Documentation to Amend Drinking Water Health Advisory in Zone C1

Joint Base Pearl Harbor Hickam (JBPHH)
O‘ahu, Hawai‘i

Interagency Drinking Water System Team
Zone C1 Removal Action Report
March 2022

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Note: Department of Defense critical infrastructure security information (DCRIT) is not included

Interagency Drinking Water System Team
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Introduction

Zone C1 Checklist to Amend the Public Health Advisory initiated November 29, 2021 for Joint Base Pearl Harbor -Hickam Public Water System No. 360
HEER Incident Case No.: 20211128-1848

Purpose: This checklist identifies the documentation and review that the Hawaii Department of Health (DOH) conducted to **amend** the Public Health Advisory (Advisory) in each Zone under the *DOH's Guidance on the Approach to Amending the Drinking Water Health Advisory, dated December 30, 2021*. This review was conducted as an oversight role in addition to the review conducted as a part of the Interagency Drinking Water System Team (IDWST).

DOH's priority is to protect the public health and environment of the people of Hawaii. DOH will evaluate the "lines of evidence" that must be met before amending the health advisory and issuing notices that the water can be used for all purposes including drinking. The Navy must also commit to following the long-term monitoring (LTM) of system water quality for this incident under the IDWST Drinking Water Sampling Plan, as amended.

Background: A chemical release of petroleum, which is a hazardous substance, entered the Joint Base Pearl Harbor-Hickam (JBPHH) drinking water distribution system and the Red Hill Shaft. This release triggered an emergency response and DOH issuance of an Advisory on November 29, 2021 for the entire JBPHH Public Water System No. 360. State and Federal Drinking Water (DW) Maximum Contaminant Levels (MCLs) under the Safe Drinking Water Act do not adequately address petroleum contamination of drinking water. DOH has established Environmental Action Levels (EALs) and Incident Specific Parameters (ISPs) to more comprehensively monitor and respond to petroleum contaminated drinking water. Any contaminants that exceed the State and Federal DW MCLs, EALs, or ISPs require additional action prior to amending the Advisory. Satisfaction of the lines of evidence will be achieved by evaluating the data generated during the investigation conducted by the IDWST. The data will be assessed for each Zone of the Drinking Water Distribution System Recovery Plan. All lines of evidence will require documentation.

DOH Project Screening Levels: State and Federal Drinking Water MCLs, specified State EALs, and ISPs are considered in development of Project Screening Levels. The actions for the thresholds for each contaminant are listed in *DOH's Guidance on the Approach to Amending the Drinking Water Health Advisory*.

Objective 0 - Introduction to Lines of Evidence Under Evaluation / Document Summary

Reference	Status	Documentation
Tab 0	Complete	DOH Checklist to Amend the Drinking Water Health Advisory.
Tab 0.1	Complete	• Executive Summary Memo for Zone C1 Removal Action Report • Signed statement by the Owner/Operator Representative of the Water System, that asserts that all lines of evidence have been met, including the following statement with a signature: "I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the submitted information is true, accurate, and complete."

Objective 1a – Line of Evidence: Reported sources of contamination are isolated and contained.

Incident Specific Criteria - Contamination from **Red Hill Shaft** is isolated from Navy's water distribution system.

Reference	Status	Documentation
Tab 1a.0	Complete	Executive Summary Memo.
Tab 1a.1	Complete	Memorandum for Record documenting that the Red Hill Shaft has been physically disconnected from the NAVFAC system.
Tab 1a.2	Complete	Memo for Record showing SCADA data that Waiawa Shaft is the single source of water for the NAVFAC system since 03 December 2021.
Tab 1a.3	Complete	Photograph of concrete blocking between air gapped isolation flanges.

Objective 1b – Line of Evidence: The regulated public water system's water quality data is compliant.

Incident Specific Criteria - Data does not exceed Federal DW MCLs, specified State EALs, and ISPs for **Waiawa Shaft (only source of the drinking water)**.

Reference	Status	Documentation
Tab 1b.0	Complete	Executive Summary Memo.
Tab 1b.1	Complete	• Sample Results for Waiawa Shaft (the source) taken 1/13/2022 Level 4 Validated Laboratory Report for EPA Methods 8260 (VOCs), 8270 (SVOCs), 8015 (TPH-G, TPH-D, TPH-O) plus Tentatively Identified Compounds (TICs) • Level 4 Validated Laboratory Report for EPA Methods 8260 (VOCs), 8270 (SVOCs), 8015 (TPH-G, TPH-D, TPH-O) plus Tentatively Identified Compounds (TICs) • Sample Results of Waiawa Shaft Entry Point (after treatment) taken 1/11/2022 Level 4 Validated Laboratory Report for Sampling Plan Addendum 1, Table 3a: Distribution Sampling (Step 2b) Summary Drinking Water Analytical Methods, Analytes, Action Levels, and Method Detection Limits • Level 4 Validated Laboratory Report for Sampling Plan Addendum 1, Table 3a: Distribution Sampling (Step 2b) Summary Drinking Water Analytical Methods, Analytes, Action Levels, and Method Detection Limits

Objective 1c – Line of Evidence: No additional contamination through the distribution system is occurring.

Incident Specific Criteria - Cross Connection Control investigation shows distribution system is protected, resulting in no additional sources of contamination.

Reference	Status	Documentation
Tab 1c.0	Complete	Executive Summary Memo.
Tab 1c.1	Complete	Certificate Regarding Cross-Connection Control Review and Confirmation – Zone C1, verifying that building and service connections with petroleum activities are protected from backflow risks with the following documentation: • A "gap analysis" of the petroleum related activities versus appropriate device inventory (i.e., inappropriate device, missing Cross-Connection Control protection, untested device, etc.). • A map that includes: All facilities with petroleum activities; locations of existing backflow prevention devices; and Water system infrastructure. • An inventory database: A list of petroleum-related activities and identified appropriate cross connection control (CCC) devices at these activities, as required, i.e., if there was human consumptive use and where cross connection potential or hazard was identified.
Tab 1c.2	Complete	COMNAVREG HAWAII INSTRUCTION 11330.2D, dated 19 Sep 2016, Backflow Prevention and Cross-Connection Control Program

Objective 2a – Line of Evidence: Water within the distribution system does not exceed State and Federal DW MCLs, specified State EALs, and ISPs.

Incident Specific Criteria –

- Zone flushing plan demonstrates entire distribution system is flushed.
- Sample results show the water in distribution system does not exceed State and Federal DW MCLs, specified State EALs, and ISPs. (Guidance Table 2 and Table 3)
- Drinking water does not show sheen, olfactory evidence, or other qualitative methods of petroleum.

Reference	Status	Documentation
Tab 2a.0	Complete	Executive Summary Memo.
Tab 2a.1	Complete	Memorandum for the Record of the Distribution System Recovery Plan Addendum – Zone C1 Analysis which includes: • Hydraulic model that exhibits and flushing line map(s) and plan to show that the flushing approach will achieve directional flushing. • A one-page high resolution zonal flushing map should be provided. • Narrative of assumptions in the development of their flushing model inclusive of any simulations that they ran.
Tab 2a.2	Complete	Summary with documentation from Dr. Whelton discussing flushing goals providing validity of volumetric exchange model.

Objective 2a – Line of Evidence: Water within the distribution system does not exceed State and Federal DW MCLs, specified State EALs, and ISPs.

Incident Specific Criteria –

- Zone flushing plan demonstrates entire distribution system is flushed.
- Sample results show the water in distribution system does not exceed State and Federal DW MCLs, specified State EALs, and ISPs. (Guidance Table 2 and Table 3)
- Drinking water does not show sheen, olfactory evidence, or other qualitative methods of petroleum.

Reference	Status	Documentation
Tab 2a.3	Complete	Identification of consecutive flushing zones and flushing phasing order. Time based contaminant slug model showing possible migration of contaminant from Red Hill Shaft used to identify zones requiring additional volumetric flushing (Hydraulic Model)
Tab 2a.4	Complete	Table showing volumetric goals and recorded flushing volumes that occurred in the field for the distribution system.
Tab 2a.5	Complete	Certification of Water Storage Facilities and Water Source for Zone C1 with Water Storage Tanks S1 and S2 Flushing Report.
Tab 2a.6	Complete	• Distribution System Exceedance Investigation Summary and Results. • Drinking Water Distribution System Recovery Plan: Stage 2 Sampling Results for Zone C1, JBPHH.

Objective 2b – Line of Evidence: Water in premise plumbing of homes/buildings does not exceed State and Federal DW MCLs, specified State EALs, and ISPs.

Incident Specific Criteria –

- Flushing Plan includes procedures to ensure no service connections will re-contaminate the distribution system.
- Sample Plan includes 72-hour stagnation to account for leaching of contaminants from premise plumbing.
- Sample results show water in premise plumbing of homes/buildings does not exceed State and Federal DW MCLs, specified State EALs, and ISPs.

Reference	Status	Documentation
Tab 2b.0	Complete	Executive Summary Memo.
Tab 2b.1	Complete	Records of Completed Residential and Non-Residential Flushing Zone C1 with: • EDMS Residential Flushing Records Zone C1 • EDMS Non-Residential Flushing Records Zone C1 • NAVFAC SCADA Data Zone C1 28 Dec 2021 to 12 Jan 2022 (for the Distribution System pressure logs during flushing and confirmation that the 30 psi within the distribution system was maintained).
Tab 2b.2	Complete	Sample Results, Level 2 and Level 4 Validated as required by Sampling Plan Section 6.0, report from EDMS.
Tab 2b.3	Complete	Exceedance Investigation Summary and Results Zone C1.
Tab 2b.4	Complete	Memorandum for Record showing that irrigation flushing is complete.

Objective 2b – Line of Evidence: Water in premise plumbing of homes/buildings does not exceed State and Federal DW MCLs, specified State EALs, and ISPs.

Incident Specific Criteria –

- Flushing Plan includes procedures to ensure no service connections will re-contaminate the distribution system.
- Sample Plan includes 72-hour stagnation to account for leaching of contaminants from premise plumbing.
- Sample results show water in premise plumbing of homes/buildings does not exceed State and Federal DW MCLs, specified State EALs, and ISPs.

Reference	Status	Documentation
Tab 2b.5	Complete	DOH Guidance for Active Irrigation Line Purging and Flushing

March 7, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: ZONE C1 REMOVAL ACTION REPORT

Ref: (a) Drinking Water Sampling Plan, December 2021
(b) Drinking Water Distribution System Recovery Plan, December 2021
(c) Single Family Home Flushing Plan Checklist and Standard Operating Procedures, December 23, 2021
(d) Non-Residential Facility Flushing Plan Checklist and Standard Operating Procedures, January 4, 2022
(e) DOH's Guidance on the Approach to Amending the Drinking Water Health Advisory, December 30, 2021; HEER Incident Case No.: 20211128-1848
(f) DOH Checklist to Amend the Drinking Water Health Advisory

Encl: (1) Zone C1 Removal Action Report

1. The enclosed report documents completion of the requirements outlined in references (a) through (f). This is in response to HEER Incident Case No.: 20211128-1848 involving the Joint Base Pearl Harbor Hickam (JBPHH) Public Water System No. 360.

2. On the 20th of November, a spill of jet fuel, specifically JP-5 jet fuel, occurred at the Red Hill Bulk Fuel Storage Facility in an access tunnel that provides fire suppression and service lines for the facility. The fuel spill was cleaned up and, on the 23rd of November, Admiral Paparo, directed an independent investigation of the spill event, and ordered the investigating officer to also determine any connection between the 20 November event and the spill that occurred earlier this year, on the 6th of May. The results of the investigation are pending public release.

On the 27th of November, the Commander, Navy Region Hawaii, RDML Tim Kott, met with the Fleet Logistics Center Commander, who operates The Red Hill Fuel Storage Facility for the Navy, and they jointly made the decision to stop Red Hill Tank fuel transfer operations based on the ongoing investigation into the recent spills.

On Sunday, the 28th of November, the JBPHH HQs and Hawaii Department of Health (HDOH) began receiving phone calls from military residents reporting a chemical or petroleum taste and smell to the water on the Navy's drinking water system. As more calls were received, it became clear that the reports were a clustered around neighborhoods fed by the Red Hill Shaft Well, so the Navy, on the evening of the 28th of November, shut down that well and stood up the Region's Emergency Operations Center to handle the issue. As more calls continued to come in of contaminated water over the next 24 hours, Admiral Paparo, as the senior Navy commander in Hawaii, ordered the establishment of a Joint Crisis Action Team on the 29th of November. The Navy immediately began flushing its potable water distribution system.

On December 8, 2021, HDOH issued Directive One which provided requirements for flushing of the Navy Water System. The Navy began working with HDOH and the U.S. Environmental Protection Agency (EPA) to meet the requirements of this directive and resume flushing of the potable water system.

On December 17, 2021, HDOH, the U.S. Navy, the U.S. Army and EPA established an Interagency Drinking Water System (IDWS) Team to restore safe drinking water to affected JBPHH housing communities. The working group was established to ensure that the agencies were coordinated in actions to restore safe drinking water to Navy water system users and that they had a clear, coordinated source of information as work continued to restore safe drinking water. On the same day, the U.S. Navy, U.S. Army, HDOH, and the EPA jointly signed the Water Distribution System Recovery Plan agreement. The signing of this plan was the second work product of the IDWS Team, which is focused on efficiently and effectively restoring safe drinking water to JBPHH military housing communities. Earlier in that week, the team jointly signed the Drinking Water Sampling Plan.

The flushing of the water distribution lines resumed on December 20, 2021. Residence and non-residence facilities were flushed and sampled after the completion of flushing and testing of the distribution system of a specific Zone. This report specifically documents the requirements outlined in references (a) through (f) for Zone C1.

3. The removal action report (RAR) for Zone C1 documents two specific lines of evidence necessary to amend the drinking water health advisory for Zone C1 as provided by HDOH. The two lines of evidence under evaluation included:

i. Ensure no contamination is entering the water system.
ii. Ensure no contamination remains in the system and water chemistry concerns are addressed.

Each line of evidence has several objectives with specific lines of evidence and incident specific criteria required to be met. Achievement of the criteria will be described and supported with documentation in the subsequent sections of the RAR.

4. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and the submitted information is true, accurate, and complete.

MENO.MICHAEL.WAYNE.JR.1088310035 Digitally signed by MENO.MICHAEL.WAYNE.JR.1088310035 Date: 2022.03.07 21:06:37 -10'00'

M. W. Meno
Captain, U.S. Navy Civil Engineer Corps

Interagency Drinking Water System Team
Zone C1 Removal Action Report
March 2022

Line of Evidence 1a

All Reported Sources of Contamination Are Isolated and Contained

Table 1: Lines of Evidence Under Evaluation – Ensure no contamination is entering the water system.

Objective 1a - All reported sources of contamination are isolated and contained.

Incident Specific Criteria - Contamination from **Red Hill Shaft** is isolated from Navy's water distribution system.

Lines of Evidence	Completion Status	Outstanding Items
Navy confirmation that Red Hill Shaft is isolated from the Navy's water distribution system.	Complete.	• None.

February 19, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: SUMMARY OF LINE OF EVIDENCE OBJECTIVE 1A – ALL REPORTED SOURCES OF CONTAMINATION ARE ISOLATED AND CONTAINED

Encl: (1) 1a.1 Memorandum for Record with Isolation Date
(2) 1a.2 Summary of Operator Logs and SCADA Data
(3) 1a.3 Photograph of Concrete Blocking Between Air Gapped Isolation Flanges

1. Enclosures (1), (2), and (3) document completion of Line of Evidence objective 1a, all reported sources of contamination are isolated and contained. On the evening of November 28, 2021, the Red Hill Shaft was secured from operation and all pumping operations ceased. The Aiea/Halawa shaft briefly served as the secondary source starting on November 28, 2021, but it was shut down on December 3, 2021 to prevent potential westward contaminant migration in the aquifer and because there were concerns over high chloride concentrations caused by saltwater intrusion. Since December 3, 2021, the Waiawa Shaft has been the sole water source providing potable water to the distribution network. It is located 5.5 miles west of the Red Hill Fuel Facility, and testing has not detected any water quality issues at this source. The Red Hill Shaft discharge pipes were physically re-arranged and encased in concrete on December 24, 2021 as shown in Enclosure (1) and (3), thereby isolating the system as required by Line of Evidence 1a. The Supervisory Control and Data Acquisition (SCADA) data in Enclosure (2) shows the previous statement to be true. All reported sources of contamination are isolated and contained.

2. The Red Hill Shaft pumps are now being used to control the spread of contamination by creating a capture zone in the aquifer by pumping to a 5 million gallons/day Granular Activated Carbon (GAC) system which discharges into the Halawa Stream. The new piping from the pumps to the GAC treatment came from the 20” header where the 20x24 reducer was removed on 24 DEC 2021. A thrust block was poured at this location around the existing blinded wye fitting as shown in Enclosure (3).

3. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and I believe the submitted information is true, accurate, and complete.

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Digitally signed by WETZEL.CHRISTOPHER.JAMES.1540194862
Date: 2022.02.19 12:23:47 -08'00'

C. J. Wetzel
LT, CEC, USN

04 JANUARY 2022

MEMORANDUM FOR RECORD

SUBJECT: Red Hill Potable Water Pumping Station

ENC: (1) Red Hill Pump Station Photographs, Post Pump Isolation dated 12/26/2021
(2) JBPHH Potable Water LOTO Log

1. This Memorandum For Record (MFR) is to document the Red Hill Shaft pump status in relation to the Joint Base Pearl Harbor Hickam Potable Water System.

2. In response to fuel contaminants found in the Red Hill Shaft aquifer/development tunnel, the main Red Hill Pumping Station pumps were secured from the Potable Water system. On 3 December 2021, all four Red Hill pumps were electrically Locked Out, Tagged Out (LOTO), see Enclosure (2). (Note: Pump #1 was LOTO on 10 June 2020 due to an unrelated pump issue, and is still out of service, LOTO.) After initially being shut down operationally, and LOTO electrically, the Red Hill pumps were physically isolated from the Potable Water system on 24 December 2021.

3. Physical isolation was performed with in-house NAVFAC forces, with a completion date of 24 December 2021. This work was performed by isolating the system from the pumps at the "wye" fitting adjacent to Red Hill Pump #1. The wye fitting is shown on Enclosure (1). A blind flange was placed on the main header and the wye branch.

4. The 24" blind flange on the main header physically air-gapped and isolated Red Hill pumps #2, #3, and #4. The 16" blind flange in the wye branch physically air-gapped and isolated Red Hill pump #1. This work is shown on Enclosure 1.

5. The work the NAVFAC in-house forces performed removed any source or pathway from the Red Hill aquifer to the JBPHH Potable Water system.

MITCHELL.JEREMY.W.1395400700
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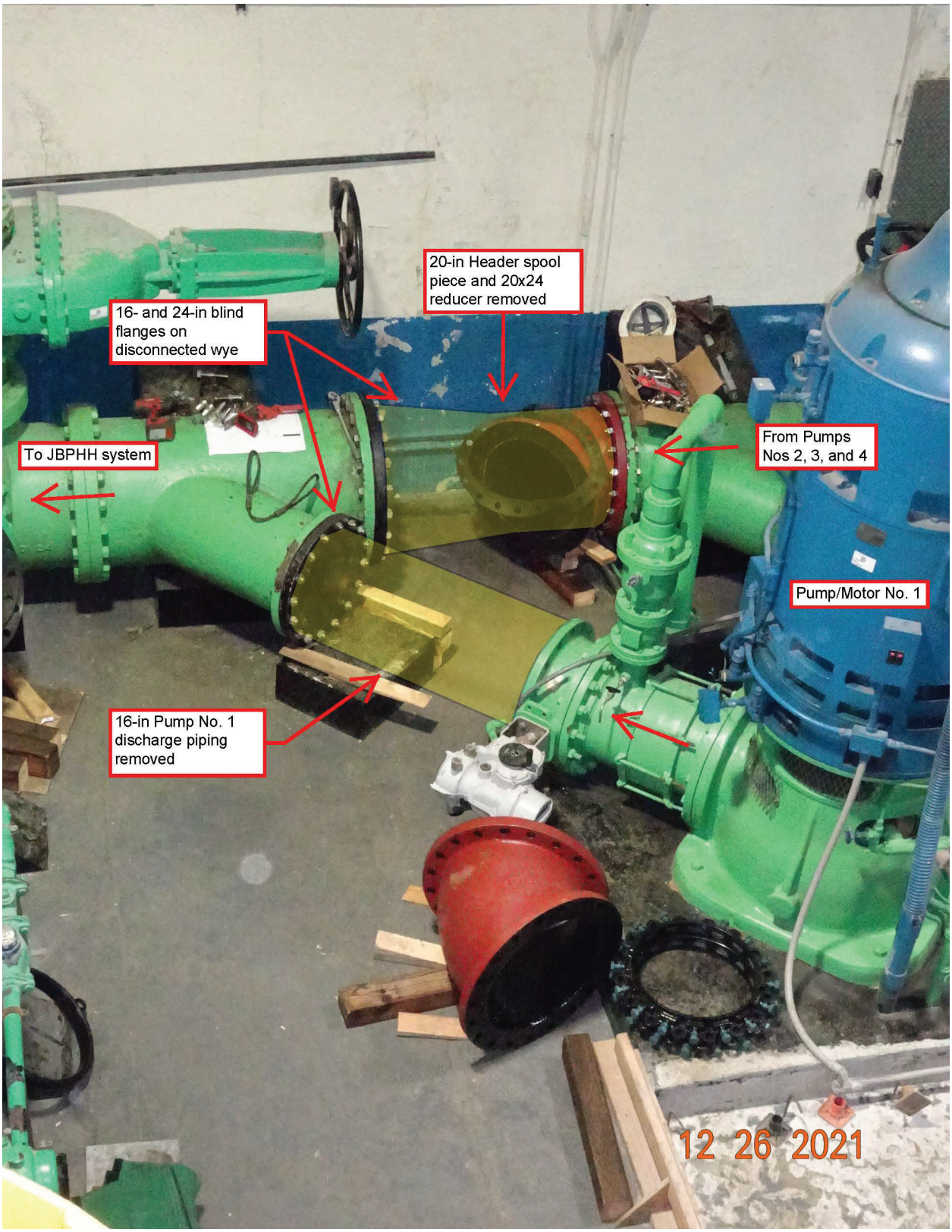
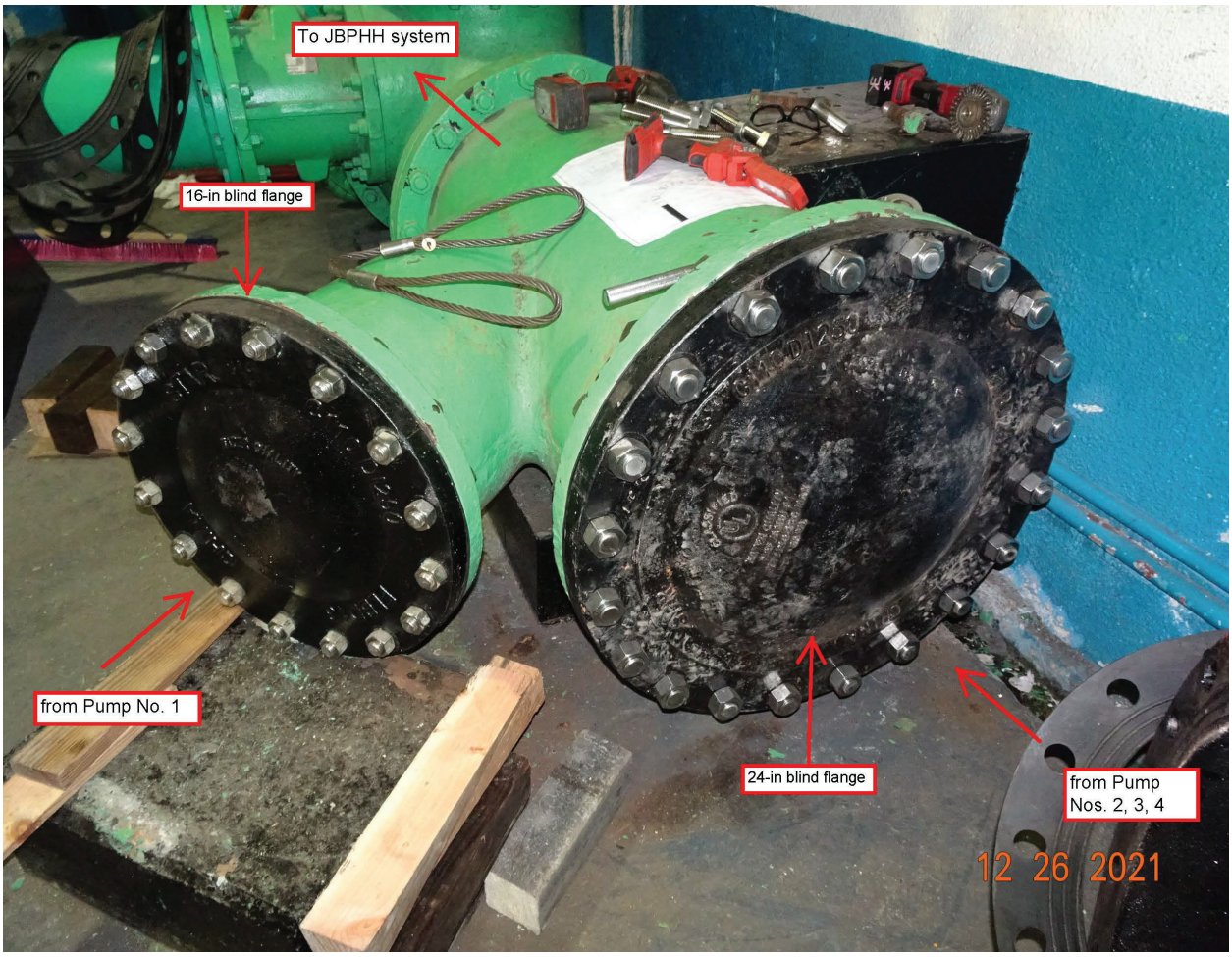
Date: 2022.01.04 07:56:02 -10'00'

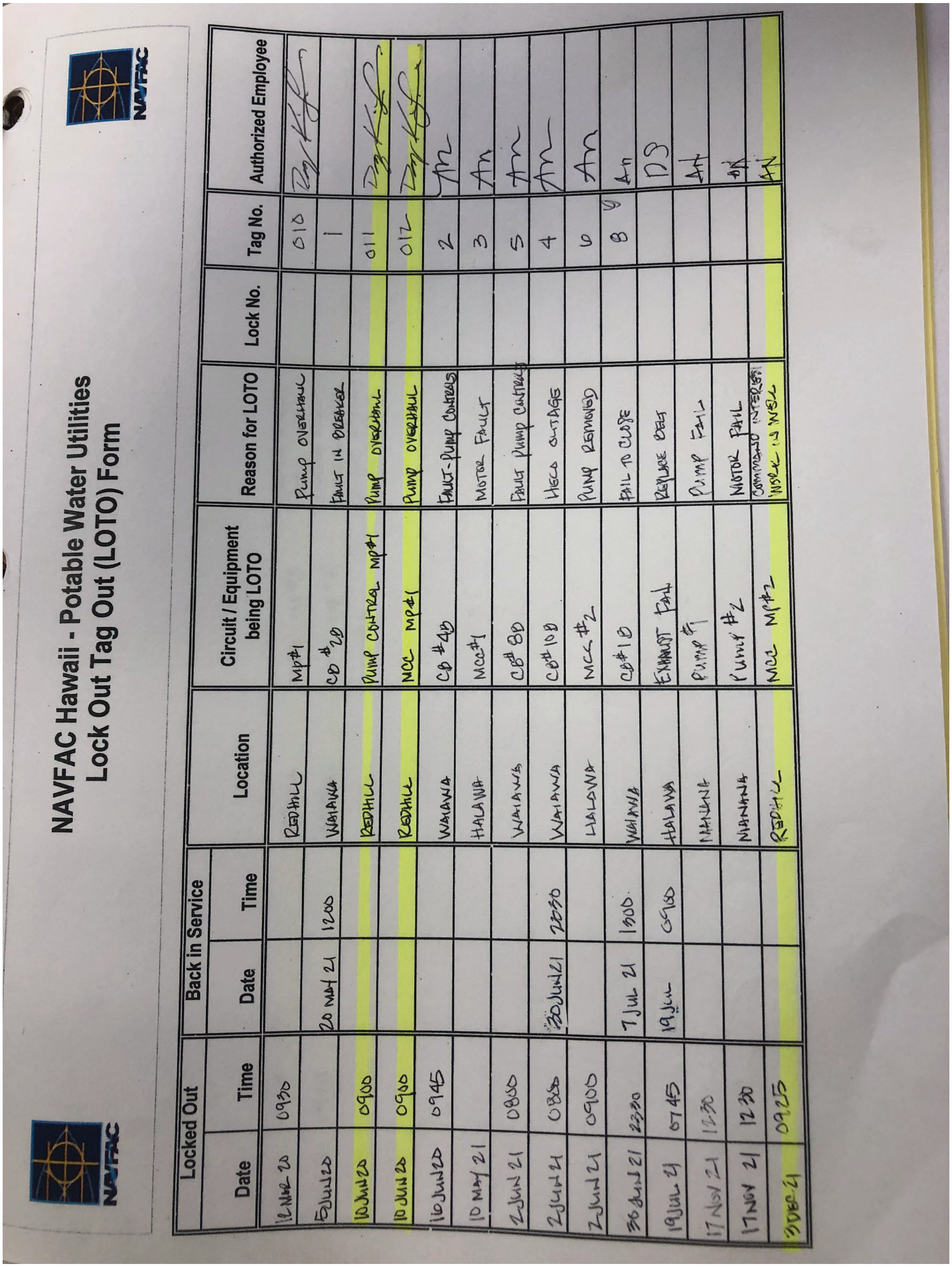
J. MITCHELL
Deputy Public Works Officer
Joint Base Pearl Harbor Hickam


20-in Header spool piece and 20x24 reducer removed
16- and 24-in blind flanges on disconnected wye
To JBPHH system
From Pumps Nos 2, 3, and 4
Pump/Motor No. 1
16-in Pump No. 1 discharge piping removed
12 26 2021

Red Hill Pump Station Photographs
Post Pump Isolation dated 12/26/2021

Enclosure (1)





NAVFAC Hawaii - Potable Water Utilities
Lock Out Tag Out (LOTO) Form

Locked Out		Back in Service		Location	Circuit / Equipment being LOTO	Reason for LOTO	Lock No.	Tag No.	Authorized Employee
Date	Time	Date	Time						
12 MAR 20	0930			REDHILL	MP#1	PUMP OVERHAUL		010	[illegible]
5 JUN 20		20 MAY 21	1200	WAIAWA	CB #2B	FAULT IN BREAKER		1	
10 JUN 20	0900			REDHILL	PUMP CONTROL MP#1	PUMP OVERHAUL		011	[illegible]
10 JUN 20	0900			REDHILL	MCC MP#1	PUMP OVERHAUL		012	[illegible]
10 JUN 20	0945			WAIAWA	CB #4B	FAULT-PUMP CONTROLS		2	An
10 MAY 21				HALAWA	MCC#1	MOTOR FAULT		3	An
2 JUN 21	0800			WAIAWA	CB# 8B	FAULT PUMP CONTROLS		5	An
2 JUN 21	0800	30 JUN 21	2030	WAIAWA	CB# 10B	HECO OUTAGE		4	An
2 JUN 21	0900			HALAWA	MCC #2	PUMP REMOVED		6	An
30 JUN 21	2330	7 JUL 21	1300	WAIAWA	CB#1B	FAIL TO CLOSE		8 9	An
19 JUL 21	0745	19 JUL	0900	HALAWA	EXHAUST FAN	REPLACE BELT			DS
17 NOV 21	1230			MANANA	PUMP #1	PUMP FAIL			An
17 NOV 21	1230			MANANA	PUMP #2	MOTOR FAIL			An
3 DEC 21	0925			REDHILL	MCC MP#2	COMMAND INTEREST WORK IN WELL			AN

NAVFAC

NAVFAC

Locked Out		Back in Service		Location	Circuit / Equipment being LOTO	Reason for LOTO	Lock No.	Tag No.	Authorized Employee
Date	Time	Date	Time						
3DEC21	0920			REDHILL	MCC MP #3	COMMAND INTEREST WORK IN WELL			AH
3DEC21	0927			REDHILL	MCC MP #4	COMMAND INTEREST WORK IN WELL			AH
3DEC21				HALAWA	MCC #3	COMMAND INTEREST ISOLATE 3/STEEM			AH

February 10, 2022

SUMMARY OF OPERATOR LOGS AND SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) DATA

1. OBJECTIVE: Provide a description of water sources that supplied the Joint Base Pearl Harbor Hickam (JBPHH) potable water system (system) prior-to and after the fuel contamination incident that occurred in late November 2021.

2. BACKGROUND:

2.1. Portions of the Navy water distribution system serving JBPHH and surrounding areas were exposed to low levels of fuel contamination with initial indications in the form of smell reports occurring on or about 28 November 2021.

2.2. Prior to the aquifer contamination incident, water users connected to the Navy's system were supplied by three Navy owned water sources, Red Hill Shaft, Aiea/Halawa Shaft and Waiawa Shaft. In the time period prior to the incident, Waiawa Shaft was the main water source supplying water to the JBPHH system with at least one pump operating full time (100%). A single Red Hill Shaft pump was operated intermittently as a secondary source to the system. The Aiea/Halawa shaft was not being operated due to concerns over high chloride concentrations caused by saltwater intrusion into the aquifer.

2.3. On the evening of 28 November 2021, the Red Hill Shaft was secured and all pumping operations ceased. The Aiea/Halawa shaft briefly served as the secondary source starting on 28 November 2021 but was shut down on 03 December 2021 to prevent westward contaminant migration in the aquifer.

2.4. Since 03 December 2021, Waiawa Shaft has been the sole water source providing potable water to the distribution network. It is located 5.5 miles west of the Red Hill Fuel Facility and testing has not found any water quality issues at this source.

3. DATA INTERPERETATION: The Supervisory Control and Data Acquisition (SCADA) data provided in reference (a) includes tabular and graphical depictions of flow from the three source pump stations, aquifer water surface elevations above mean sea level (MSL) and the water level in the 6 million gallon (MG) S1 and S2 water storage tanks. The data was provided as a daily average (i.e. data was averaged over the 24 hours of each day from 00:00 to 23:59) and ranges from 01 November 2021 to 08 January 2022.

3.1 WAIAWA SHAFT/PUMP STATION: Prior to 28 November, The Waiawa Pump Station (PS) was supplying an average of 16.6 million gallons per day (MGD) of potable water to the system. After 28 November, demand reductions from turning off irrigation and smaller residential demand reduced the water supplied by the Waiawa PS to an average of 15.5 MGD. This was 76% of the 22 MGD total system demand prior to 28 November 2021.

There was an inverse correlation between the aquifer water surface elevation and water pumped out of the aquifer. When Waiawa PS was pumping between 16 and 18 MGD, the aquifer water surface elevation dropped to between 8.0 and 10.0 feet MSL. When pumping was reduced between 15 and 16 MGD, the aquifer water surface was raised to between 15.0 and 17.0 feet

above MSL. See Figure 1 below for a graphical depiction of the daily average aquifer water surface elevation and pumps flows from Waiawa Shaft.

