DEPARTMENT OF THE NAVY
COMMANDER
NAVY REGION HAWAII
850 TICONDEROGA ST STE 110
JBPHH, HAWAII 96860-5101

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November 23, 2021

**CERTIFIED NO: 9489 0090 0027 6232 9773 76**

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

Dear Mr. Takaba:

SUBJECT: PARTIAL PRELIMINARY DATA SUBMITTAL
THIRD QUARTER 2021 - QUARTERLY GROUNDWATER MONITORING
RED HILL BULK FUEL STORAGE FACILITY
DOH FACILITY ID NO. 9-102271
DOH RELEASE ID NO. 990051, 010011, 020028, 140010, AND 210012

As part of the Red Hill groundwater long-term monitoring (LTM) program, groundwater sampling was conducted from July 14 through August 4, 2021 at 18 conventional monitoring locations and 4 multilevel monitoring locations within the Red Hill groundwater monitoring network. The conventional monitoring locations included the sampling point at Red Hill Shaft (RHMW2254-01), 15 monitoring wells within the Facility boundary (RHMW01 and RHMW01R to RHMW10, RHMW16, RHMW16A, RHMW19, and OWDFMW01), and the Halawa Deep Monitor Well (HDMW2253-03) and RHMW12A located outside the Facility. Two multilevel monitoring locations, RHMW11 and RHMW14, are located outside the Facility. Two multilevel monitoring locations, RHMW13 and RHMW15, are located within the Facility boundary.

Analytical results are compared to the current LTM screening criteria. The LTM screening criteria were agreed upon by the Parties to the Administrative Order on Consent (AOC) and are presented in the February 4, 2016, AOC Statement of Work Sections 6 and 7 scoping completion letter. The LTM screening criteria are updated (when applicable) with the most current (Fall 2017) Hawaii Department of Health (DOH) Tier 1 Groundwater Environmental Action Levels for sites where groundwater is a potential or current drinking water resource and the nearest surface water body is greater than 150 meters from the release site. Analytical results for wells RHMW01, RHMW01R, RHMW02, and RHMW03 are also compared to site specific risk based levels (SSRBLs) for total petroleum hydrocarbons as diesel fuel (TPH-d) (4,500 micrograms per liter [µg/L]) and benzene (750 µg/L).

The Third Quarter 2021 – Quarterly Groundwater Monitoring Report is not complete due to laboratory delays; therefore, the Navy is submitting a partial data set. A table containing

approximately 60% of preliminary, final, and validated laboratory analytical results for the third quarter groundwater monitoring event is submitted as an enclosure. The results are for both primary and trip blank samples with outstanding sample results marked as pending.

Due to the ongoing increased level of sampling starting in May 2021, the Navy's contracted laboratory is currently overwhelmed with requirements delaying Navy's receipt of these results. The Navy shared these concerns in a meeting with DOH and the U.S. Environmental Protection Agency (EPA) (agencies) on November 16, 2021. Discussion included recommendations to improve the timeliness of analytical laboratory results including the following: 1) request for the agencies to assist by identifying alternate laboratories with the appropriate State and DOD certifications; 2) agencies' approval for the Navy to switch from APPL to different laboratories; and/or 3) approval to use EPA Method 3510 versus the current EPA Method 3520, which is a much more time consuming and extensive procedure. While the Navy awaits feedback from the agencies on other recommended accredited laboratories, the Navy will perform quality tests on alternative laboratories to recommend transition to other laboratories that will be able to meet the time and quality expectations of the Navy and agencies.

With anticipation of similar delays with fourth quarter 2021 data analysis, the Navy is targeting to make changes before the next quarterly LTM and drinking water sampling events in January 2022. If there are any questions regarding these partial preliminary results, or if more information is needed, please contact Ms. Caroline Rossi at (808) 471- 4881, Ms. Susan Lohr at (808) 471-4619 or Ms. Dayna Fujimoto at (808) 471-4805.

