



DEPARTMENT OF THE NAVY

COMMANDER
NAVY REGION HAWAII
850 TICONDEROGA ST STE 110
JBPBH, HAWAII 96860-5101

JUL 19 2021 *cen*

5000-45A
N45
July 9, 2021

CERTIFIED NO: 9489 0090 0027 6232 9869 03

Mr. Richard Takaba
Hawaii Department of Health
Solid and Hazardous Waste Branch
Underground Storage Tank Section
2827 Waimano Home Road #100
Pearl City, Hawaii 96782

Dear Mr. Takaba:

SUBJECT: RED HILL TANK COMPLEX
JUNE 2021 OIL/WATER INTERFACE MEASUREMENTS
DOH FACILITY ID NO. 9-102271
DOH RELEASE ID NO. 990051, 010011, 020028, 140010, AND 210012

In response to the January 2014 release from Red Hill Tank 5, oil/water interface measurements were taken at groundwater monitoring wells RHMW01, RHMW02, RHMW03 and RHMW05 on June 16, 2021. No free product was observed in the wells.

A summary of the oil/water interface measurements from January 2014 through June 2021 is being submitted as an enclosure.

If there are any questions regarding this matter, or if more information is needed, please contact Ms. Susan Lohr at (808) 471-4619 or Ms. Dayna Fujimoto at (808) 471-4805.

Sincerely,

SHERRIL R. ENG
Director
Regional Environmental Department
By direction of the
Commander

Enclosure: Red Hill Oil/Water Interface Measurements, January 2014 to Present

5000-45A
N45
July 9, 2021

Hard Copy to: Mr. Michael Miyahira, DOH Safe Drinking Water Branch
Mr. John Floyd, NAVSUP FLC Pearl Harbor

Electronic Copy (sent via email) to:
Mr. Steve Linder, U.S. EPA Region 9, Underground Storage Tank Program Office
Mr. John Reed, DLA Energy Pacific
Mr. William Potter, DLA Energy - Engineering, Environmental, Property Directorate

