

Mr. Aaron Yue  
Project Manager  
California Department of Toxic Substances Control  
5796 Corporate Avenue  
Cypress, CA 90630

Ms. Pamela S. Innis  
US Department of the Interior  
CHF Remedial Project Manager  
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Phoenix, AZ 85004-4427

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ENVIRONMENT

Subject:  
Well Decommissioning Report for Monitoring Well MW-D-46  
Pacific Gas and Electric Company  
Topock Compressor Station, Needles, California

Date:  
June 1, 2020

Contact:  
Fred Stanin

Phone:  
925-296-7842

Email:  
Fred.Stanin@arcadis.com

Our ref:  
30019125

Dear Mr. Yue and Ms. Innis:

Pacific Gas and Electric Company (PG&E) is implementing a groundwater remedy at the Topock Compressor Station (TCS or Site) in Needles, California. Monitoring wells installed for the Final Groundwater Remedy at the Site are nested, when possible, to reduce the number of boreholes at the Site. The nested pair of wells installed in borehole MW-77s (formerly MW-Ds) included:

- MW-77-046 (formerly MW-D-046), screened from 26 to 46 feet (ft) below ground surface (bgs); and
- MW-77-102 (formerly MW-D-102) screened from 82 to 102 ft bgs.

Formation sand and filter pack sand was observed on September 26, 2019 during development of monitoring well MW-77-046. Development was paused to create an approach to assess the well condition. The assessment included additional development and video logging. The assessment concluded that MW-77-046 should be decommissioned, and MW-77-102 should be used as a monitoring well following development. The purpose of this memo is to document the field observations, regulatory discussions, and to summarize the agency-approved decommissioning procedures for MW-77-046.

## FIELD OBSERVATIONS

Well development for MW-77-046 and MW-77-102 began on September 26, 2019 using site-specific well development procedures. Prior to the start of development of MW-77-046, the total depth of the well was measured at 36.26 ft. bgs. The measured depth was approximately 12 feet above the installed total depth of 48.3 ft bgs. During the initial bail of the well, a mixture of formation and filter pack sand was removed. This resulted in a decrease of the total depth by 0.24 ft. During subsequent bails, a higher percentage of filter pack to formation sand was observed without a significant change in the total depth of the well. The stabilization of sand levels inside the well following bailing suggested that the casing was compromised. A downhole video survey of the well was conducted on October 3, 2019 to aid in evaluating the condition of the well.

On September 26, 2019, the total depth of well MW-77-102 was measured at the approximate depth of the final well construction log depth. During the initial bail, filter pack was not observed, and the well was determined to be intact. Development continued October 1 and was completed on October 2, 2019.

## VIDEO LOG RESULTS

A video log survey was completed on October 3, 2019 by Cascade to evaluate the condition of MW-77-046 well casing. The results are summarized below.

- First casing joint was encountered at approximately 6.8 feet bgs and appeared intact.
- Second casing joint was encountered at approximately 16.8 feet bgs and appeared intact.
- Third casing joint was encountered at approximately 26.8 feet bgs and appeared intact.

The visible portion of the well casing and screen did not show evidence of compromise to the well casing and was consistent with the as-built well construction log. Sand was observed in the well screen at approximately 36.4 ft bgs, above the joint connecting the well casing and the two 10-foot sections of screen. The Designer of Record and Cascade determined the compromise to the well was likely at or below the joint between the two screens and that the well would have to be decommissioned in place to save the adjacent deeper well MW-77-102 located in the same borehole.

## AGENCY DISCUSSIONS AND APPROVAL

Based on observations during well development, Arcadis proposed to decommission well MW-77-046. PG&E and the agencies (Department of Toxic Substances Control, California State Water Board, U.S. Department of the Interior, U.S. Bureau of Reclamation, and others) approved decommissioning procedures in a subsequent discussion summarized below.

- October 3, 2019 – Arcadis, on behalf of PG&E, suggested that MW-77-046 would need to be permanently decommissioned in place in a manner that would not affect the integrity of MW-77-102. Following decommissioning of MW-77-046, a replacement well would be installed by drilling and setting a well approximately 10 to 15 ft. to the north. The Agencies approved the decommissioning plan.