Sincerely,

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Digitally signed by FRAME.DARREL.EDWARD.1160089454
Date: 2021.11.23 19:54:22 -10'00'

DARREL E. FRAME
CDR, CEC, USN
Acting Director
Regional Environmental Department
By direction of the
Commander

Enclosure: Table of Partial Preliminary Data for Third Quarter 2021 – Quarterly Groundwater Monitoring Event

Copy to (electronic):
Ms. Gabriela Carvalho, U.S. EPA Region 9, Red Hill Program Coordinator
Mr. Delwyn Oki, United States Geological Survey (USGS)
Mr. John Reed, DLA Energy Pacific
Mr. William Potter, DLA Installation Management for Energy

| Q3 (July) 2021 GWM event | | | | Sample ID | ERH1482 | ERH1483 | ERH1485 | ERH1487 | ERH1489 | ERH1490 | ERH1492 | ERH1494 | ERH1496 | ERH1498 | ERH1500 | ERH1502 | ERH1504 | ERH1506 | ERH1572 | ERH1508 | ERH1510 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Collected | 7/29/2021 | 7/29/2021 | 7/26/2021 | 7/26/2021 | 7/27/2021 | 7/27/2021 | 7/26/2021 | 7/21/2021 | 7/27/2021 | 7/20/2021 | 7/15/2021 | 7/20/2021 | 7/19/2021 | 7/26/2021 | 8/4/2021 | 7/14/2021 | 7/14/2021 |
| Preliminary results (final / revised final results pending) | | | | Sample Type | Primary | Duplicate | Primary | Primary | Primary | Duplicate | Primary | Primary | Primary | Primary | Primary | Primary | Primary | Primary | Primary | Primary | Primary |
| Final results (under validation) / Validated data | | | | Location | RHMW2254-01 | | RHMW01 | RHMW01R | RHMW02 | | RHMW03 | RHMW04 | RHMW05 | RHMW06 | RHMW07 | RHMW08 | RHMW09 | RHMW10 | RHMW12A | RHMW16 | RHMW16A |
| Analyte | Screening Criteria | SSRBL | Units | Result Q | Result Q | Result Q | Result Q | Result Q | Result Q | Result Q | Result Q | Result Q | Result Q | Result Q | Result Q | Result Q | Result Q | Result Q | Results Q | Results | Results |
| Benzene | 5 | 750 | ug/L | < 0.30 U | < 0.30 U | pending | < 0.30 U | pending | pending | pending | < 0.30 U | pending | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | pending | < 0.30 U | < 0.30 U |
| Ethylbenzene | 30 | – | ug/L | < 0.50 U | < 0.50 U | pending | < 0.50 U | pending | pending | pending | pending | < 0.50 U | pending | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | pending | < 0.50 U | < 0.50 U |
| Toluene | 40 | – | ug/L | < 0.30 U | < 0.30 U | pending | < 0.30 U | pending | pending | pending | pending | < 0.30 U | pending | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | pending | < 0.30 U | < 0.30 U |
| Xylenes (Total) | 20 | – | ug/L | < 0.30 U | < 0.30 U | pending | < 0.30 U | pending | pending | pending | pending | < 0.30 U | pending | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | pending | < 0.30 U | < 0.30 U |