Red Hill Oil/Water Interface Measurements January 2014 to Present

| Date | RHMW01 | | | RHMW02 | | | RHMW03 | | | RHMW05 | | |
|------------|--------------------------------------|-------|-------|--------------------------------------|-------|-------|--------------------------------------|-------|-------|--------------------------------------|-------|-------|
| | Elevation = 101.9955 ft ¹ | | | Elevation = 104.5970 ft ¹ | | | Elevation = 120.8980 ft ¹ | | | Elevation = 101.3102 ft ¹ | | |
| | DTW (TOC) | SWL | LNAPL | DTW (TOC) | SWL | LNAPL | DTW (TOC) | SWL | LNAPL | DTW (TOC) | SWL | LNAPL |
| 15-Jan-14 | 83.94 | 18.06 | 0 | 86.62 | 17.98 | 0 | NT | NT | NT | NT | NT | NT |
| 16-Jan-14 | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT |
| 22-Jan-14 | 83.53 | 18.47 | 0 | 86.20 | 18.40 | 0 | NT | NT | NT | 83.09 | 18.22 | 0 |
| 23-Jan-14 | 83.58 | 18.42 | 0 | 86.24 | 18.36 | 0 | NT | NT | NT | 82.87 | 18.44 | 0 |
| 24-Jan-14 | 83.57 | 18.43 | 0 | 86.23 | 18.37 | 0 | NT | NT | NT | 82.94 | 18.37 | 0 |
| 27-Jan-14 | 83.55 | 18.45 | 0 | 86.23 | 18.37 | 0 | NT | NT | NT | 82.93 | 18.38 | 0 |
| 28-Jan-14 | 83.56 | 18.44 | 0 | 86.25 | 18.35 | 0 | NT | NT | NT | 82.93 | 18.38 | 0 |
| 29-Jan-14 | 83.56 | 18.44 | 0 | 86.22 | 18.38 | 0 | 102.52 | 18.38 | 0 | 82.94 | 18.37 | 0 |
| 30-Jan-14 | 83.53 | 18.47 | 0 | 86.21 | 18.39 | 0 | NT | NT | NT | 82.94 | 18.37 | 0 |
| 31-Jan-14 | 83.53 | 18.47 | 0 | 86.19 | 18.41 | 0 | NT | NT | NT | 82.93 | 18.38 | 0 |
| 3-Feb-14 | 83.54 | 18.46 | 0 | 86.20 | 18.40 | 0 | NT | NT | NT | 82.88 | 18.43 | 0 |
| 4-Feb-14 | 83.54 | 18.46 | 0 | 86.20 | 18.40 | 0 | NT | NT | NT | 82.91 | 18.40 | 0 |
| 10-Feb-14 | 84.49 | 17.51 | 0 | 86.16 | 18.44 | 0 | NT | NT | NT | 82.89 | 18.42 | 0 |
| 24-Feb-14 | 83.54 | 18.46 | 0 | 86.24 | 18.36 | 0 | 102.47 | 18.43 | 0 | 82.83 | 18.48 | 0 |
| 4-Mar-14* | NT | NT | NT | NT | NT | NT | 102.47 | 18.43 | 0 | 82.97 | 18.34 | 0 |
| 13-Mar-14* | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT |
| 28-Mar-14 | 83.76 | 18.24 | 0 | 86.42 | 18.18 | 0 | NT | NT | NT | NT | NT | NT |
| 7-Apr-14* | 83.42 | 18.58 | 0 | 86.43 | 18.17 | 0 | 102.65 | 18.25 | 0 | 83.18 | 18.13 | 0 |
| 21-Apr-14 | 83.93 | 18.07 | 0 | 86.58 | 18.02 | 0 | NT | NT | NT | 83.21 | 18.10 | 0 |
| 8-May-14* | 84.03 | 17.97 | 0 | 86.68 | 17.92 | 0 | 102.80 | 18.10 | 0 | 83.27 | 18.04 | 0 |
| 22-May-14* | 83.81 | 18.19 | 0 | 86.47 | 18.13 | 0 | NT | NT | NT | 83.46 | 17.85 | 0 |
| 27-May-14 | 83.91 | 18.09 | 0 | 86.60 | 18.00 | 0 | NT | NT | NT | 83.15 | 18.16 | 0 |
| 10-Jun-14* | 83.93 | 18.07 | 0 | 86.55 | 18.05 | 0 | 102.85 | 18.05 | 0 | 83.31 | 18.00 | 0 |
| 23-Jun-14 | 84.06 | 17.94 | 0 | 86.72 | 17.88 | 0 | NT | NT | NT | 83.34 | 17.97 | 0 |
| 21-Jul-14 | 84.13 | 17.87 | 0 | 86.80 | 17.80 | 0 | 103.99 | 16.91 | 0 | 83.54 | 17.77 | 0 |
| 27-Aug-14 | 84.01 | 17.99 | 0 | 86.65 | 17.95 | 0 | 102.98 | 17.92 | 0 | 83.49 | 17.82 | 0 |
| 25-Sep-14 | 84.64 | 17.36 | 0 | 87.27 | 17.33 | 0 | 102.87 | 18.03 | 0 | 83.04 | 18.27 | 0 |
| 28-Oct-14 | 83.79 | 18.21 | 0 | 86.51 | 18.09 | 0 | 103.51 | 17.39 | 0 | 84.10 | 17.21 | 0 |
| 20-Nov-14 | 83.87 | 18.13 | 0 | 86.56 | 18.04 | 0 | 102.78 | 18.12 | 0 | 83.21 | 18.10 | 0 |
| 23-Dec-14 | 83.67 | 18.33 | 0 | 86.37 | 18.23 | 0 | 102.78 | 18.12 | 0 | 83.35 | 17.96 | 0 |
| 28-Jan-15 | 83.63 | 18.37 | 0 | 86.35 | 18.25 | 0 | 102.64 | 18.26 | 0 | 83.05 | 18.26 | 0 |
| 27-Feb-15 | 83.68 | 18.32 | 0 | 86.28 | 18.32 | 0 | 102.63 | 18.27 | 0 | 83.03 | 18.28 | 0 |
| 26-Mar-15 | 83.83 | 18.17 | 0 | 86.04 | 18.56 | 0 | 102.52 | 18.38 | 0 | 83.06 | 18.25 | 0 |
| 21-Apr-15 | 84.33 | 17.67 | 0 | 86.97 | 17.63 | 0 | 102.79 | 18.11 | 0 | 83.24 | 18.07 | 0 |
| 28-May-15 | 84.29 | 17.71 | 0 | 86.97 | 17.63 | 0 | 103.18 | 17.72 | 0 | 83.72 | 17.59 | 0 |
| 25-Jun-15 | 84.58 | 17.42 | 0 | 87.28 | 17.32 | 0 | 103.24 | 17.66 | 0 | 83.95 | 17.36 | 0 |
| 21-Jul-15 | 84.58 | 17.42 | 0 | 87.24 | 17.36 | 0 | 103.57 | 17.33 | 0 | 83.75 | 17.56 | 0 |
| | | | | | | | 103.44 | 17.46 | 0 | 83.76 | 17.55 | 0 |

