



**Pacific Gas and
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May 31, 2005

Norman Shopay
Department Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710

Cathy Wolff-White.
Bureau of Land Management
Program Director
2610 Sweetwater Avenue
Lake Havasu City, AZ 86406

Subject: Evaluation of pipeline alignments between Extraction Well PE-1 and the MW-20 bench at the Pacific Gas and Electric Company (PG&E) Topock site.

Dear Mr. Shopay and Ms. Wolff-White:

This letter transmits an evaluation of two pipeline alignments in the Colorado River floodplain between extraction well PE-1 and the MW-20 bench. The memorandum is intended to facilitate further discussion among the United States Bureau of Land Management (BLM), California Department of Toxic Substances Control (DTSC), and Pacific Gas and Electric Company (PG&E) to determine which alignment will best satisfy project objectives while being fully protective of the sensitive habitat in the area.

Construction timeframes indicated in the memorandum assume that conventional construction equipment will be used to install underground piping. Hand excavation of the trench would greatly extend the construction timeframe without decreasing the amount of land disturbed. Construction of an aboveground pipeline in the floodplain would pose a significant risk for a release to the environment due to the potential for vandalism or inadvertent damage by the public that may access the area.

Upon DTSC and BLM approval of an alignment, PG&E will incorporate revisions to the design plan and can, on a parallel track, proceed with procurement of construction materials including piping and fittings, vaults, power supply and instrumentation for PE-1. Construction can begin once it has been determined that the work activities will have no adverse affect on the southwestern willow flycatcher. The first phase of the flycatcher surveys was completed in late May 2005 and the preliminary results indicate species absence. Additional flycatcher surveys are scheduled for June and July 2005 per USFWS protocol. Preliminary construction estimates indicate that the proposed alignment can be constructed in 4 to 5 weeks after procuring

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materials and the alternate alignment can be construction in 8 to 9 weeks. The difference in construction time is due to the additional length of the alternate route.

If you have any questions, please do not hesitate to contact me. I can be reached at (805) 546-5243.

Sincerely,

 for Yuonne Meeks

cc: Mark Howell/BLM
Sally Murray/BLM
Ning Wu Chang/DTSC
Robert Knutsen/PG&E

Extraction Well PE-1 Potential Conveyance Piping Routes to MW-20 Bench PG&E Topock Compressor Station, Needles, CA

Introduction

This memorandum presents an evaluation of two pipeline alignments (or routes) between Extraction Well PE-1 and the MW-20 bench at the Pacific Gas and Electric Company (PG&E) Topock site. A proposed conveyance pipeline alignment was described in the *Design Plan, Conveyance Piping and Power Supply for Extraction Well PE-1*, submitted to the Department of Toxic Substances Control (DTSC) and U.S. Bureau of Land Management (BLM) on March 21, 2005.

As part of the review and approval of the design plan, the proposed pipeline alignment was staked and a site walk completed. The site walk occurred on May 5, 2005, with representatives from PG&E, BLM, and CH2M HILL in attendance. During the site walk, BLM representatives suggested some minor modifications to the proposed alignment and also requested that an alternative to the proposed alignment be considered.

In response to BLM's request during the site visit, this memorandum summarizes the engineering, construction, and biological considerations for two alignments for the conveyance piping between extraction well PE-1 and the MW-20 bench, and compares the two alignments in terms of construction impacts and affects on biological resources in the Colorado River floodplain. Design details (e.g., piping and electrical details) will be included in the final design plan following agency concurrence on the selected alignment and approval to proceed with additional planning.

The two alignments, referred to in this memorandum as the "proposed alignment" and the "alternate alignment," are shown on the attached Figure SK-TP-PE1-1.

Proposed Alignment

The proposed alignment was revised from that described in the design plan based on BLM suggestions during the site walk. The primary revision to the alignment was rerouting the pipeline as it approaches the MW-20 bench to avoid the native mesquite trees in the area.

Engineering and Construction

There are no significant engineering or construction impacts caused by rerouting the section of the pipeline as it approaches the MW-20 bench to avoid the native mesquite trees. The length of the pipeline will be increased by approximately 50 feet to a total length of approximately 500 linear feet. One low-point drain vault (i.e., leak sensor station) and one cable pull vault will be needed in the floodplain. Each vault will be approximately 3-feet by 3-feet, mostly below grade, and will protrude above grade six inches to 1-foot. These vaults

are similar to the ones recently installed between the MW-20 bench and the Interim Measures No. 3 (IM3) treatment facility.

It is estimated that construction of the proposed alignment could be completed over a 4- to 5-week period after mobilizing materials and equipment to the site. General construction information is provided separately in this memorandum.