| TPH-g | 300 | – | ug/L | < 18.0 U | < 18.0 U | pending | < 18.0 U | pending | pending | pending | pending | < 18.0 U | pending | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | pending | < 18.0 U | < 18.0 U |
| TPH-d | 400 | 4500 | ug/L | < 300.0 U | < 300.0 U | < 300.0 U | 200 J | pending | pending | 180 J | pending | < 300.0 U | < 300.0 U | < 300.0 U | < 300.0 U | 180 BJ | < 300.0 U | pending | < 300.0 U | < 300.0 U |
| TPH-d w/ Silica Gel Cleanup | – | – | ug/L | < 300.0 U | < 300.0 U | – | < 300.0 U | pending | pending | pending | pending | – | – | – | – | – | – | pending | – | – |
| TPH-o | 500 | – | ug/L | < 300.0 U | < 300.0 U | < 300.0 U | 150 J | pending | pending | 250 J | pending | < 300.0 U | < 300.0 U | < 300.0 U | < 300.0 U | 240 BJ | < 300.0 U | pending | < 300.0 U | < 300.0 U |
| TPH-o w/ Silica Gel Cleanup | – | – | ug/L | 190 J | 150 J | – | < 300.0 U | pending | pending | pending | pending | – | – | – | – | < 300.0 U | – | pending | – | – |
| 1-Methylnaphthalene | 10 | – | ug/L | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | pending | pending | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| 2-Methylnaphthalene | 10 | – | ug/L | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | pending | pending | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Naphthalene | 17 | – | ug/L | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | pending | pending | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | 0.15 J | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| 1,2-Dibromoroethane (EDB; lead scavenger) | 0.04 | – | ug/L | – | – | – | < 0.019 U | – | – | – | – | – | – | – | – | – | – | – | < 0.019 U | < 0.019 U | < 0.019 U |
| 1,2-Dichloroethane (lead scavenger) | 5 | – | ug/L | – | – | – | < 0.30 U | – | – | – | – | – | – | – | – | – | – | – | pending | < 0.30 U | < 0.30 U |
| Phenol | 300 | – | ug/L | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | pending | pending | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U |
| 2-(2-methoxyethoxy)-ethanol | 800 | – | ug/L | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U |
| Methane | – | – | ug/L | < 1.00 U | < 1.00 U | 310 | 1900 | 3400 | 3100 | 4.3 J | < 1.00 U | < 1.00 U | < 1.00 U | < 1.00 U | < 1.00 U | < 1.00 U | < 1.00 U | <1.00 U | pending | < 1.00 U | < 1.00 U |
| Chloride | – | – | mg/L | 143 | 142 | 50.4 | 47.4 | 39.1 | – | 50.5 | 74.8 | 149 | 444 | 473 | 138 | 54.9 | 44.0 | 104 | 94.3 | 80.5 |
| Nitrate | – | – | mg/L | 2.8 | 2.3 | < 0.18 U | < 0.18 U | <3.60 U | – | 5.9 | 2.3 | 3.1 | 89.2 | 4.6 | 5.7 | 2.0 | 1.8 | 1.0 | 1.3 | 1.1 |
| Sulfate | – | – | mg/L | 20.9 | 18.3 | 7.2 | 6.1 | < 4.00 U | – | 46.8 | 10.7 | 33.5 | 2.6 | 78.0 | 30.2 | 9.4 | 6.9 | 36.2 | 12.6 | 16.5 |
| Nitrate-Nitrite as N | – | – | mg/L | 0.81 | – | < 0.090 U | 0.046 J | 0.029 J | – | 1.3 | 0.48 | 0.65 | 0.58 | 1.1 | 1.1 | 0.34 | 0.48 | 0.35 | 0.45 | 0.28 |