Mr. Aaron Yue and Ms. Pamela S. Innis  
DTSC and DOI  
June 1, 2020

## WELL DECOMMISSIONING

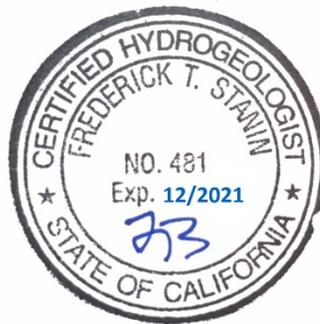
On October 15, 2019, decommissioning of well MW-77-046 was completed according the Well Decommissioning Plan (Attachment 1). The final decommissioning log is presented in Attachment 2 and the photo log presenting decommissioning activities is included as Attachment 3. The decommissioned well was renamed to MW-77-046d following decommissioning. The replacement well was drilled and named MW-77-046.

The other well in the original borehole, MW-77-102, was subsequently developed and has been incorporated in the site-wide groundwater monitoring program.

Sincerely,  
Arcadis U.S., Inc.



Frederick T. Stanin, P.G., C. Hg  
Principal Hydrogeologist



Copies:  
Curt Russell/PG&E  
Kevin Sullivan/PG&E  
Iain Baker/PG&E  
Dan Bush/Arcadis  
Richard Orens/Arcadis  
Frank Lenzo/Arcadis  
Greg Foote/Arcadis

Enclosures:

### Attachments

- 1 Well Decommissioning Plan for MW-77-046 (MW-D-046)
- 2 Well Decommissioning Log: MW-77-046d
- 3 Well Decommissioning Photo Log: MW-77-046d

# ATTACHMENT 1

Well Decommissioning Plan: MW-77-046 (MW-D-046)

## WELL DECOMMISSIONING PLAN FOR MW-77-046 (MW-D-046)

### Well Decommissioning Procedures

1. Measure and document the depth to water and the depth to the sand in the well. Additional bailing is not recommended to prevent more annular material from entering the well.
2. Backfill the remaining screen zone of the well from the top of the sand pack to up to 2 above the top of the screen (well bottom approximately 36 to 24 feet bgs) with pea stone. Tag and document the depth of the top of the peas stone. The total volume of installed pea stone will be recorded and compared to a volume calculation for a 2-inch well (~0.5 of a 50 lbs bag). The purpose of the pea stone is to prevent significant lateral migration of grout out the well screen.
3. Measure and document the depth to water in the well. If there is still water in the well, follow step number 4.
4. Manage IDW purged from the well by attaching a well diverter tool to the top well casing. Run tubing from the diverter to the purge water tank and secure the tubing to the containment vessel (Wastewater tank or 55-gal drums as directed by the Construction Manager). Containerize the displaced water in the purge water tank and direct Cascade to transfer the collected purge water to a black wastewater tank. Insert the tremie pipe through the top of the diverter down to approximately 1 to 2 feet above the pea stone.
5. Mix neat cement with up to 5% bentonite. The grout should contain a high percentage of solids so that when applied the likelihood of significant lateral migration is minimized. Calculate the expected grout usage based on a 2-inch well (~4 gallons) plus a 100% factor (~8 gallons) to account for loss into the sand and pea gravel backfilled screen.
6. Pay close attention to the amount of grout being applied. Start by applying approximately 50% of the calculated amount (4 to 5 gallons). Pull tremie pipe to avoid grouting the tremie pipe in place. Let grout cure overnight for the first lift. Measure top of grout from first lift and compare to volume calculation. Let water used to clean out the pump from grouting will be containerized in a drum and used to mix the grout that will be required for the installation of MW-D-46R

Assess if more than one additional lift of grout is needed. This decision will be made by Arcadis after assessing the amount of grout lost to the borehole and formation. Apply additional lifts of grout as necessary until grout is observed at top of well. Remove tremie pipe from well.

The next day, measure inside well to see if any settling of grout has occurred. "Top off" grout as necessary.

Once grouting is completed cap the top of the well.