Biological Considerations

The proposed alignment is roughly the shortest distance between extraction well PE-1 and the MW-20 bench. Construction of this alignment is anticipated to affect approximately 40-45 salt cedar trees directly within the pipeline route assuming a 50-foot work right-of-way. The number of potentially affected trees is an approximate estimate because salt cedars do not have a single trunk and tend to overlap, making accurate quantification difficult. The salt cedar is an aggressive non-native species that often dominates native vegetation and provides marginal wildlife habitat. However, salt cedar trees are considered potential nesting habitat for the southwestern willow flycatcher that is protected under the Endangered Species Act (ESA) as well as other avian species protected under the Migratory Bird Treaty Act (MBTA). Use of salt cedar as nesting habitat for the southwestern willow flycatcher is documented in scientific literature.

The mitigation measures identified for the floodplain wells and IM3 treatment facility construction would be followed during construction of the pipeline, including the use of a full-time biological monitor.

Alternate Alignment

The alternate alignment was identified by BLM to minimize impacts to the salt cedar trees that are considered potential southwestern willow flycatcher nesting habitat.

Engineering and Construction

The alternate alignment proposed by the BLM is feasible. The length of the pipeline would be increased from approximately 500 linear feet to approximately 900 linear feet. Two low-point drain/ leak detection vaults and two cable pull vaults will be needed in the floodplain. One high-point vent (HPV) with an air release valve (ARV) and vault may need to be installed depending on the final routing and topography along this alignment. The HPV with an ARV will be enclosed within a 3-foot by 4-foot vault that will be mostly below grade and protrude six inches to 1-foot above grade. The ARV will be piped to a 3 to 5 gallon bucket within the vault to contain potential small discharges that may occur when air is vented from the pipeline. These vaults will be similar in appearance to those along the existing conveyance piping route between the MW-20 bench and the IM3 treatment plant. The 480-volt cable that runs from the motor control center in the electrical room to the well pump will have to be increased from the existing wire size of 2/0 AWG to 4/0 AWG, which will have no impact on trench configuration.

The alternate alignment is intersected by a sand dune, approximately 10 feet to 12 feet in height, in a line roughly between TW-2S/2D and MW-28 that intersects the alternate alignment (shown on figure SK-TP-PE1-1). To keep the underground piping 5 feet below the nominal grade in the area, this dune will have to be partially reduced to the elevation of the

surrounding area before trenching of the pipeline can begin. Installation of the pipeline within the dune could result in inadequate cover and potential surfacing of the pipeline as dunes shift in the future. The dune area that may be leveled or partially affected is approximately 0.1 acres.

It is estimated that construction of the alternative alignment could be completed over an 8- to 9-week period after mobilizing materials and equipment to the site. General construction information is provided separately in this memorandum.

Biological Considerations

The alternate alignment was proposed to avoid potential impacts to nesting avian species, especially the southwestern willow flycatcher by minimizing the removal of salt cedar trees. However subsequent evaluation indicates that 30 to 35 salt cedar trees may be affected by construction assuming a 50-foot work right-of-way primarily due to the leveling of the sand dune discussed previously. This dune was observed by the project engineer independently after the field walk when comparing the documented topography with the actual topography of the area. This dune does not appear on the USGS topographical survey of the area which is why it is considered unstable and should be leveled and the pipeline installed relative to the nominal grade of the area. As cited earlier, the number of potentially affected trees is an approximate estimate as because salt cedars do not have a single trunk and tend to overlap, making accurate quantification difficult.

The mitigation measures identified for the floodplain wells and IM3 treatment facility construction would be followed during construction of the pipeline, including use of a full-time biological monitor.

General Construction Information

The staging area being considered for these activities is the north end of the MW-20 bench, and would be approved by the agencies prior to its use. Construction materials will be stockpiled at the IM3 treatment plant and/or the MW-20 bench and moved to the staging area as needed. Access to the floodplain would be from Park Moabi Road at the MW-35 cluster, similar to prior drilling access.

Due to the nature of the fine sandy soils in the floodplain it is anticipated that an approximate 50-foot-wide right-of-way will be required for either route to accommodate the trench, temporary soil stockpile, and access for materials and equipment. The use of trench boxes for construction was considered to reduce the right-of-way required. Trench boxes are typically used in situations where the bottom of trench will be greater than 4 feet and the soil is firm enough to allow machinery close enough to set the boxes without collapsing the trench. In this situation, due to the nature of the soil, a one-half to 1 or lower slope is expected to occur naturally due to settling as the trench is excavated. Any attempt to get close enough to the edge of the trench to set the trench boxes with small machinery will cause instability at the edge of the trench. Using machinery large enough to set the trench boxes in place from a greater distance will increase the right-of-way requirements and the overall environmental impact of the effort.

The sequence of events for either route would be to grub the route (including removing the dune for the alternate route), and install and backfill the well vault. Trenching would be done in approximately 300-foot increments (between vaults), with the piping and conduits being joined together in the trench. Installing components in the vault could be completed concurrently with pipeline installation.

