging and sampling of groundwater monitoring wells by well-volume and modified well-volume methods; purging and sampling of active and inactive water supply wells; depth-specific surface water sampling; groundwater sampling from sonic drilling boreholes; sample field filtration and preservation for metals analyses; decontamination of water sampling equipment; spill prevention, containment, and control measures for monitoring well sampling; pore water sampling; access routes; process water sampling; and safe fueling and fuel handling procedures.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>Well sampling activities will make use of existing routes established during the well installations so no additional habitat impacts are anticipated. Associated impacts to wildlife resources are related to the periodic visits for well sampling during operation of the Final Remedy, which will be a function of the well sampling frequency and well characteristics (e.g., required purge volumes). The SOPs minimize potential impacts to sensitive biological resources.</p> |
| Baseline Soil Sampling | <p>A Baseline Soil Sampling and Analysis Plan is provided in Appendix A of the O&M Manual (Volume 4) (CH2M HILL, 2012e). In areas where groundwater remedy infrastructure overlaps with any of the eighteen different Soil Investigation Areas, the approach presented in the SAP will be fully coordinated with the ongoing RFI/RI planning activities to minimize the total number of soil samples to be collected and associated ground disturbances, as well as to ensure consistency between the groundwater and soil programs associated with the Topock Remediation Project.</p> <p>The purpose of the baseline soil sampling will be to provide comparable data to evaluate potential impacts of the final remedy features at the time that they are being decommissioned. Baseline soil samples will be collected along the remedy pipelines/conduits alignments, which include direct burial pipelines/conduits, pipeline trenches, and the new remediation wells (i.e., injection and extraction wells) that are connected to those pipelines, as well as at the new remedy monitoring well locations.</p> <p>Baseline soil sampling will not occur along the alignment of the freshwater pipeline in Arizona, and on the California side, leading to the Compressor Station because the freshwater from HNWR-1 has very low concentrations of inorganic compounds so that potential risks to underlying soil from incidental releases, spills or leaks from the pipeline are negligible.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>The Baseline soil samples would be collected just prior to installation of Final Remedy facilities so the acreage for disturbance is already accounted for in the construction phase.</p> |
| Soil Storage | | |
| Locations and Storage Methods | <p>The Baseline Soil Sampling and Analysis Plan (SAP) presented in Appendix A of the Soil Management Plan, O&M Manual - Volume 4 (CH2M HILL, 2012e) describes the collection of data to assist with the management of materials displaced during construction activities. Screening of analytical test results will determine handling requirements for displaced soils project in accordance with the Soil Management Plan.</p> <p>Figure 4.2-3 of the C/RAWP shows twenty different proposed staging/soil storage areas that have been identified in the Updated Action Area</p> <p>Displaced soil that is non-hazardous but is unsuitable for final disposition onsite because contaminants are present above the screening level cannot be reused until project-specific soil cleanup goals are finalized and will be disposed offsite.</p> <p>Storage area(s) will depend on the volume of soil, which will not be known until after the implementation of the Baseline SAP. Soil will be stored in 55-gallon drums/small containers, roll-off bins, and/or stockpiles that are managed in accordance with the C/RAWP and O&M Soil Management Plans, and the O&M SWPPP. All containers will be properly labeled according to state and federal requirements. Only non-hazardous soil will be stored in stockpiles.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>Short-term staging of displaced soil/materials will occur within staging areas. Application and maintenance of BMPs are expected to limit expansions of the staging area footprints.</p> |
| Handling and Storage of Clean Soil | <p>Clean displaced soil will be stockpiled at the work site. If feasible, clean soil that was removed from trenches or excavations will be reused as backfill into the same trench or excavation area. Clean soil that cannot be immediately used as backfill may be reused in other areas within the Action Area, or stockpiled for future reuse within the Action Area. Displaced soil that is stockpiled for future use will be managed following the C/RAWP and O&M Soil Management Plans, and the O&M SWPPP.</p> <p>Storage area(s) for clean soil will depend on the volume of soil, which will not be known until after the implementation of the Baseline SAP (Appendix A).</p> <p>The volume of clean displaced soil from the decommissioning and removal of the IM No. 3 system requiring storage will not be known until after the system has been decommissioned and removed, which will not occur until after the start of implementation of the groundwater remedy.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>Short-term staging of displaced soil/materials will occur within construction staging areas. Application and maintenance of are expected to limit expansions of the staging area footprints.</p> |