7. Record all grout volume measurements and lift measurements on well abandonment log. Stop work and notify the QC geologist if the calculated volume exceeds the well volume plus the 100% factor.
8. Once the well has been grouted install a J-plug in the well.

9. The following day check the grout level and top off as needed. This can be done when grout is being mixed for the installation of the seal at one of the monitoring well. Once the well has been grouted to the top of the well casing a PVC cap will be glued to the top of the well.

# ATTACHMENT 2

Well Decommissioning Log: MW-77-046d

|                                 |   |  |
|---------------------------------|---|--|
| Date Started: 09/08/2019        | Surface Elevation: 478.74 ft amsl   | <b>Well ID: MW-77-046d, MW-77-102</b>      |
| Date Completed: 01/10/2020      | Shallow Well Elevation: NA  |  |
| Drilling Co.: Cascade           | Deep Well Elevation: 478.65 ft amsl   | Client: PG&E                               |
| Drilling Method: Sonic Drilling | Northing (NAD83): 2102928.26  | Project: Final GW Remedy Phase 1           |
| Driller Name: Dan O' Mara       | Easting (NAD83): 7615965.22   | Location: PG&E Topock, Needles, California |
| Drilling Asst: Jimmy Candelaria | Borehole Diameter: 10-12 inches   |  |
| Logger: J. Latham / G. Willford | Static Water Level: See Log for Depths  | Project Number: RC000753.0051              |
| Editor: Grant Willford          | Development End Date: 10/2/2019   |  |
| Total Depth: 107 ft bgs         | Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault |  |

| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction   | Calculated Material Volumes                    | Material Volumes Installed<br>Note: percentages are the actual volume vs the calculated volume   |
|------------|-----------------------|--------------------|-----------|------------|---|--|--|
| 0          |                       |                    |           |            | (+0.2 - 2.2') Surface completion                                    |  | (+0.2 - 2.2') 15 bags<br>Note: 30" diameter concrete pad with 18" diameter lockable vault, King Kon-Crete 4000 PSI   |
| 1          |                       |                    |           |            | (0.1 - 82.0') 2" PVC Sch 40 Casing                                  |  | Note: Capped decommissioned well casing covered with concrete inside the well vault during the installation of the surface completion.   |
| 2          |                       |                    |           |            | (1.6 - 26.0') Decommissioned Well Casing                            |  |  |
| 3          |                       |                    |           |            |   |  |  |
| 4          |                       |                    |           |            |   |  |  |
| 5          |                       |                    |           |            |   |  |  |
| 6          |                       |                    |           |            |   | (1.6 - 24.0') 100% Portland Cement I, II and V | (1.6 - 24.0') 3.58 gallons<br>Note: Grout decommissioning seal. Installed on 11/16/19 to top of casing settled to 2 ft. bgs by 10/17/19. PVC casing was cut and a slip cap glued to the top of casing. |
| 7          |                       |                    |           |            |   |  |  |
| 8          |                       |                    |           |            | (2.2 - 15.0') Portland Cement 6% Bentonite I, II and V with Benseal | (2.2 - 15.0') 72.1 gallons                     | (2.2 - 15.0') 98 gallons (136%)<br>Note: Grout Seal. Type I, II and V and Benseal, used >20% of the calculated volume due to potential voids forming during drilling and grout migration               |
| 9          |                       |                    |           |            |   |  |  |
| 10         |                       |                    | NR        |            | (9.5 - 10.5') Centralizer   |  |  |
| 11         |                       |                    |           |            |   |  |  |
| 12         |                       |                    |           |            |   |  |  |
| 13         |                       |                    |           |            |   |  |  |
| 14         |                       |                    |           |            |   |  |  |
| 15         |                       |                    |           |            |   |  |  |
| 16         |                       |                    |           |            |   |  |  |
| 17         |                       |                    |           |            | (15.0 - 21.0') Cemex #0/30 MESH (30x50) Lapis Lustre Sand           | (15.0 - 21.0') 8.9 bags                        | (15.0 - 21.0') 8 bags (90%)<br>Note: Transition sand   |
| 18         |                       |                    |           |            |   |  |  |
| 19         |                       |                    |           |            |   |  |  |