The equipment required to be in the floodplain area would generally include a track hoe for grubbing, excavation, and movement of construction materials, a front-end loader, the track-mounted fusion bonding machine, a water buffalo (trailer with water tank and pump for compaction of trench backfill), and John Deere four-wheel-drive (4WD) Gators. Small gas-driven generators will be needed to assist in installation of the vault components. Construction would be overseen by a construction superintendent. Construction staff would include equipment operators, pipe installers, electricians, and general laborers (10 to 15 workers).

Comparison of Proposed and Alternate Alignments

The following provides comparisons between the proposed and alternate alignments focusing on construction impacts and affects on biological resources in the Colorado River floodplain.

- For the proposed alignment, approximately 0.6 acres in the floodplain is estimated to be disturbed during construction. For the alternate alignment, approximately 1 acre in the floodplain is estimated to be disturbed by construction, including the dune area.
- Ground disturbance for either route may lead to introduced species such as Russian thistle. The alternative alignment may lead to a greater number of Russian thistle invading the area due to a larger area of disturbance. This weedy plant species has been observed on the floodplain within previously disturbed areas.
- The alternate alignment would require leveling of a sand dune (0.1 acres) to maintain the required trench depth.
- Neither alignment would harm native trees including mesquite. The proposed alignment would require removal of approximately 40-45 salt cedar trees. The alternate alignment would require removal of a sand dune containing 30-35 salt cedar trees.
- The proposed alignment could be constructed in about half the time of the alternate alignment, thereby lessening the duration of disturbance created by equipment and human activity. Existing cumulative noise impacts in the area include traffic generated by the railroad, I-40 Highway, and Colorado River watercraft. A list of major construction activities for each alignment and the estimated duration for each activity is shown below. Note that some of these activities will be performed concurrently with others. A detailed construction schedule can be developed as part of the design plan to refine the construction timeframe.

COMPARISON OF CONSTRUCTION ACTIVITY DURATIONS

No.	Description	Proposed Alignment Duration	Alternate Alignment Duration
1	Procure materials, select and mobilize contractors and equipment	3-4 Weeks	3-4 Weeks
	Construction Activities		
2	Layout and survey pipeline routing and vault locations, clear pipeline route (includes removal of dune for alternate route)	5 Days	12 Days
3	Excavate and install vaults (PE-1, leak detection, cable pull, HPV)	3 Days	5-6 Days
4	Excavate trench from PE-1 vault to Valve Vault #1	8 Days	17 Days
5	Fuse and install dual containment HDPE piping between PE-1 vault and Valve Vault #1	10 Days	21 Days
6	Install piping and instrumentation components in vaults	6 Days	8 Days
7	Hydro-test piping	2 Days	6 Days
8	Install power and control conduits, pull power and control cables	6 Days	14 Days
9	Backfill and compact trench and vaults	4 Days	10 Days
10	Tie-in power and control cables, operational testing	4 Days	4 Days
11	Re-build sand dune	0 Days	3 Days
	Estimated Construction Time	4 to 5 Weeks	8 to 9 Weeks

Note: Durations are approximate and will be refined as part of the final design plan.

It should be noted that both alignments are within the capture zone of the groundwater pumping system and the potential for pipeline leaks is greatly reduced by using double-wall pipe and leak sensor stations. However, the alternative alignment contains a segment of pipe over 400 feet long that will convey contaminated groundwater within 150 feet of the Colorado River. This location poses a greater potential for a release to the Colorado River if an unforeseeable rupture occurred.



RESPONSIBLE ENGINEER

PE #

NO.	DATE	REVISION	BY	CHK
A	05/17/05	CONCEPTUAL LAYOUT FOR REVIEW AND COMMENT	JBW	SDH

REVISION APPROVAL		REV	DATE	PRINT DISTRIBUTION	
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE	
CIVIL		ELECTRICAL		STATUS	
STRUCTURAL		INST & CONTROL		REV.	
MECHANICAL		ARCHITECTURAL		CL IENT	
PROCESS		ENVIRONMENTAL		FIELD	
PIPING		GEN. ARRANG.		INTRA CO.	

STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY		/ /		
FOR REVIEW AND APPROVAL	A	05/17/05		
APPROVED FOR CONSTRUCTION		/ /		
REVISED & APPROVED FOR CONSTRUCTION		/ /		
SCALE 1"=30'				

PACIFIC GAS & ELECTRIC TOPOCK COMPRESSOR STATION INTERIM MEASURE 3 EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM	
PROJECT NO. 327061	
CH2MHILL	

PIPING PLAN VIEW PROPOSED AND ALTERNATE PE-1 PIPELINE ROUTES		
DWG. NO.	SK-TP-PE1-1	REV. A

BAR IS ONE INCH ON
ORIGINAL DRAWING.
0 1"

FILENAME:

PLOT DATE:

PLOT TIME: