



**Pacific Gas and  
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February 28, 2006

Norman Shopay  
Project Manager  
California Department of Toxic Substances Control  
Geology and Corrective Action Branch  
700 Heinz Avenue  
Berkeley, California 94710

Subject: Technical Memorandum: Well PGE-6 Decommissioning Evaluation,  
PG&E Topock Compressor Station

Dear Mr. Shopay:

This letter transmits the technical memorandum *Well PGE-6 Decommissioning Evaluation*.  
The technical memorandum is submitted in conformance with Condition 20 in DTSC's  
January 6, 2006 letter.

Please contact me at (805) 546-5243 if you have any questions.

Sincerely,

cc. Kate Burger/ DTSC

Enclosure

# Well PGE-6 Decommissioning Evaluation PG&E Topock Compressor Station

DATE: February 28, 2006

## Introduction

This technical memorandum presents an evaluation of inactive water supply well PGE-6, as requested in the Department of Toxic Substances Control's (DTSC's) January 6, 2006 letter, *Conditional Approval of the Draft Well Installation Work Plan for Interim Measures Performance Monitoring Program, dated November 30, 2005, PG&E, Topock Compressor Station*. In the January 6, 2006 letter, DTSC requested a technical memorandum be submitted by February 28, 2006 with recommendations regarding whether this well should be decommissioned. If decommissioning was recommended, DTSC required that a work plan for decommissioning be submitted on the same date as the technical memorandum. The well decommissioning work plan has been prepared as a companion document to this memorandum.

Existing well construction records, drilling logs, and water level and water quality data were reviewed for PGE-6 and nearby wells. Recommendations for the potential future use and decommissioning of PGE-6 are discussed below.

## PGE-6 Well Construction Details

Well PGE-6 is located approximately 400 feet northeast from the eastern boundary of the Topock Compressor Station in an area known as the MW-24 bench, as shown on Figure 1. PGE-6 was originally installed in 1964 to 180 feet below ground surface (bgs) as a replacement industrial water supply well for the Topock Compressor Station. The well was constructed with 14-inch steel casing with perforations from 110 feet to 180 feet bgs. A 1998 video log of PGE-6 confirms the depth of the top of the screened interval. At the time of the video log, the well was silted in or collapsed to a depth of 162 feet bgs. Figure 2 provides a schematic diagram of PGE-6 construction details. The 1964 driller's log for PGE-6 and the video logging report are included in Attachment A. Table 1 summarizes well construction information for PGE-6, as well as for other nearby wells (PGE-7, MW-24A, MW-24B, and MW-24BR).

The driller's log of well PGE-6 (Attachment A) indicates that the well is completed in alluvium and did not encounter bedrock at a depth of 180 feet. The water level at the time the well was drilled was 106 feet bgs, similar to the current depth to water. The video log of PGE-6 (Attachment A) shows the well casing to be in very poor condition. Numerous holes are visible in the casing above the zone between about 60 and 100 feet. The well screen is heavily encrusted but appears to be mostly intact. The casing above the screen is in such

poor condition that there is significant risk of collapse if attempts were made to rehabilitate this well.

## Potential Use of PGE-6 for In-Situ Pilot Test

The MW-24 bench, where PGE-6 is located, is being considered as an alternate location for an upland in-situ pilot test. It is likely that the upland pilot test may involve some pumping and injection of water to accelerate the movement of reagents through the otherwise very slow-moving Topock groundwater system. Although PGE-6 is in poor condition, it might be possible to use it as an extraction or injection well during the relatively short duration of an in-situ pilot test. It would be relatively easy to hang a 6- or 7-inch diameter, steel sleeve casing and well screen inside the 14-inch diameter well. This sleeve casing would protect and allow retrieval of the pump in the event the well collapsed. It is likely that the steel sleeve casing could be pulled back out of the well even if the well collapsed.