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater samples collected during the drilling of MW-77d; solid blue water table marks represent depth to water (ft. bgs.) measured post development; installed in MW-77s

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK C:\USERS\SMGRANE\DOCUMENTS\PG&E\_TOPOCK\DATABASE FOR PLOG.GPJ\_TOPOCK\DATA TEMPLATE FOR PLOG.GDT\_05/05/20\_14:48

|                                 |   |  |
|---------------------------------|---|--|
| Date Started: 09/08/2019        | Surface Elevation: 478.74 ft amsl   | <b>Well ID: MW-77-046d, MW-77-102</b>      |
| Date Completed: 01/10/2020      | Shallow Well Elevation: NA  |  |
| Drilling Co.: Cascade           | Deep Well Elevation: 478.65 ft amsl   | Client: PG&E                               |
| Drilling Method: Sonic Drilling | Northing (NAD83): 2102928.26  | Project: Final GW Remedy Phase 1           |
| Driller Name: Dan O' Mara       | Easting (NAD83): 7615965.22   | Location: PG&E Topock, Needles, California |
| Drilling Asst: Jimmy Candelaria | Borehole Diameter: 10-12 inches   |  |
| Logger: J. Latham / G. Willford | Static Water Level: See Log for Depths  | Project Number: RC000753.0051              |
| Editor: Grant Willford          | Development End Date: 10/2/2019   |  |
| Total Depth: 107 ft bgs         | Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault |  |

| Depth (ft) | Groundwater Sample ID                        | Geologic Formation        | USCS Code | USCS Class | Well Construction  | Calculated Material Volumes | Material Volumes Installed<br>Note: percentages are the actual volume vs the calculated volume  |
|------------|--|---------------------------|-----------|------------|--|-----------------------------|---|
| 20         |  |                           |           |            | (15.0 - 21.0') Cemex #0/30 MESH (30x50) Lapis Lustre Sand  | (15.0 - 21.0') 8.9 bags     | (15.0 - 21.0') 8 bags (90%)<br>Note: Transition sand  |
| 21         |  |                           |           |            | (0.1 - 82.0') 2" PVC Sch 40 Casing   |                             |   |
| 22         |  |                           |           |            |  |                             |   |
| 23         |  |                           | NR        |            |  |                             |   |
| 24         |  |                           |           |            |  |                             |   |
| 25         |  |                           |           |            | (1.6 - 26.0') Decommissioned Well Casing   |                             |   |
| 26         |  |                           |           |            | (0.0 - 27.0') 12.0" Borehole   |                             |   |
| 27         |  |                           |           |            | (26 - 46.0') Decommissioned Screen interval  |                             |   |
| 28         |  | Topock - Fluvial Deposits | SP        |            | (24.0 - 36.2') Decommissioned with a combination of Cal-Silica 3/8" x 1/4" pea gravel and 100% Portland Cement Type I, II and V  | (24.0 - 46.0') 2 gallons    | (24.0 - 36.2') 4 gallons (200%)<br>Note: 0.5 bags of Cal-Silica 3/8 x 1/4" pea gravel to a depth of 24 ft. bgs. Portland Cement installed on 10/15/19 to top of casing and settled to 24 ft. bgs by 10/16/19. Used >20% of the calculated volume due to migration into the filter pack. |
| 29         |  |                           |           |            |  |                             |   |
| 30         |  | Topock - Fluvial Deposits | CL        |            | (21.0 - 50.0') Cemex #3 MESH (8x10) Lapis Lustre Sand  | (21.0 - 50.0') 31.4 bags    | (21.0 - 50.0') 45 bags (143%)<br>Note: Filter pack. Used >20% of the calculated volume due to potential voids forming during drilling.  |
| 31         |  |                           |           |            |  |                             |   |
| 32         | MW-D-VAS-30-35 (<0.17 U ppb) 8/10/2019 14:39 |                           |           |            |  |                             |   |
| 33         |  | Topock - Fluvial Deposits | ML        |            | (27.0 - 107.0') 10.0" Borehole   |                             |   |
| 34         |  |                           |           |            |  |                             |   |
| 35         |  |                           |           |            |  |                             |   |
| 36         |  |                           |           |            | (36.2 - 48.3') The well screen was potentially compromised at or below the joint between the two well screens allowing the formation and filter pack sand to enter the well screen |                             | Note: Attempts to remove the formation and filter pack sand prior to decommissioning were unsuccessful and material was decommissioned in place.  |
| 37         |  |                           |           |            |  |                             |   |
| 38         |  | Topock - Fluvial Deposits | CL        |            |  |                             |   |
| 39         |  |                           | GM        |            |  |                             |   |