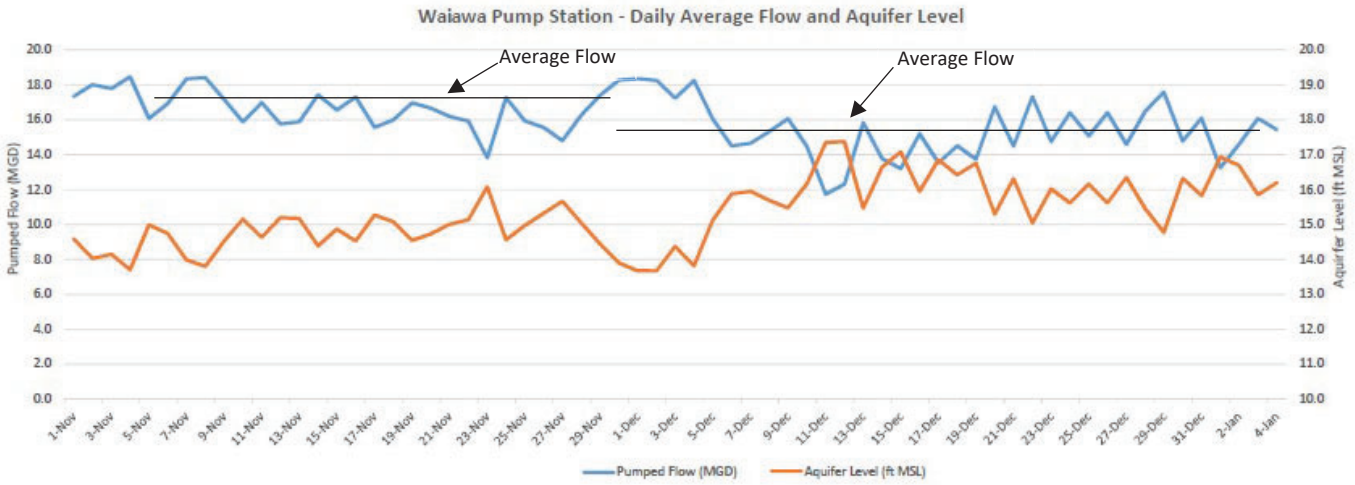


Figure 1. Waiawa Shaft Daily Average Flows and Aquifer Water Surface Elevation

3.2 RED HILL SHAFT/PUMP STATION: Prior to being shut down on 28 November 2021, the Red Hill PS was supplying an average of 5.3 MGD to the system. The represented 24% of the 22 MGD total system demand. A shown in Figure 2, the Red Hill Pump Station has not been operated since 28 November 2021.

Since pumping ceased, the aquifer water surface elevation has raised from approximately 2 ft MSL to almost 6 ft MSL

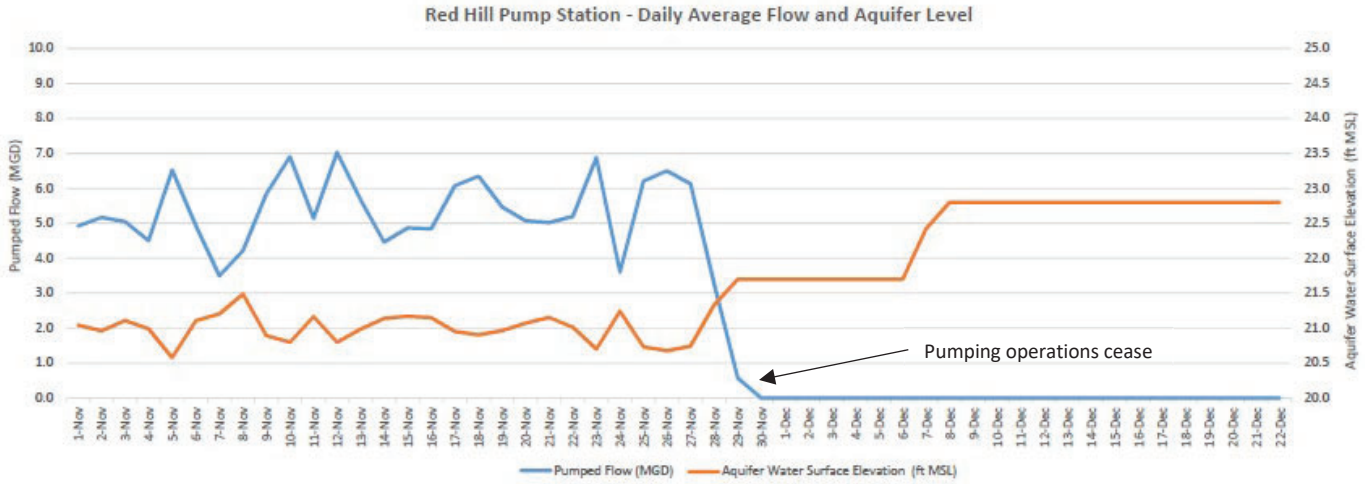


Figure 2. Red Hill Shaft Daily Average Flows and Aquifer Water Surface Elevation

3.3 HALAWA/AIEA SHAFT/PUMP STATION: Halawa Shaft was briefly operated from 28 November to 03 December 2021. The reasons for shutdown are as follows:

1. Demand reductions made it so that Waiawa Shaft could supply 100% of the water to the system,

2. there were concerns over westward plume migration from Red Hill if Halawa remained active,
3. water system operators had advised that high chloride concentrations in the Halawa/Aiea Shaft had caused water quality problems in the past.

The aquifer water surface elevation was around 12.0 ft MSL prior to turning the pumps on at the Halawa/Aiea PS. After the pumping ceased, the aquifer recovered to around 12.8 ft MSL.

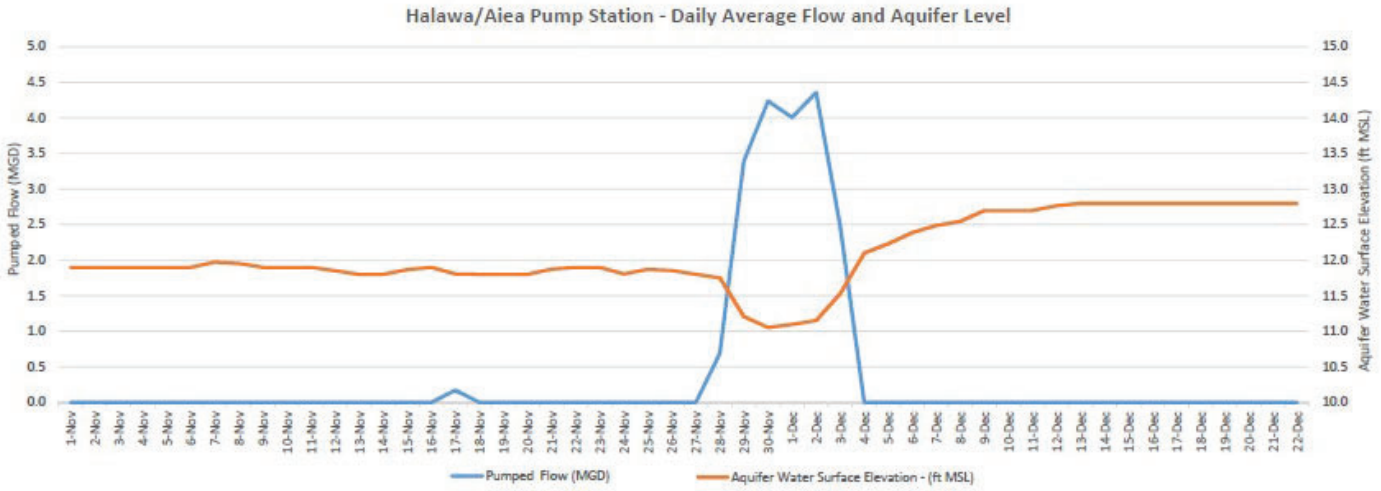


Figure 2. Halawa/Aiea Shaft Daily Average Flows and Aquifer Water Surface Elevation

Photograph of Concrete Blocking Between Air Gapped Isolation Flange

Interagency Drinking Water System Team
Zone C1 Removal Action Report
March 2022

Line of Evidence 1b

Regulated Public Water System's Water Quality Data is Compliant

Table 1: Lines of Evidence Under Evaluation – Ensure no contamination is entering the water system.

Objective 1b - The regulated public water system's water quality data is compliant.

Incident Specific Criteria - Data does not exceed Federal DW MCLs, specified State EALs, and ISPs for **Waiawa Shaft**.

Lines of Evidence	Completion Status	Outstanding Items
Date Sample Taken at Step 0 of the Sampling Plan Addendum 1	Complete	• None.
Date Sample Taken at Entry Point to Distribution	Complete	• None.

February 17, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: SUMMARY OF LINE OF EVIDENCE OBJECTIVE 1B – THE REGULATED PUBLIC WATER SYSTEM'S WATER QUALITY IS COMPLIANT

Encl: (1) 1b.1 Source Water and Entry Point of Distribution Sample

1. Enclosure (1) documents completion of Line of Evidence 1b, the regulated public water system's water quality is compliant. On the evening of November 28, 2021, the Red Hill Shaft was secured from operation and all pumping operations ceased. The Aiea/Halawa shaft briefly served as the secondary source starting on November 28, 2021, but it was shut down on December 3, 2021 to prevent potential westward contaminant migration in the aquifer and because there were concerns over high chloride concentrations caused by saltwater intrusion. Since December 3, 2021, the Waiawa Shaft has been the sole water source providing potable water to the distribution network. It is located 5.5 miles west of the Red Hill Fuel Facility, and testing has not detected any water quality issues at this source.

2. On January 11, 2022, water from the Waiawa shaft was sampled at the entry point to the distribution system (EPD). The results of the analysis are presented in Enclosure (1), Field Sample ID 20111-WS-ZT01. On January 13, 2022, additional samples were taken at the Waiawa shaft source. The results of these samples are also presented in Enclosure (1), Field Sample IDs 220113-WS-ZT01 and 220113-WS-ZT03. This data shows that the water from the Waiawa shaft does not exceed State of Hawaii and Federal Drinking Water standards, Maximum Contaminate Levels, Environmental Action Levels and Incident Specific Parameters, and the regulated public water system's water quality is complaint.

3. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and I believe the submitted information is true, accurate, and complete.

RODRIGUEZ.ALBERTO.MAURICIO.1396316168

Digitally signed by RODRIGUEZ.ALBERTO.MAURICIO.1396316168
Date: 2022.02.19 17:19:01 -10'00'

A. M. Rodriguez
LT, CEC, USN

1b.1 Source Water and Entry Point of Distribution Sample
Well Shaft Sampling
Chemistry Results

Drinking Water Sampling, JBPHH, Oahu Hawaii

		EPD	Shaft	Shaft
Location ID:		I1-SHFTWAIA	I1-SHFTWAIA	I1-SHFTWAIA
Location Type:		Well	Well	Well
Residence:		Waiawa Shaft	Waiawa Shaft	Waiawa Shaft
Field Sample ID:		220111-WS-ZT01	220113-WS-ZT01	220113-WS-ZT03
Sample Date:		2022-01-11	2022-01-13	2022-01-13
Sample Type:		N (PostChlorination Sample)	N (PreChlorination Sample)	N (PreChlorination Sample)
GENCHEM (mg/L)	**Incident Specific Parameters**	**Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 2A12046**		**SDG: 810121191**
Total Organic Carbon	2	None	None	None	0.190 U	--	0.250 U
HC (µg/L)	**Incident Specific Parameters**	**Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 5801092421**	**SDG: 5801092721**	**SDG: 5801092711**
Petroleum Hydrocarbons (as Diesel)	200	400	None	None	90.0 U	91.0 U	92.0 U
Petroleum Hydrocarbons (as Gasoline)	200	300	None	None	31.0 U	31.0 U	31.0 U
Petroleum Hydrocarbons (as Motor Oil)	200	500	None	None	180 U	180 U	180 U
HERB (µg/L)	**Incident Specific Parameters**	**Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**			**SDG: 980559**
Pentachlorophenol	None	None	None	None	--	--	0.0200 U
HG (µg/L)	**Incident Specific Parameters**	**Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 2A12046**		
Mercury	0.025	0.025	2	2	0.0170 U	--	--
METAL (µg/L)	**Incident Specific Parameters**	**Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 2A12046**		**SDG: 980559**
Antimony	6	6	6	6	**0.0915 J**	--	0.110 U
Arsenic	10	10	10	10	**0.207 J**	--	0.210 U
Barium	220	220	2000	2000	**1.72**	--	**1.80 J**
Beryllium	0.66	0.66	4	4	0.0624 U	--	0.0910 U
Cadmium	3	3	5	5	0.0416 U	--	0.0290 U
Chromium	11	11	100	100	**1.46**	--	**1.50**
Copper	2.9	2.9	1300	1300	**21.2**	--	**46.0**
Lead	15	5.6	15	15	**0.265**	--	**0.0630 J**
Selenium	5	5	50	50	**0.704**	--	**0.350 J**
Thallium	2	2	2	2	0.0210 U	--	0.0410 U
SVOC (µg/L)	**Incident Specific Parameters**	**Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 2A12046**	**SDG: 5801092721**	**SDG: 810121191**

1b.1 Source Water and Entry Point of Distribution Sample
Well Shaft Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

					EPD	Shaft	Shaft
1,2,4-Trichlorobenzene	70	70	70	70	--	0.0930 U	--
1,2-Dichlorobenzene	10	10	600	600	--	0.0520 U	--
1,3-Dichlorobenzene	None	None	None	None	--	0.0410 U	--
1,4-Dichlorobenzene	5	5	75	None	--	0.0410 U	--
1-Methylnaphthalene	2.1	10	None	None	0.00801 U	--	0.0190 U
2,4,5-Trichlorophenol	None	None	None	None	--	0.100 U	--
2,4,6-Trichlorophenol	None	None	None	None	--	0.100 U	--
2,4-Dichlorophenol	None	None	None	None	--	0.210 U	--
2,4-Dimethylphenol	None	None	None	None	--	0.170 U	--
2,4-Dinitrophenol	None	None	None	None	--	1.70 U	--
2,4-Dinitrotoluene	None	None	None	None	--	0.100 U	--
2,6-Dinitrotoluene	None	None	None	None	--	0.100 U	--
2-Chloronaphthalene	None	None	None	None	--	0.0720 U	--
2-Chlorophenol	None	None	None	None	--	0.0520 U	--
2-Ethylhexyl adipate	None	None	None	None	0.00962 U	--	--
2-Methylnaphthalene	4.7	10	None	None	0.00904 U	--	0.0190 U
2-Methylphenol (o-Cresol)	None	None	None	None	--	0.0520 U	--
2-Nitroaniline	None	None	None	None	--	0.100 U	--
3,3'-Dichlorobenzidine	None	None	None	None	--	0.270 U	--
3-Nitroaniline	None	None	None	None	--	0.170 U	--
4,6-Dinitro-2-methylphenol	None	None	None	None	--	0.570 U	--
4-Bromophenyl phenyl ether	None	None	None	None	--	0.0620 U	--
4-Chloro-3-methylphenol	None	None	None	None	--	0.130 U	--
4-Chloroaniline	None	None	None	None	--	0.610 U	--
4-Chlorophenyl phenyl ether	None	None	None	None	--	0.0520 U	--
4-Nitroaniline	None	None	None	None	--	0.220 U	--
4-Nitrophenol	None	None	None	None	--	1.80 U	--
Acenaphthene	None	None	None	None	--	0.0520 U	--
Acenaphthylene	None	None	None	None	--	0.0620 U	--
Alachlor	None	None	None	None	0.0110 U	--	0.0480 U
Anthracene	None	None	None	None	--	0.0520 U	--
Atrazine	None	None	None	None	0.00734 U	--	0.0290 U
Benzo(a)anthracene	None	None	None	None	--	0.0520 U	--
Benzo(a)pyrene	0.06	0.06	0.2	0.2	0.0117 UJ	0.0410 U	0.00960 U
Benzo(b)fluoranthene	None	None	None	None	--	0.0410 U	--
Benzo(g,h,i)perylene	None	None	None	None	--	0.0410 U	--
Benzo(k)fluoranthene	None	None	None	None	--	0.0520 U	--
Benzyl butyl phthalate	None	None	None	None	--	0.280 U	--
Bis(2-chloroethoxy)methane	None	None	None	None	--	0.0520 U	--
Bis(2-chloroethyl) ether (2-Chloroethy ether)	None	None	None	None	--	0.0310 U	--
Bis(2-ethylhexyl)phthalate	3	3	6	6	0.437 U	0.770 U	0.580 U
Carbazole	None	None	None	None	--	0.100 U	--
Chlordane	None	None	None	None	0.0669 U	--	0.0320 U
Chrysene	None	None	None	None	--	0.0410 U	--

1b.1 Source Water and Entry Point of Distribution Sample
Well Shaft Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

					EPD	Shaft	Shaft
Cresols, m- & p-	None	None	None	None	--	0.100 U	--
Dibenz(a,h)anthracene	None	None	None	None	--	0.0720 U	--
Dibenzofuran	None	None	None	None	--	0.100 U	--
Diethyl phthalate	None	None	None	None	--	0.160 U	--
Dimethyl phthalate	None	None	None	None	--	0.0620 U	--
Di-n-butyl phthalate	None	None	None	None	--	0.200 U	--
di-n-Octyl phthalate	None	None	None	None	--	0.130 U	--
Dioctyl adipate	None	None	None	None	--	--	0.580 U
Endrin	None	None	None	None	0.00991 U	--	0.00500 U
Fluoranthene	None	None	None	None	--	0.0620 U	--
Fluorene	None	None	None	None	--	0.0520 U	--
gamma-BHC (Lindane)	None	None	None	None	0.00633 U	--	0.00700 U
Heptachlor	None	None	None	None	0.00965 U	--	0.00300 U
Heptachlor epoxide	None	None	None	None	0.0122 U	--	0.00500 U
Hexachlorobenzene	0.0003	0.0003	1	1	0.0980 U	0.0410 U	0.00960 U
Hexachlorobutadiene	None	None	None	None	--	0.0620 U	--
Hexachlorocyclopentadiene	50	None	50	50	0.00594 U	0.140 U	0.00960 U
Hexachloroethane	None	None	None	None	--	0.0520 U	--
Indeno(1,2,3-c,d)pyrene	None	None	None	None	--	0.130 U	--
Isophorone	None	None	None	None	--	0.100 U	--
Methoxychlor	None	None	None	None	0.00863 U	--	0.0320 U
Naphthalene	12	17	None	None	0.0103 U	0.170 U	0.0190 U
Nitrobenzene	None	None	None	None	--	0.0410 U	--
N-Nitrosodi-n-propylamine	None	None	None	None	--	0.0620 UJ	--
N-Nitrosodiphenylamine	None	None	None	None	--	0.0720 U	--
PCB, Total	None	None	None	None	0.100 U	--	--
PCB-1016 (Aroclor 1016)	None	None	None	None	0.0157 U	--	0.0220 U
PCB-1221 (Aroclor 1221)	None	None	None	None	0.0436 U	--	0.0790 U
PCB-1232 (Aroclor 1232)	None	None	None	None	0.0102 U	--	0.0850 U
PCB-1242 (Aroclor 1242)	None	None	None	None	0.0737 U	--	0.0720 U
PCB-1248 (Aroclor 1248)	None	None	None	None	0.0941 U	--	0.0230 U
PCB-1254 (Aroclor 1254)	None	None	None	None	0.0869 U	--	0.0350 U
PCB-1260 (Aroclor 1260)	None	None	None	None	0.0379 U	--	0.0330 U
Pentachlorophenol	None	None	None	None	0.0242 U	0.530 U	--
Phenanthrene	None	None	None	None	--	0.120 U	--
Phenol	None	None	None	None	--	0.370 U	--
Pyrene	None	None	None	None	--	0.0410 U	--
Simazine	None	None	None	None	0.00734 U	--	0.0290 U

VOC (µg/L)	Incident Specific Parameters	Environmental Action Levels Table D-1A Groundwater Action Levels	DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents	Environmental Protection Agency Maximum Contaminant Levels	SDG: 2A12046	SDG: 5801092721	SDG: C22A017REV1
1,1,1-Trichloroethane	11	11	200	200	0.256 U	0.390 U	0.119 U
1,1,2,2-Tetrachloroethane	None	None	None	None	--	0.520 U	--
1,1,2-Trichloroethane	5	5	3	5	0.190 U	0.240 U	0.288 U

1b.1 Source Water and Entry Point of Distribution Sample
Well Shaft Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

					EPD	Shaft	Shaft
1,1-Dichloroethane	None	None	None	None	--	0.220 U	--
1,1-Dichloroethene	7	7	7	7	0.160 U	0.280 U	0.128 U
1,2,4-Trichlorobenzene	70	70	70	70	0.170 U	--	0.318 U
1,2-Dichlorobenzene	10	10	600	600	0.190 U	--	0.272 U
1,2-Dichloroethane	5	5	5	5	0.243 U	0.420 U	0.0884 U
1,2-Dichloroethene	None	None	None	None	--	0.390 U	--
1,2-Dichloropropane	5	5	5	5	0.130 U	0.180 U	0.129 U
1,4-Dichlorobenzene	5	5	75	None	0.180 U	--	0.245 U
2-Butanone (MEK)	None	None	None	None	--	4.70 U	--
2-Hexanone	None	None	None	None	--	4.00 U	--
4-Methyl-2-pentanone (MIBK)	None	None	None	None	--	2.50 U	--
Acetone	None	None	None	None	--	3.20 U	--
Benzene	5	5	5	5	0.150 U	0.240 U	0.0846 U
Bromodichloromethane	None	None	None	None	--	0.290 U	--
Bromoform	None	None	None	None	--	0.510 U	--
Bromomethane	None	None	None	None	--	0.210 U	--
Carbon disulfide	None	None	None	None	--	0.530 U	--
Carbon Tetrachloride	5	5	5	5	0.270 U	0.300 U	0.165 U
Chlorobenzene	25	25	100	100	0.150 U	0.440 U	0.146 U
Chloroethane	None	None	None	None	--	0.350 U	--
Chloroform	None	None	None	None	--	0.260 U	--
Chloromethane	None	None	None	None	--	0.280 U	--
cis-1,2-Dichloroethene	70	70	70	70	0.250 U	0.350 U	0.0570 U
cis-1,3-Dichloropropene	None	None	None	None	--	0.200 U	--
Dibromochloromethane	None	None	None	None	--	0.430 U	--
Ethylbenzene	700	7.3	700	700	0.210 U	0.500 U	0.141 U
m,p-Xylene	10000	13	None	None	0.330 U	0.530 U	0.317 U
Methylene chloride	5	5	5	5	0.303 U	1.40 U	2.15 U
o-Xylene	10000	13	None	None	0.200 U	0.390 U	0.157 U
Styrene	10	10	100	100	0.190 U	0.530 U	0.224 U
Tetrachloroethene (PCE)	5	5	5	5	0.180 U	0.410 U	0.125 U
Toluene	1000	9.8	1000	1000	0.294 U	0.390 U	0.120 U
trans-1,2-Dichloroethene	100	100	100	100	0.259 U	0.390 U	0.0958 U
trans-1,3-Dichloropropene	None	None	None	None	--	0.410 U	--
Trichloroethene (TCE)	5	5	5	5	0.180 U	0.260 U	0.0574 U
Vinyl chloride	2	2	2	2	0.180 U	0.220 U	0.611 U
Xylenes, Total	10000	13	10000	10000	--	0.530 U	--

Section 1b.1 Source Water and Entry Point of Distribution Sample

Notes:

-- indicates that the sample was Not Analyzed for the analyte

Results highlighted yellow exceed the ISP
Results in purple font also exceed the EALs
Results in green font also exceed the DOH MCL
Results in blue font also exceed the EPA MCL

µg/L = Micrograms per Liter

Interagency Drinking Water System Team
Zone C1 Removal Action Report
March 2022

Line of Evidence 1c

No Additional Contamination through the Distribution System is Occurring

Table 1: Lines of Evidence Under Evaluation – Ensure no contamination is entering the water system.

Objective 1c - No additional contamination through the distribution system is occurring**.**

Incident Specific Criteria - Cross Connection Control investigation shows distribution system is protected, resulting in no additional sources of contamination.

Lines of Evidence	Completion Status	Outstanding Items
No contamination of the distribution system is occurring from cross-connections with other petroleum sources during this incident	Complete	• None.
Cross Connection Control/Backflow Program-related documents	Complete	• None.

February 19, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: SUMMARY OF LINE OF EVIDENCE OBJECTIVE 1C – NO ADDITIONAL CONTAMINATION THROUGH THE DISTRIBUTION SYSTEM IS OCCURRING

Encl: (1) 1c.1 Certification of Inventory and Petroleum Facility Locations with Associated Backflow Preventers.
(2) 1c.2 Backflow Prevention and Cross-Connection Control Program Instruction

1. Enclosures (1) and (2) document completion of Line of Evidence 1c, no additional contamination through the distribution system is occurring. On the evening of November 28, 2021, the Red Hill Shaft was secured from operation and all pumping operations ceased. The Aiea/Halawa shaft briefly served as the secondary source starting on November 28, 2021, but it was shut down on December 3, 2021 to prevent potential westward contaminant migration in the aquifer and because there were concerns over high chloride concentrations caused by saltwater intrusion. Since December 3, 2021, the Waiawa Shaft has been the sole water source providing potable water to the distribution network. It is located 5.5 miles west of the Red Hill Fuel Facility, and testing has not detected any water quality issues at this source.

2. Enclosure (1) identifies all water service connections where petroleum activities exist and documents adequate backflow prevention devices installed at those petroleum service activities. Enclosure (2) provides the governing instructions for backflow prevention devices referenced in Enclosure (1). This data shows that no additional contamination through the water distribution system is occurring.

3. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and I believe the submitted information is true, accurate, and complete.

RODRIGUEZ.ALBERTO.MAURICIO.1396316168
Digitally signed by RODRIGUEZ.ALBERTO.MAURICIO.1396316168
Date: 2022.02.19 17:24:22 -10'00'

A. M. Rodriguez
LT, CEC, USN

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND, HAWAII
400 MARSHALL ROAD
JBPHH, HAWAII 96860-3139

11000
Ser PWO/0081
March 10, 2022

Director of the State of Hawaii
Department of Health (DOH)

Dear DOH Director:

SUBJECT: CERTIFICATE REGARDING CROSS CONNECTION CONTROL REVIEW AND CONFIRMATION – ZONE C1

Enclosure: [1] ZONE C1: POL Activities Backflow Prevention Devices
[2] ZONE C1: POL Activities Map

On behalf of the United States Department of the Navy, operator of the Joint Base Pearl Harbor-Hickam Public Water System (PWS ID No. 360 Water System), and in connection with and pursuant to the removal action required by the DOH Hazard Evaluation and Emergency Response Office Incident Case No. 20211128-1848, the undersigned certifies that the Navy has made all necessary inquiry into their Water System and represents and warrants as set forth below.

All service connections where petroleum activities exist in the Water System, **Zone C1**, are identified in Enclosure [1], "Zone C1: POL Activities Backflow Prevention Devices." Petroleum activities include, but are not limited to, operating or having gas stations, fuel storage, facilities with aboveground or underground storage tanks (>100-gallon capacity), fuel transfer, motor pools, vehicle maintenance facilities, fuel recovery pits, waste oil collection facilities or systems.

All service connections where petroleum activities exist, as identified in Enclosure [1] have adequate backflow protection as recommended by and in accordance with COMNAVREGHIINST 11330.2D, BACKFLOW PREVENTION AND CROSS-CONNECTION CONTROL PROGRAM. Adequate backflow protection includes installation of devices appropriate to the identified hazard condition, correct design and installation of the device, timely testing by a certified tester, and regular maintenance/repair/replacement.

All facilities identified with adequate backflow protection have had their assemblies tested by a DOH-approved certified tester in the past year in accordance with Hawaii Administrative Rules, Title 11-21-8(b) Maintenance requirements.

The Navy has committed to the funding and performance in FY2022 of a comprehensive cross connection control survey of the entire JBPHH water system per the December 2021 AH Engineers & Scientists Water Quality CAT Memorandum.

SUBJECT: CERTIFICATE REGARDING CROSS CONNECTION CONTROL REVIEW AND CONFIRMATION – ZONE C1

Buildings 1758, 1771, 1772, 1784, 696, 59, and 796 were identified as facilities that may contain petroleum activities. Information for these facilities are included in Enclosures [1] and [2]. Buildings 1257 and 1594 are abandoned facilities and do not contain any petroleum activity. Additionally, Pier Sierra 12 (S12) does not have any petroleum facilities identified because there is no potable water connection at S12. The closest water connection is at Sierra 11 (S11), which is listed in Enclosures [1] and [2]

The undersigned has due authority to deliver to DOH this Certification on behalf of the Navy.

Sincerely,

HARMEYER.RANDALL.ERNEST.1186692663

Digitally signed by HARMEYER.RANDALL.ERNEST.1186692663
Date: 2022.03.10 13:25:31 -10'00'

R. E. HARMEYER
Captain, CEC, U.S. Navy
Public Works Officer
By Direction of the
Commanding Officer

Enclosure [1] - ZONE C1: POL Activities Backflow Prevention Devices

POL Activities Backflow Prevention Devices **Zone: C1**

ASSET NAME	Location (Bldg. #)	Reference Location	Description of petroleum -related activity	BFP Manufacturer	BFP Model	BFP Size	Serial # or VIN #	Installation Date or In Service Date	Changed (Replacement) Date	Last Tested Date	Last Repaired Date
SA-FWP 6261	60	UNDERGROUND VAULT CHAMBER	UST DDP-1 / 18,144 GAL DIESEL UST DDP-2 / 18,522 GAL DIESEL UST DDP-3 / 25,704 GAL DIESEL UST DDP-4 / 97,692 GAL DIESEL UST DDP-5 / 93,198 GAL DIESEL UST DDP-6 / 92,526 GAL DIESEL UST DDP-7 / 92,148 GAL DIESEL UST DDP-8 / 93,492 GAL DIESEL	WATTS	909	1	636452	1/1/2000	N/A	3/30/2021	N/A
NO BFP ASSETS, HOSE BIBS	449	FORKLIFT SHOP	AST FLC-449 / 605 GAL DRUMS POL	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
NO BFP ASSETS, HOSE BIBS	490	TANKER TRUCKS -490	FLC-490-TP / 21,000 GAL POL	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
NO BFP ASSETS, HOSE BIBS	492	TRUCK RACK TRUCK PARKING		HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
NO BFP ASSETS, HOSE BIBS	643	ELECTRICAL SUB STATION	AST D-18 / 4,000 GAL DIESEL AST D-18A / 500 GAL DIESEL	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
NO BFP ASSETS, HOSE BIBS	660	TRUCK RACK OFFICE		HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
NO BFP ASSETS, HOSE BIBS	661	SUBASE WATERFRONT CONTROL		HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
NO BFP ASSETS, HOSE BIBS	1322	BEHIND BLDG 619	UST SB-34 / 2,500 GAL DIESEL	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWP 1326	1326	AUTOPORT GAS STATION	UST SB-32 / 10,000 GAL GASOLINE UST SB-33 / 10,000 GAL GASOLINE	CONBRACO	RZ 301	1.5	40207T2	1/1/2000	N/A	2/25/2022	N/A
NO BFP ASSETS, HOSE BIBS	1366	BARRACKS LOCKWOOD HALL	GENERATOR	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWP 1151	1538	SEWER STATION	AST C-21 / 500 GAL DIESEL	WATTS	909	0.75	279194	1/1/1994	N/A	3/25/2021	N/A
NO BFP ASSETS, HOSE BIBS	1554	BLDG NEXT TO LIFT STATION		HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWQ 2031	1579	LIFT STATION 16	AST C-34 / 300 GAL DIESEL	WILKINS	975	1	989046	1/1/2008	N/A	3/18/2021	N/A
SA-FWQ 861	1581	SEWER STATION	AST C-62 / 392 GAL DIESEL	WATTS	909	1.5	89639	1/1/2004	N/A	3/18/2021	N/A
SA-FWP 1082	1584	SEWER STATION	AST C-61 / 392 GAL DIESEL	WATTS	909	0.75	59126	1/1/1977	N/A	3/24/2021	N/A
SA-FWQ 1586	1586	SEWER STATION	AST C-33 / 200 GAL DIESEL	WILIKNS	975	1	989376	1/1/2000	N/A	3/16/2021	N/A
NO BFP ASSETS, HOSE BIBS	1649	K 33	AST D-28 / 200 GAL DIESEL	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWQ 0025	1685	FUEL LAB	AST FLC-1685-1 / 200 GAL DIESEL	FEBCO	805	1.5	A-00130	1/1/1996	N/A	3/18/2021	N/A
SA-FWP 0007BP	1694	BARRACKS		FEBCO	825	2	A001523	1/1/1996	N/A	3/29/2021	N/A
NO BFP ASSETS, HOSE BIBS	1718	GENERATOR	AST FLC-1718-1 / 2500 GAL DIESEL	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWQ 0032BP	1721	FIRE BOSTER PUMP BLDG	AST FLC-1721 / 500 GAL DIESEL	WATTS	909	10	400292	1/1/2001	N/A	3/18/2021	N/A
SA-FWP 0711BP	1724	SEA WOLF BRKS	UST SB-29 / 1,000 GAL DIESEL	FEBCO	860	2	9990	3/31/2003	N/A	4/1/2021	N/A

Enclosure [1] - ZONE C1: POL Activities Backflow Prevention Devices

POL Activities Backflow Prevention Devices **Zone: C1**

ASSET NAME	Location (Bldg. #)	Reference Location	Description of petroleum -related activity	BFP Manufacturer	BFP Model	BFP Size	Serial # or VIN #	Installation Date or In Service Date	Changed (Replacement) Date	Last Tested Date	Last Repaired Date
NO BFP ASSETS, HOSE BIBS	1731	FIRE BOOSTER PUMP BLDG		HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
NO BFP ASSETS, HOSE BIBS	1736	BOWLING ALLEY		HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWQ 19202	1747	HAZMAT BLDG	FLC-1747 DR 44,000 GAL DRUMS	WATTS	909	1	90147	3/18/2017	N/A	3/18/2021	N/A
SA-FWQ 0031BP	1751	UPPER FUEL FARM TANK STORAGE	AST 55 / 6,300,000 GAL JP-5	FEBCO	860	1.5	2205	1/1/1991	N/A	3/18/2021	N/A
NO BFP ASSETS, HOSE BIBS	1757	NAVSUP OFFICE		HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWQ 1579	1759	HAZMAT BLDG	AST FLC-1759-PT / 100 GAL DIESEL	FEBCO	825	1.5	23210	1/1/2000	N/A	3/12/2021	N/A
SA-FWQ 505	1771	IMF	AST C-32 / 180 GAL DIESEL	HERSEY	FRP2	0.75	169206	6/1/1997	N/A	3/17/2021	N/A
NO BFP ASSETS, HOSE BIBS	2190	TRUCK RACK		HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
NO BFP ASSETS, HOSE BIBS	9250	TRUCK RACK		HOSE BIB	AB	0.75	N/A	N/A	N/A	N/A	N/A
NO BFP ASSETS, HOSE BIBS	9478	OCEAN TERMINAL BLDG	AST FLC-9478-1 / 88 GAL DIESEL	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
NO BFP ASSETS, HOSE BIBS	1398A	SEWER LIFT STATION		HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWQ 0031BP	S754	UPPER FUEL FARM TANK STORAGE	AST 46 / 6,300,000 GAL JET-A	FEBCO	860	1.5	2205	1/1/1991	N/A	3/18/2021	N/A
SA-FWQ 0031BP	S755	UPPER FUEL FARM TANK STORAGE	AST 47 / 6,300,000 GAL JP-8	FEBCO	860	1.5	2205	1/1/1991	N/A	3/18/2021	N/A
SA-FWQ 0031BP	S756	UPPER FUEL FARM TANK STORAGE	AST 48 / 6,300,000 GAL DIESEL	FEBCO	860	1.5	2205	1/1/1991	N/A	3/18/2021	N/A
SA-FWQ 0031BP	S761	UPPER FUEL FARM TANK STORAGE	AST 53 / 6,300,000 GAL JP-8	FEBCO	860	1.5	2205	1/1/1991	N/A	3/18/2021	N/A
SA-FWQ 0031BP	S762	UPPER FUEL FARM TANK STORAGE	AST 54 / 6,300,000 GAL F-76	FEBCO	860	1.5	2205	1/1/1991	N/A	3/18/2021	N/A
SA-FWQ 0031BP	S769	LOWER FORFAC STORAGE		FEBCO	860	1.5	2205	1/1/1991	N/A	3/18/2021	N/A
SA-FWQ 0031BP	S770	LOWER FORFAC STORAGE	AST B-1 / 378,000 GAL OILY WATER	FEBCO	860	1.5	2205	1/1/1991	N/A	3/18/2021	N/A
SA-FWP 2361	S1A	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SA-3236	1/1/2011	N/A	9/1/2021	N/A
SA-FWP 237	S1A	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	SA-3284	1/1/2008	N/A	9/2/2021	N/A
SA-FWP 238	S1A	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SA-3272	6/1/1997	N/A	9/2/2021	N/A
SA-FWP 239	S1A	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RK-0998	3/1/2018	N/A	9/2/2021	N/A