| Bicarbonate Alkalinity | – | – | mg/L | 64.7 | – | 85.1 | 88.6 | 202 | – | 296 | 81.0 | 84.2 | 120 | 159 J- | 98.3 | 65.5 | 70.1 | 16.2 | 59.7 J- | 92.6 J- |
| Carbonate Alkalinity | – | – | mg/L | < 1.70 U | – | < 1.70 U | < 1.70 U | < 1.70 U | – | < 1.70 U | < 1.70 U | < 1.70 U | < 1.70 UJ | < 1.70 UJ | < 1.70 U | < 1.70 U | < 1.70 U | 69.1 | < 1.70 UJ | < 1.70 UJ |
| Total Alkalinity | – | – | mg/L | 64.7 | – | 85.1 | 88.6 | 202 | – | 296 | 81.0 | 84.2 | 120 | 159 J- | 98.3 | 65.5 | 70.1 | 85.3 | 59.7 J- | 92.6 J- |
| Ferrous Iron | – | – | mg/L | < 0.32 U | – | 0.34 J | 0.44 J | 2.0 | – | 0.52 J | < 0.32 U | 0.68 J | 0.16 J | 0.19 J | 0.16 J | < 0.32 U | < 0.32 U | < 0.32 U | < 0.32 U | 0.16 J |
| Total Organic Carbon | – | – | mg/L | < 0.350 U | – | 0.36 J | 0.69 J | 5.1 | – | 2.1 | < 0.350 U | 0.23 J | < 0.350 U | < 0.350 U | 0.23 J | < 0.350 U | < 0.350 U | 0.94 | < 0.350 U | < 0.350 U |
| Total Silica | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 35.1 | – | – |
| Dissolved Silica | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 32.5 | – | – |
| Calcium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 16300 | – | – |
| Magnesium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 13700 | – | – |
| Manganese | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 35.0 | – | – |
| Potassium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 9660 | – | – |
| Sodium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 77200 | – | – |
| Total Dissolved Solids (field) | – | – | ppm | 405.63 | – | 218.35 | 214.43 | 335.18 | – | 512.08 | 297.72 | 450.66 | 1167.79 | 1125.13 | 464.14 | 214.22 | 187.13 | 381.70 | 287.59 | 293.66 |
| pH (field) | – | – | – | 7.51 | – | 7.10 | 7.01 | 6.59 | – | 6.89 | 7.27 | 7.97 | 6.94 | 7.10 | 7.55 | 7.52 | 7.49 | 9.49 | 8.11 | 7.21 |
| Specific Conductance (field) | – | – | mS/cm | 0.62 | – | 0.34 | 0.33 | 0.52 | – | 0.79 | 0.43 | 0.69 | 1.80 | 1.73 | 0.71 | 0.33 | 0.29 | 0.59 | 0.44 | 0.45 |
| DO (field) | – | – | mg/L | 9.24 | – | 0.67 | 0.51 | 0.55 | – | 1.14 | 8.79 | 8.53 | 6.93 | 4.72 | 6.66 | 8.36 | 8.53 | 2.98 | 7.43 | 4.99 |
| Turbidity (field) | – | – | NTU | 0.03 | – | 0.03 | 0.05 | 0.28 | – | 3.16 | 0.23 | 0.14 | 0.01 | 0.05 | 0.23 | 0.08 | 0.04 | 6.33 | 14.97 | 1.94 |
| Temperature (field) | – | – | degC | 18.95 | – | 24.80 | 23.49 | 23.91 | – | 27.40 | 22.35 | 24.31 | 23.41 | 24.34 | 23.54 | 23.41 | 23.77 | 25.04 | 24.63 | 26.89 |
| ORP (field) | – | – | mV | 93.00 | – | 29.0 | 20.9 | 29.5 | – | 22.1 | 103.8 | 135.3 | 92.2 | 94.9 | 84.4 | 74.5 | 100.6 | 173.8 | 83.0 | 90.6 |
| Salinity (field) | – | – | psu | 0.3 | – | 0.2 | 0.2 | 0.3 | – | 0.4 | 0.2 | 0.3 | 0.9 | 0.9 | 0.4 | 0.2 | 0.1 | 0.3 | 0.2 | 0.2 |