## Decommissioning Techniques for PGE-6

Conventional well decommissioning methods typically involve perforation of the casing above the screen followed by placement of grout in the well. The perforations in the casing allow the grout to penetrate and seal the annular space outside the casing. San Bernardino County Department of Environmental Health Services (DEHS) was contacted to discuss the proper means of decommissioning PGE-6, given the poor condition of the casing. Because there is a significant risk of collapse if attempts were made to perforate the casing, the DEHS agreed that perforation of the casing in PGE-6 would not be required (personal communication between Martin Barackman/CH2M HILL and Marvyn Cerdenio/San Bernardino County DEHS, February 17, 2006).

Given that the groundwater sampled from PGE-6 contains hexavalent chromium (1,630 micrograms per liter in October 2005), it will be necessary to contain and properly dispose of any water that is displaced from the well during the decommissioning. By filling the section of the well below the water level with sand, the amount of groundwater that will be displaced up the hole can be minimized. The details of the well decommissioning methods and materials are described in the work plan submitted to DTSC concurrently with this technical memorandum.

## Recommendation

The poor condition of the casing and screen in well PGE-6 preclude any long-term use of this well as part of a final remedy at the site. The long screen length and large diameter make it unsuitable for use as a monitoring well. Additionally, existing wells MW-24A and MW-24B provide monitoring data for the alluvial aquifer at this location. However, well PGE-6 might be used as a pumping or extraction well for an in-situ pilot test, if one is conducted at this site location. We therefore recommend the following:

1. Well PGE-6 should not be decommissioned until a determination is made regarding the potential use of this well in an in-situ pilot test.

2. After the well has either served its purpose or is determined not to be needed for the in-situ pilot test, PGE-6 should be decommissioned according to State and County regulations and following procedures in the DTSC-approved work plan.

Drilling records, video log observations, and adjacent drilling logs confirm that well PGE-6 is constructed solely within the alluvial aquifer in an area where hexavalent chromium is found in both the upper and lower depth intervals of the alluvial aquifer. PGE-6 is not completed across the alluvium and bedrock formations. Therefore, there is no need to decommission this well until it is determined whether or not it will be used in the in-situ pilot test.

## Certification

This memorandum was prepared by CH2M HILL under the supervision of the professional whose seal and signature appears hereon, in accordance with currently accepted professional practices; no warranty, expressed or implied, is made.



Paul F. Bertucci  
Certified Engineering Geologist



## **Table**

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**TABLE 1**

Well Construction Information for PGE-6, PGE-7, and MW-24 Monitoring Wells

*Technical Memorandum: Well PGE-6 Decommissioning Evaluation**PG&E Topock Compressor Station*

Well ID monitored zone	Completion Date	Ground Elevation ft MSL	Well Depth ft bgs	Well Material	Well Perforation / Screen Interval		Screen Length feet	Remarks
					Depth ft bgs	Elevation ft MSL		
<b>PGE-6</b> Upper Alluvial Aquifer	Jun-1964	562	180	14" steel	110 - 180	452 - 282	70	Installed as replacement supply well for Station March 1998 video log: casing deteriorated and silted bottom at 162' (52' open perforations)
<b>PGE-7</b> Bedrock and 25' of basal interval of Alluvial Aquifer	Sep-1964 Aug-1969	563	182 330	14" steel 7" steel liner to 195'	N.A. <sup>(1)</sup> 195 - 330 6.7" openhole	--- 368 - 283	--- 135	Installed as replacement supply well for Station Re-completed as a monitoring well in 1969 as part of well PGE-8 wastewater disposal operations March 1998 video log: casing liner to 195' and openhole boring to silted bottom at 303' (108' openhole)
<b>MW-24A</b> Upper Alluvial Aquifer	May-1998	565	125	4" PVC	104 - 124	461 - 441	20	
<b>MW-24B</b> Base Alluvial Aquifer	May-1998	563	214	4" PVC	194 - 214	369 - 349	20	
<b>MW-24BR</b> Bedrock	Apr-1998	563	438	4" PVC	378 - 438	185 - 125	60	Boring was logged as "Red Fanglomerate (rock) and Sandstone" from 225' to 441'

## NOTES:

<sup>(1)</sup> Well perforation depths for **original completion of PGE-7** are not available; assume similar well completion to the 70-foot perforated completion used for PGE-6.