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POL Activities Backflow Prevention Devices **Zone: C1**

ASSET NAME	Location (Bldg. #)	Reference Location	Description of petroleum -related activity	BFP Manufacturer	BFP Model	BFP Size	Serial # or VIN #	Installation Date or In Service Date	Changed (Replacement) Date	Last Tested Date	Last Repaired Date
SA-FWP 240	S1A	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SA-3266	1/1/2011	N/A	9/2/2021	N/A
SA-FWP 241	S1B	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SA-3216	1/1/2011	N/A	9/2/2021	N/A
SA-FWP 242	S1B	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2	SA-3284	1/1/2011	N/A	9/2/2021	N/A
SA-FWP 243	S1B	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2	SA-3292	1/1/2011	N/A	9/2/2021	N/A
SA-FWP 244	S1B	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2	SA-3280	1/1/2011	N/A	9/2/2021	N/A
SA-FWP 258	S9	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2	88624	1/1/2011	N/A	9/9/2021	N/A
SA-FWP 259	S8	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SB-1330	1/1/2011	N/A	9/9/2021	N/A
SA-FWP 260	S8	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88618	1/1/2011	N/A	9/9/2021	N/A
SA-FWP 26101	S9	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88609	1/1/2011	N/A	9/3/2021	N/A
SA-FWP 266	S10	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88615	1/1/2008	N/A	9/1/2021	N/A
SA-FWP 267	S10	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957	2	88610	1/1/2019	N/A	9/2/2021	N/A
SA-FWP 271	S11	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909HW	2	88609	1/1/2011	N/A	2/25/2022	N/A
SA-FWP 274	S13	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88587	1/1/2008	N/A	2/25/2022	N/A
SA-FWP 275	S13	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909HW	2	88590	1/1/2008	N/A	2/25/2022	N/A
SA-FWP 276	S14	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	88588	1/1/2008	N/A	9/7/2021	N/A
SA-FWP 277	S14	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	88620	1/1/2008	N/A	9/7/2021	N/A
SA-FWP 278	S15	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SB-0482	1/1/2008	N/A	9/7/2021	N/A
SA-FWP 2781	S15	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SA-3254	1/1/2008	N/A	9/7/2021	N/A
SA-FWP 279	S15	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SB-1524	1/1/2008	N/A	9/7/2021	N/A
SA-FWP 2791	S15	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2	SB-1502	6/1/2018	N/A	9/7/2021	N/A

Enclosure [1] - ZONE C1: POL Activities Backflow Prevention Devices

POL Activities Backflow Prevention Devices **Zone: C1**

ASSET NAME	Location (Bldg. #)	Reference Location	Description of petroleum -related activity	BFP Manufacturer	BFP Model	BFP Size	Serial # or VIN #	Installation Date or In Service Date	Changed (Replacement) Date	Last Tested Date	Last Repaired Date
SA-FWP 280	S15	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SB-1512	1/1/2008	N/A	9/7/2021	N/A
SA-FWP 281	S15	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SB-0040	1/1/2008	N/A	9/9/2021	N/A
SA-FWP 2811	S15	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2	SA-3234	6/1/2018	N/A	9/7/2021	N/A
SA-FWP 282	S17	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SA-3310	1/1/2008	N/A	9/9/2021	N/A
SA-FWP 283	S17	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SA-3220	1/1/2008	N/A	9/9/2021	N/A
SA-FWP 284	S17	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SA-3250	1/1/2009	N/A	9/9/2021	N/A
SA-FWP 285	S17	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SB-0060	1/1/2009	N/A	9/9/2021	N/A
SA-FWP 286	S19	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SC-0224	1/1/2009	N/A	9/3/2021	N/A
SA-FWP 287	S19	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SC-0220	1/1/2008	N/A	9/3/2021	N/A
SA-FWP 288	S19	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SC-0214	1/1/2008	N/A	9/3/2021	N/A
SA-FWP 289	S19	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	SA-3214	1/1/2009	N/A	9/3/2021	N/A
SA-FWP 2891	S20	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2	SB-1502	6/1/2018	N/A	9/3/2021	N/A
SA-FWP 290	S20	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2	SC-0632	1/1/2009	N/A	9/3/2021	N/A
SA-FWP 291	S20	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RK-2354	1/1/2009	N/A	9/3/2021	N/A
SA-FWP 292	S20	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	88601	6/1/2018	N/A	9/7/2021	N/A
SA-FWP 293	S21	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88569	1/1/2009	N/A	9/7/2021	N/A
SA-FWP 295	S21	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88568	1/1/2009	N/A	9/14/2021	N/A
SA-FWP 296	S21	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88563	1/1/2009	N/A	9/14/2021	N/A
SA-FWP 297	S21	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88586	1/1/2008	N/A	9/14/2021	N/A
SA-FWP 298	S21	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88592	6/1/1997	N/A	9/14/2021	N/A

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POL Activities Backflow Prevention Devices **Zone: C1**

ASSET NAME	Location (Bldg. #)	Reference Location	Description of petroleum -related activity	BFP Manufacturer	BFP Model	BFP Size	Serial # or VIN #	Installation Date or In Service Date	Changed (Replacement) Date	Last Tested Date	Last Repaired Date
SA-FWP 299	S21	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88595	6/1/2018	N/A	9/17/2021	N/A
SA-FWP 300	S21	SIERRA PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2	88596	6/1/2018	N/A	9/17/2021	N/A
SA-FWQ 291	Y2	YANKEE PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	88629	1/1/2008	N/A	9/14/2021	N/A
SA-FWQ 292	Y2	YANKEE PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	89936	1/1/2008	N/A	9/13/2021	N/A
SA-FWQ 305	Y3A	YANKEE PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	QH-2300	6/1/1997	N/A	9/17/2021	N/A
SA-FWQ 306	Y3A	YANKEE PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RC-1036	6/1/1997	N/A	9/17/2021	N/A
SA-FWQ 307	Y3B	YANKEE PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	QH-2334	6/1/1997	N/A	9/17/2021	N/A
SA-FWQ 308	Y3B	YANKEE PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	QI-0176	1/1/2013	N/A	9/17/2021	N/A
SA-FWQ 311	K2	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RH-2388	1/1/2013	N/A	9/17/2021	N/A
SA-FWQ 312	K3	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RH-1260	1/1/2013	N/A	9/17/2021	N/A
SA-FWQ 313	K3	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RH-1256	1/1/2013	N/A	9/17/2021	N/A
SA-FWQ 314	K4	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RH-1252	1/1/2013	N/A	9/17/2021	N/A
SA-FWQ 315	K5	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RH-1222	1/1/2013	N/A	9/8/2021	N/A
SA-FWQ 316	K5	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RH-1224	1/1/2013	N/A	9/17/2021	N/A
SA-FWQ 3161	K6	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	88847	1/1/2013	N/A	9/17/2021	N/A
SA-FWQ 317	K7	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RI-2910	1/1/2013	N/A	9/10/2021	N/A
SA-FWQ 318	K7	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RI-2976	1/1/2013	N/A	9/10/2021	N/A
SA-FWQ 319	K7	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RI-2904	1/1/2013	N/A	9/10/2021	N/A
SA-FWQ 320	K8	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RI-2978	1/1/2013	N/A	9/10/2021	N/A
SA-FWQ 321	K8	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RI-1466	1/1/2013	N/A	9/10/2021	N/A

Enclosure [1] - ZONE C1: POL Activities Backflow Prevention Devices

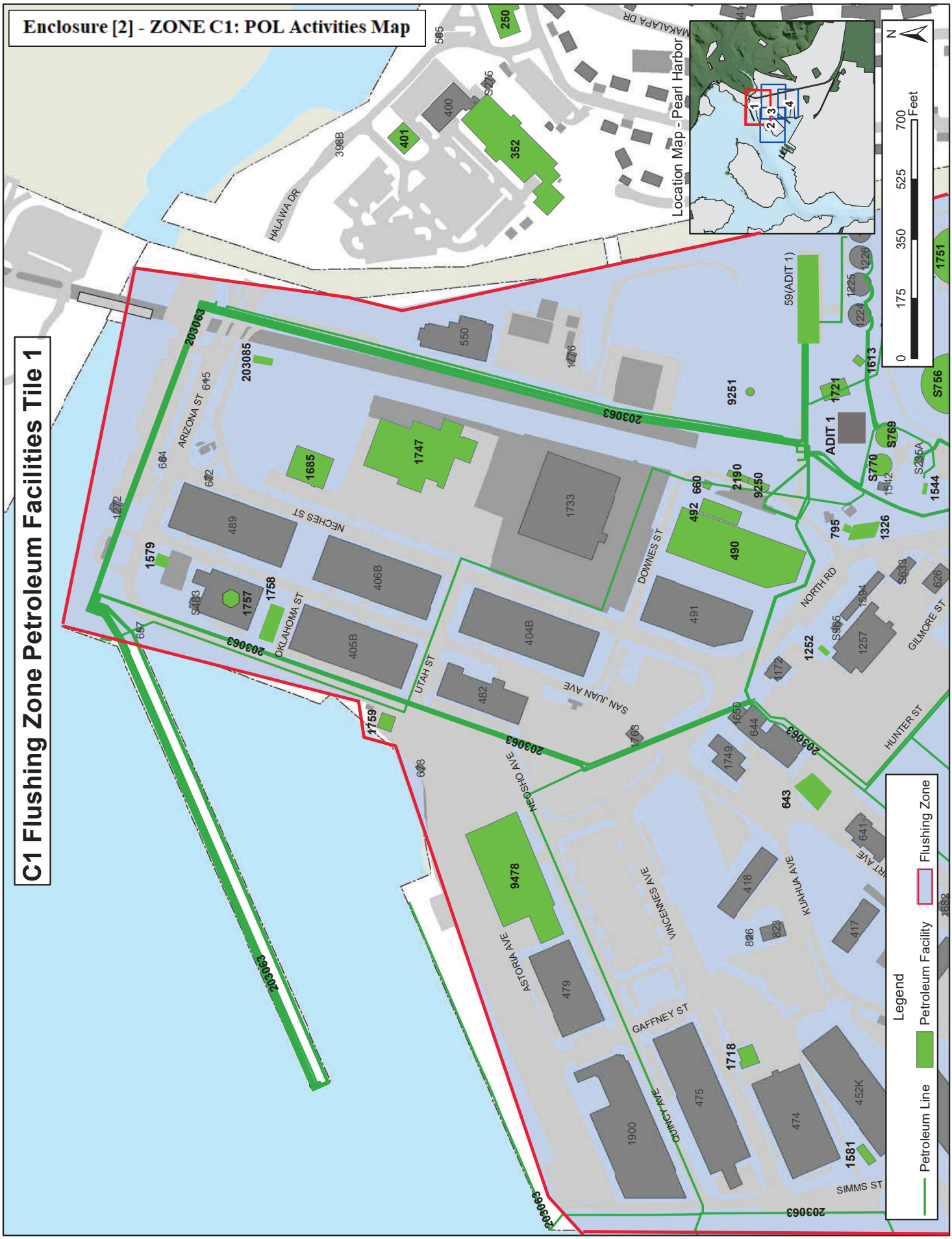
POL Activities Backflow Prevention Devices **Zone: C1**

ASSET NAME	Location (Bldg. #)	Reference Location	Description of petroleum -related activity	BFP Manufacturer	BFP Model	BFP Size	Serial # or VIN #	Installation Date or In Service Date	Changed (Replacement) Date	Last Tested Date	Last Repaired Date
SA-FWQ 322	K8	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	957QT	2.5	RH-2202	1/1/2013	N/A	9/10/2021	N/A
SA-FWQ 323	K10	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	4	18760	1/1/2013	N/A	9/8/2021	N/A
SA-FWQ 3231	K10	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	4	18792	6/1/1997	N/A	9/7/2021	N/A
SA-FWQ 325	K10	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	4	18903	1/1/2013	N/A	9/8/2021	N/A
SA-FWQ 326	K11	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	4	18886	1/1/2008	N/A	9/8/2021	N/A
SA-FWQ 327	K11	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	4	18909	1/1/2008	N/A	9/10/2021	N/A
SA-FWQ 328	K11	KILO PIERS DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	4	18906	1/1/2008	N/A	9/10/2021	N/A
SA-FWQ 329	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	89109	6/1/2018	N/A	9/10/2021	N/A
SA-FWQ 330	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	89085	6/1/2018	N/A	9/10/2021	N/A
SA-FWQ 331	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	89083	6/1/2018	N/A	9/10/2021	N/A
SA-FWQ 332	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	89112	6/1/2018	N/A	9/14/2021	N/A
SA-FWQ 333	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	89081	6/1/2018	N/A	9/14/2021	N/A
SA-FWQ 334	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909HW	2	89078	6/1/2018	N/A	9/14/2021	N/A
SA-FWQ 335	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	89075	6/1/2018	N/A	9/14/2021	N/A
SA-FWQ 336	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	89113	1/1/2008	N/A	9/14/2021	N/A
SA-FWQ 337	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	89114	6/1/2018	N/A	9/14/2021	N/A
SA-FWQ 338	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	427306	6/1/2018	N/A	9/10/2021	N/A
SA-FWQ 339	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	395104	6/1/2018	N/A	9/10/2021	N/A
SA-FWQ 340	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	428111	1/1/2008	N/A	9/10/2021	N/A
SA-FWQ 341	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	428266	1/1/2008	N/A	9/10/2021	N/A

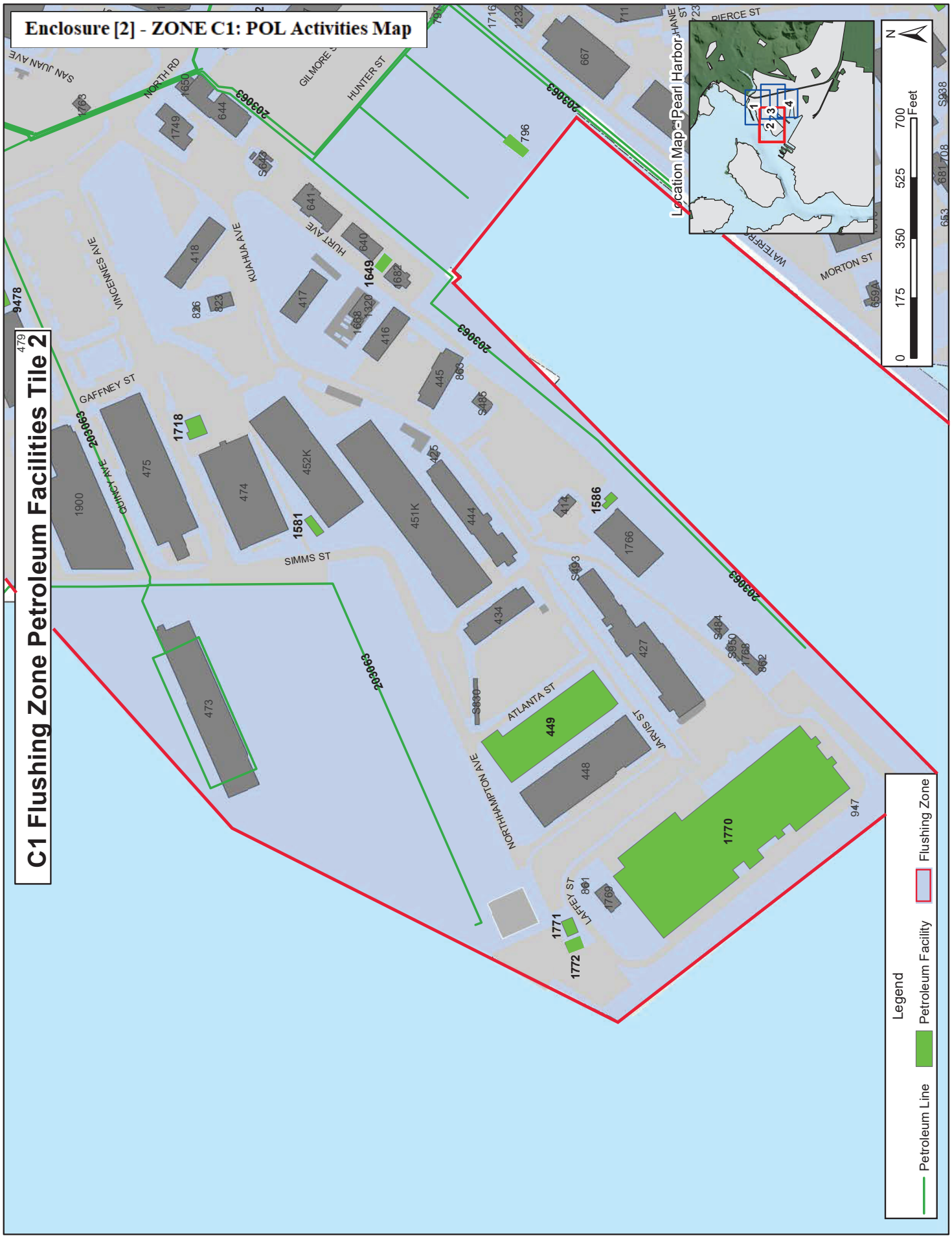
Enclosure [1] - ZONE C1: POL Activities Backflow Prevention Devices

POL Activities Backflow Prevention Devices **Zone: C1**

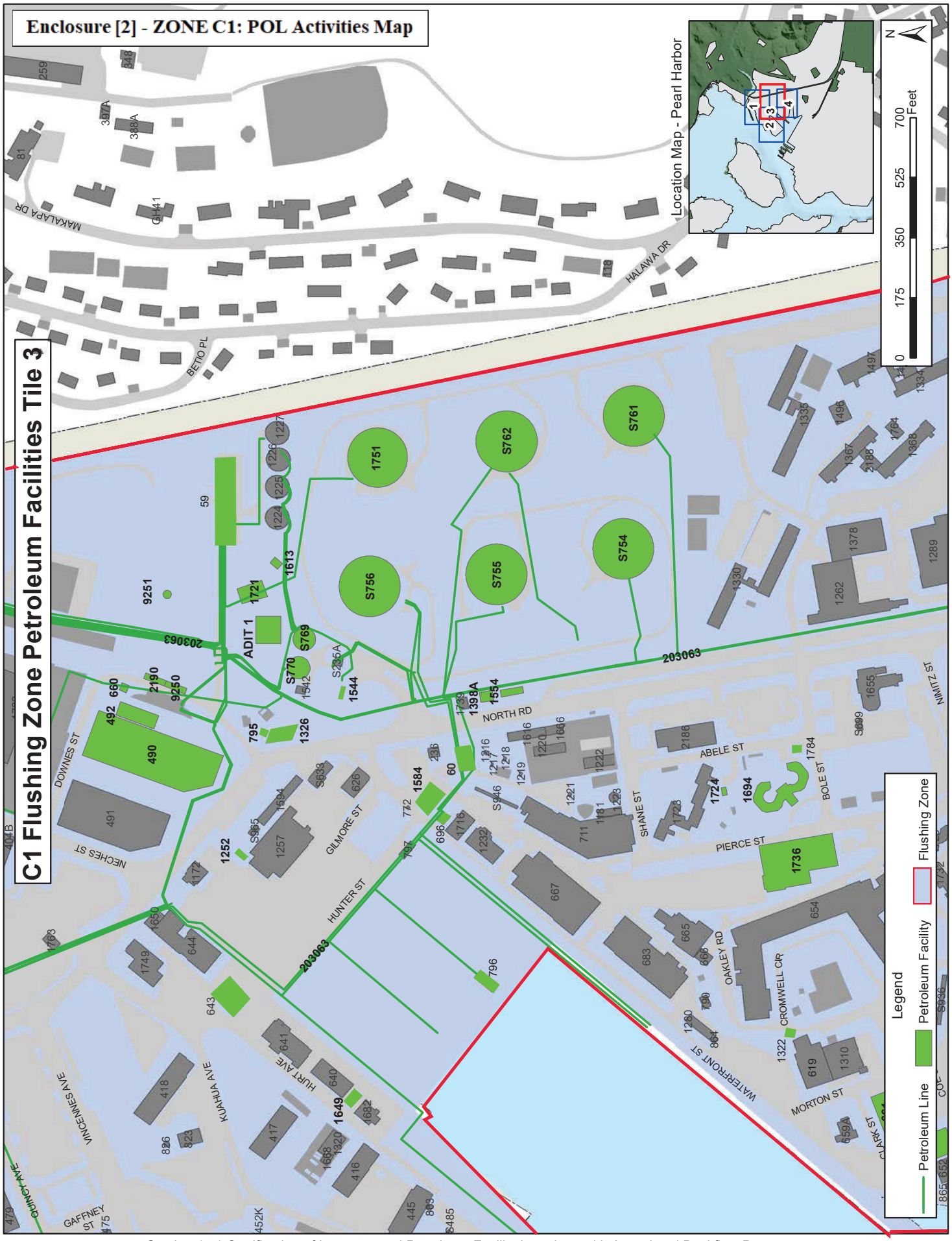
ASSET NAME	Location (Bldg. #)	Reference Location	Description of petroleum -related activity	BFP Manufacturer	BFP Model	BFP Size	Serial # or VIN #	Installation Date or In Service Date	Changed (Replacement) Date	Last Tested Date	Last Repaired Date
SA-FWQ 342	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	428267	1/1/2008	N/A	9/17/2021	N/A
SA-FWQ 343	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2.5	428270	1/1/2008	N/A	9/17/2021	N/A
SA-FWQ 344	H1	HOTEL PIER DOCK OUTLETS	DOCK FUEL TRANSFER TO SHIPS/SUBMARINES	WATTS	909	2	428264	1/1/2008	N/A	9/17/2021	N/A
SA-FWQ 3021	1770	IMF	AST FOR GENERATOR / 300 GAL ABOVEGROUND STORAGE DIESEL TANK	WILKINS	375	3	105894	7/30/2013	N/A	3/12/2021	N/A
SA-FWQ 1613	1613	ON TOP OF ADIT 1	AST FOR GENERATOR	FEBCO	856	4	N0605150548	1/1/2000	N/A	3/17/2021	N/A
NO BFP ASSETS, HOSE BIBS	9251	NEAR TRUCK RACK	FUEL VALVE & PIPING	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWQ 0031BP	1544	LOWER 4 FAC AREA	AST	FEBCO	860	1.5	2205	1/1/1991	N/A	3/18/2021	N/A
NO BFP ASSETS, HOSE BIBS	1252	BEHIND OLD AUTOPORT SERVICE	AST	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWP 13311	1487	GENERATOR FOR 1407	AST FOR GENERATOR	WATTS	909	2	90157	1/1/2019	N/A	4/1/2021	N/A
SA-FWQ 11877	795	SUPPORT FOR AUTO PORT GAS STN	UNDERGROUD FUEL TANKS	CONBRACO	20A02	4	NS490	6/1/1997	N/A	3/16/2021	N/A
NO BFP ASSETS, HOSE BIBS	203085	HAIR PIN TURN ON THE WAY TO 155	FUEL VALVE CONTROL AREA	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWQ 11877	59(ADIT 1)	ADIT ENTRANCE	FUEL OIL UNDERGROUND PUMP HOUSE	CONBRACO	20A02	4	NS490	6/1/1997	N/A	3/16/2021	N/A
NO BFP ASSETS, HOSE BIBS	696	FUEL OIL PUMP HOUSE	UNDERGROUND FUEL PIPE VALVE CHAMBER	HOSE BIB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-FWP 2791	796	END OF SIERRA 15 PIER	SMALL GAS ENGINE REPAIR SHOP	WATTS	957	2.5	SB-1502	6/1/2018	N/A	9/3/2021	N/A
SA-FWQ 1901	1758	SMALL EQUIPMENT REPAIR SHOP	30 GAL USED OIL DRUM	WATTS	909	2	117341	1/1/1991	N/A	3/18/2021	N/A
SA-FWQ 504	1772	IMF HAZMIN CENTER	HAZARDOUS STORAGE	CONBRACO	40-100	6	N6772	1/1/1995	N/A	3/17/2021	N/A
SA-FWP 0007BP	1784	SEAWOLF HALL BLDG	STANDBY GENERATOR / 1,000 GAL DIESEL STORAGE	FEBCO	825Y	2	A001523	1/1/1996	N/A	3/29/2021	N/A



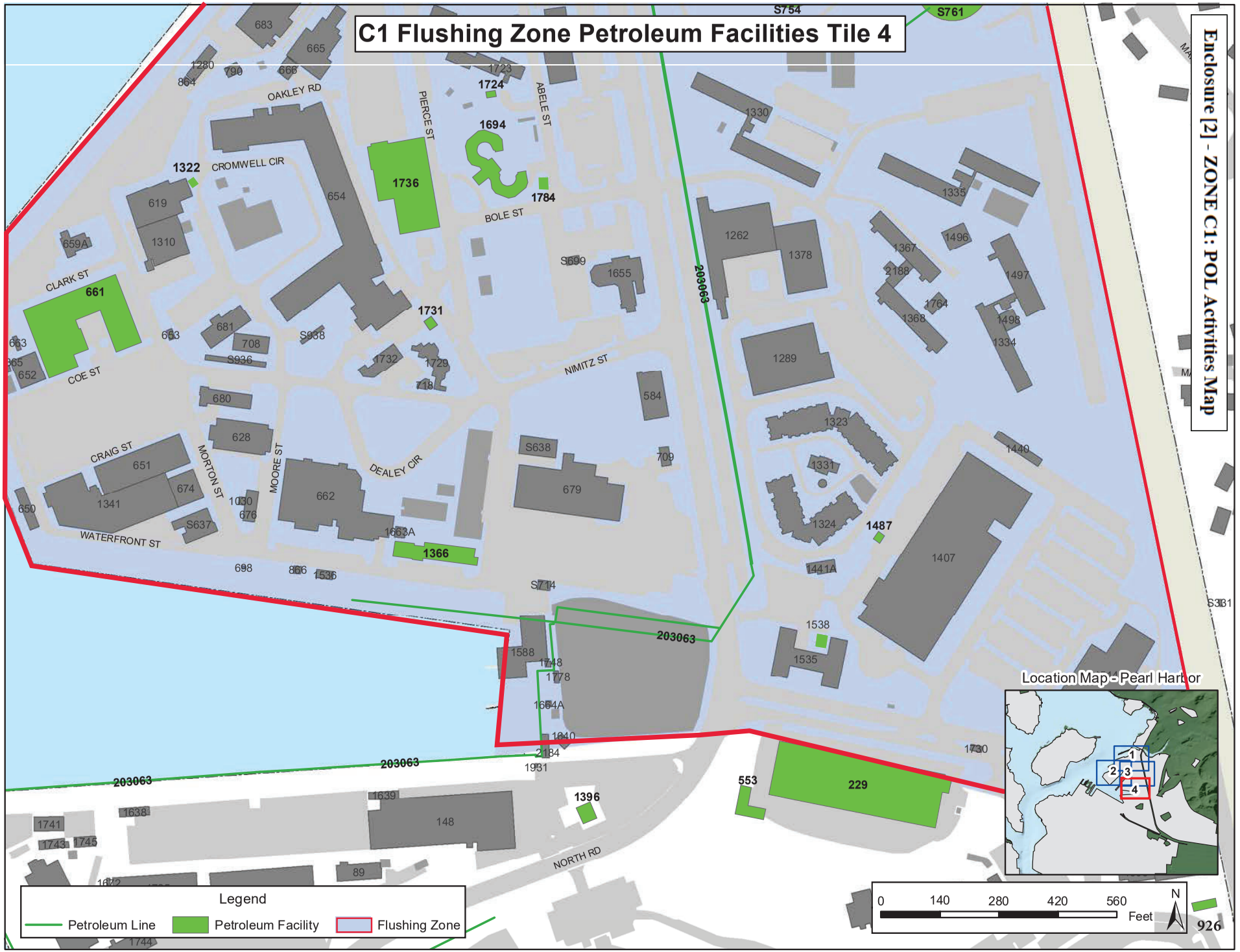
Section 1c.1 Certification of Inventory and Petroleum Facility Locations with Associated Backflow Preventers



Section 1c.1 Certification of Inventory and Petroleum Facility Locations with Associated Backflow Preventers



Section 1c.1 Certification of Inventory and Petroleum Facility Locations with Associated Backflow Preventers


C1 Flushing Zone Petroleum Facilities Tile 4
Enclosure [2] - ZONE C1: POL Activities Map
Section 1c.1 Certification of Inventory and Petroleum Facility Locations with Associated Backflow Preventers
OAKLEY RD
CROMWELL CIR
PIERCE ST
ABELE ST
BOLE ST
CLARK ST
COE ST
NIMITZ ST
CRAIG ST
MORTON ST
MOORE ST
DEALEY CIR
WATERFRONT ST
NORTH RD
203063
1322
1736
1694
1724
1784
661
1731
1366
1396
1487
553
229
Location Map - Pearl Harbor
Legend
Petroleum Line
Petroleum Facility
Flushing Zone
0
140
280
420
560
Feet
N
926

Enclosure [2] C1 Piers

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

COMNAVREGHIINST 11330.2D
N4
19 Sep 2016

COMNAVREG HAWAII INSTRUCTION 11330.2D

From: Commander, Navy Region Hawaii

Subj: BACKFLOW PREVENTION AND CROSS-CONNECTION CONTROL PROGRAM

Ref: (a) Recommended Practice for Backflow Prevention and Cross-Connection Control, (AWWA Manual M14), American Water Works Association
(b) MIL-HDBK-I 005/7, Military Handbook Water Supply Systems
(c) State of Hawaii, Department of Health, Administrative Rules Title 11, Chapter 21, Cross-Connection and Backflow Control
(d) NAVFACINST 11330.11E
(e) Manual of Cross-Connection Control, Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California
(f) NAVFAC MO-210, Maintenance and Operation of Water Supply, Treatment, and Distribution Systems

1. Purpose. To supplement current Navy directives pertaining to the protection of the Base potable water supply.

2. Cancellation. COMNAVREGHIINST 11330.2C.

3. Definitions. References (a) through (c) define technical terms used herein as follows:

a. Backflow. The reversal of the normal flow of water caused by either backpressure or back-siphonage.

b. Back-pressure. The flow of water or other liquids, mixtures or substances under pressure into the distribution pipes of a potable water supply system from any source or sources other than the intended source.

c. Back-siphonage. The flow of water or other liquids, mixtures or substances into the distribution pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.

d. Backflow Preventer. A device or means designated to prevent backflow. These include:

(1) Air Gap. The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of said vessel. An approved air-gap must be at least double the diameter of the supply pipe, measured vertically, above the top of the overflow rim of the vessel, and in no case less than six inches.

(2) Reduced Pressure Principle Device. An approved assembly of two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure relief valve located between the check valves, as described in reference (b) and specified in reference (d).

(3) Double Check Valve Assembly. An approved assembly of two independently operating approved check valves with tightly closing shut-off valves on each end of the check valves, plus properly located test cocks for the testing of each check valve.

(4) Atmospheric Vacuum Breaker. A device designed to not subject to static line pressure and contains a check valve and an air-let valve.

(5) Pressure Vacuum Breaker. A device that is designed to operate under conditions of static line pressure and contains one or two independently operating, spring-loaded air-inlet valves located on the discharge side of the check valve (or valves), plus properly located test cocks, and tightly closing shut-off valves.

e. Certified Tester. A certified tester means three classes of certified testers:

(1) A limited tester - A person trained and qualified to perform periodic testing, inspection, and repairs on the specific devices contained within a specific plant or institution. This person is usually an employee of the plant or institution and assigned the duty of taking care of the backflow prevention equipment as part of his or her overall plant duties, and does not extend to backflow prevention devices that are not part of the specific plant or institution.

(2) A general tester - A person trained and qualified to perform the periodic testing, inspection, and repairs on all devices that are on the market. This person may be an employee of a water agency, an employee of a municipal agency, or an individual operating a backflow device testing service.

(3) A manufacturer's agent - A person who is an employee of a manufacturer of backflow prevention equipment and is thoroughly familiar with the backflow prevention devices produced by his/her employer. This person maybe familiar with other makes and models of backflow prevention devices but is restricted to only his/her employer's products. The Director of the Department of Health, State of Hawaii or his duly authorized representative, must approve all certified testers.

f. Cross-Connection. Any physical connection or arrangement of piping or fixtures between two otherwise separate piping systems, one of which contains potable water for human consumption and the other water for irrigation, fire protection, industrial and other uses, or non-potable water or industrial fluids of questionable safety, through which, or because of which, backflow may occur into the potable water system. This would include bypass arrangements, jumper connections, removable sections, swivel or changeover devices, and any other temporary or permanent devices through which, or because of which backflow could occur.

4. Background

a. Reference (b) presents requirements for the design of water supply systems for naval shore activities. Reference (b) indicates the design requirements for protecting the potable system from contamination by cross-connections with non-potable supplies and units containing polluted water. Reference (b) further indicates the need to protect the potable system from contamination by irrigation systems.

b. Reference (d) sets forth criteria for specifying backflow preventers of the reduced pressure principle type. It requires that such devices have a current Certificate of Approval and provides a list of approved backflow prevention devices.

c. Reference (e) cites methods and devices by which hazards may be eliminated without interfering with the functions of plumbing or water supply distribution systems. It is a comprehensive reference, and covers all aspects of cross-connection control.

d. Reference (f) provides technical guidance for the operation and maintenance of water supply systems at naval shore activities. Chapter 8 of reference (f) describes how the water system becomes contaminated. Chapter 9 reference (f) further requires that approved backflow preventers be installed according to the degree of the hazard involved and indicates the need for periodic testing and inspection of the devices by certified personnel. It also suggests a time interval for inspection and indicates that all devices be tested according to the manufacturer's service instructions. It further points out the requirements for record keeping.

e. To assure the quality of the water at the customer's tap, both the customer and Navy Facilities Engineering Command, Hawaii(NAVFAC HI), the water supplier, must participate in a backflow prevention and cross-connection control program.

5. Policy. Protect the existing potable water system at all times from hazardous cross-connections by the installation, operation, and maintenance of approved backflow preventers. Backflow prevention and cross-connection control measures must be in accordance with the recommendations and requirements of references (a) through (f).

6. Discussion

a. The objectives of the backflow prevention and cross-connection control program are to achieve the following:

(1) Protection of the quality of the base water supply.

(2) Elimination of existing hazards.

(3) Prevention of future unprotected cross-connections.

b. The backflow prevention and cross-connection control program requires the following:

(1) The survey all existing cross-connections to determine they are adequately protected.