Notes:

J - estimated value

U - nondetect value

ID - identification

TPH-d/o - total petroleum hydrocarbons diesel/oil

DO - dissolved oxygen

ORP - oxidation-reduction potential

Laboratory results are reported in accordance with the DOD Quality Systems Manual. The following three laboratory reporting limits are used to report data:
Detection Limit (DL) - the smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration with 99% confidence. At the DL, the false positive rate is 1%. Detections between the DL and the LOQ assure the presence of the analyte, but their numeric values are estimates (qualified with a J flag) and are therefore indicated as such in reporting (i.e., [concentration] J).
Limit of Detection (LOD) - the lowest concentration for reliable reporting of a non-detect of a specific analyte at 99% confidence. At the LOD, the false negative rate is 1%. Failure to obtain a detection is always reported as less than LOD and qualified with a U (i.e., < [LOD value] U).
Limit of Quantitation (LOQ) - the smallest concentration that produces a quantitative results with known and recorded precision bias. The LOQ is set at or above the concentration of the lowest initial calibration standard and within the calibration range of an instrument. Values at or above the LOQ are reported as known detections (i.e., [concentration]).

| Q3 (July) 2021 GWM event | | | | Sample ID | ERH1512 | ERH1514 | ERH1516 | ERH1518 | ERH1520 | ERH1521 | ERH1523 | ERH1525 | ERH1527 | ERH1528 | ERH1481 | ERH1484 | ERH1486 | ERH1488 | ERH1491 | ERH1493 | ERH1495 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Collected | 7/22/2021 | 8/2/2021 | 7/21/2021 | 7/22/2021 | 7/21/2021 | 7/21/2021 | 7/19/2021 | 7/20/2021 | 7/21/2021 | 7/21/2021 | 7/29/2021 | 7/26/2021 | 7/26/2021 | 7/27/2021 | 7/26/2021 | 7/21/2021 | 7/27/2021 |
| Preliminary results (final / revised final results pending) | | | | Sample Type | Primary | Primary | Primary | Primary | Primary | Duplicate | Primary | Primary | FB | EB | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank |
| Final results (under validation) / Validated data | | | | Location | RHMW19 | OWDFMW01 | HDMW2253-03 | RHMW11-05 | RHMW13-05 | | RHMW14-03 | RHMW15-05 | Field Blanks (Westbay) | | RHMW2254-01 | RHMW01 | RHMW01R | RHMW02 | RHMW03 | RHMW04 | RHMW05 |
| **Analyte** | **Screening Criteria** | **SSRBL** | **Units** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Results Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** |
| Benzene | 5 | 750 | ug/L | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | pending | < 0.30 U | pending | pending | < 0.30 U | pending |
| Ethylbenzene | 30 | – | ug/L | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | pending | < 0.50 U | pending | pending | < 0.50 U | pending |
| Toluene | 40 | – | ug/L | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | pending | < 0.30 U | pending | pending | < 0.30 U | pending |
| Xylenes (Total) | 20 | – | ug/L | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | pending | < 0.30 U | pending | pending | < 0.30 U | pending |
| TPH-g | 300 | – | ug/L | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | pending | < 18.0 U | pending | pending | < 18.0 U | pending |
| TPH-d | 400 | 4500 | ug/L | pending | < 300.0 U | < 300.0 U | pending | pending | pending | 260 BJ | < 300.0 U | pending | pending | – | – | – | – | – | – | – |
| TPH-d w/ Silica Gel Cleanup | – | – | ug/L | pending | – | – | pending | pending | pending | < 300.0 U | – | pending | pending | – | – | – | – | – | – | – |
| TPH-o | 500 | – | ug/L | pending | < 300.0 U | < 300.0 U | pending | pending | pending | 310 BJ | < 300.0 U | pending | pending | – | – | – | – | – | – | – |