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| Handling, Short-term Storage, and Offsite Transport of Hazardous Waste Soil | Non-RCRA and RCRA hazardous wastes will be removed from the site within 90 days from date of generation. | Required Additional Current Floodplain Acreage: None Required Additional Historical Floodplain Acreage: None Required Additional Upland Acreage: None Required Additional Wells: None Hazardous waste soils will be contained in drums or roll-off bins and managed at waste storage areas will be located within selected upland areas that have been previously disturbed. Regular inspection of waste storage areas are expected to prevent releases of hazardous waste soil. There will be no hazardous soil storage or handling within the historical or current river floodplains. |
| Emergency Response | <p>A barrier, such as temporary fencing, will be provided for hazardous waste accumulation areas that are otherwise accessible to the general public.</p> <p>Hazardous waste accumulation areas will also have signs that provide 24-hour emergency contacts and telephone numbers and will contain emergency response equipment appropriate to applicable waste hazards.</p> <p>The project-specific Health and Safety Plan will identify the project emergency response procedures and equipment, including emergency response contacts and phone numbers.</p> <p>In addition to the project-specific Health and Safety Plan procedures, hazardous waste accumulation areas will be provided with fire extinguishers, decontamination equipment including an eye wash station, and an alarm system (if radio equipment is not available to all staff working in accumulation area).</p> | Required Additional Current Floodplain Acreage: None Required Additional Historical Floodplain Acreage: None Required Additional Upland Acreage: None Required Additional Wells: None Established procedures for management of hazardous soil storage areas located in upland areas will include properly trained personnel and equipment to handle emergency response situations. There will be no hazardous soil storage or handling within the historical or current river floodplains. |
| Post-Remediation Monitoring | | |
| Post-Remediation Monitoring | <p>After active remediation is completed, monitored natural attenuation will be implemented as a long-term component of the groundwater remedy to address residual chromium that may remain in recalcitrant portions of the aquifer following efforts to enhance and optimize in-situ treatment and flushing systems during the O&M phase.</p> <p>In addition, in compliance with the State Board directive dated November 20, 2013, monitoring of groundwater quality in the freshwater injection areas will be conducted to verify that the arsenic water quality objective in the receiving groundwater are met within the earlier of (i) 20 years after achieving the RAO for chromium or (ii) 20 years after ceasing injection of freshwater containing naturally occurring arsenic at concentrations above the water quality objective.</p> <p>It is currently assumed that there will be no need for new monitoring wells other than those provisional wells already accounted for (in the Construction section of this table) as a part of the post-remediation monitoring program.</p> | Required Additional Current Floodplain Acreage: None expected Required Additional Historical Floodplain Acreage: None expected Required Additional Upland Acreage: None expected Required Additional Wells: To Be Determined Well sampling activities will make use of existing routes established during the well installations so no additional habitat impacts are anticipated. Additional impact comes from the periodic visits for well sampling during operation of the Final Remedy, which will be a function of the well sampling frequency and well characteristics (e.g., required purge volumes). This assumes that no new wells will be needed other than those provisional wells already accounted for in the Construction section of this table. |