(2) The recording of data on all existing backflow preventers to enable up-to-date monitoring. The data must include at least the following information:

(a) Activity name.

(b) Building number (if appropriate).

(c) Sketch of approximate location of backflow preventer.

(d) Size, type, model number, and manufacturer of the backflow preventer.

(e) Date installed (if known).

(f) Type of Hazard.

(3) Operate, maintained and repair all known existing backflow preventers to ensure their proper operation for the protection of the water system.

(4) Inspect and test all existing backflow preventers at the minimum time intervals to determine their effectiveness as shown in the table. If successive tests on a backflow preventer indicate repeated failures, test preventer at more frequent interval to be determined by NAVFAC HI Utilities and Energy Management Department, Potable Water Division (OPC61). All testing must be performed in accordance with the manufacturer's instruction.

METHOD OR DEVICE	3 MONTHS	6 MONTHS	12 MONTHS
Pressure Type Vacuum Breaker			X
Double Check Valve Assembly			X
Reduce Pressure Principle devices used for shore-to ship connections	X		

METHOD OR DEVICE	3 MONTHS	6 MONTHS	12 MONTHS
Other Reduced Pressure Principle device		X	
Air Gap			X
Reduced Pressure Principle devices used to separate the Navy's potable water system from another agency's potable water system			X

(5) Review all plans and specifications or sketches and material description for new connections to NAVFAC HI Potable Water Systems by NAVFAC HI OPC61 to verify the safety of the cross-connections.

(6) Report all known or suspected accidental contamination immediately to NAVFAC HI OPC61 to enable corrective action, and avoid widespread contamination of the water system.

7. Implementation. Maintain the following provisions of the backflow prevention and cross-connection control program by the shore activities as indicated below:

a. All shore activities and other agencies who receive potable water from water systems owned and operated by NAVFAC HI must:

(1) Conduct a Cross-Connection Control and Backflow Prevention Survey of the areas under their jurisdiction including building plumbing, fire protection, exterior hose bibs, lawn irrigation systems, etc. The survey must include an inspection of the consumer's premises for hazards noted in references (a) and (e) and document any findings observed during the survey. The survey must also document all existing backflow preventers. The activity is responsible for funding the survey.

(2) Conduct follow-up surveys of the areas under their jurisdiction within 5 years after the initial survey to update the status of the initial findings and provide new information, findings, and recommendations as required. The activity funds the follow-up surveys as a lump sum amount or incremental amounts of the cost determined by NAVFAC HI OPC61.

(3) Take immediate action to eliminate hazards if the survey indicates that there are cross-connection hazards.

(4) Forward copy of all surveys to NAVFAC HI OPC61.

(5) The activity may submit a work request to have NAVFAC HI conduct the survey.

b. All shore activities and other agencies who have existing backflow preventers that do not conform to the requirements of reference (e) and the NAVFAC HI OPC61 and, who receive water from systems owned and operated by NAVFAC HI, must provide funding to have their backflow preventers tested and certified by certified testers from NAVFAC HI OPC61.

c. All shore activities and other agencies who have requirements for new backflow preventers and who receive water from systems owned and operated by NAVFAC HI must:

(1) Provide funding to have their backflow preventers installed, tested, and certified.

(2) Provide funding for the re-testing and re-certification of the backflow preventer should the backflow preventer fail the initial test.

(3) Ensure initial certification and all re-certification is performed by NAVFAC HI OPC61. Certification by other agencies is not accepted.

d. All shore activities and other agencies who have existing backflow preventers registered with NAVFAC HI OPC61 will have their devices inspected, maintained, and certified by NAVFAC HI funding for the inspection, maintenance, and certification must be provided by NAVFAC HI OPC61.

e. The activities who are responsible for the design of the connection to a NAVFAC HI Potable Water System must submit construction drawings and specifications for the connection to NAVFAC HI OPC61 for approval, prior to its construction.

f. NAVFAC HI job planners must obtain approval for the connection to the NAVFAC HI Potable Water System from NAVFAC HI OPC61, if NAVFAC HI is to perform the work and construction drawings are not required for the connection.

g. The activity who requires the connection to NAVFAC HI Potable Water System must obtain approval for the connection from NAVFAC HI OPC61 prior to construction of the connection.

h. All shore activities who install backflow preventers or administer contracts for their installation NAVFAC HI must ensure that all newly installed backflow preventers are tested and inspected by a certified tester from NAVFAC HI OPC61 at the same time that the water outage occurs for the connection to the water system. Backflow preventer must pass all tests prior to supplying potable water.

i. All activities that suspect that the potable water system may have been contaminated must call NAVFAC HI OPC61 Steam/Air/Potable Water Division Manager, telephone number 473-0388. In addition, warn all personnel in the area of the possible contamination to stop drinking the water.

8. Responsibility

a. Commanding Officers and Officers-in-Charge of shore activities must ensure that hazards from cross-connections are eliminated and that new connections are approved.

b. Commanding Officers and Officers-in-Charge of shore activities in doubt as to the proper methods of backflow prevention and cross-connection control may request engineering and technical assistance from NAVFAC HI (Code 431), Long Range Maintenance Planning Branch, telephone number (808) 474-3700.

9. Records Management. Manage all records created by this instruction, regardless of media or format per SECNAV Manual 5210.1 of January 2012.

10. Review and Effective Date. Per OPNAVINST 5215.17A of 26 May 2016, the Facilities and Environmental (N4) will review this instruction annually on the anniversary of its issuance date to ensure applicability, currency, and consistency with Federal, DoD, SECNAV, and Navy policy and statutory authority using OPNAV 5215/40. This instruction will automatically expire 5 years after its issuance date unless reissued or canceled prior to the 5-year anniversary date, or an extension has been granted.

R. A. ESPINOSA
Chief of Staff
Acting

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Interagency Drinking Water System Team
Zone C1 Removal Action Report
March 2022

Line of Evidence 2a

Water within the Distribution System does not exceed State and Federal Drinking Water MCLs, Specified State EALs, and ISPs

Table 1: Lines of Evidence Under Evaluation – Ensure no contamination remains in the system and water chemistry concerns are addressed.

Objective 2a - Water within the distribution system does not exceed State and Federal DW MCLs, specified State EALs, and ISPs.

Incident Specific Criteria –

- Zone flushing plan demonstrates entire distribution system is flushed.
- Sample results show the water in distribution system does not exceed State and Federal DW MCLs, specified State EALs, and ISPs. (Guidance Table 2 and Table 3)
- Drinking water does not show sheen, olfactory evidence, or other qualitative methods of petroleum.

Lines of Evidence	Completion Status	Outstanding Items
JBPHH water system's approach to flushing and their metrics for success.	Complete	• None.
Validity of the volumetric exchange model	Complete	• None.
Verification that the entire distribution system is flushed volumetrically.	Complete	• None.
Residential Sampling Report for Flushing Zone (Risk Management Summary)	Complete	• None.

February 19, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: SUMMARY OF LINE OF EVIDENCE OBJECTIVE 2A – WATER WITHIN THE DISTRIBUTION SYSTEM DOES NOT EXCEED STATE AND FEDERAL DW MCLs, SPECIFIED STATE EALs, AND ISPs

Encl: (1) 2a.1 Memorandum for Record
(2) 2a.2 Validity and Application of Volumetric Exchange Method
(3) 2a.3 Hydraulic Model
(4) 2a.4 Records of Completed Volumetric Exchanges
(5) 2a.5 Water Source and Water Storage Facilities
(6) 2a.6 Distribution System Exceedance Investigation Summary and Results

1. Enclosures (1) through (6) document completion of Line of Evidence 2a, that water within the Zone C1 distribution system does not exceed State of Hawaii and Federal Drinking Water standards, Maximum Contaminate Levels, Environmental Action Levels and Incident Specific Parameters. On the evening of November 28, 2021, the Red Hill Shaft was secured from operation and all pumping operations ceased. The Aiea/Halawa shaft briefly served as the secondary source starting on November 28, 2021, but it was shut down on December 3, 2021 to prevent potential westward contaminant migration in the aquifer and because there were concerns over high chloride concentrations caused by saltwater intrusion. Since December 3, 2021, the Waiawa Shaft has been the sole water source providing potable water to the Joint Base Pearl Harbor-Hickam (JBPHH) distribution network. Zone C1 is part of the JBPHH Drinking Water system that is operated and maintained by the United States Navy. Flushing operations for Zone C1 are summarized in Enclosure (1), signed by LCDR Carl Chase, team lead for the Drinking Water Distribution System Recovery Team.

2. Details on the drinking water system and flushing operations and protocols are provided in Enclosures (1), (3), and (5). The guidance provided by Dr. Whelton on the recommended volume exchanges to be flushed in the distribution system is provided in Enclosure (2).

3. The records of the distribution system volumetric exchanges flushed are provided in Enclosure (4). Level 2 sampling data collected after distribution flushing is summarized in Enclosure (6).

4. Sample results with analyte detections exceeding the prescribed MCL, EAL, or ISP are documented in Enclosure (6). The follow-on investigation summary and additional sampling results are also documented in Enclosure (6).

5. The information provided in Section 2a, including the flushing process followed and the subsequent sampling results, demonstrate that water within the Zone C1 distribution system does not exceed State of Hawaii and Federal Drinking Water standards, Maximum Contaminate Levels, Environmental Action Levels and Incident Specific Parameters.

6. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and I believe the submitted information is true, accurate, and complete.

WETZEL.CHRISTOPHER.JAMES.1540194862

Digitally signed by WETZEL.CHRISTOPHER.JAMES.1540194862
Date: 2022.02.19 19:37:51 -08'00'

C. J. Wetzel
LT, CEC, USN

25 Jan 2022

MEMORANDUM FOR THE RECORD

From: LCDR Carl Chase, JBPHH Drinking Water Distribution System Recovery Team
To: Interagency Drinking Water System Team

Subj: DISTRIBUTION SYSTEM RECOVERY PLAN ADDENDUM – ZONE C1 ANALYSIS

Ref: (a) Memorandum for the Record from LCDR John Daly regarding the Distribution System Zone Flushing, December 28, 2021
(b) State of Hawaii Department of Health, Directive One– Flushing Requirements Navy Water System Incident, Case No.: 20211128-1848 (HI Directive One, dated 08 December, 2021)
(c) Drinking Water Distribution System Recovery Plan, 17 December 2021
(d) Incident Specific Criteria to Meet Lines of Evidence Objectives 1c and 2a, dated 05 January 2022

1. OBJECTIVE: The Drinking Water Distribution System Recovery Plan (DWDSRP) was signed by the Interagency Working Group on 17 December 2021. This addendum provides additional technical information to document the system flushing methodology and engineering approach used to restore Flushing Zone C1 to service as requested by the State of Hawaii Department of Health (HI DoH) in reference (d).

2. BACKGROUND:

2.1. Portions of the Navy water distribution system serving JBPHH and surrounding areas were exposed to low levels of fuel contamination with initial indications in the form of smell reports occurring on or about 28 November 2021.

2.2. Prior to the aquifer contamination incident (incident), water users connected to the Navy's system were supplied by three Navy owned water sources, Red Hill Shaft, Aiea/Halawa Shaft and Waiawa Shaft. In the time period prior to the incident, Waiawa Shaft was the main water source supplying approximately 16 million gallons per day (MGD) to the JBPHH system with at least one pump operating full time (100%). A single Red Hill Shaft pump was operated intermittently as a secondary source to supply approximately 5.5 MGD to the system. The Aiea/Halawa shaft was not being operated due to concerns over high chloride concentrations caused by saltwater intrusion into the aquifer.

2.3. On the evening of 28 November 2021, the Red Hill Shaft was secured and all pumping operations ceased. The Aiea/Halawa shaft briefly served as the secondary source starting on 28 November 2021 but was shut down on 03 December 2021 to prevent westward contaminant migration in the aquifer.

2.4. Since 03 December 2021, Waiawa Shaft has been the sole water source providing potable water to the distribution network. It is located 5.5 miles west of the Red Hill Fuel Facility and testing has not found any water quality issues at this source.

3. ENGINEERING ANALYSIS AND TOOLS: DWDSRP development utilized engineering judgement informed by existing tools and data sources such as ArcGIS, Supervisory Control and Data Acquisition (SCADA) system historic/current data, hydraulic models, and input from water system infrastructure contamination subject matter experts (SMEs).

3.1. ArcGIS was the primary tool used for mapping, volumetric calculations, and spatial analysis of the JBPHH utility systems.

3.2. System flows were measured by meters at key points within the distribution system. Data was recorded and stored by the Navy's SCADA system historian. SCADA is also monitored 24/7 by water system operators.

3.3. A hydraulic model was developed in 2014 and calibrated to conditions at the time. It is a skeletonized model depicting major transmission lines to many areas of the base. It does not include all mainline pipes, the Hickam area, or laterals feeding residence and non-residence facilities. The model was considered to be of limited use in determining the effectiveness of system flushing. It was primarily used to determine areas that were most likely impacted by the contamination event. The results directly correlated with initial reporting from impacted residents.

3.4 Dr. Andrew Whelton, a Purdue University associate professor of civil, environmental, and ecological engineering and recognized for his expertise in disaster response and recovery, provided recommendations to the US Navy based on his research and experience. His work is often cited in EPA literature and he is a leading expert in the field of recovering contaminated drinking water plumbing. His recommendations were incorporated into the DWDSRP.

4. CONSTRAINTS: In addition to Section 1.3 of the DWDSRP, the following constraints were considered during development of the plan:

4.1. Waiawa Shaft pumps are capable of pumping 19 MGD with 2 pumps running at full speed. There are 4 pumps at Waiawa Shaft, 2 are operational, one is standby, and one is down for maintenance. Average daily demand at JBPHH since the incident has ranged from 11 to 14 MGD. Maximum potable water system flushing flows were limited to 5 MGD to avoid excessive drawdown of the S1/S2 tanks and stay within the capacity of Waiawa Shaft pumps.

4.2. The two 6 million gallon (each) tanks, S1 and S1 could not be drawn down below the 28-foot level. This constraint was imposed by the water system operators who wanted to avoid low water system pressures that would be caused by S1/S2 drawdown below 28-feet.

4.3. Discharge to the Navy's sanitary sewer system and the Fort Kamehameha Wastewater Treatment Plant (Ft. Kam WWTP) was limited to 1 MGD by wastewater operations staff. Much of the infrastructure Ft. Kam WWTP was considered to be in poor condition and some process elements do not have a backup unit. The direct discharge of too much potable water to the plant was also thought to pose the risk of "wash out" of the microbes that provide secondary treatment.

4.4. Discharges of potable water to land or storm sewers were required by HI Directive One to be treated prior to discharge. Treatment was provided through 1 MGD mobile granular activated carbon (GAC) units. The units had several constraints on their use including site access, adequate staging areas that were level with sufficient area for the units and support crews, impacts to the community, traffic control, and distance to discharge. Each GAC was kept in a single location for at least 24 hours due to labor and time required for unit setup and breakdown.

4.5. Water service was required be maintained to residents and JBPHH tenants. Many families have remained in their homes and mission essential Government activities require continuous water service.

4.6. JBPHH did not have an established unidirectional flushing plan developed prior to the incident. Unidirectional flushing typically involves inducing one-way flow through each pipe segment in a water distribution system by closing mainline isolation valves and opening hydrants for a short period of time. The number of hydrants required would be determined by the pipe size and the minimum water velocity required to flush sediments and other contaminants from the pipe segment. True unidirectional flushing of the system was determined not to be a feasible method for flushing the JBPHH potable water system for the following reasons:

4.6.1. Per section 1.2 of the DWDSRP, the distribution system was to be recovered with critical urgency. Additionally, SMEs advised that the longer contaminants remained in the system, the more likely it was that they would migrate into plastics, gaskets, sediments, etc. A unidirectional flushing program would take several months to develop and implement and the timeline was not considered feasible for a return to service.

4.6.2. Water system operators indicated that many mainline isolation valves would not properly close and could not be relied upon to isolate pipe segments.

4.7. Dr.Whelton recommended three volumetric turnovers for impacted pipe networks. Flushing zones with higher risk of contamination were identified and prioritized using water user complaint history, testing results, the hydraulic model, and the hydraulic proximity to Red Hill Shaft. A factor of safety was applied to the highest priority zones by specifying a minimum of five volumetric turnovers. Zones where the hydraulic modelling indicated that contamination may have travelled, were in close hydraulic proximity to Red Hill Shaft, and had few complaints were flushed with the recommended three volumetric turnovers. Low priority was given to zones where SCADA data indicated that water was fed solely from Waiawa Shaft before and after the incident. To reduce water waste, flush zones with lower risk of contamination were volumetrically turned over a minimum of once or twice.

5. Following Dr. Whelton's recommendation, the DWDSRP was designed with a directional flush of the distribution system starting from the clean water source and moving systematically through the entire system. The limited water source capacity at Waiawa Shaft and disposal constraints required that the system be broken down into smaller flush zones. 19 total zones were established that could be independently flushed without adverse hydraulic or water quality impacts to previously flushed zones. Section 2.4 of the DWDSRP depicts the network diagram and zone relationships.

6. FLUSH ZONE C1:

6.1. DESCRIPTION OF FLOW: This zone is fed from two transmission mains (24,- and 30-inch diameter) that interconnect at the northern zone boundary. Water sources to the zone include Waiawa Shaft, Red Hill Shaft and the S1/S2 tanks. Water flows from north to south through the zone. See Figure 1 for a schematic representation of the zone.

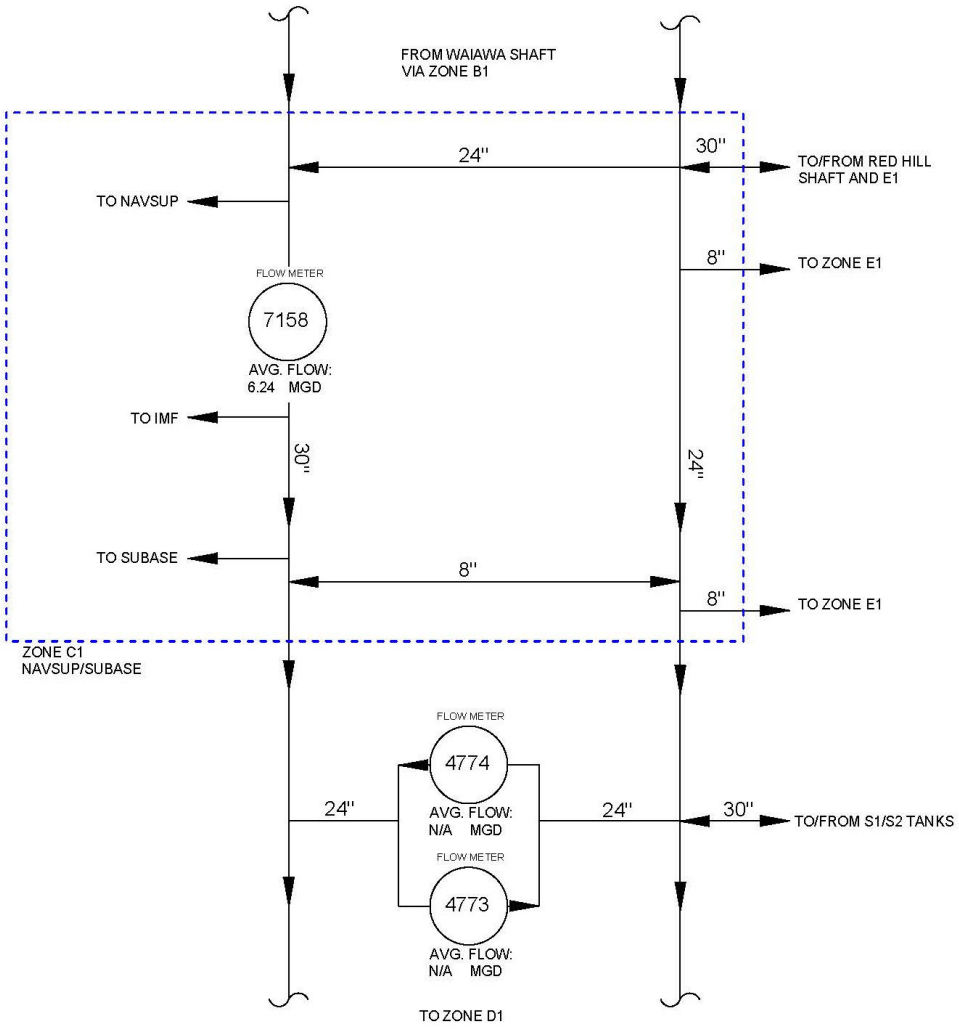


Figure 1: Zone C1 Schematic

6.1.1. Downstream zones include zones C2, C3, D1 through D4 and E1. A3 may also be considered a downstream zone prior to the incident. The interconnection between Zone A3 and other zones (Shipyard and Hickam) to the east was closed on 05 December 2021and has not been re-opened.

6.2. WATER USE/TENANTS: Water users in this zone include a mix of operational facilities, community facilities, and enlisted personnel barracks. There is one Child Daycare Center (CDC), the Naval Station CDC. Large community support facilities include the Makalapa Medical/Dental Clinic. Main operational tenant facilities include administrative and large warehouse facilities for the Naval Supply Systems Command (NAVSUP), the Intermediate Maintenance Facility (IMF), and administrative and shore support facilities for Commander, Submarine Force, Pacific Fleet (COMSUBPAC / SUBASE).

6.3. PIPE VOLUME: Per section 2.5.1.1. of the DWDSRP, Zone C1 has a mainline pipe volume of 410 thousand gallons (KGal). This volume includes the transmission mains running through

the zone. With the exception of the 24- and 30-inch transmission pipelines, distribution pipes in the zone are 4 to 12-inches in diameter.

6.4. PRIORITY:. There is a connection to Red Hill shaft at the north end of the zone via a 30-inch transmission main. Hydraulic modelling indicated that the predominant direction of flow in the transmission main was eastward (with water from Waiawa Shaft) toward Zone E1. However, the hydraulic model also indicated that flows may reverse for short periods of time when the Red Hill Shaft pumps were on and there was the potential for contamination to enter Zone C1. There is no flow meter data that supports this observation.

6.4.1. It was estimated that an average flow of 9.58 MGD was flowing to Zone C1 from Waiawa Shaft (Meter 4700 + Meter 4793 – B1 estimated average day demand). Water quality complaints in this zone were low and since Waiawa Shaft water was the majority of the flow entering the zone, it was assumed that this zone received little contamination relative to other higher priority zones.

6.4.2. Since the possibility for contamination existed, Zone C1 was grouped with the Priority #3 zones with a flush of 2 times the pipe volume or 820 KGal assigned.

6.5. HYDRANT SELECTION: Nine geographically and hydraulically dispersed flushing hydrants were selected to flush Zone C1.

6.5.1. Hydrants 542, 548, 503 and 535 were selected so that water would be pulled through the distribution main network serving the NAVSUP area.

6.5.2. Hydrant 512 was selected to flush the distribution pipes serving the IMF facility. This distribution main network is in the same area as the NAVSUP network. However it has a separate connection to the 30-inch transmission main and the two systems are not connected.

6.5.3. Hydrants 410 and 405 were selected so that water would be pulled through the distribution main network serving the large administrative facilities and barracks in the SUBASE area.

6.5.4. Hydrants 442 and 465 were selected flush the distribution network serving the BEQs and medical/dental center. Hydrant 442 was located to be roughly at the midpoint between the 30-inch and 24-inch transmission mains.

6.6. DEAD-END LINES: It is possible that flushing was not induced in some small loops or dead-end lines serving facilities or piers. To address this concern, additional distribution water line samples were taken in locations selected in a joint effort by the Navy, DoH, and EPA. These samples are representative of other dead-end lines within the zone and areas where is was suspected that water was not actively flushed from the system.

6.7. FLUSHING ACTUALS: Water was simultaneously discharged through:

405	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
2-Jan	8:00	20:00	15:12		4:48	20220102 0800-2000	Y
2-Jan	20:00	8:00		23:50	3:50	20220102 2000-0800	N/A
2-Jan	20:00	8:00	1:35		6:25	20220102 2000-0800	N/A
3-Jan	8:00	20:00		9:10	1:10	20220103 0800-2000	Y

TOTAL RUN @ FLOW of 300	
TIME	16:13
VOLUME	291900 Gallons

410	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
3-Jan	8:00	20:00	19:02		0:58	20220103 0800-2000	N/A
3-Jan	20:00	8:00			12:00	20220103 2000-0800	N/A
4-Jan	8:00	20:00		10:15	2:15	20220104 0800-2000	Y

TOTAL RUN @ FLOW of 300	
TIME	15:13
VOLUME	273900 Gallons

442	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
3-Jan	8:00	20:00	19:02		0:58	20220103 0800-2000	N/A
3-Jan	20:00	8:00			12:00	20220103 2000-0800	N/A
4-Jan	8:00	20:00		12:00	4:00	20220104 0800-2000	Y

TOTAL RUN @ FLOW of 300	
TIME	16:58
VOLUME	305400 Gallons

535	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
4-Jan	8:00	20:00	19:10		0:50	20220104 0800-2000	N/A
4-Jan	20:00	8:00			12:00	20220104 2000-0800	N/A
5-Jan	8:00	20:00		9:35	1:35	20220105 0800-2000	N/A

TOTAL RUN @ FLOW of 300	
TIME	14:25
VOLUME	259500 Gallons

542	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
4-Jan	8:00	20:00	18:37		1:23	20220104 0800-2000	Y
4-Jan	20:00	8:00		7:40	11:40	20220104 2000-0800	Y

TOTAL RUN @ FLOW of 300	
TIME	13:03
VOLUME	234900 Gallons

548	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
3-Jan	8:00	20:00	17:34		2:26	20220103 0800-2000	N/A
3-Jan	20:00	8:00			12:00	20220103 2000-0800	N/A
4-Jan	8:00	20:00		9:13	1:13	20220104 0800-2000	N/A

TOTAL RUN @ FLOW of 300	
TIME	15:39
VOLUME	277005 Gallons

465	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
3-Jan	8:00	20:00	15:54		4:06	20220103 0800-2000	N/A
3-Jan	20:00	8:00			12:00	20220103 2000-0800	N/A
4-Jan	8:00	20:00		9:30	1:30	20220104 0800-2000	Y

TOTAL RUN @ FLOW of 300	
TIME	17:36
VOLUME	316800 Gallons

503	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
4-Jan	8:00	20:00	19:30		0:30	20220104 0800-2000	N/A
4-Jan	20:00	8:00			12:00	20220104 2000-0800	N/A
5-Jan	8:00	20:00		8:17	0:17	20220105 0800-2000	Y

TOTAL RUN @ FLOW of 300	
TIME	12:47
VOLUME	230100 Gallons

512	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
4-Jan	20:00	8:00	22:12		9:48	20220104 2000-0800	N/A
5-Jan	8:00	20:00		15:05	7:05	20220105 0800-2000	Y

TOTAL RUN @ FLOW of 100	
TIME	16:53
VOLUME	101300 Gallons

Hydrant Volume	
405	291,900
410	273,900
442	305,400
465	316,800
503	230,100
512	101,300
535	259,500
542	234,900
548	277,005
TOTAL	2,290,805

6.7.1. The total volume flushed through the system was 2,291 KGal for 5.5 volumetric turnovers. Actual volumetric turnovers exceeded the minimum requirement.

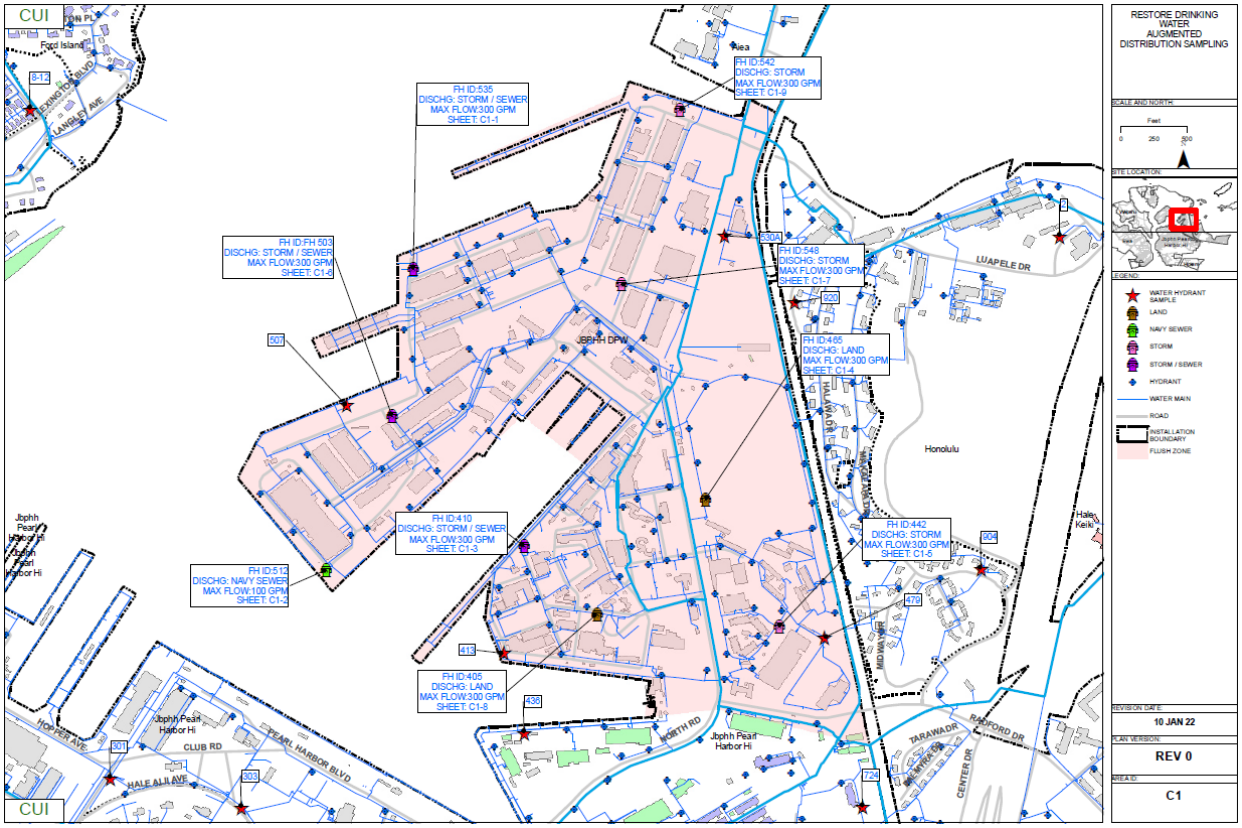


Figure 2: Flush Zone C1

6.8. SCADA DATA: Flow meter 7158 is located in this zone. However, it only measured the flows in the 30-inch transmission main running north/south through the zone. Flows in the parallel 24-inch transmission main and the 30-inch transmission main connected to the Red Hill Shaft were not measured. There were also no flow meters that measured flows leaving the Zone. For these reasons, it was not possible to perform any meaningful analysis of Zone C1 using flow meter data.

C. C. CHASE

February 15, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: VALIDITY AND APPLICATION OF VOLUMETRIC EXCHANGE METHOD

Ref: (a) Drinking Water Distribution System Recovery Plan, December 2021

Encl: (1) Dr. Whelton email documenting volumetric exchange method dtd 08 JAN 22

1. This letter documents the basis of the volumetric exchange method used in the development of reference (a). The basis of the flushing method was based on two key recommendations from Dr. Whelton, who served as the Navy's consultant in the early stages of the incident. Enclosure (1) documents key recommendations from Dr. Whelton which included flushing from a clean source, systematically moving through the entire system, and flushing at least three times the pipe volume. Rules of three is what Dr. Whelton generally recommends.

2. Reference (a) incorporated the recommendations from Dr. Whelton by creating a flushing sequence that began with clean water from the Waiawa shaft and flushing systematically through the entire system. The volumetric exchanges for each zone and zone flushing sequence plan was developed by Navy engineers. This is outlined in table 2.4, Distribution System Recovery Plan Diagram, and section 2.5, Flushing Plan Phasing, of reference (a). A safety factor was applied to the rule of three to obtain five volumetric turnovers for the phase 1 zone areas. Phase 2 zone areas had three volumetric turnovers. Phase 3 zone area had two volumetric turnovers and phase 4 zone areas had one volumetric turnover. The phase 3 and phase 4 zone volumetric turnover determinations were made after considering the up-gradient zone flushing volumes and the non-potable use of water in the zones.

3. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and the submitted information is true, accurate, and complete.

MENO.MICHAEL.WAYNE.JR.1088310035
Digitally signed by MENO.MICHAEL.WAYNE.JR.1088310035
Date: 2022.02.15 07:17:55 -10'00'

M. W. Meno
Captain, U.S. Navy Civil Engineer Corps

Phone numbers have been redacted

From: Whelton, Andrew J <[redacted]>
Sent: Saturday, January 8, 2022 4:58 AM
To: Lee, Andre K (NAVFAC HI BD) CIV USN NAVFAC HAWAII PEARL (USA) <[redacted]>
Cc: Isaacson, Kristofer P <[redacted]>; Proctor, Caitlin Rose <[redacted]>
Subject: [URL Verdict: Neutral][Non-DoD Source] RE: Cross Connection Control Plan and Flushing Plan documentation requirements for DoH

LCDR Daly,

I am free to talk later this afternoon today if you want. I'm Mountain Standard Time.
Below is some information.

Andy
[redacted]

FEEDBACK

1. You applied unidirectional flushing and if you opened hydrants fully you likely maximized velocity in the pipes you were flushing. The issue they seem to be getting at is scouring velocity which you identify. This is used for removing sediment (typical cleaning of water pipes) as you know. There is no SOP for water contamination response and recovery, so you applied standard water distribution system maintenance practice of unidirectional flushing. This is good. The state I think invoked water main disinfection standard which, to my knowledge isn't applicable here unless you conducted shock disinfection.
    a. For perspective, per a Water Research Foundation study: Microbial Control Strategies for Main Breaks and Depressurization, Project 4307. Published 2014. Denver, Colorado.
        1. Scouring velocity helps removed sediment from water mains/pipes. To achieve 2.5 to 3 log removal of sand particles for 4-to-16-inch diameter PVC pipes, 3 ft/s is needed.
        2. In that report, to achieve this removal for a 6-inch diameter PVC pipe, Q was 308 GPM
        3. In that report, to achieve this removal for 4-inch diameter PVC pipe, Q was 137 GPM
    b. We recommended starting flushing from the clean water source and moving systematically through the entire system in a unidirectional way. If you all did this, be sure to explain that. That helps minimize the change residual "old" water gets untouched, or is left in the system.
    c. You could calculate scouring velocities in each of the areas. If any are lower than desired you can go back and just keep repeat flushing giving an added level of safely.
    d. The state's interest in scouring velocity may be of concern that (JP-5?) free product adsorbed to sediment/scales and they want to be certain it got scoured out. If it didn't, it could dissolve it's constituents into water over time.
    e. Dead-ends are really important. You need to specifically address how you will get that water out. In West Virginia, many weeks after the spill and utility had flushed out the black-licorice smelling contaminated water out someone in a distal part of the system complained about odor. To my recollection the utility thought it was psychological, but it turned out there was a dead-end they didn't flush. Somehow that contaminated water got drawn into a nearby home and someone was exposed.

f. Question: How long was each hydrant open typically?
g. I think we mentioned flushing 3 times the pipe volume. Rules of three is what I often recommend. Flushing velocity is certainly important. I vaguely remember NAVFAC had contracted a consultant to create the flushing plan.