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater samples collected during the drilling of MW-77d; solid blue water table marks represent depth to water (ft. bgs.) measured post development; installed in MW-77s

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|                                 |   |  |
|---------------------------------|---|--|
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| Editor: Grant Willford          | Development End Date: 10/2/2019   |  |
| Total Depth: 107 ft bgs         | Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault |  |

| Depth (ft) | Groundwater Sample ID                              | Geologic Formation        | USCS Code | USCS Class | Well Construction   | Calculated Material Volumes | Material Volumes Installed<br>Note: percentages are the actual volume vs the calculated volume   |
|------------|--|---------------------------|-----------|------------|---|-----------------------------|--|
| 40         |  | Topock - Fluvial Deposits | GM        |            | (0.1 - 82.0')<br>2" PVC Sch 40 Casing   |                             |  |
| 41         |  |                           |           |            | (26 - 46.0')<br>Decommissioned Screen interval  |                             |  |
| 42         |  |                           |           |            | (36.2 - 48.3')<br>The well screen was potentially compromised at or below the joint between the two well screens allowing the formation and filter pack sand to enter the well screen |                             |  |
| 43         |  |                           |           |            |   |                             |  |
| 44         |  | Topock - Fluvial Deposits | ML        |            | (21.0 - 50.0')<br>Cemex #3 MESH (8x10) Lapis Lustre Sand  | (21.0 - 50.0')<br>31.4 bags | (21.0 - 50.0') 45 bags (143%)<br>Note: Filter pack. Used >20% of the calculated volume due to potential voids forming during drilling. |
| 45         |  | Topock - Fluvial Deposits | GM        |            |   |                             |  |
| 46         |  |                           |           |            |   |                             |  |
| 47         |  |                           |           |            | (46.5 - 47.5')<br>Centralizer   |                             |  |
| 48         | MW-D-VAS-46-51<br>(0.47 ppb)<br>8/11/2019<br>12:59 |                           |           |            |   |                             |  |
| 49         |  |                           |           |            | (46.0 - 48.3')<br>Decommissioned Sump and PVC End Cap   |                             |  |
| 50         |  |                           |           |            | (27.0 - 107.0')<br>10.0" Borehole   |                             |  |
| 51         |  |                           |           |            |   |                             |  |
| 52         |  |                           |           |            |   |                             |  |
| 53         |  |                           | NR        |            |   |                             |  |
| 54         |  |                           |           |            |   |                             |  |
| 55         |  |                           |           |            | (50.0 - 80.0')<br>Bentonite seal chips<br>Puregold Medium Chips   | (50.0 - 80.0')<br>21.8 bags | (50.0 - 80.0') 24 bags (110%)<br>Note: Intermediate Seal   |
| 56         |  |                           |           |            |   |                             |  |
| 57         |  |                           |           |            |   |                             |  |
| 58         |  |                           |           |            |   |                             |  |
| 59         |  |                           |           |            |   |                             |  |