Red Hill Oil/Water Interface Measurements January 2014 to Present

| Date | RHMW01 | | | RHMW02 | | | RHMW03 | | | RHMW05 | | |
|-----------|--------------------------------------|-------|-------|--------------------------------------|-------|-------|--------------------------------------|--------|-------|--------------------------------------|-------|-------|
| | Elevation = 101.9955 ft ¹ | | | Elevation = 104.5970 ft ¹ | | | Elevation = 120.8980 ft ¹ | | | Elevation = 101.3102 ft ¹ | | |
| | DTW (TOC) | SWL | LNAPL | DTW (TOC) | SWL | LNAPL | DTW (TOC) | SWL | LNAPL | DTW (TOC) | SWL | LNAPL |
| 27-Aug-15 | 84.44 | 17.56 | 0 | 87.13 | 17.47 | 0 | 103.41 | 17.49 | 0 | 83.69 | 17.62 | 0 |
| 23-Sep-15 | 84.26 | 17.74 | 0 | 86.91 | 17.69 | 0 | 103.21 | 17.69 | 0 | 83.63 | 17.68 | 0 |
| 20-Oct-15 | 84.00 | 18.00 | 0 | 86.38 | 18.22 | 0 | 103.38 | 17.52 | 0 | Obstructed | NT | NT |
| 18-Nov-15 | 84.25 | 17.75 | 0 | 86.93 | 17.67 | 0 | 103.24 | 17.66 | 0 | 84.62 ² | 16.69 | 0 |
| 17-Dec-15 | 83.76 | 18.24 | 0 | 86.36 | 18.24 | 0 | 102.56 | 18.34 | 0 | 83.18 | 18.13 | 0 |
| 20-Jan-16 | 83.31 | 18.69 | 0 | 85.97 | 18.63 | 0 | 102.21 | 18.69 | 0 | Obstructed | NT | NT |
| 17-Feb-16 | 83.17 | 18.83 | 0 | 85.81 | 18.79 | 0 | 102.10 | 18.80 | 0 | Obstructed | NT | NT |
| 15-Mar-16 | 82.89 | 19.11 | 0 | 85.60 | 19.00 | 0 | 101.82 | 19.08 | 0 | 82.26 | 19.05 | 0 |
| 20-Apr-16 | 82.97 | 19.03 | 0 | 85.63 | 18.97 | 0 | 101.91 | 18.99 | 0 | 82.31 | 19.00 | 0 |
| 23-May-16 | 83.14 | 18.86 | 0 | 85.81 | 18.79 | 0 | 102.03 | 18.87 | 0 | 82.50 | 18.81 | 0 |
| 21-Jun-16 | 83.16 | 18.84 | 0 | 85.77 | 18.83 | 0 | 10.03 | 110.87 | 0 | 82.54 | 18.77 | 0 |
| 20-Jul-16 | 83.32 | 18.68 | 0 | 85.99 | 18.61 | 0 | 102.31 | 18.59 | 0 | 82.63 | 18.68 | 0 |
| 23-Aug-16 | 83.27 | 18.73 | 0 | 85.96 | 18.64 | 0 | 102.20 | 18.70 | 0 | 82.63 | 18.68 | 0 |
| 21-Sep-16 | 83.13 | 18.87 | 0 | 85.74 | 18.86 | 0 | 102.06 | 18.84 | 0 | 82.44 | 18.87 | 0 |
| 19-Oct-16 | 83.01 | 18.99 | 0 | 85.69 | 18.91 | 0 | 101.95 | 18.95 | 0 | 82.39 | 18.92 | 0 |