2. JP-5 isn't a single contaminant which we've talked about before. It's a mixture of 100s-1000s of individual chemicals. Even if JP-5 itself is hydrophobic and primarily found in emulsions or floating on the surface, some of these constituents will still diffuse into the water itself. The question they are likely after is how do you know you removed all parts of JP-5 that may have gotten entrained in the water system? This goes back to what chemicals are you testing for in the water distribution system. JP-5 constituents have different water solubility and octanol-water partitioning coefficients (Log Kow = How much they like to be in biofilm and plastics, not water). Additionally, the different materials (Metal vs PVC vs HDPE vs. gaskets) may be more prone to soaking up some JP-5 contaminants and not others depending on their characteristics. For example, PVC has been shown to be less susceptible to soaking up some crude oil-based contaminants than HDPE pipes (Huang et al. study with Whelton). Ultimately, the fate of the chemicals in the drinking water system will not be the same for all JP-5 constituents. Remember the drawing I drew on the whiteboard when meeting with CDR Chase, NAVFAC, COE, and Army? It showed different constituents may be in different parts of the water system. That's what DOH is likely after. Question to you: What wide screen testing have you done in the water distribution system since December 22? This can help you hunt down that the contaminants are present or gone.

3. Escalation should be based on how much flushing you are okay with trying. If you want to remove and replace infrastructure (that has sometimes happened after other contamination events on the mainland and overseas), it's a viable but laborious option. As an extreme example, following the Camp Fire it was estimated it would take over a year of continuous flushing to return some contaminanted pipes to safe use, so for some conditions they removed and replaced pipes. However, this flushing timeline will vary significantly depending on the water distribution systems and water testing results – AND chemicals or individual JP-5 constituents present. If I knew what the chemicals were still being found and what was done to try to get rid of them, I could give a more informed opinion. Food grade surfactants were used in Israel after a drinking water contamination incident…BUT using surfactants is not trivial and can cause all sorts of damage to water system components and leave residual. This probably isn't an email, but more discussion. Happy to talk. If you decide you want to go this way we should be more engaged technically in what this means. It's not likely an email response/effort, but more involved.

4. Here's a paper where we reviewed petroleum (and other material) drinking water distribution and plumbing contamination incidents and flushing Decontaminating chemically contaminated residential premise plumbing systems by flushing - Environmental Science: Water Research & Technology (RSC Publishing) DOI:10.1039/C5EW00118H. Unfortunately, when we went to

review the underlying evidence of each incident, often the utility and state didn't document much. Even incidents overseas had little documentation. It seems groups simply tried something, it did or didn't work, and they moved on. They also didn't sample much and rarely it an entire water distribution system that was affected.

Again, I can get on a zoom call or phone this afternoon MST to connect. I was called into the Colorado wildfires to help the communities identify and design water sampling and recovery plans. We're getting data every day and meeting with state and federal agencies. This is the Marshall Fire and Middle Fork Fire. I apologize for the delayed response.

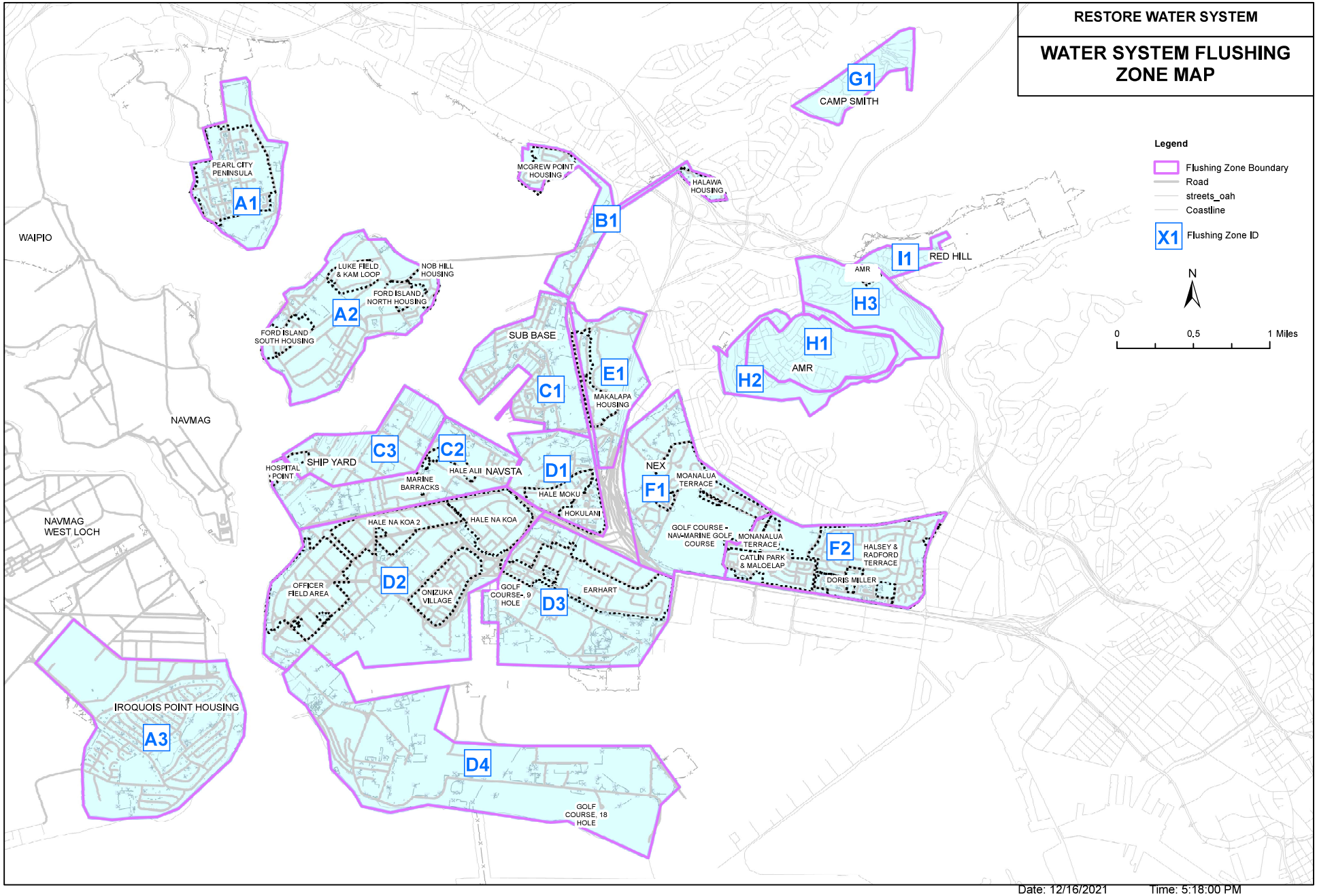
Andy

Cell/text: [redacted]

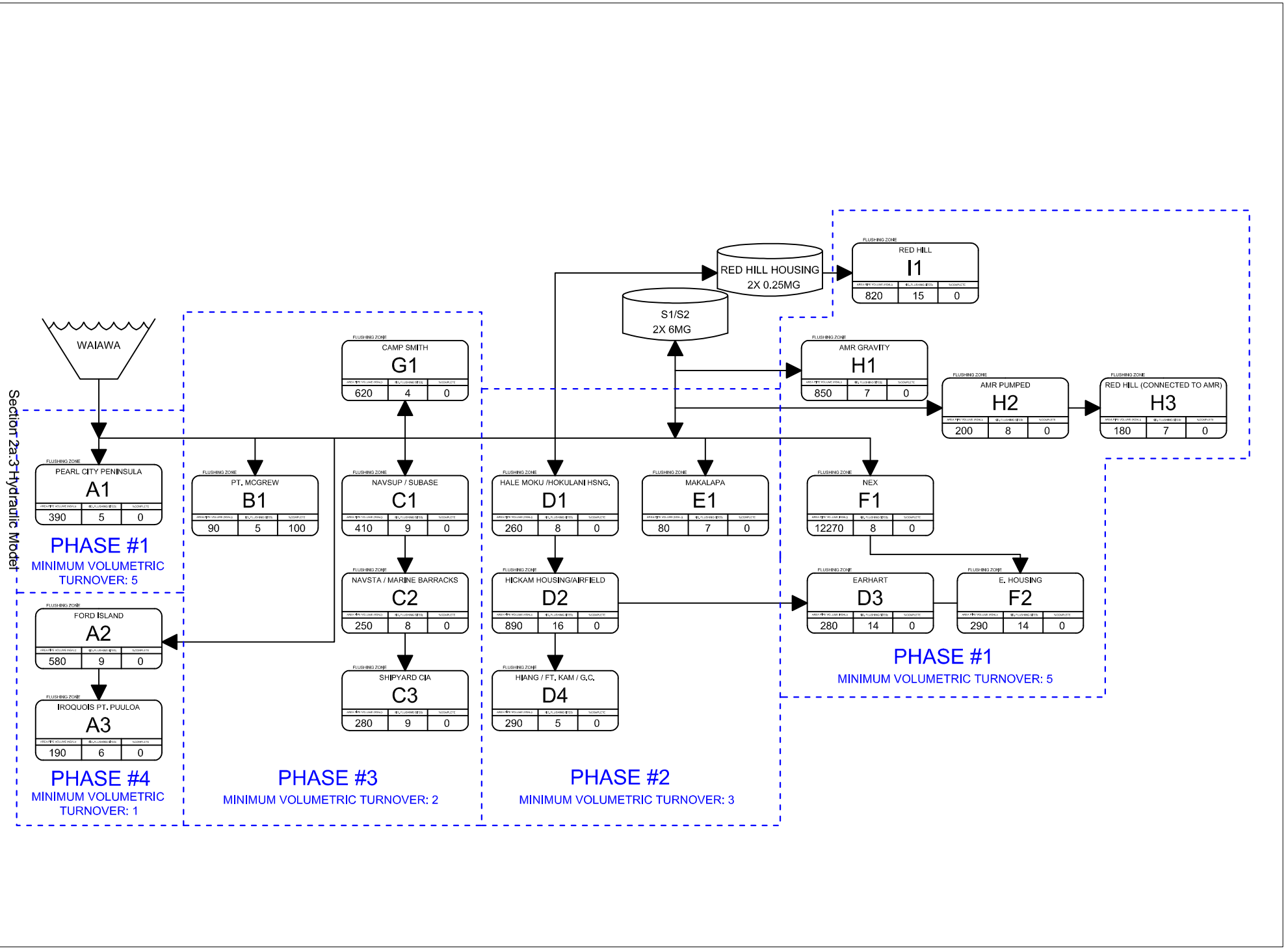
**Link to Dr.Whelton's Paper: https://pubs.rsc.org/en/content/articlelanding/2015/ew/c5ew00118h

RESTORE WATER SYSTEM

WATER SYSTEM FLUSHING ZONE MAP



Date: 12/16/2021 Time: 5:18:00 PM

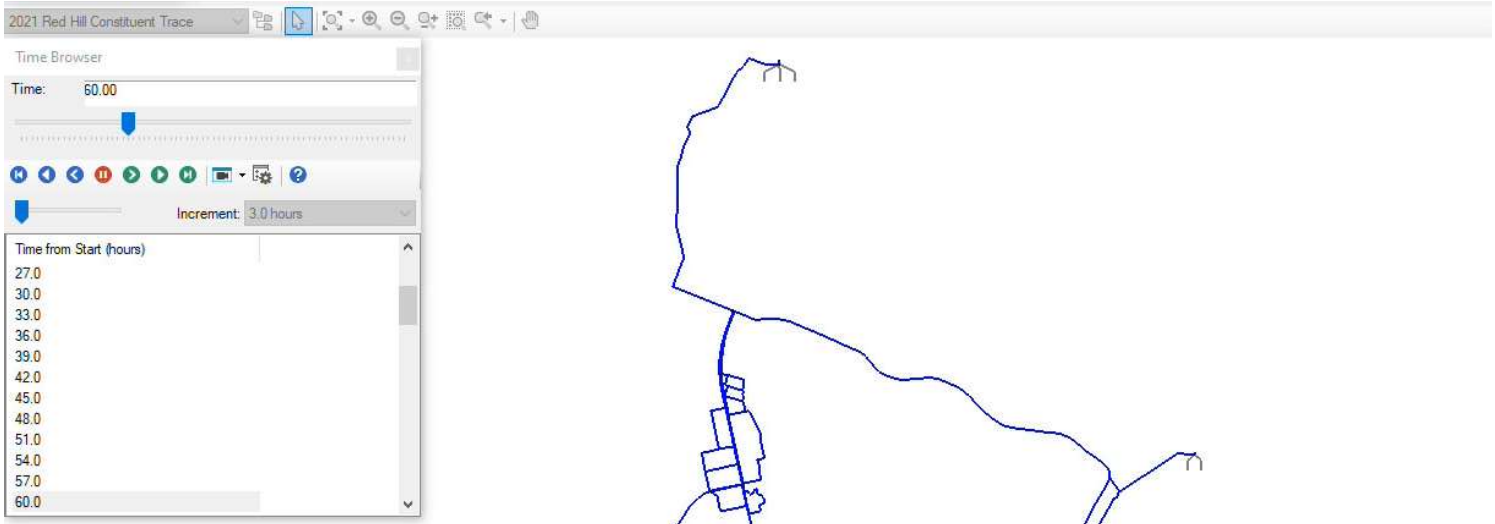

Section 2a:3-Hydraulic Model
WAIAWA
RED HILL HOUSING
2X 0.25MG
S1/S2
2X 6MG
FLUSHING ZONE
RED HILL
I1
820
15
0
FLUSHING ZONE
CAMP SMITH
G1
620
4
0
FLUSHING ZONE
AMR GRAVITY
H1
850
7
0
FLUSHING ZONE
AMR PUMPED
H2
200
8
0
FLUSHING ZONE
RED HILL (CONNECTED TO AMR)
H3
180
7
0
FLUSHING ZONE
PEARL CITY PENINSULA
A1
390
5
0
FLUSHING ZONE
PT. MCGREW
B1
90
5
100
FLUSHING ZONE
NAVSUP / SUBASE
C1
410
9
0
FLUSHING ZONE
HALE MOKU /HOKULANI HSNG.
D1
260
8
0
FLUSHING ZONE
MAKALAPA
E1
80
7
0
FLUSHING ZONE
NEX
F1
12270
8
0
PHASE #1
MINIMUM VOLUMETRIC TURNOVER: 5
FLUSHING ZONE
NAVSTA / MARINE BARRACKS
C2
250
8
0
FLUSHING ZONE
HICKAM HOUSING/AIRFIELD
D2
890
16
0
FLUSHING ZONE
EARHART
D3
280
14
0
FLUSHING ZONE
E. HOUSING
F2
290
14
0
PHASE #1
MINIMUM VOLUMETRIC TURNOVER: 5
FLUSHING ZONE
FORD ISLAND
A2
580
9
0
FLUSHING ZONE
SHIPYARD CIA
C3
280
9
0
FLUSHING ZONE
HIANG / FT. KAM / G.C.
D4
290
5
0
FLUSHING ZONE
IROQUOIS PT. PUULOA
A3
190
6
0
PHASE #4
MINIMUM VOLUMETRIC TURNOVER: 1
PHASE #3
MINIMUM VOLUMETRIC TURNOVER: 2
PHASE #2
MINIMUM VOLUMETRIC TURNOVER: 3

JBPHH Hydraulic Model

Interagency Drinking Water Supply Team

18 January 2022

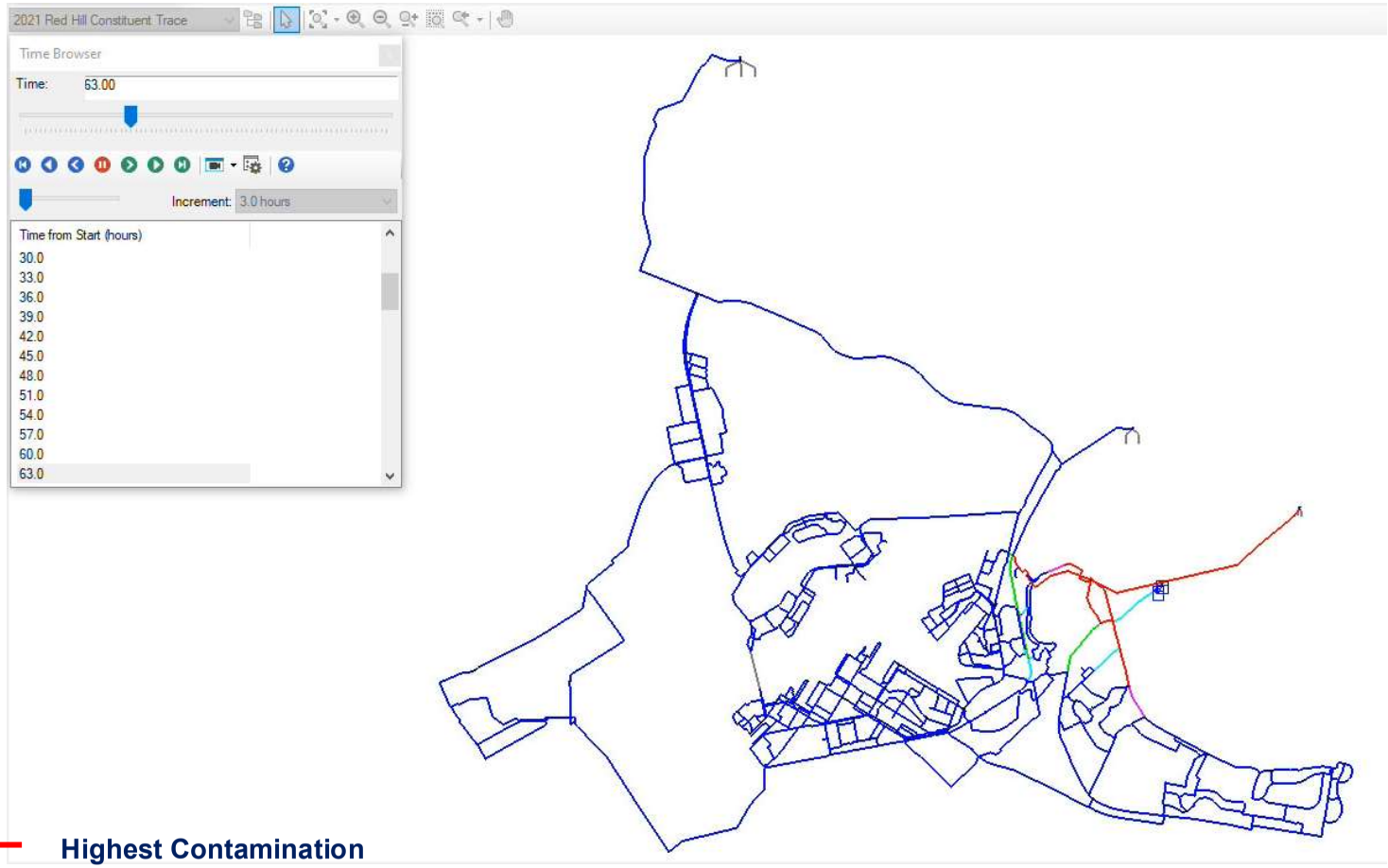
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

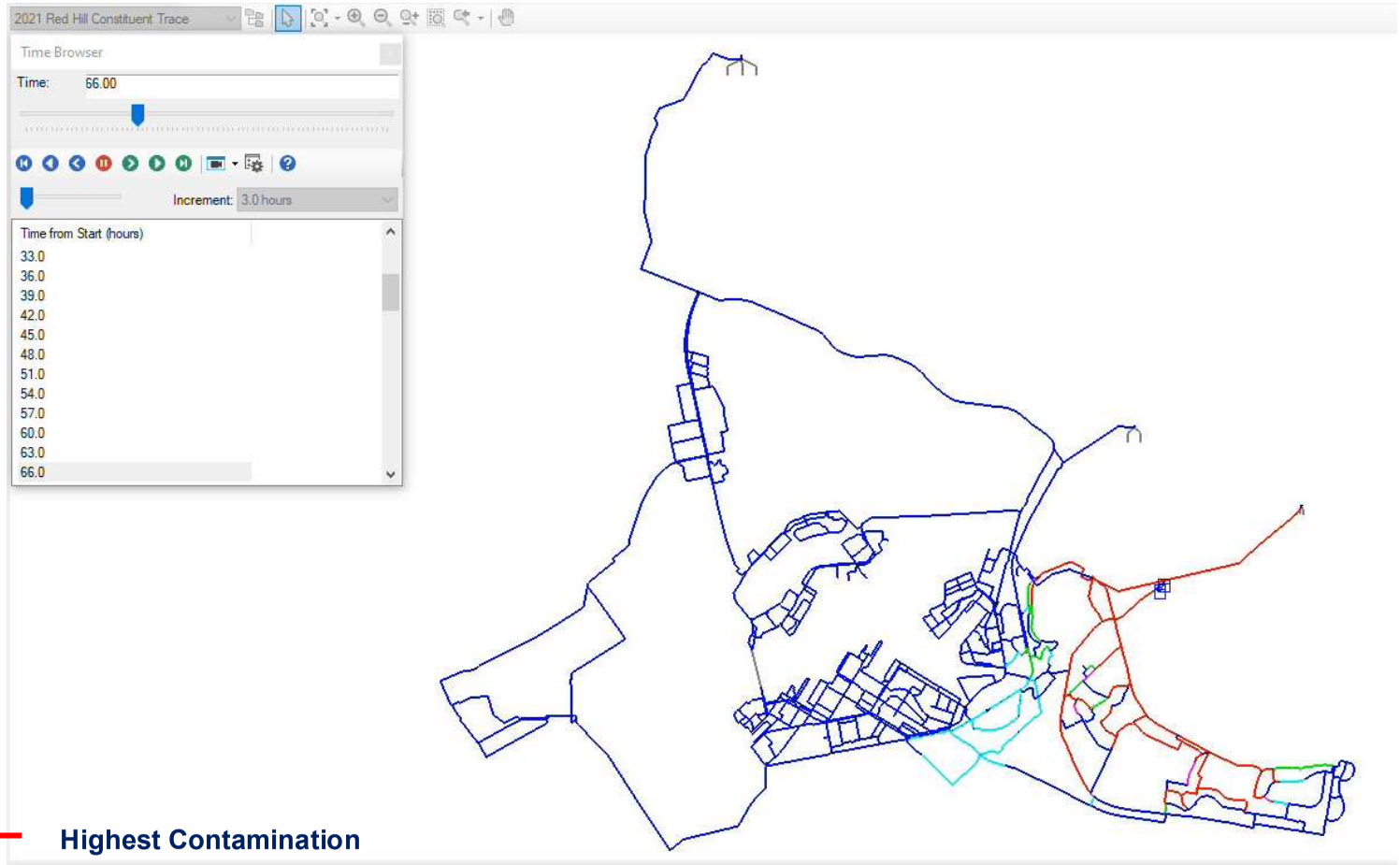
JBPHH Hydraulic Model



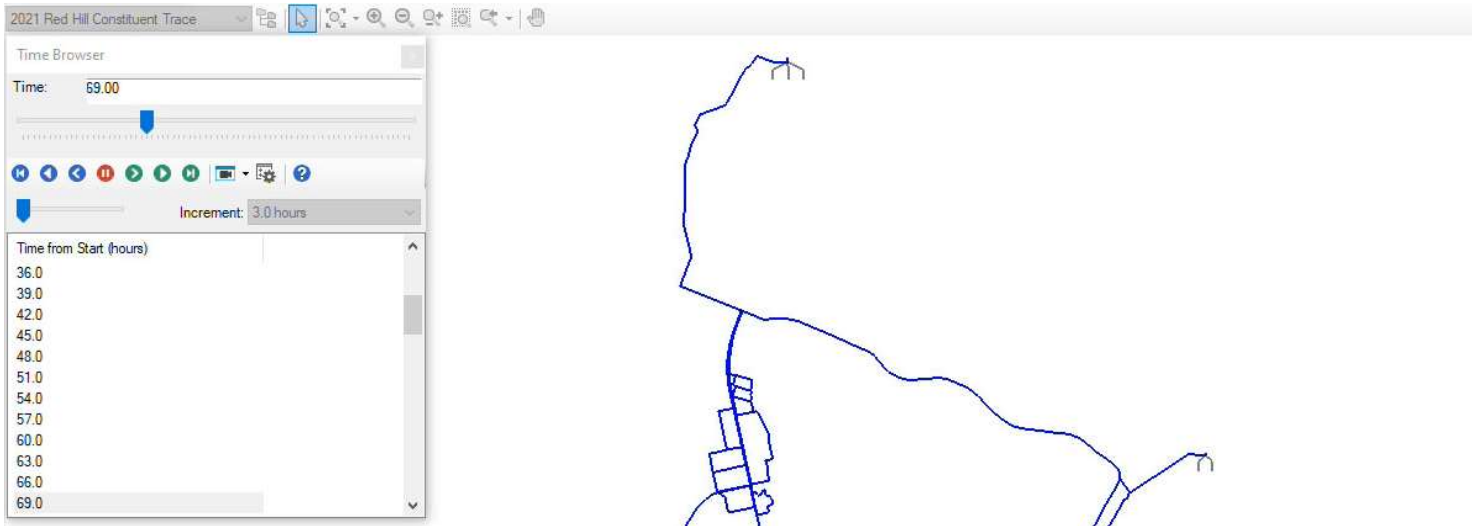
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



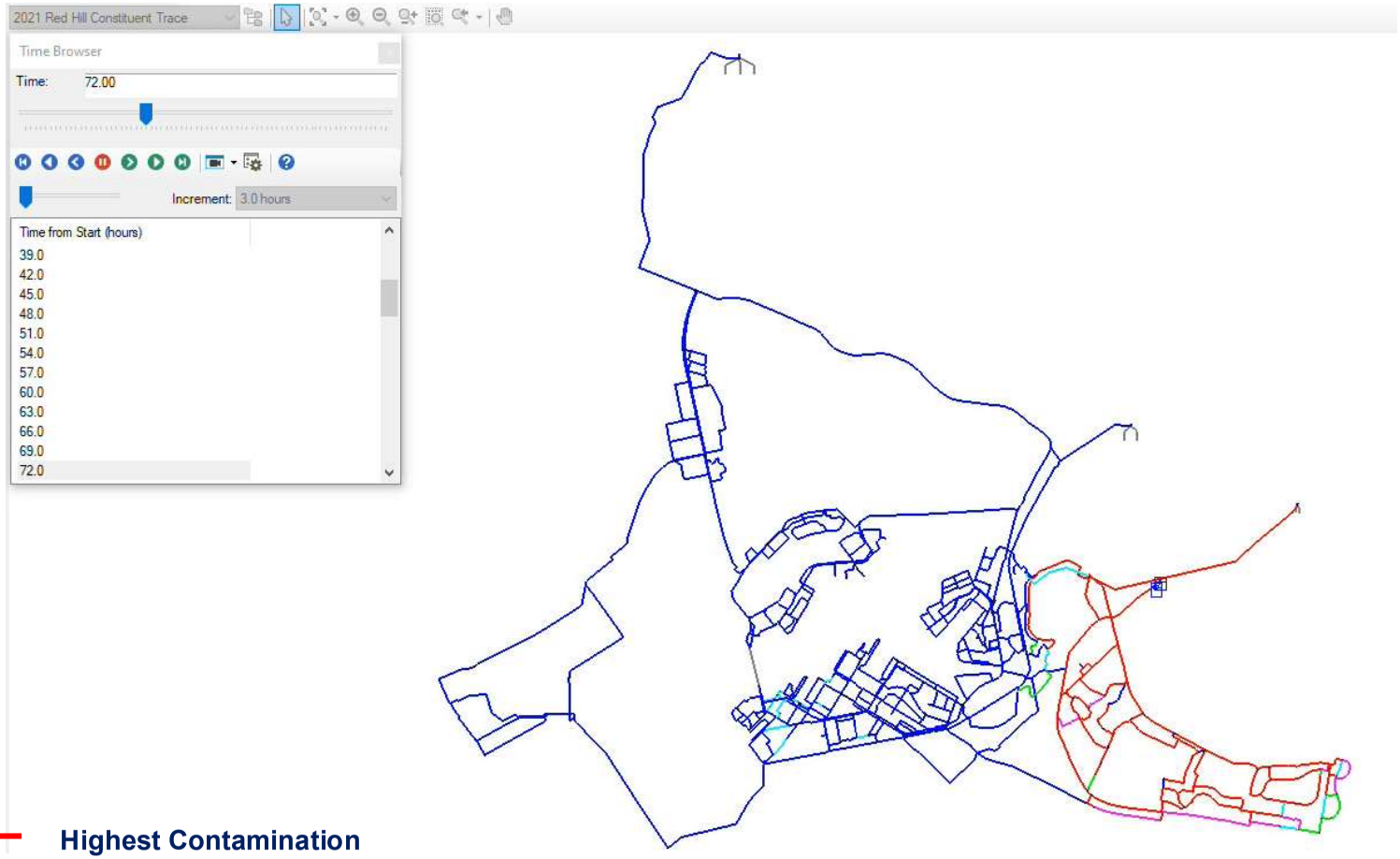
JBPHH Hydraulic Model



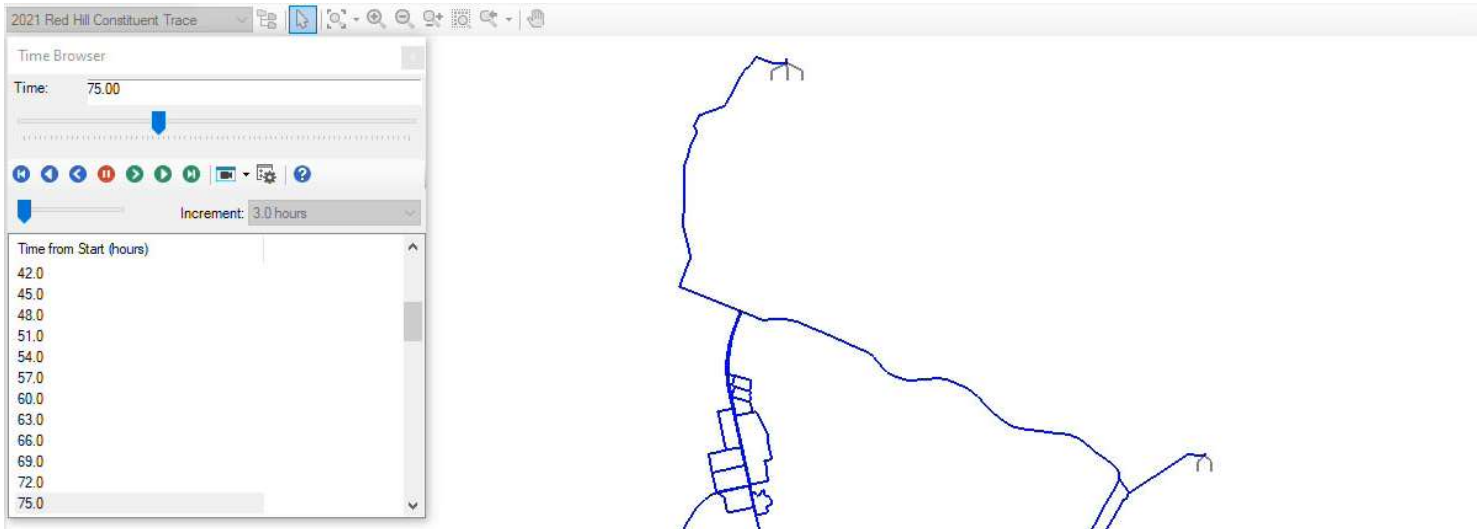
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



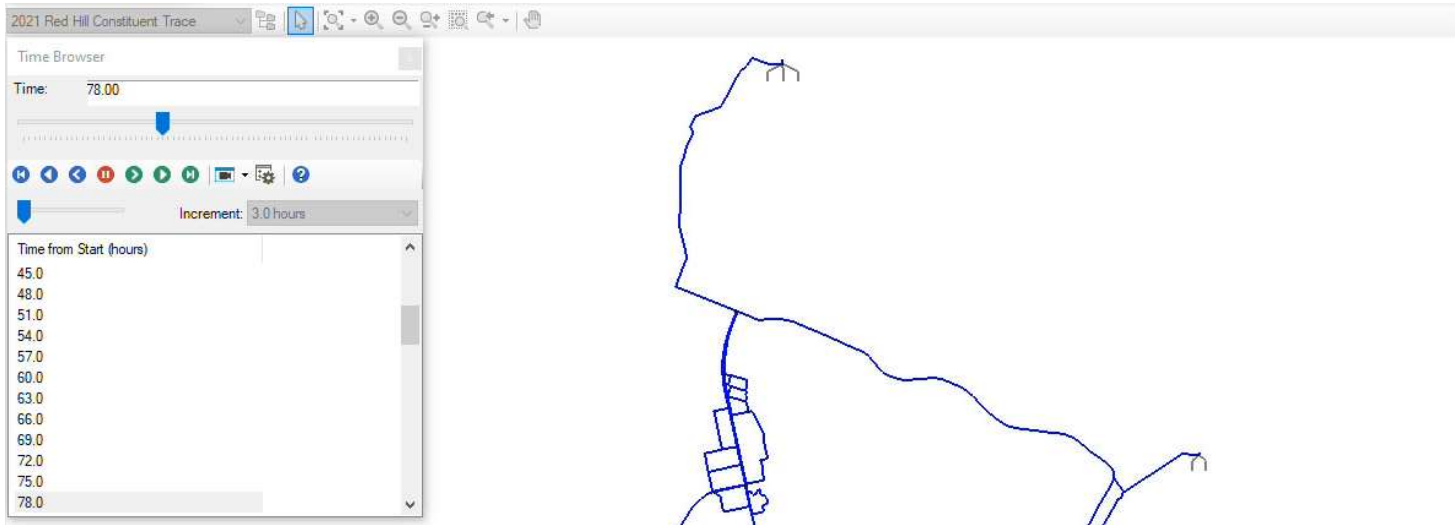
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

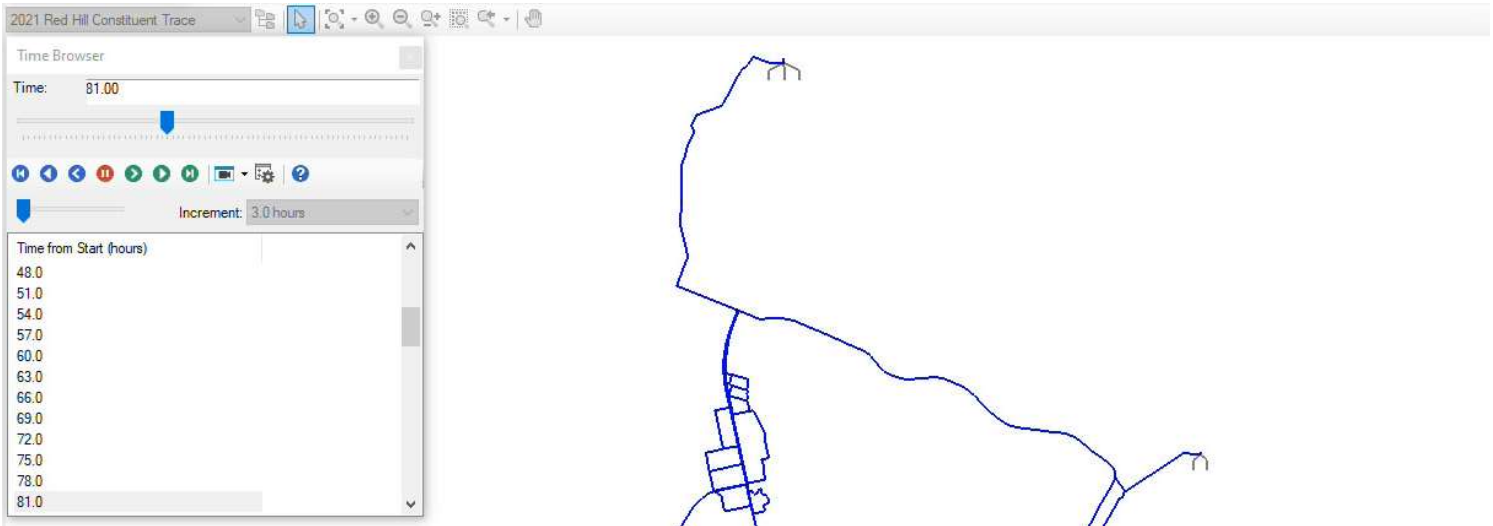
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