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|                                 |   |  |
|---------------------------------|---|--|
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| Drilling Asst: Jimmy Candelaria | Borehole Diameter: 10-12 inches   |  |
| Logger: J. Latham / G. Willford | Static Water Level: See Log for Depths  | Project Number: RC000753.0051              |
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| Depth (ft) | Groundwater Sample ID | Geologic Formation | USCS Code | USCS Class | Well Construction  | Calculated Material Volumes | Material Volumes Installed<br>Note: percentages are the actual volume vs the calculated volume |
|------------|-----------------------|--------------------|-----------|------------|--|-----------------------------|--|
| 60         |                       |                    |           |            | (0.1 - 82.0')<br>2" PVC Sch 40<br>Casing                           |                             |  |
| 61         |                       |                    |           |            | (60.5 - 61.5')<br>Centralizer                                      |                             |  |
| 62         |                       |                    |           |            |  |                             |  |
| 63         |                       |                    |           |            |  |                             |  |
| 64         |                       |                    |           |            |  |                             |  |
| 65         |                       |                    |           |            |  |                             |  |
| 66         |                       |                    |           |            |  |                             |  |
| 67         |                       |                    |           |            |  |                             |  |
| 68         |                       |                    |           |            |  |                             |  |
| 69         |                       |                    |           |            |  |                             |  |
| 70         |                       |                    | NR        |            | (50.0 - 80.0')<br>Bentonite seal chips<br>Puregold Medium<br>Chips | (50.0 - 80.0')<br>21.8 bags | (50.0 - 80.0') 24 bags (110%)<br>Note: Intermediate Seal                                       |
| 71         |                       |                    |           |            |  |                             |  |
| 72         |                       |                    |           |            |  |                             |  |
| 73         |                       |                    |           |            |  |                             |  |
| 74         |                       |                    |           |            |  |                             |  |
| 75         |                       |                    |           |            |  |                             |  |
| 76         |                       |                    |           |            |  |                             |  |
| 77         |                       |                    |           |            |  |                             |  |
| 78         |                       |                    |           |            |  |                             |  |
| 79         |                       |                    |           |            |  |                             |  |

Final - Revised 10/20

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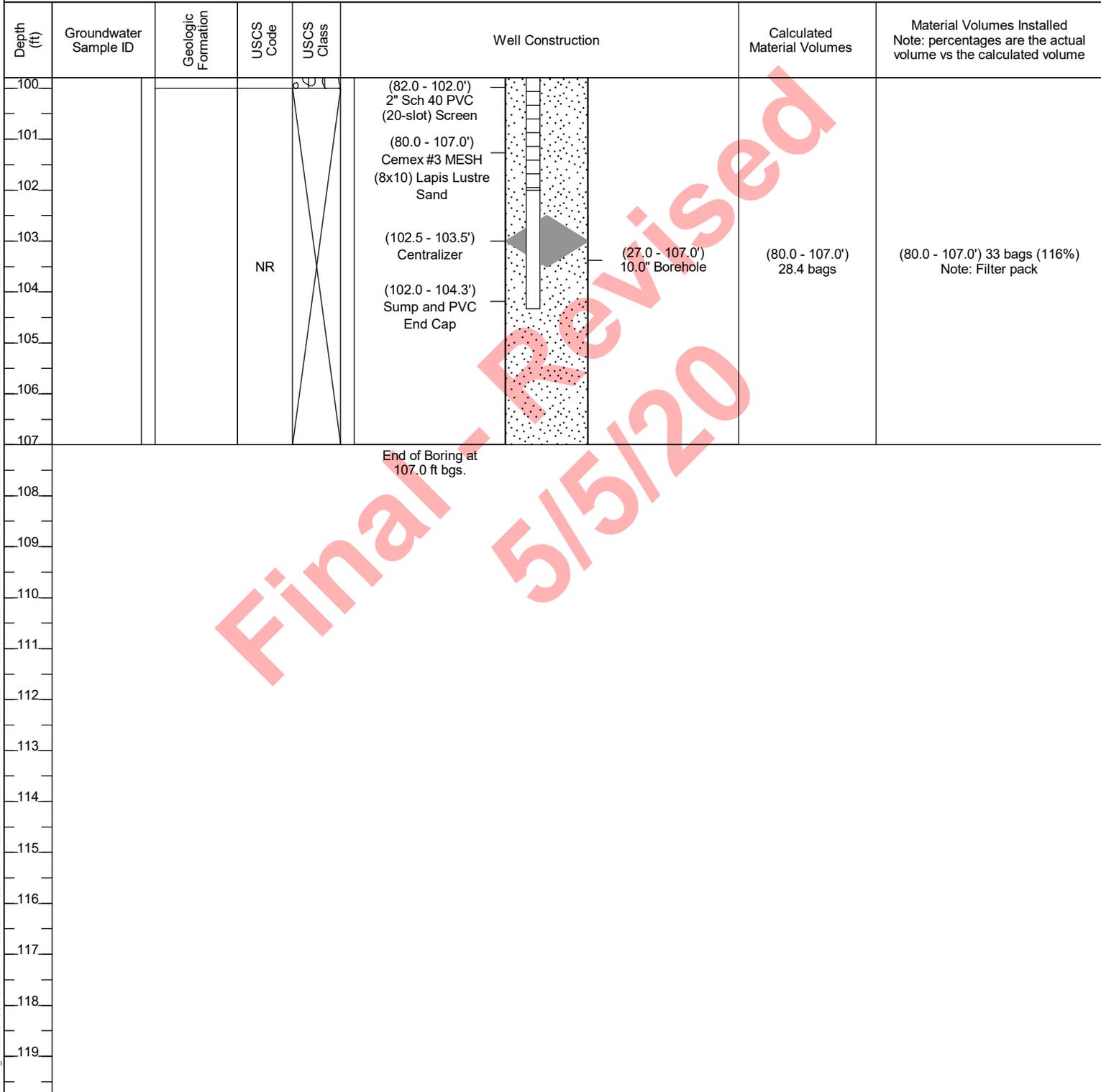
|                                 |   |  |
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| Logger: J. Latham / G. Willford | Static Water Level: See Log for Depths  | Project Number: RC000753.0051              |
| Editor: Grant Willford          | Development End Date: 10/2/2019   |  |
| Total Depth: 107 ft bgs         | Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault |  |