| 17-Nov-16 | 82.92 | 19.08 | 0 | 85.56 | 19.04 | 0 | 101.82 | 19.08 | 0 | 82.24 | 19.07 | 0 |
| 20-Dec-16 | 82.67 | 19.33 | 0 | 85.36 | 19.24 | 0 | 101.61 | 19.29 | 0 | 82.01 | 19.30 | 0 |
| 31-Jan-17 | 82.45 | 19.55 | 0 | 85.13 | 19.47 | 0 | 101.46 | 19.44 | 0 | 82.04 | 19.27 | 0 |
| 22-Feb-17 | 82.37 | 19.63 | 0 | 85.01 | 19.59 | 0 | 101.31 | 19.59 | 0 | 81.72 | 19.59 | 0 |
| 24-Mar-17 | 82.49 | 19.51 | 0 | 85.19 | 19.41 | 0 | 101.45 | 19.45 | 0 | 81.84 | 19.47 | 0 |
| 20-Apr-17 | 82.59 | 19.41 | 0 | 85.25 | 19.35 | 0 | 101.5 | 19.40 | 0 | 81.94 | 19.37 | 0 |
| 26-May-17 | 82.45 | 19.55 | 0 | 85.13 | 19.47 | 0 | 101.39 | 19.51 | 0 | 81.80 | 19.51 | 0 |
| 22-Jun-17 | 82.94 | 19.06 | 0 | 85.59 | 19.01 | 0 | 101.89 | 19.01 | 0 | 82.30 | 19.01 | 0 |
| 21-Jul-17 | 83.43 | 18.57 | 0 | 86.5 | 18.10 | 0 | Transducer Installed | NT | NT | 82.81 | 18.50 | 0 |
| 20-Mar-18 | 83.56 | 18.44 | 0 | 86.24 | 18.36 | 0 | 102.55 | 18.35 | 0 | 82.89 | 18.42 | 0 |
| 25-Apr-18 | 83.47 | 18.53 | 0 | 86.14 | 18.46 | 0 | 102.38 | 18.52 | 0 | 82.86 | 18.45 | 0 |
| 22-May-18 | 83.61 | 18.39 | 0 | 86.28 | 18.32 | 0 | 102.56 | 18.34 | 0 | 82.86 | 18.45 | 0 |
| 20-Jun-18 | 83.63 | 18.37 | 0 | 86.28 | 18.32 | 0 | 102.57 | 18.33 | 0 | 82.99 | 18.32 | 0 |
| 25-Jul-18 | 83.55 | 18.45 | 0 | 86.33 | 18.27 | 0 | 102.58 | 18.32 | 0 | 82.90 | 18.41 | 0 |
| 21-Aug-18 | Transducer Installed | NT | NT | 86.32 | 18.28 | 0 | 102.58 | 18.32 | 0 | Transducer Installed | NT | NT |
| 30-Oct-18 | 82.64 | 19.36 | 0 | 85.34 | 19.26 | 0 | 101.58 | 19.32 | 0 | 81.99 | 19.32 | 0 |
| 24-Jan-19 | 82.30 | 19.70 | 0 | 84.96 | 19.64 | 0 | 101.22 | 19.68 | 0 | 81.66 | 19.65 | 0 |
| 26-Apr-19 | 82.45 | 19.55 | 0 | 85.18 | 19.42 | 0 | 104.41 | 16.49 | 0 | 81.88 | 19.43 | 0 |
| 29-Jul-19 | 82.67 | 19.33 | 0 | 85.34 | 19.26 | 0 | 101.57 | 19.33 | 0 | 82.06 | 19.25 | 0 |
| 29-Oct-19 | 83.15 | 18.85 | 0 | 85.84 | 18.76 | 0 | 102.19 | 18.71 | 0 | 82.09 | 19.22 | 0 |
| 31-Jan-20 | Obstructed | NA | 0 | 85.88 | 18.72 | 0 | 102.17 | 18.73 | 0 | 82.52 | 18.79 | 0 |