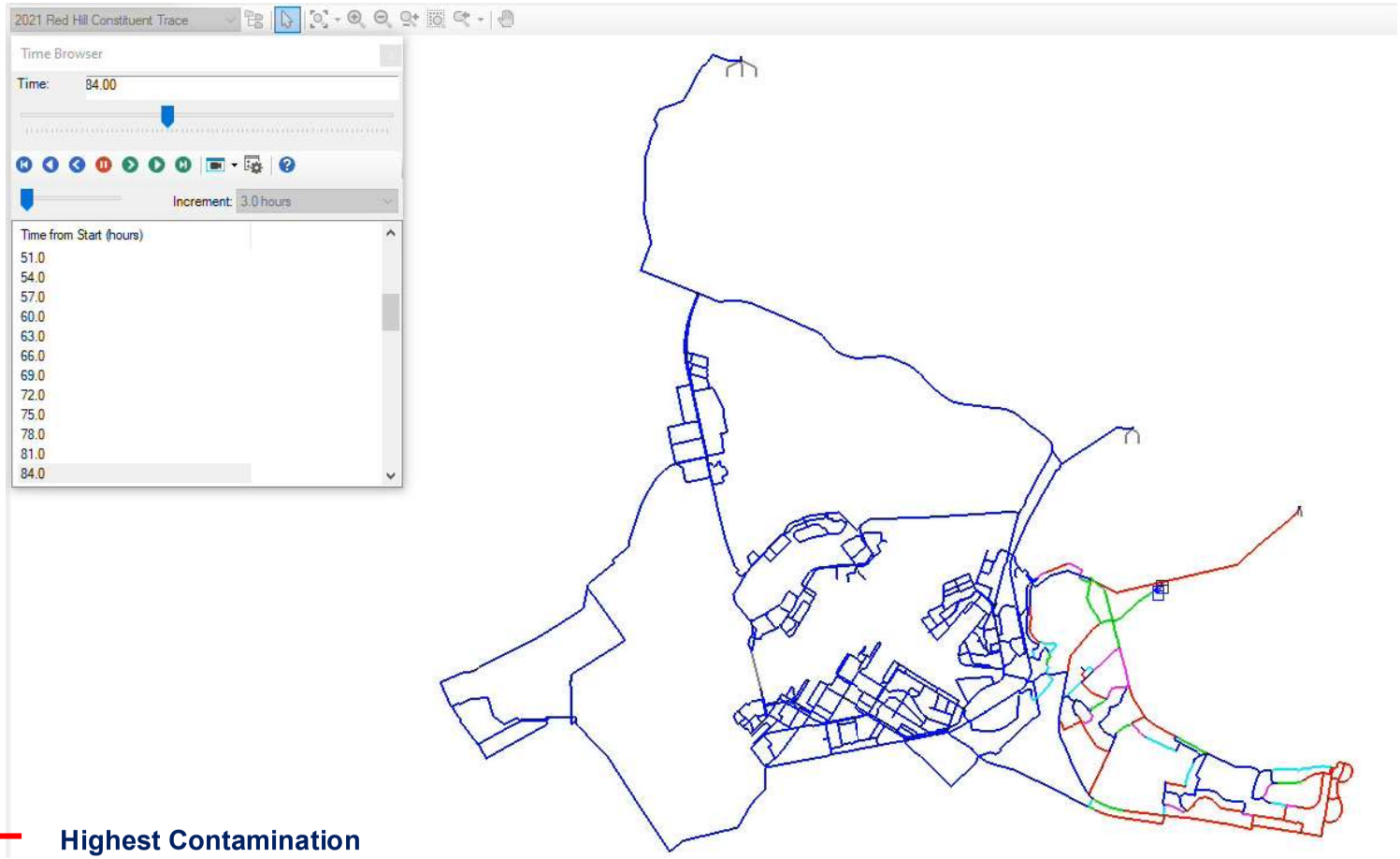
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

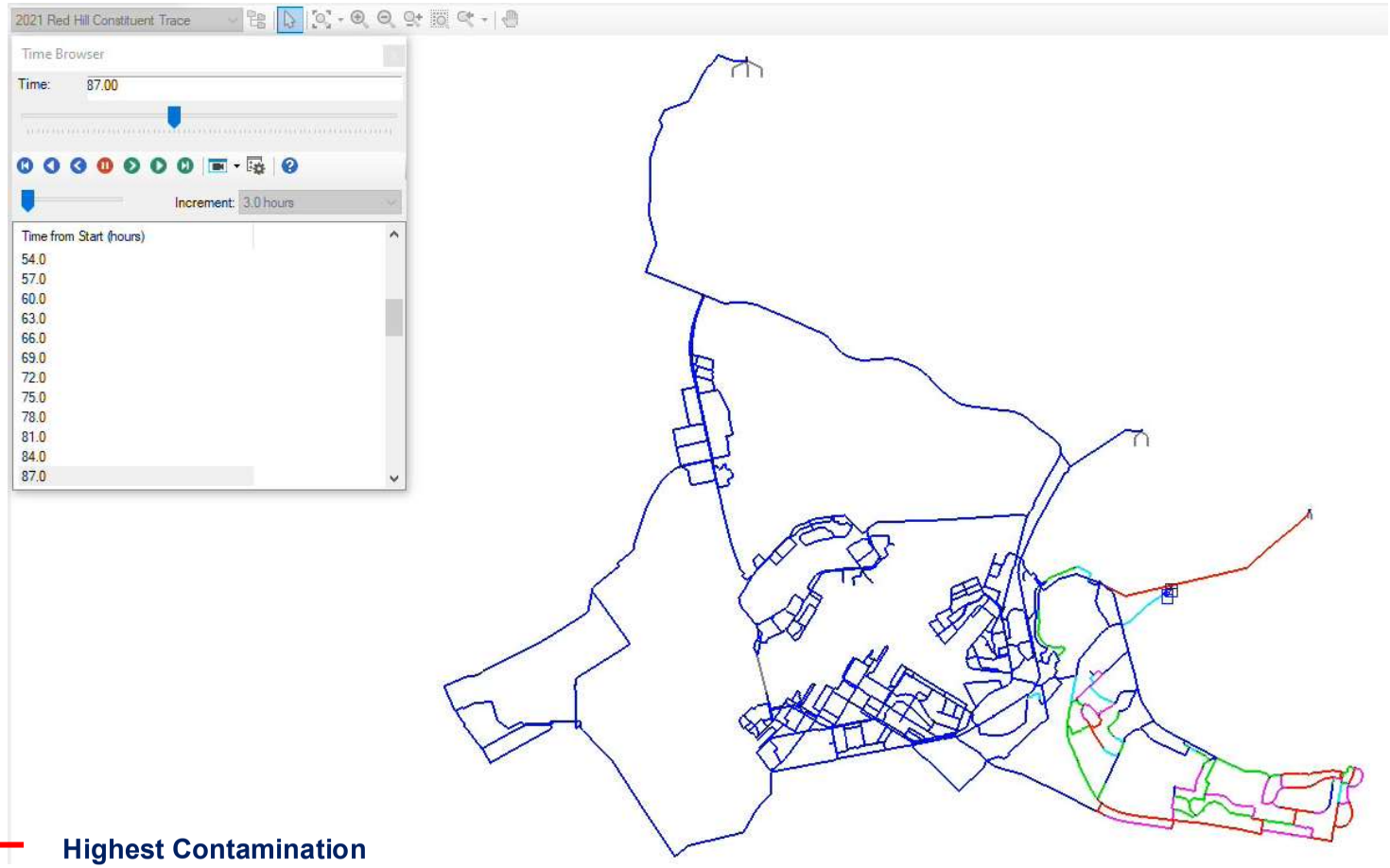
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



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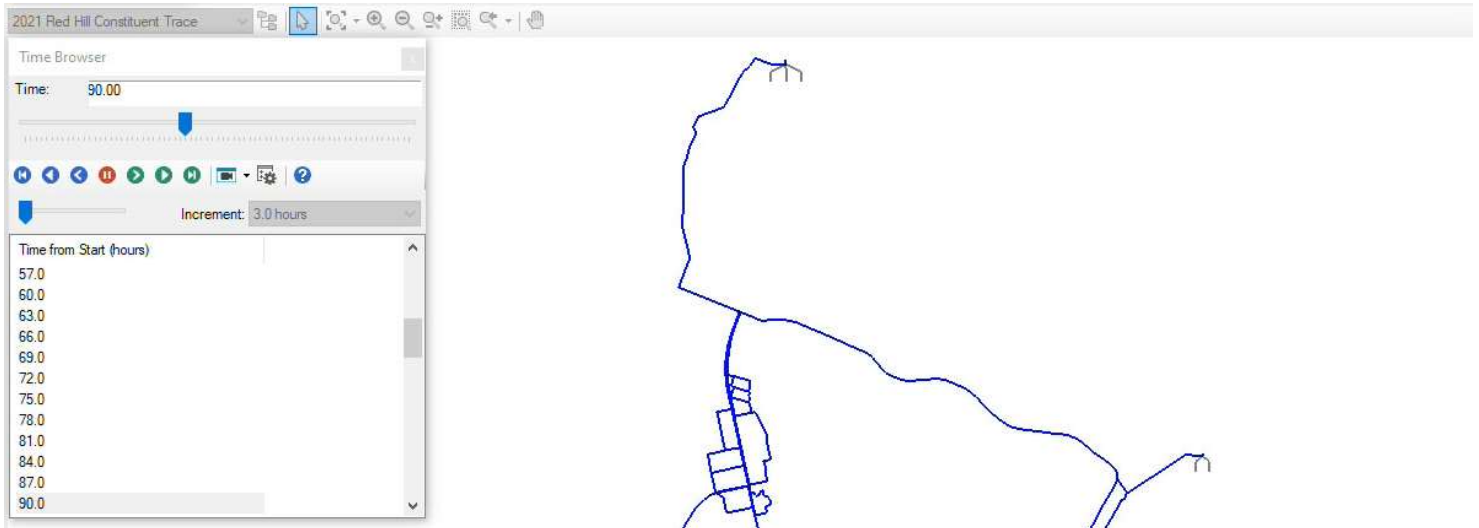
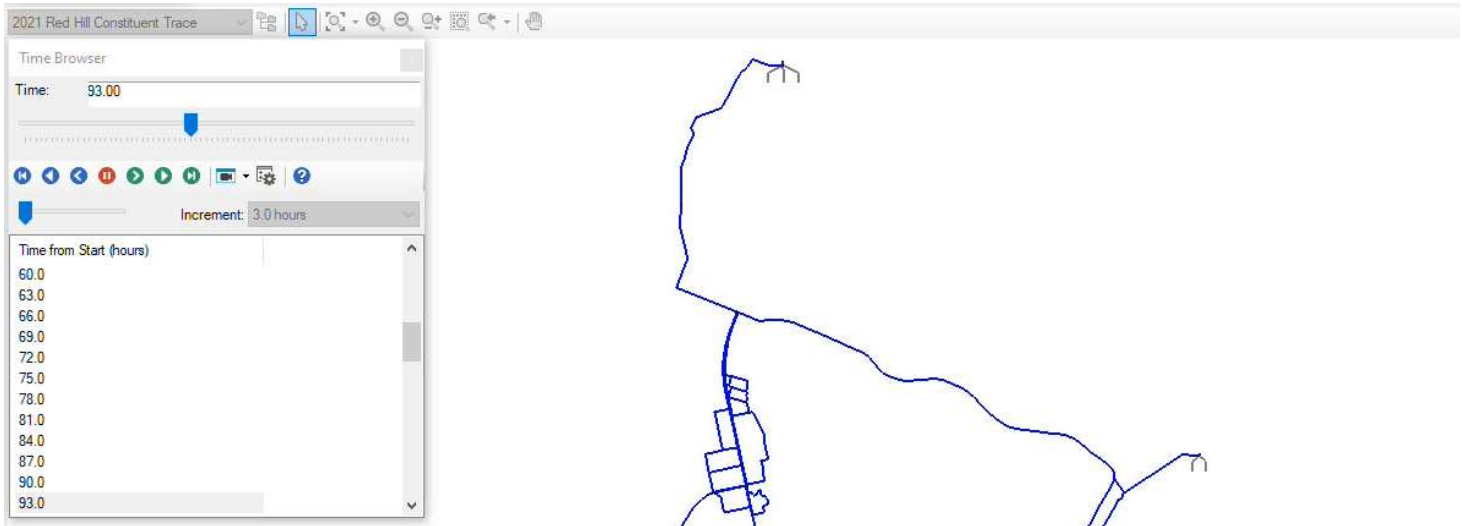


Highest Contamination

Lowest Contamination

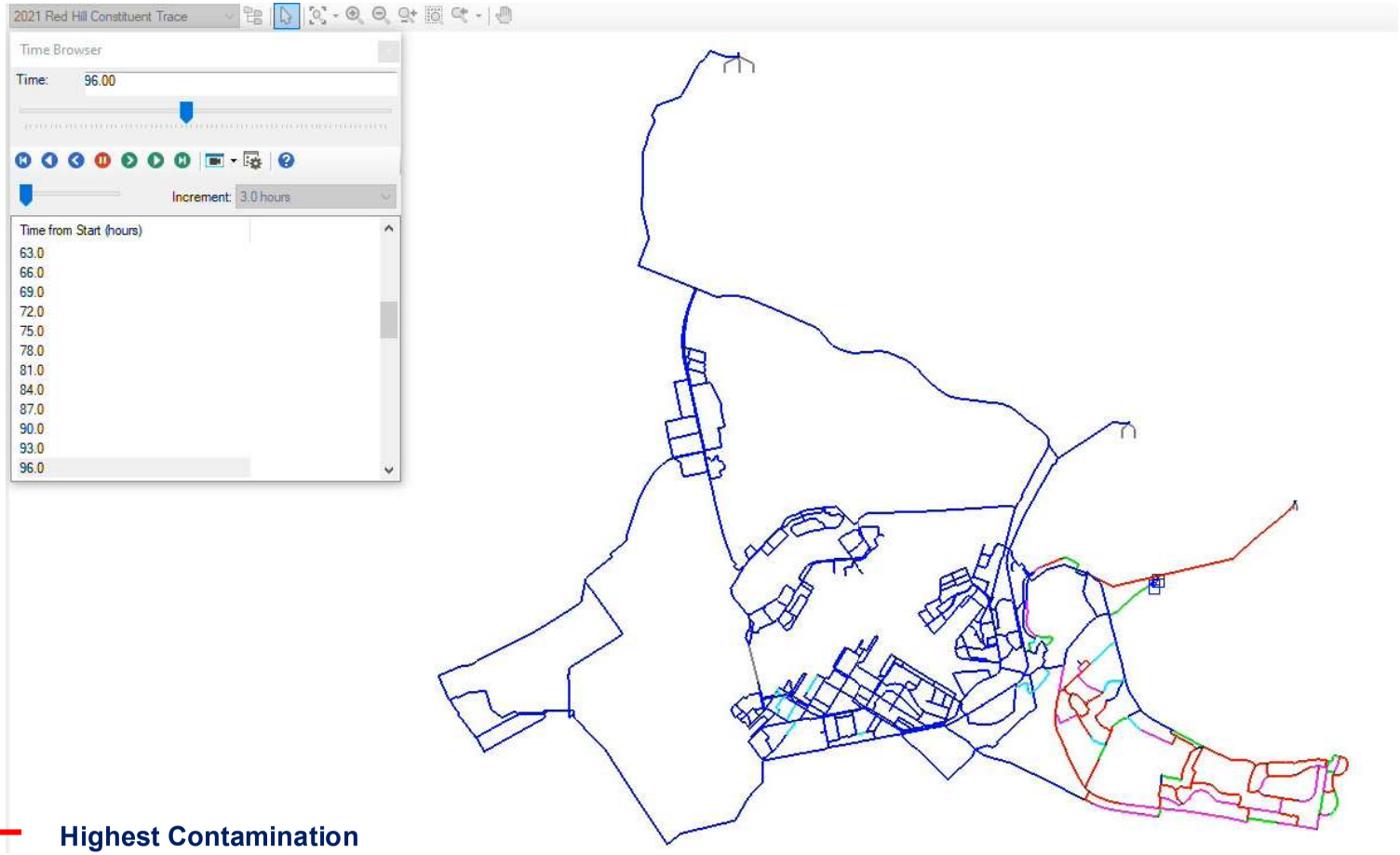
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



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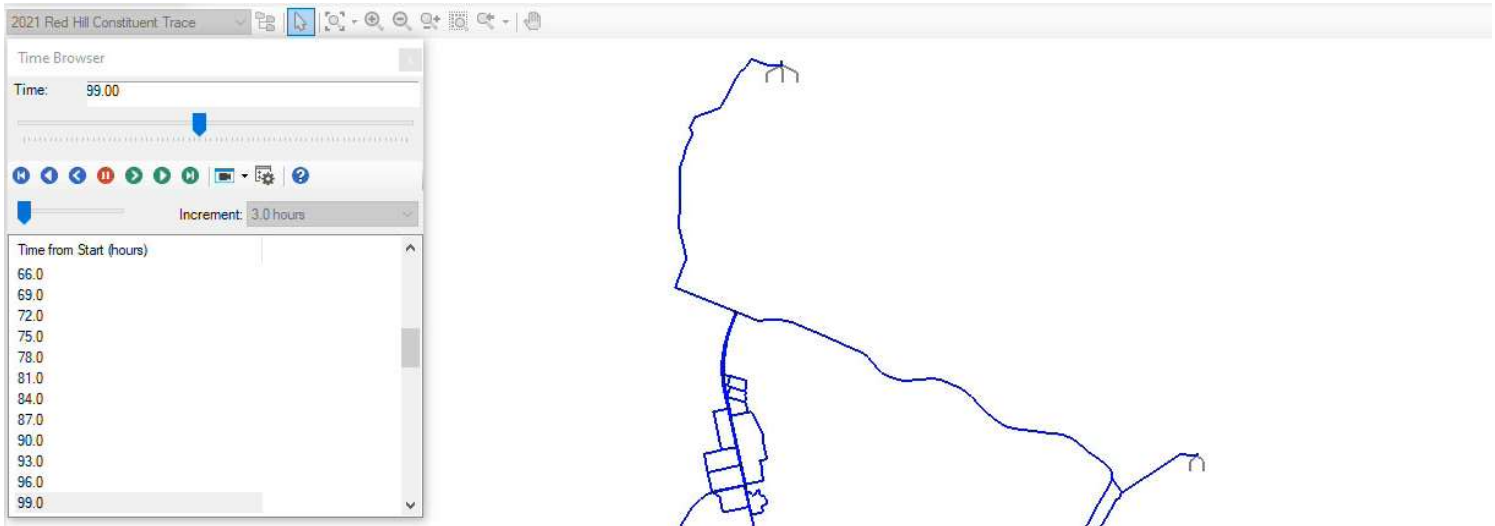
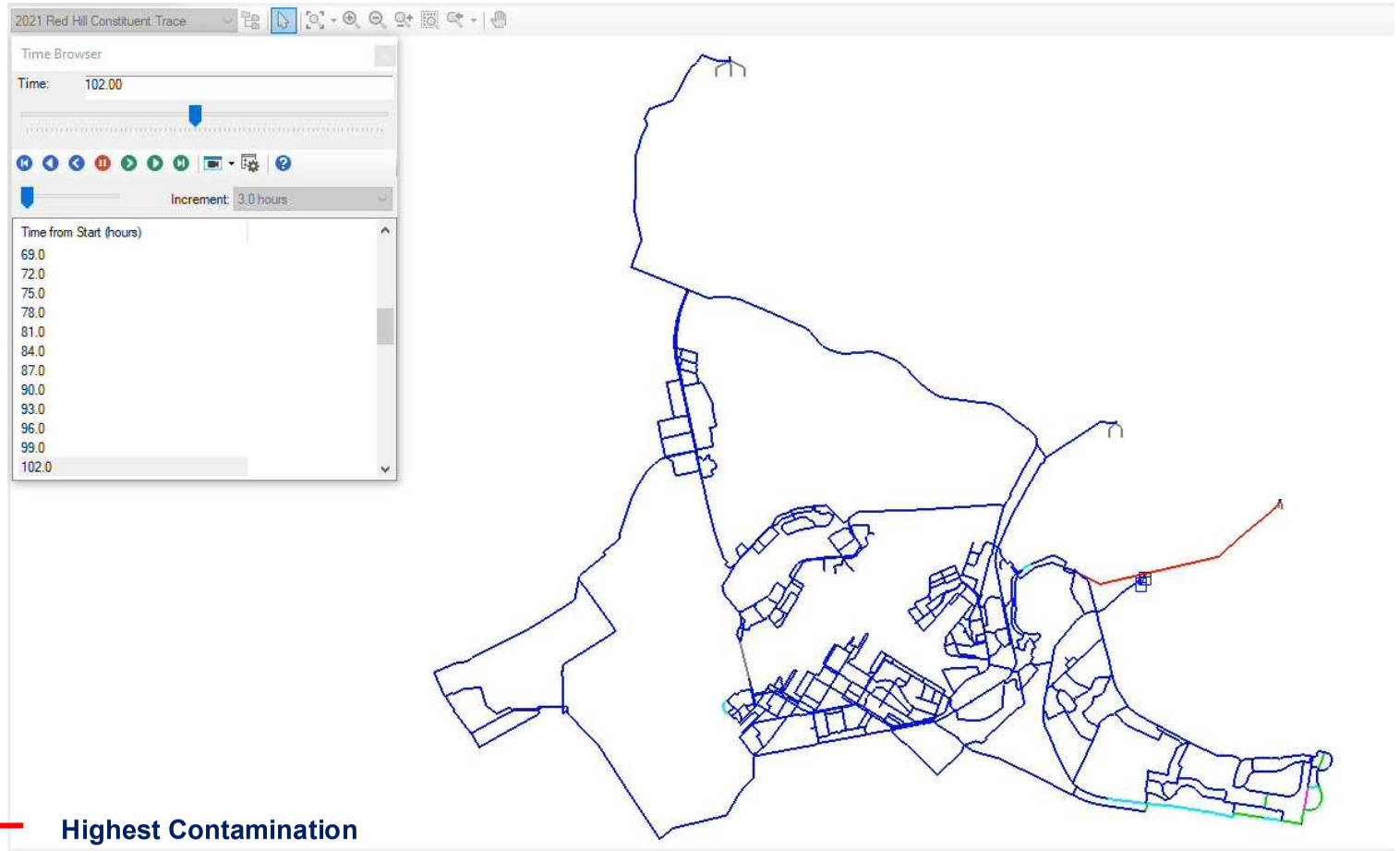


Highest Contamination

Lowest Contamination

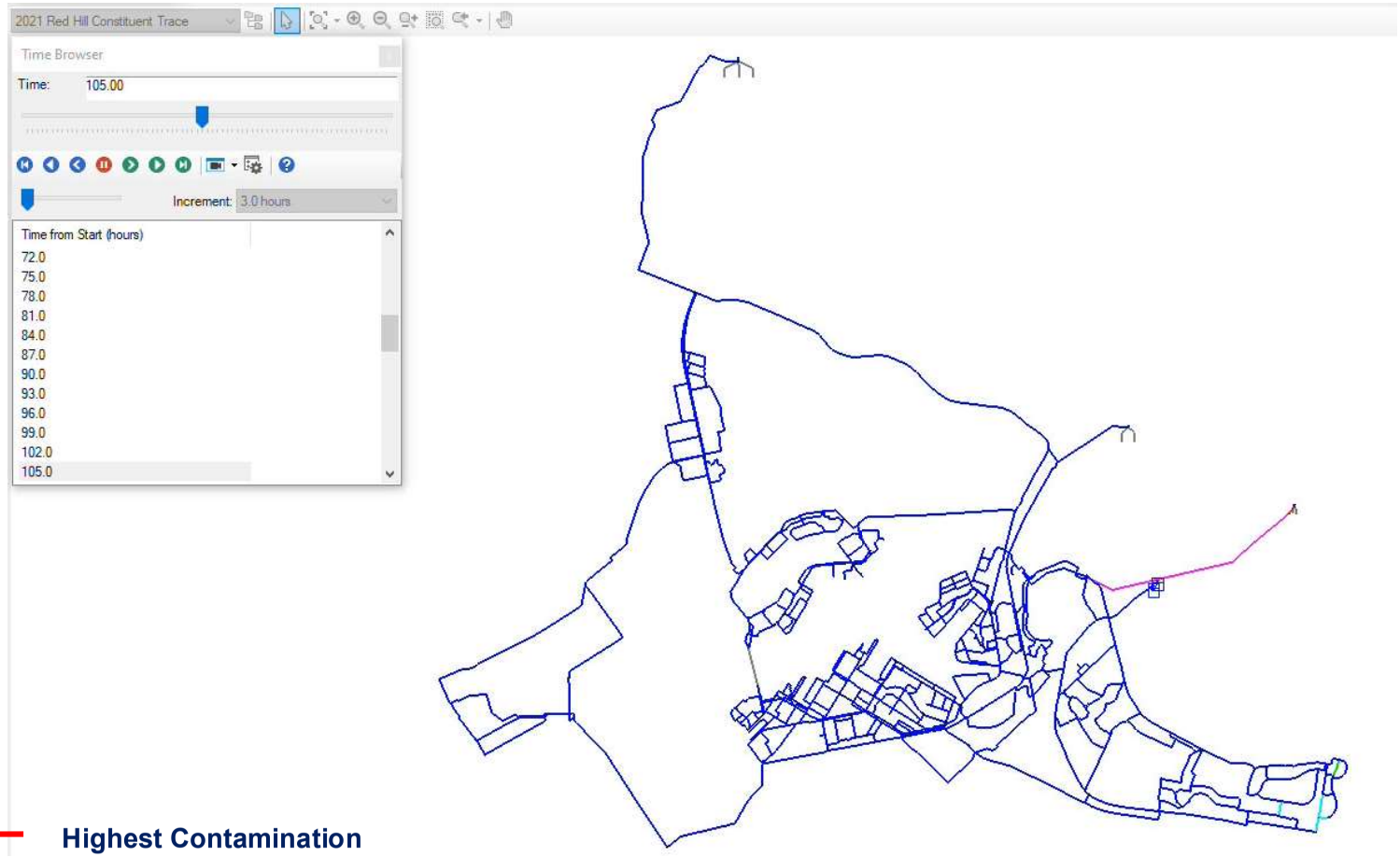
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



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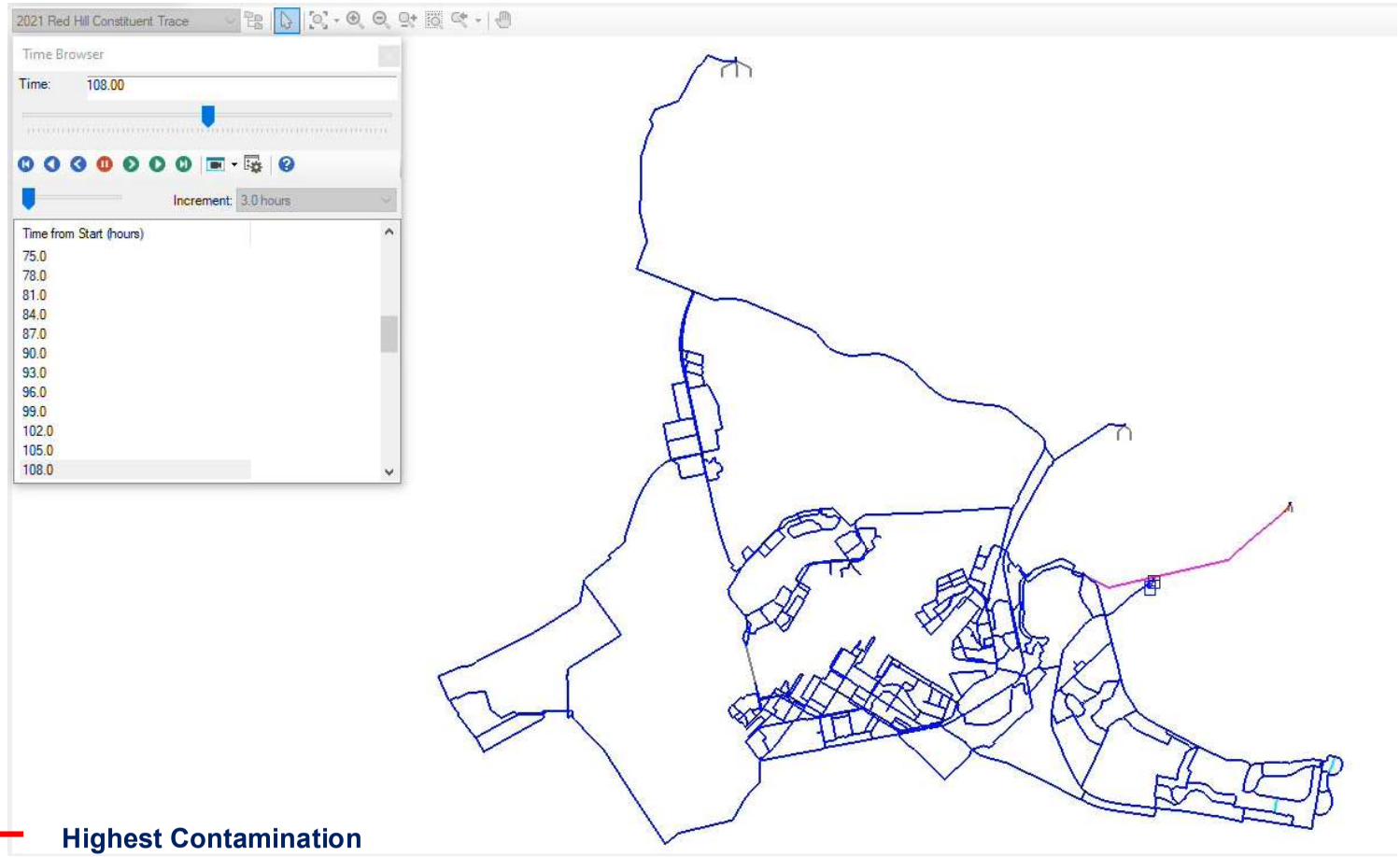
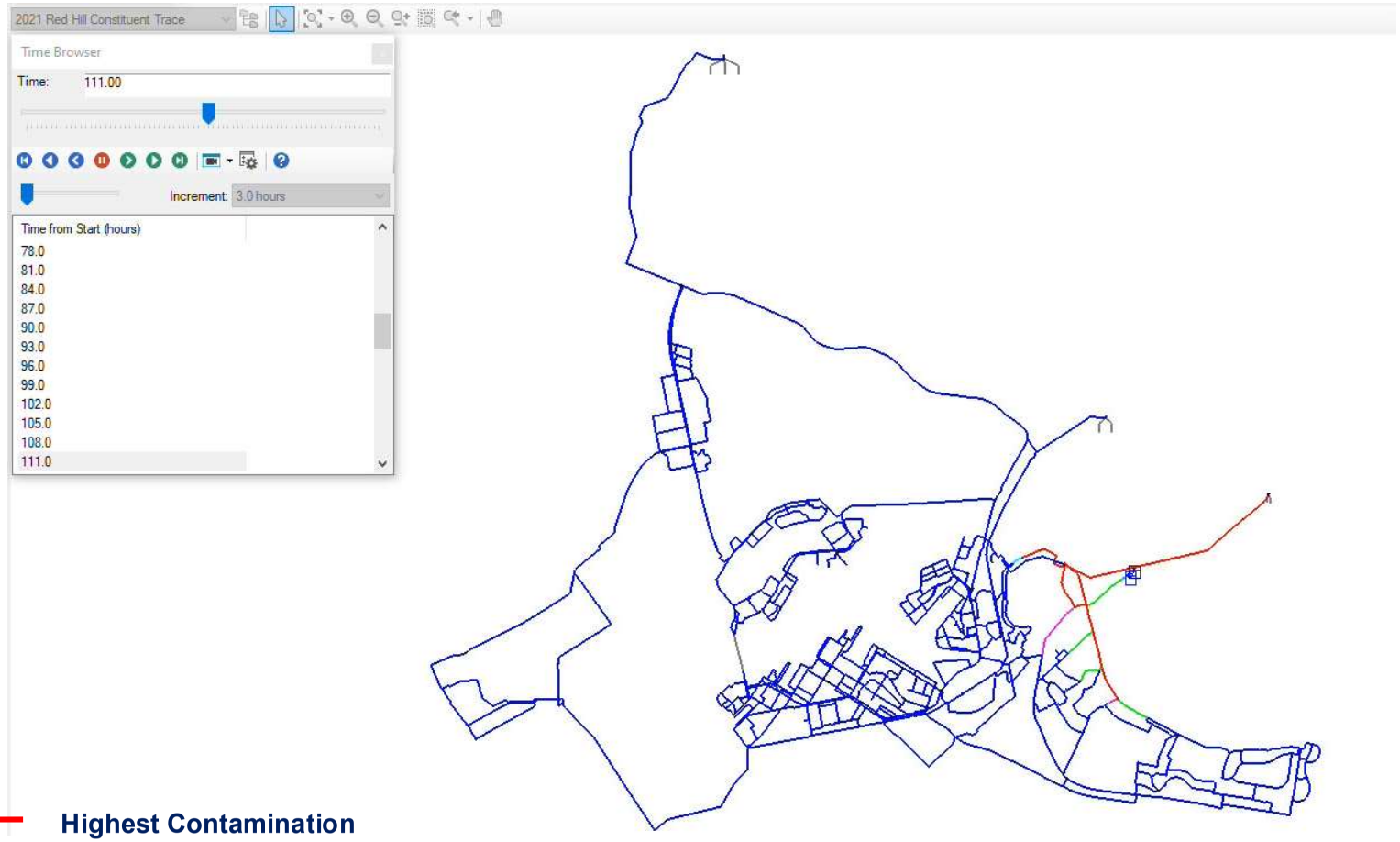


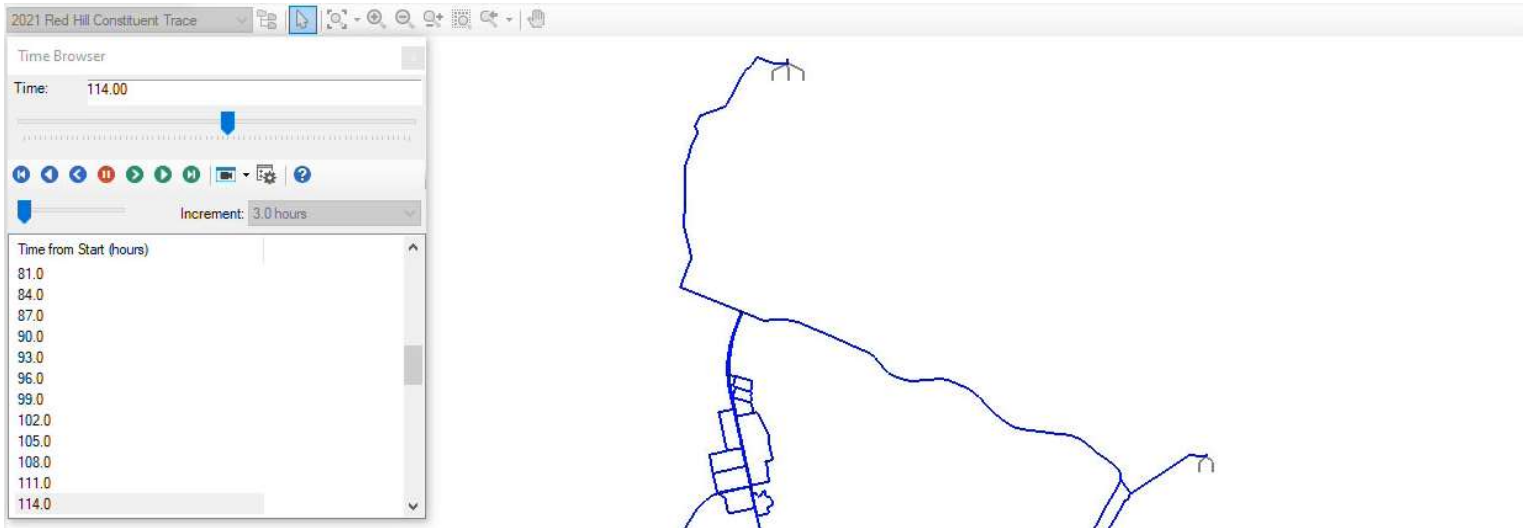
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