| Depth (ft) | Groundwater Sample ID                               | Geologic Formation         | USCS Code | USCS Class | Well Construction  | Calculated Material Volumes       | Material Volumes Installed<br>Note: percentages are the actual volume vs the calculated volume |
|------------|---|----------------------------|-----------|------------|--|-----------------------------------|--|
| 80         |   |                            |           |            | (0.1 - 82.0')<br>2" PVC Sch 40 Casing                        |                                   |  |
| 81         |   |                            |           |            |  |                                   |  |
| 82         |   |                            |           |            |  |                                   |  |
| 83         |   |                            | NR        |            | (82.0 - 102.0')<br>2" Sch 40 PVC<br>(20-slot) Screen         |                                   |  |
| 84         |   |                            |           |            |  |                                   |  |
| 85         |   |                            |           |            |  |                                   |  |
| 86         |   |                            |           |            |  |                                   |  |
| 87         |   | Topock - Alluvium Deposits | SM        |            |  |                                   |  |
| 88         |   |                            |           |            |  |                                   |  |
| 89         |   |                            |           |            |  |                                   |  |
| 90         |   |                            |           |            | (80.0 - 107.0')<br>Cemex #3 MESH<br>(8x10) Lapis Lustre Sand | (27.0 - 107.0')<br>10.0" Borehole | (80.0 - 107.0') 33 bags (116%)<br>Note: Filter pack  |
| 91         |   |                            |           |            |  | (80.0 - 107.0')<br>28.4 bags      |  |
| 92         |   |                            |           |            |  |                                   |  |
| 93         | MW-D-VAS-91-96<br>(<0.033 U ppb)<br>8/12/2019 10:38 | Topock - Alluvium Deposits | GM        |            |  |                                   |  |
| 94         |   |                            |           |            |  |                                   |  |
| 95         |   |                            |           |            |  |                                   |  |
| 96         |   |                            |           |            |  |                                   |  |
| 97         |   |                            |           |            |  |                                   |  |
| 98         |   |                            |           |            |  |                                   |  |
| 99         |   |                            |           |            |  |                                   |  |

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater samples collected during the drilling of MW-77d; solid blue water table marks represent depth to water (ft. bgs.) measured post development; installed in MW-77s