| TPH-o w/ Silica Gel Cleanup | – | – | ug/L | pending | – | – | pending | pending | pending | < 300.0 U | – | pending | pending | – | – | – | – | – | – | – |
| 1-Methylnaphthalene | 10 | – | ug/L | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | – | – | – | – | – | – | – |
| 2-Methylnaphthalene | 10 | – | ug/L | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | – | – | – | – | – | – | – |
| Naphthalene | 17 | – | ug/L | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | – | – | – | – | – | – | – |
| 1,2-Dibromoroethane (EDB; lead scavenger) | 0.04 | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | < 0.019 U | – | – | – | – |
| 1,2-Dichloroethane (lead scavenger) | 5 | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | < 0.30 U | – | – | – | – |
| Phenol | 300 | – | ug/L | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | < 4.00 U | – | – | – | – | – | – | – |
| 2-(2-methoxyethoxy)-ethanol | 800 | – | ug/L | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | < 80.0 U | – | – | – | – | – | – | – |
| Methane | – | – | ug/L | < 1.00 U | < 1.00 U | 3.1 J | 9.7 | 520 | 360 | < 1.00 U | < 1.00 U | – | – | < 1.00 U | pending | < 1.00 U | < 1.00 U | pending | < 1.00 U | pending |
| Chloride | – | – | mg/L | 44.7 | 1960 | 89.2 | 54.1 | 52.3 | – | 47.6 | 52.5 | – | – | – | – | – | – | – | – | – |
| Nitrate | – | – | mg/L | 1.5 | 7.2 | 0.91 | < 0.18 U | < 0.18 U | – | 2.0 | 1.8 | – | – | – | – | – | – | – | – | – |
| Sulfate | – | – | mg/L | 6.9 | 525 | 29.1 | 11.5 | 8.5 | – | 8.2 | 10.0 | – | – | – | – | – | – | – | – | – |
| Nitrate-Nitrite as N | – | – | mg/L | 0.35 | 2.5 | 0.18 | < 0.090 U | < 0.090 U | – | 0.37 | 0.38 | – | – | – | – | – | – | – | – | – |
| Bicarbonate Alkalinity | – | – | mg/L | 66.2 | 166 | 51.6 | 121 | 117 | – | 63.2 | 65.1 | – | – | – | – | – | – | – | – | – |
| Carbonate Alkalinity | – | – | mg/L | < 1.70 U | < 1.70 U | < 1.70 U | <0.170 U | < 1.70 U | – | < 1.70 U | < 1.70 U | – | – | – | – | – | – | – | – | – |
| Total Alkalinity | – | – | mg/L | 66.2 | 166 | 51.6 | 121 | 117 | – | 63.2 | 65.1 | – | – | – | – | – | – | – | – | – |
| Ferrous Iron | – | – | mg/L | < 0.32 U | < 0.32 U | 1.1 | 0.17 J | 0.22 J | – | < 0.32 U | < 0.32 U | – | – | – | – | – | – | – | – | – |
| Total Organic Carbon | – | – | mg/L | < 0.350 U | 0.31 J | < 0.350 U | 0.52 J | 0.8 J | – | 1.6 | < 0.350 U | – | – | – | – | – | – | – | – | – |
| Total Silica | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Dissolved Silica | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Calcium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Magnesium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Manganese | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Potassium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Sodium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Total Dissolved Solids (field) | – | – | ppm | 188.35 | 2830.77 | 291.72 | 249.29 | 383.23 | – | 188.39 | 206.77 | – | – | – | – | – | – | – | – | – |
| pH (field) | – | – | – | 7.82 | 8.46 | 6.43 | 8.27 | 6.99 | – | 7.89 | 6.10 | – | – | – | – | – | – | – | – | – |
| Specific Conductance (field) | – | – | mS/cm | 0.29 | 4.35 | 0.45 | 0.38 | 0.59 | – | 0.29 | 0.32 | – | – | – | – | – | – | – | – | – |
| DO (field) | – | – | mg/L | 8.62 | 5.49 | 1.16 | 0.34 | 0.73 | – | 1.80 | 1.81 | – | – | – | – | – | – | – | – | – |
| Turbidity (field) | – | – | NTU | 0.74 | 2.47 | 27.60 | 0.16 | 0.28 | – | 2.05 | 0.15 | – | – | – | – | – | – | – | – | – |
| Temperature (field) | – | – | degC | 23.77 | 26.92 | 22.68 | 22.68 | 21.47 | – | 23.69 | 24.37 | – | – | – | – | – | – | – | – | – |
| ORP (field) | – | – | mV | 83.4 | 124.6 | 64.2 | 63.2 | 121.4 | – | 88.7 | 117.60 | – | – | – | – | – | – | – | – | – |
| Salinity (field) | – | – | psu | 0.1 | 2.3 | 0.2 | 0.2 | 0.3 | – | 0.10 | 0.2 | – | – | – | – | – | – | – | – | – |