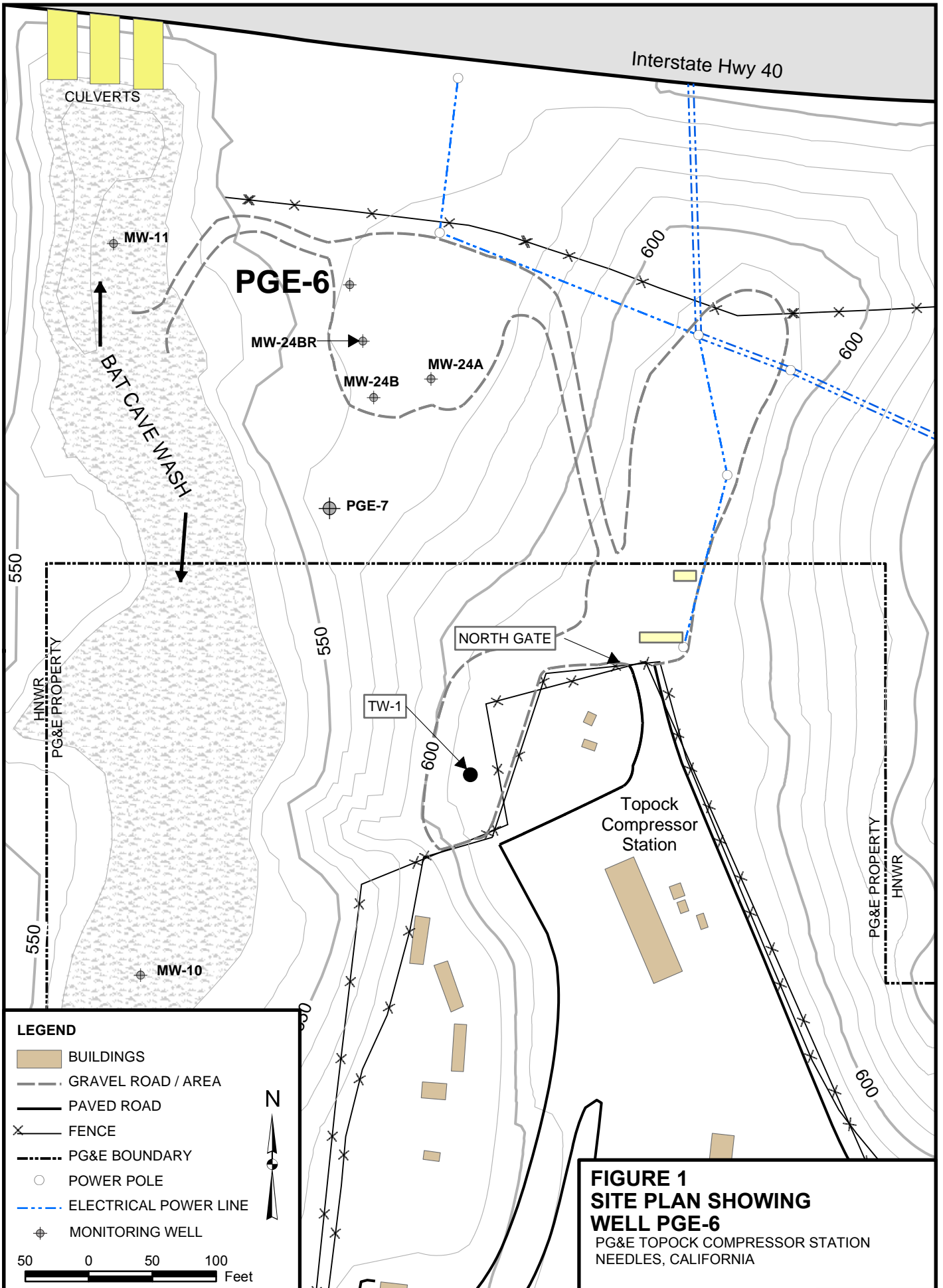
MSL = mean sea level. ft bgs = feet below ground surface. (--) = data not available. PVC = polyvinyl chloride.