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|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Decommissioning | | |
| IM No. 3 | <p>Once the Final Groundwater Remedy is brought on line and is determined by the agencies to be operating properly and successfully, PG&E will decommission and remove the IM No. 3 system after receipt of approval by DTSC, with concurrence from DOI. A work plan describing the IM No. 3 Decommissioning activities was submitted for review with the 100% design. Once approved, the work plan will be implemented for the decommissioning and removal of IM No. 3 facilities. The scope of work includes the decommissioning and removal of the following IM No. 3 system components:</p> <ul style="list-style-type: none">• Three extraction wells in the MW-20 Bench area of the site (TW-2S, TW-2D, and TW-3D) and one extraction well in the floodplain (PE-1), as well as ancillary well equipment and vaults• Underground piping and vaults between the extraction wells and the treatment plant• Entire treatment plant, including equipment, pipelines, valves, instrumentation, utilities, and infrastructure underneath the sunshade, the sunshade, mobile warehouse units, trailer, treatment plant foundation and secondary containment areas, underground pipelines and utilities within the footprint of the treatment plant fence line, and security fence and gate• Underground and aboveground pipelines, and instrumentation conduit between treatment plant and injection well field• Two injection wells in the East Mesa area of the site (IW-2 and IW-3) and power supply structure located at this site• Support facilities on the MW-20 Bench, including Valve Vault #1, pumps, valves, pipelines, electrical, and instrumentation associated with the extraction wells, parking areas, security fence and gates, security system, lighting, and other ancillary equipment.• Four conduits and one water pipe buried in the steep slope east of the MW-20 Bench (PG&E understands that the current landowner BLM prefers that these conduits and water pipe be removed). Existing MWs and their instrumentation that are currently used to monitor IM No. 3 performance will be reused as part of the monitoring network associated with the Final Remedy, and therefore will not be decommissioned. Decommissioning of these existing MWs and their instrumentation will be addressed as part of the decommissioning of the groundwater remedy.• No aboveground component of the existing IM No. 3 system located within the footprint of the existing IM No. 3 Treatment Plant building, or within the IM No. 3 Treatment Plant fence line will be reused in its current location as part of the Final Remedy. The brine storage and loading facility (three tanks, the truck lane, and associated pumps and piping) will be reused by the Final Groundwater Remedy in its existing location at the MW-20 Bench. | <p>Required Additional Current Floodplain Acreage: None expected</p> <p>Required Additional Historical Floodplain Acreage: None expected</p> <p>Required Additional Upland Acreage: None expected</p> <p>Required Additional Wells: None</p> <p>The decommissioning process is not expected to expand beyond the footprint that was already created during construction and maintenance activities. It is recognized however; that there may be “re-disturbance” for limited areas where habitat has re-established on previously disturbed areas.</p> |
| Final Remedy | <p>In compliance with the 2013 Consent Decree (Appendix C, Item 9), PG&E will submit a decommissioning plan within 120 days of DOI’s certification of completion of the remedial action and a determination by DOI that removal of such facilities is protective of human health and the environment. The decommissioning plan will describe procedures for the removal of the remedy facilities and associated infrastructure. The plan will also describe the post-remedy restoration of the site to the conditions existing prior to the implementation of the remedy construction, to the extent practicable.</p> <p>In addition, in accordance with mitigation measure, biological surveys will be conducted prior to decommissioning, and during the breeding season, to inform the decommissioning planning process. The Final Remedy Decommissioning activities will be completed in accordance with the Bird Impact Avoidance and Mitigation Plan (BIAMP; CH2M HILL, 2013f) and other relevant documents (including this PBA).</p> <p>After decommissioning and removal of the remediation facilities, the areas will be restored using decompaction and grading techniques designed to decrease erosion and accelerate revegetation of native species. The decommissioning of monitoring wells will be after an appropriate time span following the decommissioning of the remediation facilities.</p> | <p>Required Additional Current Floodplain Acreage: To Be Determined</p> <p>Required Additional Historical Floodplain Acreage: To Be Determined</p> <p>Required Additional Upland Acreage: To Be Determined</p> <p>Required Additional Wells: None</p> <p>The decommissioning process is not expected to expand beyond the footprint that was already created during construction and maintenance activities. It is recognized; however, that there may be “re-disturbance” for limited areas where habitat has re-established on previously disturbed areas that have regrown during the Final Remedy operation (up to 50 years).</p> |