Notes:
J - estimated value
U - nondetect value
ID - identification
TPH-d/o - total petroleum hydrocarbons diesel/oil
DO - dissolved oxygen
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Laboratory results are reported in accordance with the DOD Quality Systems Manual. The following three laboratory reporting limits are used to report data:
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Limit of Detection (LOD) - the lowest concentration for reliable reporting of a non-detect of a specific analyte at 99% confidence. At the LOD, the false negative rate is 1%. Failure to obtain a detection is always reported as less than LOD and qualified with a U (i.e., < [LOD value] U).
Limit of Quantitation (LOQ) - the smallest concentration that produces a quantitative results with known and recorded precision bias. The LOQ is set at or above the concentration of the lowest initial calibration standard and within the calibration range of an instrument. Values at or above the LOQ are reported as known detections (i.e., [concentration]).

| Q3 (July) 2021 GWM event | | | | Sample ID | ERH1497 | ERH1499 | ERH1501 | ERH1503 | ERH1505 | ERH1571 | ERH1507 | ERH1509 | ERH1511 | ERH1513 | ERH1515 | ERH1517 | ERH1519 | ERH1522 | ERH1524 | ERH1526 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Collected | 7/20/2021 | 7/15/2021 | 7/20/2021 | 7/19/2021 | 7/26/2021 | 8/4/2021 | 7/14/2021 | 7/14/2021 | 7/22/2021 | 8/2/2021 | 7/21/2021 | 7/22/2021 | 7/21/2021 | 7/19/2021 | 7/20/2021 | 7/21/2021 |
| Preliminary results (final / revised final results pending) | | | | Sample Type | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank |
| Final results (under validation) / Validated data | | | | Location | RHMW06 | RHMW07 | RHMW08 | RHMW09 | RHMW10 | RHMW12A | RHMW16 | RHMW16A | RHMW19 | OWDFMW01 | HDMW2253-03 | RHMW11-05 | RHMW13-05 | RHMW14-03 | RHMW15-05 | Field QC (Westbay) |
| **Analyte** | **Screening Criteria** | **SSRBL** | **Units** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Results Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** | **Result Q** |
| Benzene | 5 | 750 | ug/L | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | pending | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U |
| Ethylbenzene | 30 | – | ug/L | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | pending | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U |
| Toluene | 40 | – | ug/L | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | pending | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U |
| Xylenes (Total) | 20 | – | ug/L | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | pending | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U | < 0.30 U |
| TPH-g | 300 | – | ug/L | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | pending | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U | < 18.0 U |
| TPH-d | 400 | 4500 | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| TPH-d w/ Silica Gel Cleanup | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| TPH-o | 500 | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| TPH-o w/ Silica Gel Cleanup | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 1-Methylnaphthalene | 10 | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 2-Methylnaphthalene | 10 | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Naphthalene | 17 | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 1,2-Dibromoroethane (EDB; lead scavenger) | 0.04 | – | ug/L | – | – | – | – | – | < 0.019 U | < 0.019 U | < 0.019 U | – | – | – | – | – | – | – | – | – |
| 1,2-Dichloroethane (lead scavenger) | 5 | – | ug/L | – | – | – | – | – | pending | < 0.30 U | < 0.30 U | – | – | – | – | – | – | – | – | – |
| Phenol | 300 | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 2-(2-methoxyethoxy)-ethanol | 800 | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Methane | – | – | ug/L | < 1.00 U | < 1.00 U | < 1.00 U | < 1.00 U | < 1.00 U | pending | < 1.00 U | < 1.00 U | < 1.00 U | < 1.00 U | – | < 1.00 U | < 1.00 U | < 1.00 U | < 1.00 U | < 1.00 U | pending |
| Chloride | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Nitrate | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Sulfate | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Nitrate-Nitrite as N | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Bicarbonate Alkalinity | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Carbonate Alkalinity | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Total Alkalinity | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Ferrous Iron | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Total Organic Carbon | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Total Silica | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Dissolved Silica | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Calcium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Magnesium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Manganese | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Potassium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Sodium | – | – | ug/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Total Dissolved Solids (field) | – | – | ppm | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| pH (field) | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Specific Conductance (field) | – | – | mS/cm | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| DO (field) | – | – | mg/L | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Turbidity (field) | – | – | NTU | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Temperature (field) | – | – | degC | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| ORP (field) | – | – | mV | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Salinity (field) | – | – | psu | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

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