Ground surface elevations and well screen depths are rounded-off to whole-foot.

Static water levels in PGE-6, PGE-7, and MW-24 wells typically range from approximately 106 to 108 feet bgs.

## Figures

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**FIGURE 1**  
**SITE PLAN SHOWING**  
**WELL PGE-6**  
 PG&E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA



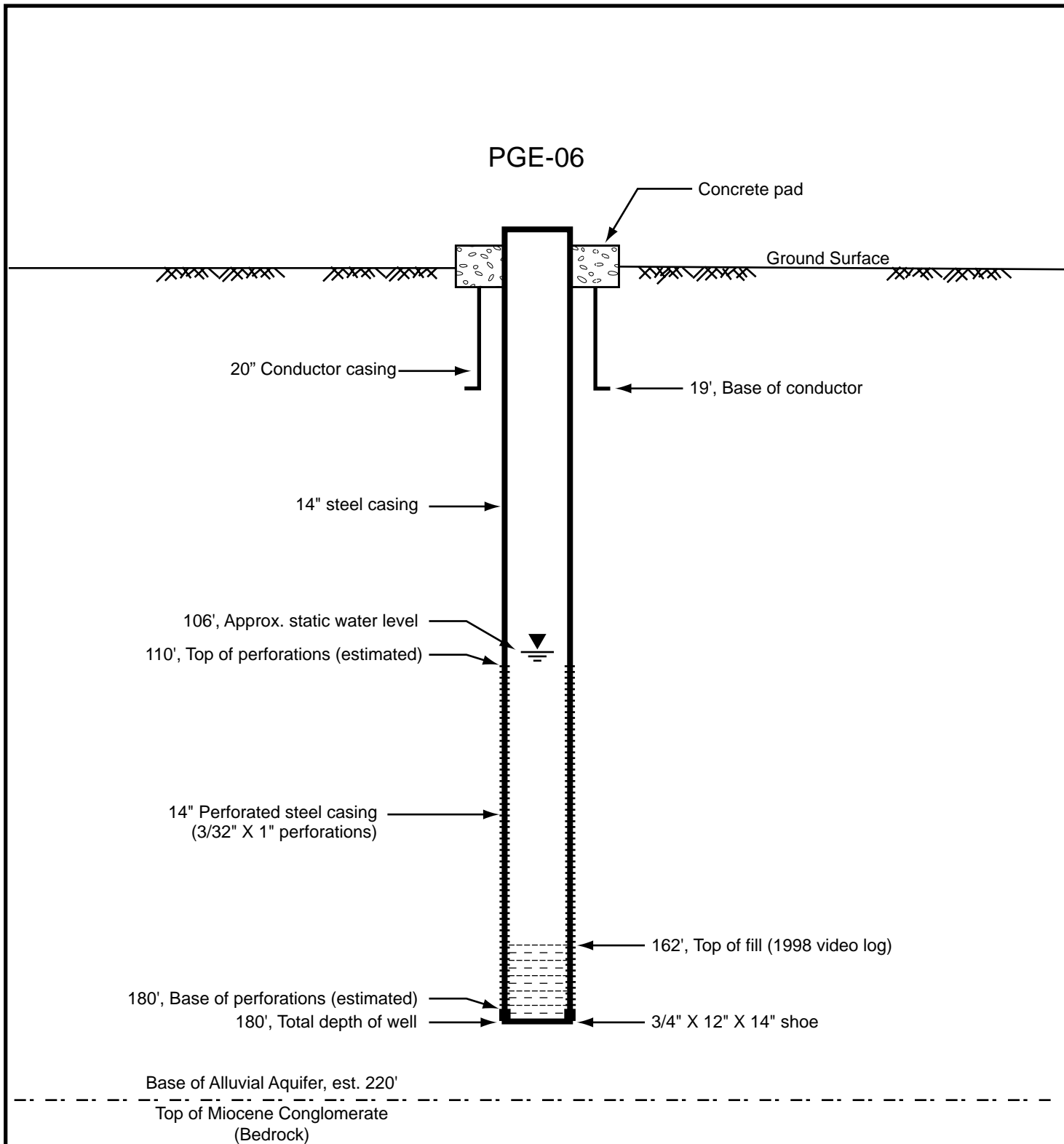


DIAGRAM NOT TO SCALE

All depths in feet below ground surface (bgs)

PGE-6 is an inactive water supply well that was installed in 1964. Well contains Grundfos submersible pump for periodic sampling.

**FIGURE 2**  
**SCHEMATIC DIAGRAM FOR INACTIVE**  
**SUPPLY WELL PGE-6**  
 PG&E TOPOCK COMPRESSOR STATION  
 NEEDLES, CALIFORNIA

# **Attachment A**

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**PAUL R. PEAKER**

WATER WELL REPAIRING AND DRILLING

ROUTE 6, BOX 522-T • TELEPHONE THornwall 5-0823

BAKERSFIELD, CALIFORNIA

WATER WELL LOG

June 17, 1964

for

*No. 6 - WELL*

Pacific Gas and Electric Co., Box 488, Barstow, California  
 14", 180', at Topock Compressor Station.

<u>DEPTH</u>	<u>FORMATION</u>
0 - 19'	Boulders and gravel
19 - 30'	Cobblestone and gravel
30 - 60'	Some boulders and gravel.
60 - 180'	Sand, gravel, and rocks.

## CASING LOG

0 - 110'	Blank #8 gage Kai-weld
110 - 180'	Perf. 3/32 x 1", with a 3/4 x 12 x 14" shoe on bottom