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E\_TOPOCK\DRIFT BORING LOGS\GINT FILES\05.05.20\TOPOCK DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GBT\_050520\_1448

|                                 |   |  |
|---------------------------------|---|--|
| Date Started: 09/08/2019        | Surface Elevation: 478.74 ft amsl   | <b>Well ID: MW-77-046d, MW-77-102</b>      |
| Date Completed: 01/10/2020      | Shallow Well Elevation: NA  |  |
| Drilling Co.: Cascade           | Deep Well Elevation: 478.65 ft amsl   | Client: PG&E                               |
| Drilling Method: Sonic Drilling | Northing (NAD83): 2102928.26  | Project: Final GW Remedy Phase 1           |
| Driller Name: Dan O' Mara       | Easting (NAD83): 7615965.22   | Location: PG&E Topock, Needles, California |
| Drilling Asst: Jimmy Candelaria | Borehole Diameter: 10-12 inches   |  |
| Logger: J. Latham / G. Willford | Static Water Level: See Log for Depths  | Project Number: RC000753.0051              |
| Editor: Grant Willford          | Development End Date: 10/2/2019   |  |
| Total Depth: 107 ft bgs         | Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault |  |



Final Revised 5/5/20

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: groundwater samples collected during the drilling of MW-77d; solid blue water table marks represent depth to water (ft. bgs.) measured post development; installed in MW-77s

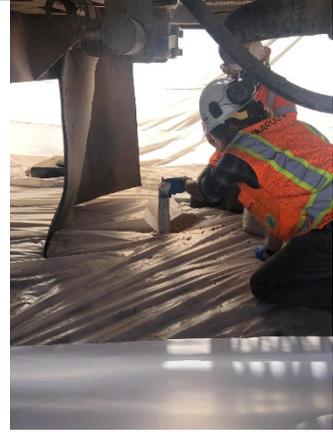
WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK\_C:\USERS\SMC\GRANDOCUMENTS\PG&E\_TOPOCK\DATA\DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GPJ\_050520\_1448

# ATTACHMENT 3

Well Decommissioning Photo Log: MW-77-046d

## WELL DECOMMISSIONING PHOTO LOG

|                               |   |
|-------------------------------|---|
| <b>Client Name</b>            | PG&E  |
| <b>Project Name/Location</b>  | Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, CA |
| <b>Arcadis Project Number</b> | RC000753.0051   |
| <b>Well ID</b>                | MW-77-046D  |

|   |  |
|---|--|
|    | <p><b>10/15/2019</b><br/> <b>Adding pea gravel into well screen</b><br/>         (photo-20191015-221233.jpg)</p> |
|   | <p><b>10/15/2019</b><br/> <b>Cal-Silica pea gravel</b><br/>         (photo-20191015-205216.jpg)</p>              |
|  | <p><b>10/15/2019</b><br/> <b>Grout</b><br/>         (photo-20191015-222625.jpg)</p>                              |

|                               |   |
|-------------------------------|---|
| <b>Client Name</b>            | PG&E  |
| <b>Project Name/Location</b>  | Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, CA |
| <b>Arcadis Project Number</b> | RC000753.0051   |
| <b>Well ID</b>                | MW-77-046D  |

|   |   |
|---|---|
|    | <p><b>10/15/2019</b><br/> <b>Installing grout in casing to decommission well</b><br/> (photo-20191015-223018.jpg)</p>       |
|   | <p><b>10/15/2019</b><br/> <b>Tremie pipe used while installing grout</b><br/> (photo-20191015-222856.jpg)</p>               |
|  | <p><b>1/10/2020</b><br/> <b>Well capped before surface completion</b><br/> (photo-3644e851c4634a62940c86d04a35f89b.jpg)</p> |

|                               |   |
|-------------------------------|---|
| <b>Client Name</b>            | PG&E  |
| <b>Project Name/Location</b>  | Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, CA |
| <b>Arcadis Project Number</b> | RC000753.0051   |
| <b>Well ID</b>                | MW-77-046D  |

|   |  |
|---|--|
|  | <p><b>1/10/2020</b><br/> <b>PVC riser and slip cap concreted during installation of surface completion</b><br/> (photo-ed9909549cd24e52bab71c683b350317.jpg)</p> |
|---|--|