Red Hill Oil/Water Interface Measurements January 2014 to Present

| Date | RHMW01 | | | RHMW02 | | | RHMW03 | | | RHMW05 | | |
|-----------|--------------------------------------|-------|-------|--------------------------------------|-------|-------|--------------------------------------|-------|-------|--------------------------------------|-------|-------|
| | Elevation = 101.9955 ft ¹ | | | Elevation = 104.5970 ft ¹ | | | Elevation = 120.8980 ft ¹ | | | Elevation = 101.3102 ft ¹ | | |
| | DTW (TOC) | SWL | LNAPL | DTW (TOC) | SWL | LNAPL | DTW (TOC) | SWL | LNAPL | DTW (TOC) | SWL | LNAPL |
| 23-Apr-20 | 82.93 | 19.07 | 0 | 85.68 | 18.92 | 0 | 101.82 | 19.08 | 0 | 82.27 | 19.04 | 0 |
| 24-Jul-20 | 83.28 | 18.72 | 0 | 85.94 | 18.66 | 0 | 102.13 | 18.77 | 0 | 82.63 | 18.68 | 0 |
| 15-Oct-20 | 83.69 | 18.31 | 0 | 86.39 | 18.21 | 0 | 102.56 | 18.34 | 0 | 83.12 | 18.19 | 0 |
| 27-Jan-21 | 83.53 | 18.47 | 0 | 86.23 | 18.37 | 0 | 102.46 | 18.44 | 0 | 82.87 | 18.44 | 0 |
| 22-Apr-21 | 83.85 | 18.15 | 0 | 86.53 | 18.07 | 0 | 102.72 | 18.18 | 0 | 83.26 | 18.05 | 0 |
| 20-May-21 | 83.85 | 18.15 | 0 | Obstructed | NA | NA | Obstructed | NA | NA | 83.42 | 17.89 | 0 |
| 16-Jun-21 | 84.10 | 17.90 | 0 | 86.79 | 17.81 | 0 | 102.99 | 17.91 | 0 | 83.53 | 17.78 | 0 |

Notes:

1 - Elevations were updated based on the Well Elevation Survey Report, Red Hill Bulk Fuel Storage Facility (DON 2018).

2 - Dedicated groundwater pump was obstructing the path of the interface meter probe. Depth measured was based on the elevation of water when pump was removed from the monitoring well (RHMW05).

Measurements recorded by Environmental Science International from January 2014 to August 2015, unless otherwise noted.

Measurements recorded by Element Environmental, LLC from September 2015.

* - Measurements recorded by NAVFAC HI.

All units in feet (ft).

DTW (TOC) - depth to water from top of well casing

LNAPL - light non-aqueous phase liquid

NT - measurement not taken

SWL - static water level