There is 19' of 20" conductor pipe on top, and the water level is 106'.

PGS434692

*Refer to G.M. 159114**Contract # 11-10-64**Contract # 11-29-64*

# welenco

## VIDEO SURVEY REPORT

Fax (805) 834-2550 • (800) 445-9914 • (805) 834-8100

Customer <u>ECOLOGY + ENVIRONMENT</u> Address <u>350 SANSON ST STE 300</u> City <u>SAN FRANCISCO</u> State <u>CA</u> Zip <u>94104</u> Request By <u>RALPH LAMBERT</u> Cust. P.O. _____ Copy To _____ Reason for Survey <u>GENERAL INSPECTION</u>	Job No. <u>29098</u> Run No. <u>ONE</u> Well No. <u>PG&amp;E # 6</u> Date <u>3-25-98</u> Location <u>TOPOCK - PG&amp;E COMPRESSOR</u> <u>STATION - NEEDLES AREA</u> Zero Datum <u>TOP OF CASING</u> Survey By <u>DAW THOS</u> Truck No. <u>L-17</u>
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DEPTH	REMARKS
0 FT	RECORDING STARTS
39	MARK ON CASING
50	MARK ON CASING BEHIND PIPE
58	HEAVY SCALE
63	LARGE HOLE
64	LARGE HOLES TO 65'
71	HOLES
74	HOLES
78	HOLES
98	HOLES
106	STATIC WATER LEVEL - FAIR TO POOR VISIBILITY
123	BOTTOM OF PUMP
162	FILL - BOTTOM OF WELL
110	POSSIBLE TOP OF VERTICAL SCOTS

**NOTE:** pump in well - perforations reported 110' - 180'

**CASING CONDITION:**

ID at Surface 14" Reduces to \_\_\_\_\_ at \_\_\_\_\_ : \_\_\_\_\_ at \_\_\_\_\_ : \_\_\_\_\_ at \_\_\_\_\_

Diameter Reference:  Caliper Survey  Estimate from TV/Photo Survey  Well Records

Corrosion/Incrustation Build-up  Light  Moderate  Heavy  Increases with Depth