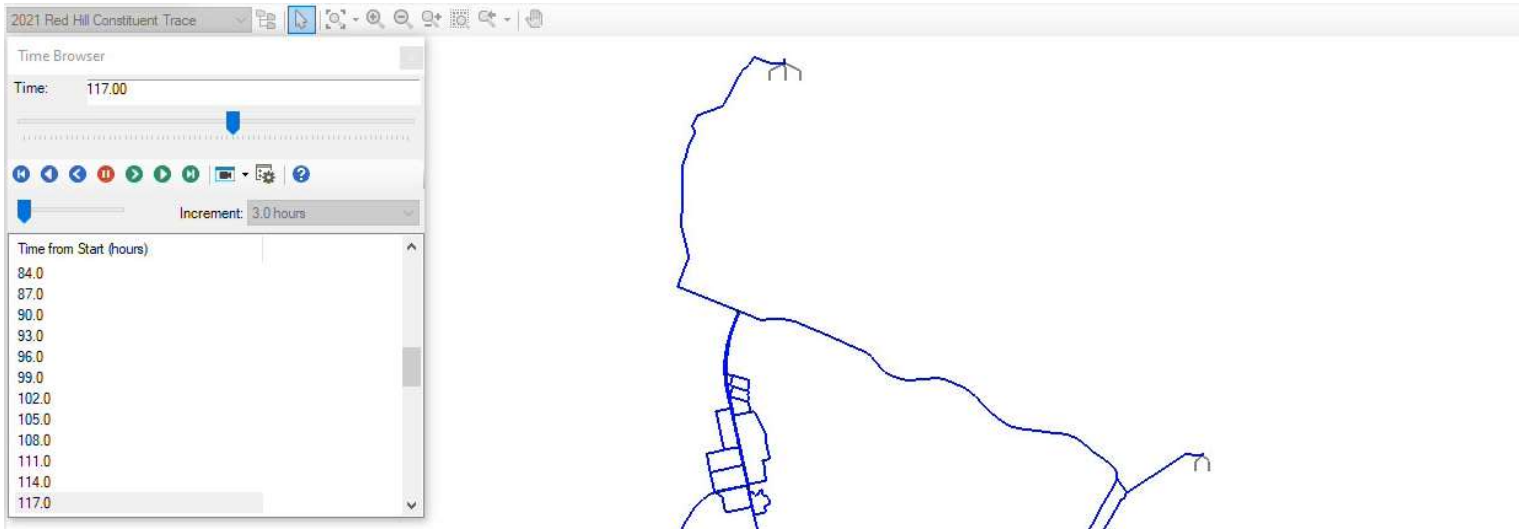
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

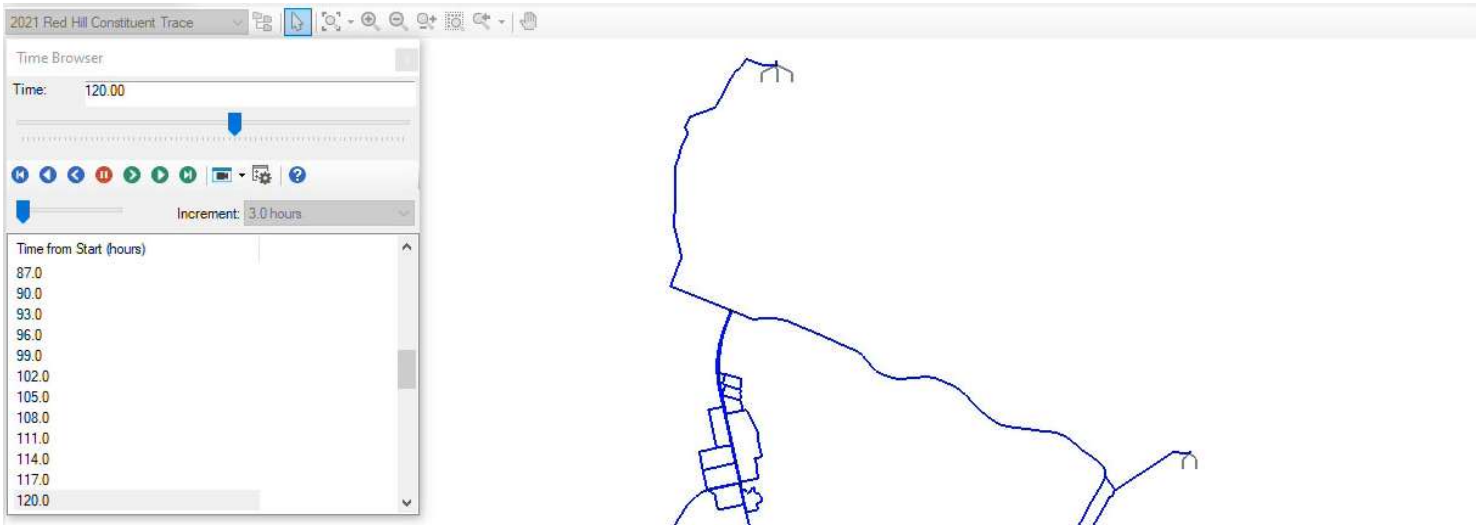
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

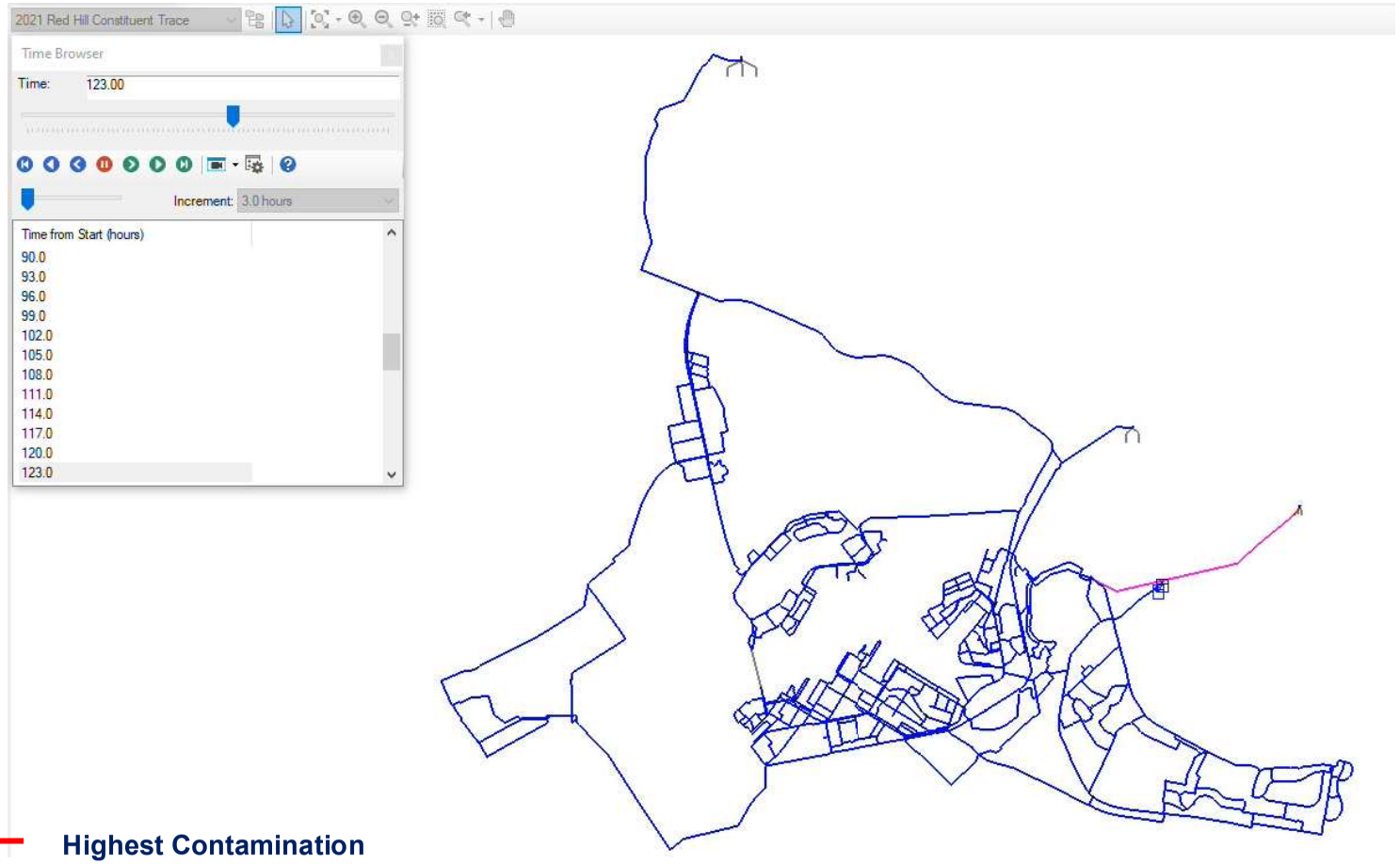
JBPHH Hydraulic Model



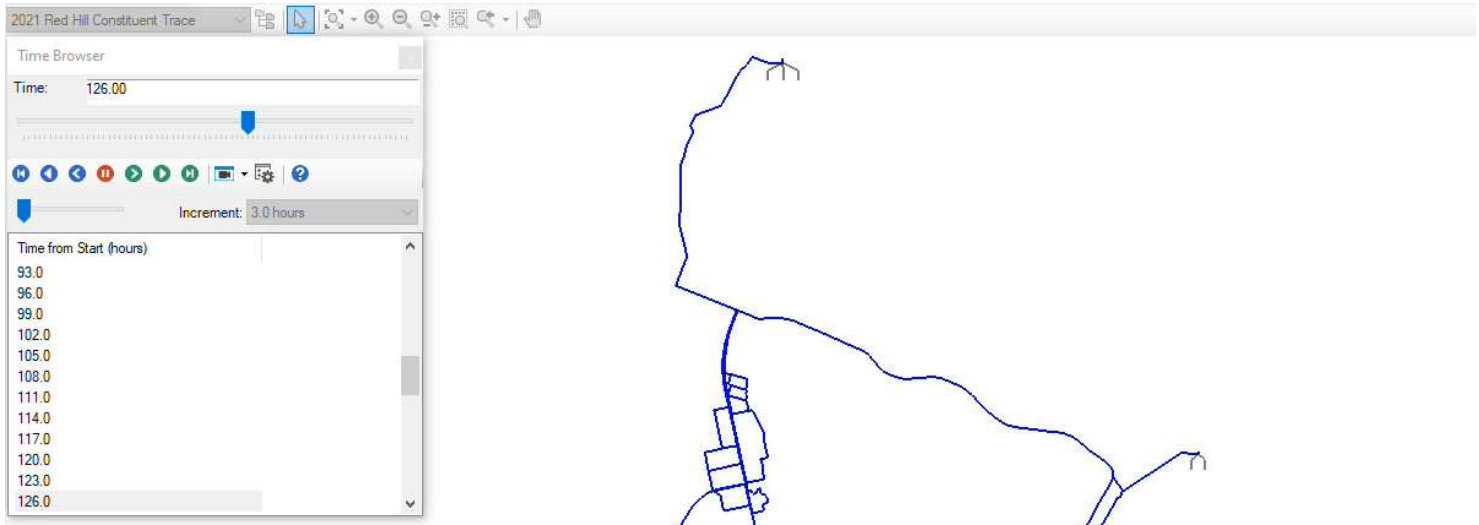
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



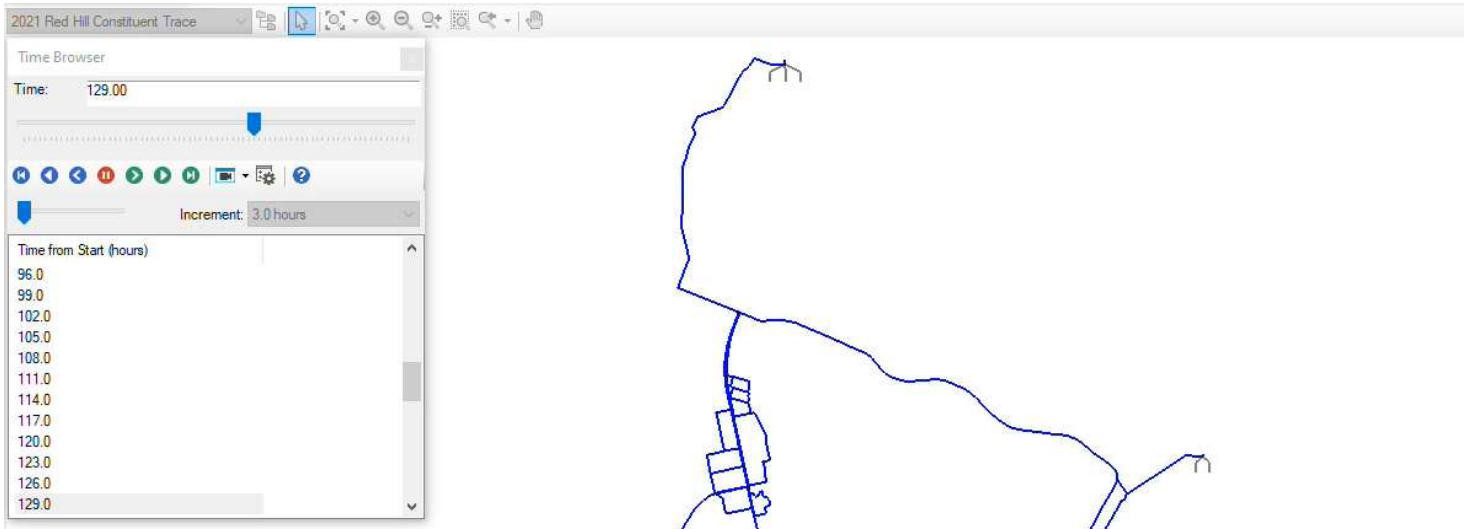
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

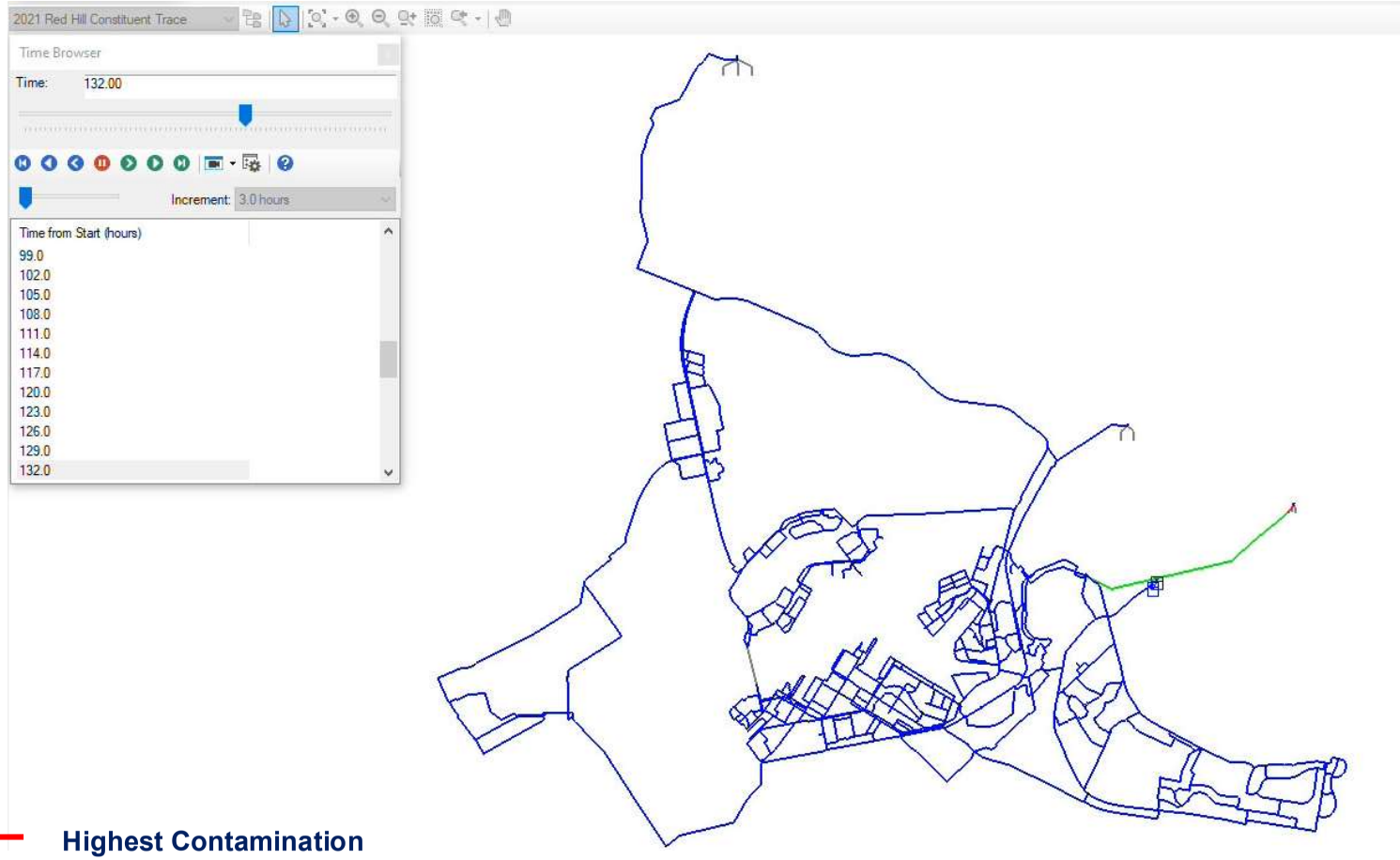
JBPHH Hydraulic Model



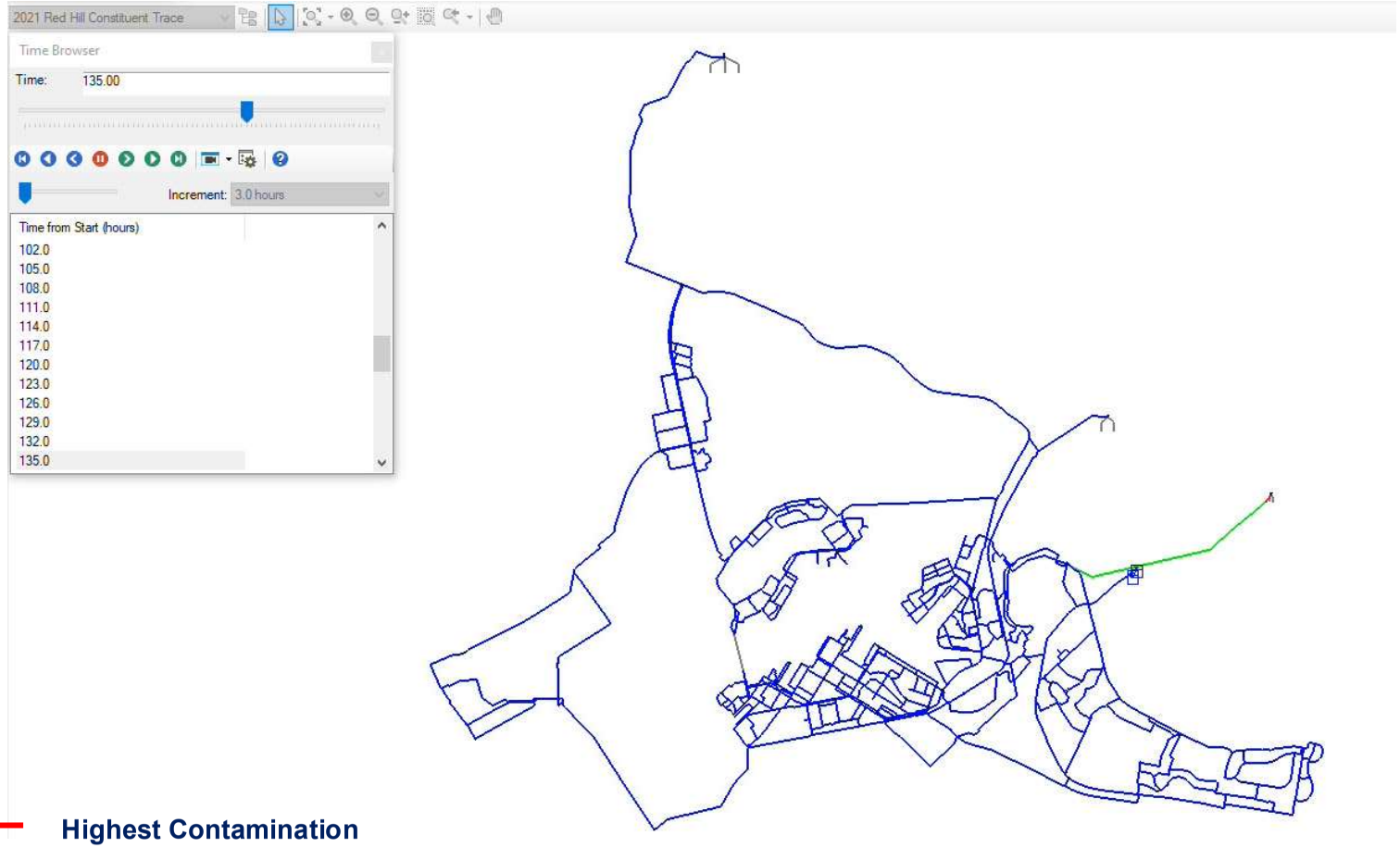
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



JBPHH Hydraulic Model



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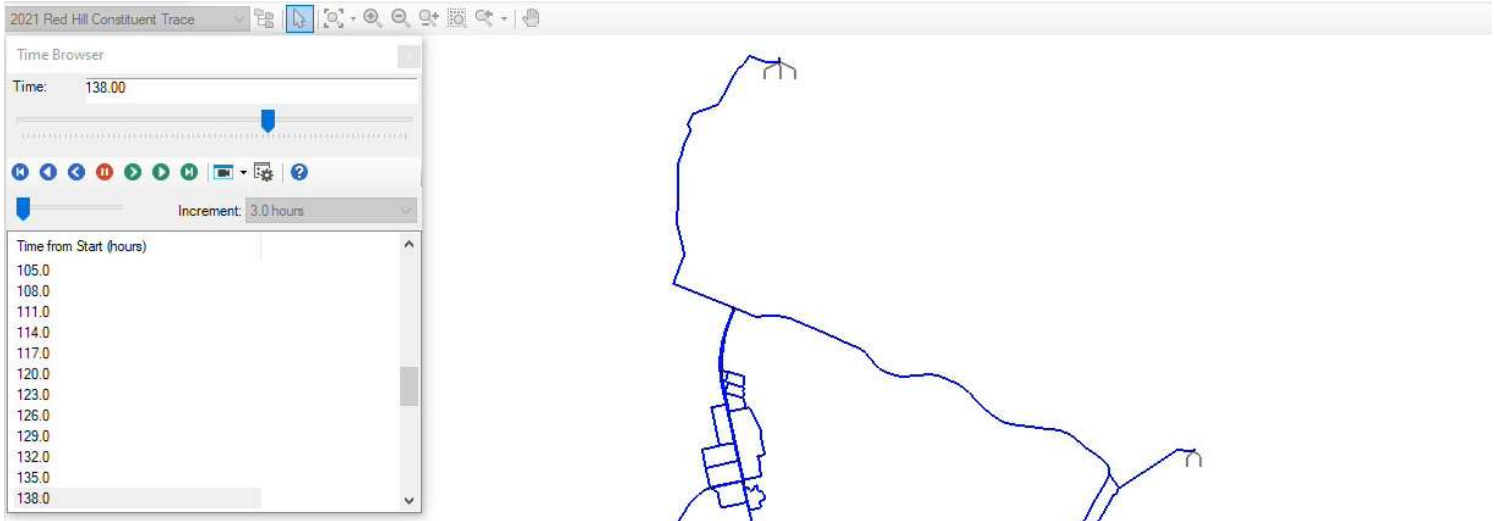

Highest Contamination

Lowest Contamination

1 March 2022

MEMORANDUM

From: Naval Facilities Engineering Systems Command Representative, EWG Team
To: Interagency Drinking Water System Team

Subj: RECORDS OF COMPLETED DISTRIBUTION SYSTEM FLUSHING ZONE C1

Ref: (a) Drinking Water Distribution System Recovery Plan, December 2021

Encl: (1) Distribution System Flushing Records Zone C1

1. The completed records as shown in Enclosure (1), document the flushing of 9 hydrants in Zone C1 in accordance with Reference (a).

2. Field logs documenting the completion of the distribution flushing are summarized below demonstrate fulfillment of the criterion established in Reference (a):

Hydrant Location ID	Discharge Location Type	Flushed Volume (gallons)
405	Land Application	291,900
410	Storm Drain	273,900
442	Storm Drain	305,400
465	Land Application	316,800
503	Storm Drain	230,100
512	Sanitary Sewer (Navy)	101,300
535	Storm Drain	259,500
542	Storm Drain	234,900
548	Storm Drain	277,005
	Total:	2,290,805 gallons

3. Zone C1 was required to flush 820,000 gallons per Reference (a), para 2.5.3.1, which was exceeded.

Very respectfully,

LCDR, CEC, USN

DALY.JOHN.FRANCIS.III.1365462468
2022.03.01 10:43:13 -10'00'

J. F. DALY III
LCDR, CEC, USN

TABLE OF CONTENTS

Section A Utilitiesmen Flushing Log Roll-up

Section 2a.4 Records of Completed Volumetric Exchanges

405	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
2-Jan	8:00	20:00	15:12		4:48	20220102 0800-2000	Y
2-Jan	20:00	8:00		23:50	3:50	20220102 2000-0800	N/A
2-Jan	20:00	8:00	1:35		6:25	20220102 2000-0800	N/A
3-Jan	8:00	20:00		9:10	1:10	20220103 0800-2000	Y

TOTAL RUN @ FLOW of 300	
TIME	16:13
VOLUME	291900 Gallons

410	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
3-Jan	8:00	20:00	19:02		0:58	20220103 0800-2000	N/A
3-Jan	20:00	8:00			12:00	20220103 2000-0800	N/A
4-Jan	8:00	20:00		10:15	2:15	20220104 0800-2000	Y

TOTAL RUN @ FLOW of 300	
TIME	15:13
VOLUME	273900 Gallons

442	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
3-Jan	8:00	20:00	19:02		0:58	20220103 0800-2000	N/A
3-Jan	20:00	8:00			12:00	20220103 2000-0800	N/A
4-Jan	8:00	20:00		12:00	4:00	20220104 0800-2000	Y

TOTAL RUN @ FLOW of 300	
TIME	16:58
VOLUME	305400 Gallons

465	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
3-Jan	8:00	20:00	15:54		4:06	20220103 0800-2000	N/A
3-Jan	20:00	8:00			12:00	20220103 2000-0800	N/A
4-Jan	8:00	20:00		9:30	1:30	20220104 0800-2000	Y

TOTAL RUN @ FLOW of 300	
TIME	17:36
VOLUME	316800 Gallons

503	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
4-Jan	8:00	20:00	19:30		0:30	20220104 0800-2000	N/A
4-Jan	20:00	8:00			12:00	20220104 2000-0800	N/A
5-Jan	8:00	20:00		8:17	0:17	20220105 0800-2000	Y

TOTAL RUN @ FLOW of 300	
TIME	12:47
VOLUME	230100 Gallons

512	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
4-Jan	20:00	8:00	22:12		9:48	20220104 2000-0800	N/A
5-Jan	8:00	20:00		15:05	7:05	20220105 0800-2000	Y

TOTAL RUN @ FLOW of 100	
TIME	16:53
VOLUME	101300 Gallons

ENCL (1)

535	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
4-Jan	8:00	20:00	19:10		0:50	20220104 0800-2000	N/A
4-Jan	20:00	8:00			12:00	20220104 2000-0800	N/A
5-Jan	8:00	20:00		9:35	1:35	20220105 0800-2000	N/A

TOTAL RUN @ FLOW of 300	
TIME	14:25
VOLUME	259500 Gallons

542	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
4-Jan	8:00	20:00	18:37		1:23	20220104 0800-2000	Y
4-Jan	20:00	8:00		7:40	11:40	20220104 2000-0800	Y

TOTAL RUN @ FLOW of 300	
TIME	13:03
VOLUME	234900 Gallons

548	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
3-Jan	8:00	20:00	17:34		2:26	20220103 0800-2000	N/A
3-Jan	20:00	8:00			12:00	20220103 2000-0800	N/A
4-Jan	8:00	20:00		9:13	1:13	20220104 0800-2000	N/A

TOTAL RUN @ FLOW of 300	
TIME	15:39
VOLUME	277005 Gallons

Hydrant	Volume
405	291,900
410	273,900
442	305,400
465	316,800
503	230,100
512	101,300
535	259,500
542	234,900
548	277,005
TOTAL	**2,290,805**

Section 2a.4 Records of Completed Volumetric Exchanges

02JAN2022

0001	START OF NEW DAY.
0320	WATER LEVEL 29.9'. NAVFAC (MATT) NOTIFIED.
0527	WATER LEVEL 28.7'.
0550	SENT LOGBOOK ENTRIES TO EOC.
0612	WATER LEVEL 28.1'.
0635	UT STIEFERMANN RELIEVED BY UT RHINE
0645	CHECKED IN WITH USS
0700	BEGAN ROVE.
0822	F/H 1 STARTED IN OPS
0859	F/H 18 (FAMILY S.) ON
0947/0947	F/H 40 (FZ) ON
~~0955~~ ~~0955~~	F/H 42 (FZ) ON
1050	THROTTLED 40(FZ) FOR TESTING
1055	RESUMED 10PSI ON 40(FZ)
1105	THROTTLED LINE 2 FOR TESTING.
1118	RESUMED NORMAL PRESSURE OF FH/1 INFZ
1237	202 OFF (DS)
1240	40 - OFF (FZ)
1249	34 OFF (FZ)
1253	1 - OFF FZ
1300	11A OFF
1305	21 OFF
1309	42 OFF
1314	18
0104	36A
1320	606

2JAN22

1313	18(C.S.) OFF
1346	26(GS) OFF
1415	OPENED 473/273 FOR TESTING
1445	CLOSED 473/273
1500	UT1 RHINE RELIEVED AS DUTY UT. UT2 DOMANSKI ASSUMES DUTY UT.
1520	RESUME ALL OPERATIONS. PER LT CRUZ.
1522	FH-405, FH-426, FH-1, OPERATIONAL.
1554	FH-405 OPEN.
1600	FH-473 OPEN.
1600	WATER LEVEL 26.2'.
1650	FH-202 OPEN.
1655	FH-34 OPEN.
1710	FH-1 OPEN AND SAMPLED. "SOUTH"
1730	FH-40 OPEN.
1746	FH-42 OPEN AND SAMPLED.
1758	FH-11A OPEN.
1803	FH-21 OPEN.
1807	GAC 18 FH-426, FLAT TRAILER TIRE. DEEMED OPERATIONAL PER LT CRUZ.
1806	FH-426 OPEN.
1811	FH-36A OPEN.
1818	FH-606 OPEN.
1828	FH-42 CLOSED UNTIL FURTHER NOTICE DUE TO HIGH PH LEVELS.
1831	FH-18 2ND FI OPEN.
1906	GI FH-18 OPEN.
1925	GI FH-26 OPEN.

Ø2 JAN 22

1945	191 SATURATED. UT CONTRACTOR WATCH SECURED
1945	WATER LEVEL 3Ø'.
2Ø17	FH-1 NORTH OPEN.
2Ø49	WATER LEVEL 28'.
2237	UT2 DOMANSKI RELIEVED BY UT1 STIEFERMANN
2350	HYDRANT 405 CLOSED DUE TO FLOODING.
2359	END OF DAY.

NFETP
UT1 (SCW/EXW) STIEFERMANN

Ø3 JAN 2022

ØØØ1	START OF NEW DAY.
Ø135	HYDRANT 405 OPENED. VCC/EOC NOTIFIED.
Ø2 13	VCC REPORTED BURST HOSE FH G1 18.
Ø233	HYDRANT FH G1 18 CLOSED, DAMAGED SECTION OF HOSE ROLLED AND PLACED WITH GAC. VCC/EOC NOTIFIED.
Ø527	LOGBOOK ENTRIES SUBMITTED TO EOC.
Ø528	WATER LEVEL 31.7'
Ø645	UT1 STIEFERMANN RELIEVED BY UT1 RHINE
Ø7ØØ	CHECKED IN AT VCC.
Ø715	BEGAN ROVE
Ø9Ø9	405 SHUT DOWN
Ø942	426 SHUT DOWN
Ø957	34 SHUT DOWN
1016	1 NORTH SHUT DOWN
1Ø29	1 SOUTH SHUT DOWN
1009 LE	202 SHUT DOWN
1Ø3Ø	273 SHUT DOWN
1Ø24 LE.	LT CRUZ CALLED TO CLOSE ALL HYDRANT FOR FLOOD WARNING
1Ø38	26(C.S.) CLOSED
1Ø5Ø	11 A CLOSED
1Ø54	21 CLOSED
1Ø59	36A CLOSED (WILL BE FOR 6HR+)
11Ø5	606 CLOSED
11 2Ø	18 CLOSED
1220	RECEIVED CALL TO OPEN HYDRANTS

3 JAN 22

1306	18 - OPENED
1317	606 - OPENED
1325	21 - OPENED NO WATCH ON SITE
1346	ARMY WATCH ON SITE.
1351	11A - OPENED
1405	26 (C.S.) OPENED.
1530	51 ACTIVATED
1481	191 ACTIVATED
1530	UT1 RHINE RELIEVED AS DUTY UT. UT2 DOMANSKI ASSUME UT.
1642	FH-36A OPEN.
1700	FH-191 CLOSED DUE TO FLOODING STREET.
1750	WATER LEVEL 29.9'.
1913	WATER LEVEL 27.8'.
1940	FH-410 OPEN.
2003	FH-465 OPEN.
~~2100~~	~~FH-~~ RCD
2200	FH-191 OPEN.
2245	UT2 DOMANSKI RELIEVED BY UT1 STIEFERMANN
2334	FH-442 OPENED BY CONTRACTORS.
2359	END OF DAY.