TABLE 2
Summary of Planned Activities for the Final Groundwater Remedy

| Final Remedy Item | Planned Activity Description (Refer to Figure 6 in 2014 PBA for locations of these features, unless otherwise noted) | Estimated Future Habitat Loss ^c |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Restoration | | |
| IM No. 3 | <p>The Site-Specific IM No. 3 Restoration Plan will provide a template after which, subsequent restoration efforts may be modeled or improved. Prior to conducting restoration activities, PG&E will prepare a Restoration Plan for review by regulatory agencies, stakeholders, landowners, and Tribal Nations. The focus of the Restoration Plan would be to outline the scope of restoration; the goals and objectives of the restoration; to promote native plant and habitat regeneration; and to prevent invasive plant establishment. Success criteria will be proposed along with a monitoring and reporting plan. Adaptive management will be used to evaluate the effectiveness of the restoration through monitoring, and adjust management of the site in the event of unforeseen circumstances.</p> <p>It should be recognized that the majority of the IM No. 3 decommissioned facilities are adjacent to ongoing Final Groundwater Remedy facilities. Similarly, previously used staging or soil storage may also be required for use in the Final Groundwater Remedy, or have ongoing activities (e.g., the Compressor Station, the Transwestern Metering Bench, the MW-24 Bench, the evaporation ponds area, the trailer park area in Moabi Regional Park, the parking areas off I-40, etc.). Even after the decommissioning of the IM No. 3 facilities, it is expected that restoration will not be feasible for many areas that are required for ongoing Final Remedy operations (e.g., MW-20 Bench). Rather, these areas will not be restored until after the Final Groundwater Remedy facilities have been closed and decommissioned. Instead, these locations will be maintained along with remaining facilities over the duration of the final remedy operation. Established roads and access pathways will be maintained during decommissioning and restoration activities. After demobilization, the condition of established roads and access pathways will be returned to pre-mobilization condition.</p> <p>The IM No. 3 treatment plant site may represent one area where restoration could proceed in advance of the closure of the Final Groundwater Remedy facilities, assuming it was not required as part of the Final Groundwater or Soil Remedies. Whether it is the former IM No. 3 Treatment Plant site or any other location, as previously mentioned, the IM No. 3 Restoration Plan will provide an excellent opportunity to develop the best methods and approaches that will help the Final Groundwater Remedy restoration efforts.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>No additional disturbance areas outside of those already used for prior construction or maintenance activities are expected during the restoration process.</p> |
| Final Remedy | <p>With the decommissioning and removal of the Final Groundwater Remedy facilities, it will be possible to restore many of the areas used by the Remediation Project. Prior to final decommissioning, a second Restoration Plan will be prepared for review by regulatory agencies, stakeholders and Tribal Nations. This Restoration Plan will encompass the remaining project areas used by groundwater remedy, including staging/storage areas. Similar to IM No. 3 Restoration, staging areas that have ongoing activities (e.g., the Compressor Station, the Transwestern Metering Bench, the MW-20 Bench, the evaporation ponds area, the parking areas off I-40, etc.) will not be restored. Also, established roads and access pathways will be returned to pre-mobilization condition.</p> <p>The Restoration Plan for the remedy facilities will incorporate the approaches and feedback gathered from the previously prepared IM No. 3 Restoration Plan.</p> | <p>Required Additional Current Floodplain Acreage: None</p> <p>Required Additional Historical Floodplain Acreage: None</p> <p>Required Additional Upland Acreage: None</p> <p>Required Additional Wells: None</p> <p>No additional disturbance areas outside of those already used for prior construction or maintenance activities are expected during the restoration process.</p> |

Notes:

^a The updated listed Final Groundwater Remedy features described in this table are based upon the 100% Design Submittal (November 18, 2015).

^b The numbers of well locations and wells differs because of the need for dual well completions at certain individual locations.

^c The estimated habitat losses provided in this table may reflect the 60% Design used in the 2014 PBA modified based on discussions with Agencies have resulted in changes at the 90% and 100% Design stages that are evaluated as part of an overall Construction footprint and are summarized in Table 3. Habitat losses were originally estimated in the 2014 PBA for planned well and pipeline locations as shown in the 60% Design and modified based on subsequent agency comments and a constructability review between April 7 and April 10, 2014. The habitat losses from the planned wells were used to estimate the additional habitat losses from future provisional wells, for which data are not currently available. Estimated impacts for the upland pipeline corridors used current design trench dimensions and assumed that a 25-foot construction corridor would be needed, recognizing that actual project impacts may be less as adaptations in the field are used to minimize impacts to potential sensitive resources or to avoid terrain constraints. In historical floodplain areas assumed pipeline construction corridors ranged between 50 and 75 feet based on anticipated design and construction conditions. In upland areas, the estimated new impact area was estimated by intersecting the GIS footprint with previous undisturbed areas. In the historical and current floodplains, the estimated new impact area was estimated by intersecting the GIS footprint with mapped vegetation polygons. It should be recognized that the vegetation unit intersections in the floodplain habitats overestimate impacts when the vegetation polygons contain significant bare ground (such as the native shrub and some arrow weed map units). In such units, it is expected that access routes will be able to avoid most (if not all) of the vegetation impacts.

^d The current floodplain of the Colorado River includes those areas within the 100-year floodplain while the historical floodplain is comprised of the land in California that is outside of the 100-year floodplain and extends to the MW-20 Bench and National Trails Highway or adjacent upland area as shown on Figure 7 in the 2014 PBA.

TABLE 3

Summary of 2007 PBA (2017 Reinitiation) and 2014 PBA (2017 Reinitiation) Impacts in the Project Action Area

| Final Remedy Item | Current Floodplain Acreage^a | Historical Floodplain Acreage^a | Upland Acreage |
|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------|-----------------------|
| Activities Covered Under 2007 PBA (including the 2012 Re-initiation) | | | |
| CA Slant Wells | 0.082 | None | None |
| Upland ISPT | None | None | None |
| AZ Drill Program | None | None | None |
| East Ravine GW Investigations (1) | None | None | None |
| East Ravine GW Investigations (2) | None | None | None |
| AOC 4 removal Action | None | None | 1.6 |
| FWIP | None | None | None |
| Soil Investigation | None | None | 0.155 |
| Total Disturbance Covered under 2007 PBA (2012 Reinitiation) | 0.082 | None | 1.755 |
| 2014 PBA (2017 Reinitiation) Final Groundwater Remedy Construction | 1.29 | 2.33 | 7.08 |
| Including 25% Design Change Contingency | 1.613 | 2.913 | 8.85 |
| Total 2014 PBA (2017 Reinitiation) Final Groundwater Remedy (Value A) | 1.613 | 2.913 | 8.85 |
| Allowable Acreage Disturbance from 2007 PBA (2012 Reinitiation) (Value B) | 2.5 | | 8.0 |
| Total Disturbance Covered under 2007 PBA (2012 Reinitiation) (Value C) | 0.082 | | 1.755 |
| Balance Remaining from 2007 PBA (2012 Reinitiation) PBA (Value D) (Value D = Value B – Value C) | 2.418 | | 6.245 |
| Amount Added for the 2014 PBA Final Groundwater Remedy (Value E) | 1.222 | 8.8 | 4.2 |
| Total from Balance Remaining from 2007 PBA (2012 Reinitiation) plus 2014 PBA Final Groundwater Remedy (Value F) (Value F = Value D + Value E) | 3.64 | 8.8 | 10.445 |
| Balance minus 2014 PBA (2017 Reinitiation) Final Groundwater Remedy (Value F – Value A) | 2.027 | 5.887 | 1.595 |
| Total Requested for this 2014 PBA (2017 Reinitiation) Final Groundwater Remedy | 0 | 0 | 0 |

Notes:

^a The current floodplain of the Colorado River includes those areas within the 100-year floodplain while the historical floodplain is composed of the land in California that is outside of the 100-year floodplain and extends to the MW-20 Bench and National Trails Highway or adjacent upland area.