NFETP
UT1 (SEW/EW) Left
STIEFERMANN

04 JAN 2022

0001	START OF NEW DAY.
0211	FH-548 OPENED.
0334	FH G1 18 CLOSED DUE TO FLOODING.
0345	FH G1 26 CLOSED DUE TO FLOODING
0450	WATER LEVE 34.1'
0530	SUBMITTED LOGBOOK ENTRIES TO EOC
0630	UT1 RHINE ASSUMED DUTIES AS DUTY UT
0815	F/H 26(CS) OPENED
0900	ASSISTED AECOM WITESTING ON ~~465~~ 442
0935	ASSISTED AECOM W/ TESTING ON 465
0950	ASSISTED W/ TESTING ON 410
1033	RECIEVED WORD TO SHUT ALL SYSTEMS DOWN DUE TO FLOODING.
1040	SHUT DOWN 606;
1015 LE.	SHUT DOWN 410
1215	SHUT OFF F/H 18(FI)
1315	RECIEVED WORD TO START HYDRANTS
1400	STARTED 476.
1425	STARTED FLOODING SHUT OFF-476
1450	STARTED 48
1456	STARTED 13
1540	STARTED 26(C.S.)
1500-1525	STARTED TESTING ON 48, 13
1622	UT2 DOMANSKI ASSUMES DUTY UT. UT1 RHINE PROPERLY RELIEVED
1640	FH-123 OPEN.
~~1709~~	~~FH-1705 OPEN.~~ RCD FH-542 OPEN.

04JAN22

1746	WATER LEVEL 28'.
1750	FH-535 OPEN.
1805	FH-143 OPEN.
1837	~~FH-535~~ OPEN. FH-542
1853	FH-50 OPEN.
1910	FH-26 "61" CLOSED, DUE TO FLOODING.
2019	FH-8103 OPEN.
2019	FH-812 OPEN. CHANGED FROM 23.
2039	FH-801 MOVED TO 803 OPEN.
2040	FH-804 MOVED TO 805 OPEN.
2043	BACK LOG TO 1543 - FH-503 OPEN
2057	1709 "BACK LOG" - FH-476 OPEN
2126	FH-382 OPEN
2212	FH-512 MOVED TO FH-511. OPEN.
2250	FH-812 CLOSED, DUE TO FLOODING. WASTE WATER WILL COME TO CLEAR LINE IN MORNING.
2300	UT² DOMANSKY RELIEVED BY UT1 STIEFERMANN
2359	END OF DAY.

STIEFERMANN

05 JAN 2022

0001	START OF NEW DAY.
0030	START ROVE.
0150	OPEN FH 812, VCC/EOC NOTIFIED.
0251	CLOSED FH 812. WATER AT TOP OF SEWER, VCC/EOC NOTIFIED.
0427	CLOSED FH 143 DUE TO FLOODING. VCC/EOC NOTIFIED.
0501	HYDRANT 26 OPENED. VCC/EOC NOTIFIED.
0522	WATER LEVEL 33.8'
0530	LOGBOOK ENTRIES SUBMITTED TO EOC
0640	UT1 RHINE ASSUMES DUTIES AS DUTY UT.
0700	CHECKS IN AT VCC
0730	RELIEVED CALL 542 FLOODING OUT.
0740	ARRIVED AT SITE, CLOSED 542, SENT MATERIALS TO VCC,
0817	503 SHUTDOWN
0836	535 SHUTDOWN
0917	123 SHUTDOWN
1017	476 SENT DOWN
1024	143 SHUTDOWN
1035	FH 9 (EZ) OPEN
1042	FH 14 (EZ) OPEN
1124	FH 13 SHUTDOWN
1131	FH 30 SHUTDOWN
1142	FH 8103 SHUTDOWN
1151	FH 805 SHUTDOWN
1206	FH 803 SHUTDOWN

5 JAN 22

1210	CALLED TO OPEN FH7.
1215	AT FIRE HYDRANT 7, NO HOSE ON SITE. AECOM, DEPT SANITATION ON SITE.
1305	NAVFAC BRING HOSES, TESTING BELOW 100 G.P.M.
1334	FH/7 OPENED.
1345	ARRIVE AT F/H 25. NO AECOM ON SITE FOR TESTING.
1420	AECOM ARRIVES. CONDUCTS TESTING
1347	LL 300 & 318 OPERATIONAL,
1425	F/H 25 OPERATIONAL
1442	F/H 33 IS OPERATIONAL
1443	* FH 382 CLOSED
1444	* F/H 812 CLOSED
1505	F/H 511 CLOSED
1530	UT2 DOMANSKI ASSUMES DUTIES AS DUTY UT,
1532	UT2 DOMANSKI ASSUMES DUTY UT. UT1 RAHINE RELIEVED AS DUTY UT.
1622	WATER LEVEL 28'.
1652	FH-457 OPEN.
1715	FH-7 CLOSED DUE TO FLOOD ADVISORY.
1722	FH-25 CLOSED DUE TO FLOOD ADVISORY.
1746	FH-926, START UP ATTEMPTED, LEAKING CAM LOCK AS WELL AS CLOGGED STORM DRAIN.
1840	FH-926 OPEN. SITE TESTED.
1921	FH-7 OPEN.
1930	FH-25 OPEN.

05 JAN 2022

2245	UT2 DOMANSKI RELIEVED BY UT1 STIEFERMANN
2359	END OF DAY.

NFETP
LT (SCW/EXW) STIEFERMANN

Cruz, Nicholas D LT USN NAVFAC SE JAX FL (USA)

From: Kelly, Austin A 1st Lt USAF 647 ABG (USA)
Sent: Sunday, January 2, 2022 10:12 PM
To: Joseph, Craig M TSgt USAF (USA); Duarte, Israel A MSgt USAF (USA); AhLeong, Peter A MSgt USAF 647 ABG (USA); Collins, Jason A SMSgt USAF USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); [redacted]; [redacted]; Gruber, Marjorie J LCDR USN CBMU 303 (USA); [redacted]; Huang, Andy D CIV USN NAVFAC HAWAII PEARL (USA); Spencer, Matthew A CIV USN COMNAVREG SW SAN CA (USA); Poche, Brennan W LT USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); Donovan, Luke T Lt Col USAF 49 MSG (USA); Beattie, Aaron J MAJ USARMY USARPAC (USA); 647 CES/UCC; Howard, Spencer L LT USN CBMU 303 (USA); Natsuhara, Brent T LT USN NAVFAC MARIANAS GU (USA); Cope, Jimmy Lee CPO USN COMEXSTRKGRU TWO (USA); Baranowski, Phillip J CPO USN NAVFAC SE JAX FL (USA); [redacted] Hawkins, Brian A PO1 USN NAS KEY WEST FL (USA); Barr, Justin A PO2 USN (USA); Harris, Jamel W PO2 USN (USA); Johnson, Jamaria T PO2 USN (USA); Credle, Gregory E III PO2 USN (USA); Lett, Julius J SMSgt USAF (USA); [redacted] Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA); Cc: EDWARDS, PHYLYSHA C SSgt USAF PACAF 647 CES/CEOER; Pendleton, Cole R SrA USAF 647 ABG (USA); Mchenry, Kevin G MSgt USAF 647 ABG (USA); Corum, Michael L II MSgt USAF 647 ABG (USA); CORUM, MICHAEL L II MSgt USAF PACAF 647 CES/CEN; Wiley, Scottie R Capt USAF 647 ABG (USA)
Cc: 647 CES/UCC
Subject: INFO: 02 Jan 22 0800L - 2000L JBPHH DWDSRP Flush Report
Attachments: 02 Jan 2022 0800L - 2000L JBPHH DWDSRP FLUSH REPORT.pdf
Signed By: [redacted]

Ladies & Gentlemen,

Attached is the flush report for Sunday, 02 Jan 22, 0800L – 2000L. Also below is a summary on distribution flushing below.

Current Location Summary:
Zone / FH# / GAC # / Flushing Status
C1 / 405 / 14 / ON
D3 / 426 / 18 / ON
D3 / 202 / 19 / ON
D3 / 273 / 16 / ON
F1 / 36A / 6 / ON
F1 / 21 / 7 / ON
F1 / 11A / 8 / ON
F1 / 42 / 9 / OFF due to high pH
F1 / 18 / 3 / ON
F1 / 606 / 1 / ON
F2 / 1 South / 10 / ON
F2 / 1 North / 12 / ON
F2 / 34 / 11 / ON
F2 / 40 / 5 / ON
F2 / 51 / 20 / OFF
G1 / 18 / 17 / ON

G1 / 26 / 4 / ON

Very Respectfully,

Austin Kelly, 1st Lt, USAF
Airfield Deputy Assistant Public Works Officer
Naval Facilities Engineering Systems Command HI
Public Works Department, JBPHH
DSN: [redacted]
Email: [redacted]

Cruz, Nicholas D LT USN NAVFAC SE JAX FL (USA)

From: Wiley, Scottie R Capt USAF 647 ABG (USA) <[redacted]>
Sent: Monday, January 3, 2022 1:44 PM
To: Kelly, Austin A 1st Lt USAF 647 ABG (USA); Joseph, Craig M TSgt USAF (USA); Duarte, Israel A MSgt USAF (USA); AhLeong, Peter A MSgt USAF 647 ABG (USA); Collins, Jason A SMSgt USAF USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); [redacted]; Gruber, Marjorie J LCDR USN CBMU 303 (USA); [redacted]; Huang, Andy D CIV USN NAVFAC HAWAII PEARL (USA); Spencer, Matthew A CIV USN COMNAVREG SW SAN CA (USA); Poche, Brennan W LT USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); Donovan, Luke T Lt Col USAF 49 MSG (USA); Beattie, Aaron J MAJ USARMY USARPAC (USA); 647 CES/UCC; Howard, Spencer L LT USN CBMU 303 (USA); Natsuhara, Brent T LT USN NAVFAC MARIANAS GU (USA); Cope, Jimmy Lee CPO USN COMEXSTRKGRU TWO (USA); Baranowski, Phillip J CPO USN NAVFAC SE JAX FL (USA); [redacted]; Hawkins, Brian A PO1 USN NAS KEY WEST FL (USA); Barr, Justin A PO2 USN (USA); Harris, Jamel W PO2 USN (USA); Johnson, Jamaria T PO2 USN (USA); Credle, Gregory E III PO2 USN (USA); Lett, Julius J SMSgt USAF (USA); [redacted]; Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA); Cc: EDWARDS, PHYLYSHA C SSgt USAF PACAF 647 CES/CEOER; Pendleton, Cole R SrA USAF 647 ABG (USA); Mchenry, Kevin G MSgt USAF 647 ABG (USA); Corum, Michael L II MSgt USAF 647 ABG (USA); CORUM, MICHAEL L II MSgt USAF PACAF 647 CES/CEN
Cc: 647 CES/UCC
Subject: INFO: 20220103 2000L - 0800L JBPHH DWDSRP Flush Report
Attachments: 20220103 2000L - 0800L JBPHHH DWDSRP Flush Report.pdf

Ladies & Gentlemen,

Attached is the flush report for Sunday/Monday, 02/03 Jan 22, 2000L – 0800L. Also below is a summary on distribution flushing below.

Current Location Summary:
Zone / FH# / GAC # / Flushing Status
C1 / 405 / 14 / Flushing Paused 2350L and Resumed 0135L
D3 / 426 / 18 / Continuous Flushing This Period
D3 / 202 / 19 / Continuous Flushing This Period
D3 / 273 / 16 / Continuous Flushing This Period
F1 / 36A / 6 / Continuous Flushing This Period
F1 / 21 / 7 / Continuous Flushing This Period
F1 / 11A / 8 / Continuous Flushing This Period
F1 / 42 / 9 / Continuous Flushing This Period
F1 / 18 / 3 / Continuous Flushing This Period
F1 / 606 / 1 / Continuous Flushing This Period
F2 / 1 South / 10 / Continuous Flushing This Period
F2 / 1 North / 12 / Flushing Resumed 2018L
F2 / 34 / 11 / Continuous Flushing This Period
F2 / 40 / 5 / Continuous Flushing This Period
F2 / 51 / 20 / Flushing Paused This Period
G1 / 18 / 17 / Flushing Paused 0234L (Ruptured Hose)
G1 / 26 / 4 / Continuous Flushing This Period

r/

srw

SCOTT R. WILEY, Major, USAF
Facilities Sustainment Division Deputy Director – PRJ3
Naval Facilities Engineering Systems Command, Hawaii
400 Marshall Road JBPHH HI 96860-3139
DSN [redacted]
Comm: [redacted]
Gov Cell: [redacted]

Cruz, Nicholas D LT USN NAVFAC SE JAX FL (USA)

From: Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA) <[redacted]>

Sent: Monday, January 3, 2022 9:39 PM

To: Kelly, Austin A 1st Lt USAF 647 ABG (USA); Joseph, Craig M TSgt USAF (USA); Duarte, Israel A MSgt USAF (USA); AhLeong, Peter A MSgt USAF 647 ABG (USA); Collins, Jason A SMSgt USAF USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); [redacted]; Gruber, Marjorie J LCDR USN CBMU 303 (USA); [redacted] Huang, Andy D CIV USN NAVFAC HAWAII PEARL (USA); Spencer, Matthew A CIV USN COMNAVREG SW SAN CA (USA); Poche, Brennan W LT USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); Donovan, Luke T Lt Col USAF 49 MSG (USA); Beattie, Aaron J MAJ USARMY USARPAC (USA); 647 CES/UCC; Howard, Spencer L LT USN CBMU 303 (USA); Natsuhara, Brent T LT USN NAVFAC MARIANAS GU (USA); Cope, Jimmy Lee CPO USN COMEXSTRKGRU TWO (USA); Baranowski, Phillip J CPO USN NAVFAC SE JAX FL (USA); [redacted]; Hawkins, Brian A PO1 USN NAS KEY WEST FL (USA); Barr, Justin A PO2 USN (USA); Harris, Jamel W PO2 USN (USA); Johnson, Jamaria T PO2 USN (USA); Credle, Gregory E III PO2 USN (USA); Lett, Julius J SMSgt USAF (USA); [redacted]; Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA); EDWARDS, PHYLYSHA C SSgt USAF PACAF 647 CES/CEOER; Pendleton, Cole R SrA USAF 647 ABG (USA); Mchenry, Kevin G MSgt USAF 647 ABG (USA); Corum, Michael L II MSgt USAF 647 ABG (USA); CORUM, MICHAEL L II MSgt USAF PACAF 647 CES/CEN

Subject: INFO: 03 Jan 22 0800L - 2000L JBPHH DWDSRP Flush Report

Attachments: 03 Jan 2022 - 0800L 2000L - Flush Reports.pdf

Signed By: [redacted]

Ladies & Gentlemen,

Attached is the flush report for Monday, 03 Jan 22, 0800L – 2000L. Also below is a summary on distribution flushing below.

Current Location Summary:
Zone / FH# / GAC # / Flushing Status
F1 / 36A / 6 / Continuous Flushing This Period
F1 / 21 / 7 / Continuous Flushing This Period
F1 / 11A / 8 / Continuous Flushing This Period
F1 / 42 / 9 / Flushing Paused – High PH level
F1 / 18 / 3 / Continuous Flushing This Period
F1 / 606 / 1 / Continuous Flushing This Period
F2 / 51 / 20 / Flushing Paused (24/7 manning required for the gates)
G1 / 18 / 17 / Flushing Resumed 1902
G1 / 26 / 4 / Continuous Flushing This Period
C1 / 410 / 12 / Flushing (First Start – 1902)
C1 / 442 / 18 / Flushing (First Start – 1902)
C1 / 465 / 14 / Flushing (First Start – 1554)
C1 / 548 / 25 / Flushing (First Start – 1734)
D3 / 191 / 23 / Flushing Paused, requires additional hose to prevent overflow

Very respectfully,

ANGELA L. ASISTIO, 2d Lt, USAF
Construction Manager, Hickam/Outlying, PRJ211
Naval Facilities Engineering Systems Command, Hawaii
400 Marshall Road
JBPHH, HI 96860-3139
[redacted] cell
Email: [redacted]

Cruz, Nicholas D LT USN NAVFAC SE JAX FL (USA)

From: Wiley, Scottie R Maj USAF 647 ABG (USA) <[redacted]>
Sent: Tuesday, January 4, 2022 1:11 PM
To: Kelly, Austin A 1st Lt USAF 647 ABG (USA); Joseph, Craig M MSgt USAF (USA); Duarte, Israel A MSgt USAF (USA); AhLeong, Peter A MSgt USAF 647 ABG (USA); Collins, Jason A CMSgt USAF USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); [redacted]; Gruber, Marjorie J LCDR USN CBMU 303 (USA); [redacted]; Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA); Huang, Andy D CIV USN NAVFAC HAWAII PEARL (USA); Spencer, Matthew A CIV USN COMNAVREG SW SAN CA (USA); Poche, Brennan W LT USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); Donovan, Luke T Lt Col USAF 49 MSG (USA); Beattie, Aaron J MAJ USARMY USARPAC (USA); 647 CES/UCC; Howard, Spencer L LT USN CBMU 303 (USA); Natsuhara, Brent T LT USN NAVFAC MARIANAS GU (USA); Cope, Jimmy Lee CPO USN COMEXSTRKGRU TWO (USA); Baranowski, Phillip J CPO USN NAVFAC SE JAX FL (USA); [redacted]; Hawkins, Brian A PO1 USN NAS KEY WEST FL (USA); Barr, Justin A PO2 USN (USA); Harris, Jamel W PO2 USN (USA); Johnson, Jamaria T PO2 USN (USA); Credle, Gregory E III PO2 USN (USA); Lett, Julius J SMSgt USAF (USA); [redacted]; Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA); Cc: EDWARDS, PHYLYSHA C SSgt USAF PACAF 647 CES/CEOER; Pendleton, Cole R SrA USAF 647 ABG (USA); Mchenry, Kevin G MSgt USAF 647 ABG (USA); Corum, Michael L II MSgt USAF 647 ABG (USA); CORUM, MICHAEL L II MSgt USAF PACAF 647 CES/CEN
Cc: 647 CES/UCC
Subject: INFO: 20220104 2000L - 0800L JBPHH DWDSRP Flush Report
Attachments: 20220104 2000L - 0800L JBPHHH DWDSRP Flush Report.pdf

Ladies & Gentlemen,

Attached is the flush report for Sunday/Monday, 03/04 Jan 22, 2000L – 0800L. Also below is a summary on distribution flushing below.

Current Location Summary:
Zone / FH# / GAC # / Flushing Status
F1 / 36A / 6 / Continuous Flushing This Period
F1 / 21 / 7 / Continuous Flushing This Period
F1 / 11A / 8 / Continuous Flushing This Period
F1 / 42 / 9 / Flushing Paused This Period (High PH level)
F1 / 18 / 3 / Continuous Flushing This Period
F1 / 606 / 1 / Continuous Flushing This Period
F2 / 51 / 20 / Flushing Resumed 0018L
G1 / 18 / 17 / Flushing Paused 0335L (Flooding)
G1 / 26 / 4 / Flushing Paused 0345L (Flooding)
C1 / 410 / 12 / Continuous Flushing This Period
C1 / 442 / 18 / Continuous Flushing This Period
C1 / 465 / 14 / Continuous Flushing This Period
C1 / 548 / 25 / Flushing Resumed 0212L
D3 / 191 / 23 / Flushing Paused 2152L; Flushing Resumed 2205L (Re-position discharge hose)

r/

srw

SCOTT R. WILEY, Major, USAF
Facilities Sustainment Division Deputy Director – PRJ3
Naval Facilities Engineering Systems Command, Hawaii
400 Marshall Road JBPHH HI 96860-3139
DSN [redacted]
Comm: [redacted]
Gov Cell: [redacted]

Cruz, Nicholas D LT USN NAVFAC SE JAX FL (USA)

From: Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA) <[redacted]>

Sent: Tuesday, January 4, 2022 9:53 PM

To: Kelly, Austin A 1st Lt USAF 647 ABG (USA); Joseph, Craig M MSgt USAF (USA); Duarte, Israel A MSgt USAF (USA); AhLeong, Peter A MSgt USAF 647 ABG (USA); Collins, Jason A CMSgt USAF USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); [redacted] Gruber, Marjorie J LCDR USN CBMU 303 (USA); [redacted]; Huang, Andy D CIV USN NAVFAC HAWAII PEARL (USA); Spencer, Matthew A CIV USN COMNAVREG SW SAN CA (USA); Poche, Brennan W LT USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); Donovan, Luke T Lt Col USAF 49 MSG (USA); Beattie, Aaron J MAJ USARMY USARPAC (USA); 647 CES/UCC; Howard, Spencer L LT USN CBMU 303 (USA); Natsuhara, Brent T LT USN NAVFAC MARIANAS GU (USA); Cope, Jimmy Lee CPO USN COMEXSTRKGRU TWO (USA); Baranowski, Phillip J CPO USN NAVFAC SE JAX FL (USA); [redacted]; Hawkins, Brian A PO1 USN NAS KEY WEST FL (USA); Barr, Justin A PO2 USN (USA); Harris, Jamel W PO2 USN (USA); Johnson, Jamaria T PO2 USN (USA); Credle, Gregory E III PO2 USN (USA); Lett, Julius J SMSgt USAF (USA); [redacted]; Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA); EDWARDS, PHYLYSHA C SSgt USAF PACAF 647 CES/CEOER; Pendleton, Cole R SrA USAF 647 ABG (USA); Mchenry, Kevin G MSgt USAF 647 ABG (USA); Corum, Michael L II MSgt USAF 647 ABG (USA); CORUM, MICHAEL L II MSgt USAF PACAF 647 CES/CEN

Subject: RE: INFO: 04 Jan 22 0800L - 2000L JBPHH DWDSRP Flush Report

Attachments: SKM_C36822010420490.pdf

Signed By: [redacted]

Attached is the flush report for Tuesday, 04 Jan 22, 0800L – 2000L. Also below is a summary on distribution flushing below.

Current Location Summary:
Zone / FH# / GAC # / Flushing Status
C1 / 535 / 6 / Flushing started (First time 1910)
C2 / 123 / 11 / Flushing started (First time 1647)
D3 / 143 / 18 / Flushing started 1801
D3 / 382 / NO GAC / Flushing started (First time 2134)
D3 / 476 / 16 / Flushing started 1753
D3 / 803 / NO GAC / Flushing started (First time 2108)
D3 / 805 / NO GAC / Flushing started (First time 2054)
D3 / 812 / NO GAC / Flushing started (First time 2032)
D3 / 8103 / NO GAC / Flushing started (First time 2029)
G1 / 26 / 4 / Flushing resumed 2020
F2 / 13 / 19 / Flushing started 1613
F2 / 48 / 5 / Flushing started (First time 1513)
F2 / 50 / 20 / Flushing started 1920
C1 / 503 / 8 / Offline (projected to start in current shift)
C1 / 512 / NO GAC / Offline (projected to start in current shift)
C1 / 542 / 7 / Offline (projected to start in current shift)

Cruz, Nicholas D LT USN NAVFAC SE JAX FL (USA)

From: Wiley, Scottie R Maj USAF 647 ABG (USA) <[redacted]>
Sent: Wednesday, January 5, 2022 2:28 PM
To: Kelly, Austin A 1st Lt USAF 647 ABG (USA); Joseph, Craig M MSgt USAF (USA); Duarte, Israel A MSgt USAF (USA); AhLeong, Peter A MSgt USAF 647 ABG (USA); Collins, Jason A CMSgt USAF USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); [redacted] Gruber, Marjorie J LCDR USN CBMU 303 (USA); [redacted]; Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA); Huang, Andy D CIV USN NAVFAC HAWAII PEARL (USA); Spencer, Matthew A CIV USN COMNAVREG SW SAN CA (USA); Poche, Brennan W LT USN NAVFAC HAWAII PEARL (USA); Williams, Malcolm J Capt USAF 647 ABG (USA); Donovan, Luke T Lt Col USAF 49 MSG (USA); Beattie, Aaron J MAJ USARMY USARPAC (USA); 647 CES/UCC; Howard, Spencer L LT USN CBMU 303 (USA); Natsuhara, Brent T LT USN NAVFAC MARIANAS GU (USA); Cope, Jimmy Lee CPO USN COMEXSTRKGRU TWO (USA); Baranowski, Phillip J CPO USN NAVFAC SE JAX FL (USA); [redacted] Hawkins, Brian A PO1 USN NAS KEY WEST FL (USA); Barr, Justin A PO2 USN (USA); Harris, Jamel W PO2 USN (USA); Johnson, Jamaria T PO2 USN (USA); Credle, Gregory E III PO2 USN (USA); Lett, Julius J SMSgt USAF (USA); [redacted]; Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA); Cc: EDWARDS, PHYLYSHA C SSgt USAF PACAF 647 CES/CEOER; Pendleton, Cole R SrA USAF 647 ABG (USA); Mchenry, Kevin G MSgt USAF 647 ABG (USA); Corum, Michael L II MSgt USAF 647 ABG (USA); CORUM, MICHAEL L II MSgt USAF PACAF 647 CES/CEN; Szczepanik, Brittany A 2d LT USAF (USA)
Cc: 647 CES/UCC
Subject: INFO: 20220105 2000L - 0800L JBPHH DWDSRP Flush Report
Attachments: 20220105 2000L - 0800L JBPHHH DWDSRP Flush Report.pdf

Ladies & Gentlemen,

Attached is the flush report for Monday/Tuesday, 04/05 Jan 22, 2000L – 0800L. Also below is a summary on distribution flushing below.

Current Location Summary:
Zone / FH# / GAC # / Flushing Status
C1 / 535 / 6 / No change
C2 / 123 / 11 / No change
D3 / 143 / 18 / No change
D3 / 382 / NO GAC / No change
D3 / 476 / 16 / No change
D3 / 803 / NO GAC / No change
D3 / 805 / NO GAC / No change
D3 / 812 / NO GAC / No change
D3 / 8103 / NO GAC / No change
G1 / 26 / 4 / No change
F2 / 13 / 19 / No change
F2 / 48 / 5 / No change
F2 / 50 / 20 / No change
C1 / 503 / 8 / Flushing began
C1 / 512 / NO GAC / Flushing began
C1 / 542 / 7 / Flushing began

Cruz, Nicholas D LT USN NAVFAC SE JAX FL (USA)

From: SZCZEPANIK, BRITTANY A 2d Lt USAF AETC 71 STUS/STU [redacted]

Sent: Wednesday, January 5, 2022 10:13 PM

To: Wiley, Scottie R Maj USAF 647 ABG (USA); Kelly, Austin A 1st Lt USAF 647 ABG (USA); [redacted] Duarte, Israel A MSgt USAF (USA); [redacted]; Williams, Malcolm J Capt USAF 647 ABG (USA); [redacted] Gruber, Marjorie J LCDR USN CBMU 303 (USA); [redacted]; Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA); Huang, Andy D CIV USN NAVFAC HAWAII PEARL (USA); Spencer, Matthew A CIV USN COMNAVREG SW SAN CA (USA); Poche, Brennan W LT USN NAVFAC HAWAII PEARL (USA); [redacted]; Donovan, Luke T Lt Col USAF 49 MSG (USA); Beattie, Aaron J MAJ USARMY USARPAC (USA); 647 CES/UCC; Howard, Spencer L LT USN CBMU 303 (USA); [redacted]; Baranowski, Phillip J CPO USN NAVFAC SE JAX FL (USA); [redacted]; Hawkins, Brian A PO1 USN NAS KEY WEST FL (USA); Barr, Justin A PO2 USN (USA); Harris, Jamel W PO2 USN (USA); Johnson, Jamaria T PO2 USN (USA); [redacted] Lett, Julius J SMSgt USAF (USA); [redacted] Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA); EDWARDS, PHYLYSHA C SSgt USAF PACAF 647 CES/CEOER; Pendleton, Cole R SrA USAF 647 ABG (USA); Mchenry, Kevin G MSgt USAF 647 ABG (USA); Corum, Michael L II MSgt USAF 647 ABG (USA); CORUM, MICHAEL L II MSgt USAF PACAF 647 CES/CEN

Cc: 647 CES/UCC

Subject: INFO: 20220105 0800L - 2000L JBPHH DWDSRP Flush Report

Attachments: 20220105 0800L - 2000L JBPHH DWDSRP Flush Report.pdf

Signed By: [redacted]

Ladies & Gentlemen,

Attached is the flush report for Wednesday, 05 Jan 22, 0800L – 2000L. Below is a summary of current distribution flushing.

Current Location Summary:

Zone	Hydrant / GAC	Latest Status
F2	FH 5 / 20	Flushing Started
C2	FH 318 / 25	Flushing Started
C2	FH 300 / 23	Flushing Started
C2	FH 315 / 10	Flushing Started
F2	FH 19 / 12	Flushing Started (First Time)
F2	FH 33	Flushing Started (First Time)
F2	FH 14 / 17	Flushing Started
F2	FH 7	Flushing Resumed
F2	FH 25	Flushing Resumed
D4	FH 168 / 14	Flushing Started
D4	FH 457	Flushing Started (First Time)
E1	FH 924	Flushing Resumed

G1	FH 26 / 4	Flushing Started

Very Respectfully,

BRITTANY A. SZCZEPANIK, 2d Lt, USAF
Project Programmer/ ICAP Engineer
NAVFAC HI, FMD JBPHH
647 CES/CEN
DSN: [redacted]

February 26, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: WATER STORAGE FACILITIES AND WATER SOURCE FOR ZONES A1, A2, A3, B1, C1, C2, C3, D1, D2, D3, D4, G1, E1, F1, F2, H1, H2, H3, AND I1

Ref: (a) Drinking Water Sampling Plan, December 2021
(b) Drinking Water Distribution System Recovery Plan, December 2021

Encl: (1) Joint Base Pearl Harbor Hickam Potable Water System Description
(2) S1 and S2 Water Storage Tank Flushing Report Memo
(3) Inspection, Maintenance, and Cleaning of Potable Water Tanks Memo
(4) Ford Island/Shipyard Water Transmission Line Status
(5) JBPHH/Iroquois Point Water Transmission Line Status
(6) Board of Water Supply Interconnection Status

1. This letter and associated enclosures describes and documents the flushing of the water storage facilities that serve the Joint Base Pearl Harbor Hickam (JBPHH) public water system (PWS No. 360). The flushing of the JBPHH water storage facilities and distribution system was completed in accordance with reference (a) and (b). Enclosure (1) describes the JBPHH public water system and storage tanks associated with the system. Page 8 of reference (a) has the flushing zones and water storage facilities located in each zone. The flushing of each zone identified in phase 1 of reference (a) included five volumetric turnovers. The volumetric turnover requirement included the water tank storage and distribution system volume for each zone. The water testing of the distribution system after flushing a zone's water storage tank and distribution system was the confirmation that contamination was removed from the system and that the water tanks was not a source of contamination. Enclosure (2) documents the Hawaii Department of Health's approved change from reference (a) for the flushing of Halawa S-1 and Halawa S-2.

2. Zones A1, A2, A3, B1, C1, C2, C3, D1, D2, D3, D4, G1, E1, F1, F2, H1, H2, H3 and I1 are currently fed by the Waiawa Shaft water supply source. The pumps from the shafts generally run continuous and range from 6,000 to 14,000 gallons per minute based on the demand of the JBPHH potable water system. The pressure throughout the JBPHH distribution system is aided by the two Halawa water storage tanks. The Halawa S-1 tank is currently in service and the Halawa S-2 tank has been taken offline for maintenance as documented in enclosure (2). Enclosure (3) documents the planned timeline associated with the inspection, maintenance and cleaning of the Navy owned water storage tanks. The planned work is scheduled to be completed before the end of this calendar year. The inspection of the water storage tanks will be conducted in accordance with American Water Works Association (AWWA) Standard for Inspecting and Repairing Steel Water Tanks, Standpipes, Reservoirs, and Elevated Tanks by personnel with the requisite qualifications outlined in this AWWA standard. Zone I1 (Red Hill) is served by Navy owned water storage tanks. The Army operates the consecutive Aliamanu public water system (PWS No. 337) which receives its water from the JBPHH public water

system. The Army's public water system serves the Aliamanu Military Reservation (AMR). The AMR area was subdivided into three flushing zones which included Zones H1, H2, and H3. The planned timeline associated with the inspection, maintenance, and cleaning of the Army owned water storage tanks will be submitted as part of the removal action reports for Zones H1, H2, H3.

3. At this time, there are two water transmission lines that are not in operation. The water transmission line between Ford Island and the Shipyard was offline at the time of the incident as described in Enclosure (3) and is currently going through repairs. The valves at each end of the underwater water transmission line between JBPHH and Iroquois Point were closed on December 5, 2021 and the valves have remained closed since that date as documented in Enclosure (4). Enclosure (5) documents the method for reopening the underwater water transmission line between JBPHH and Iroquois Point to prevent potential contamination and adverse water quality issues. The Navy will notify the Hawaii Department of Health prior to reopening the underwater water transmission line the between JBPHH and Iroquois Point. Additional interconnections with Board of Water Supply (BWS) are described in Enclosure (6). Water being distributed in the system and being stored in water storage tanks that maintain pressure in Zones A1, A2, A3, B1, C1, C2, C3, D1, D2, D3, D4, G1, E1, F1, and F2 have been flushed in accordance with reference (b) and the distribution system tested in accordance with reference (a). The removal action reports for Zones H1, H2, H3, and I1 document the flushing of the water storage tanks that specifically serve those zones.

4. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and the submitted information is true, accurate, and complete.

MENO.MICHAEL.WAYNE.JR.1088310035

Digitally signed by MENO.MICHAEL.WAYNE.JR.1088310035
Date: 2022.02.26 17:41:31 -10'00'

M. W. Meno
CAPT, CEC, USN

February 26, 2022

Joint Base Pearl Harbor Hickam (JBPHH) Potable Water Description

Major components of the JBPHH potable water system include:

- Supply sources
  - Waiawa Shaft/Pumping Station
  - Red Hill Shaft/Pumping Station
  - Halawa Shaft/Pumping Station
  - Emergency Interconnections (2 locations)
- Water storage facilities
- 2-6,000,000 gallon steel storage tanks at Halawa
  - 2-200,000 gallon concrete storage tanks at Camp Smith
  - 1-250,000 gallon glass-fused steel storage tank at Camp Smith with a usable storage capacity of 140,000 gallons
  - 2-250,000 gallon glass-fused steel storage tank at Red Hill
- Distribution system
  - Camp Smith Booster Pump (to convey water to the Camp Smith water system)
  - Red Hill Booster Pumps (to convey water to the storage tank)
  - Moanalua Terrace Booster Pumps (to pressurize the water system serving the
  - Moanalua Terrace Housing area)
  - Boneyard Booster Pumps (to pressurize the water system serving the upper elevation of Moanalua Terrace Housing area)
  - Manana Booster Pumps (to pressurize the water system servingthe Manana Housing area)
  - A network of pipes, meters, valves, and hydrants for distribution and fire protection

Water Storage Facilities:

Fresh water storage facilities store water for normal, fire, and maximum demand use, and serve to maintain relatively constant pressure in the water system. The JBPHH water system is equipped with two welded steel tanks, each with a storage capacity of six million gallons. These tanks are identified as the Halawa storage tanks S-1 and S-2. Both of these tanks are located adjacent to the Aliamanu Military Reservation at a ground elevation of 140 feet. The diameter of the tanks are 164 feet each, with a nominal height of 48 feet. The spillway elevations of the S-1 and S-2 tanks are 178.5 feet. The tanks are interconnected by a 10-inch line. Water from each of the tanks discharges through separate 24-inch mains and combines to a single 30-inch transmission main.

Other water storage tanks in the JBPHH system include the three tanks at Camp Smith, a storage tank serving the Red Hill Housing area, and three storage tanks serving the Army's Aliamanu Housing area. The Red Hill and Aliamanu tanks are supplied by separate booster pump stations located at the Red Hill Water Pumping Station and the Halawa Storage Tanks, respectively. These tanks are dedicated to serving these two non-Navy housing areas.

February 11, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: S1 AND S2 WATER STORAGE TANK FLUSHING REPORT

Ref: (a) Drinking Water Distribution System Recovery Plan, December 2021

1. This letter documents the current status of the S1 and S2 water storage tanks. In accordance with reference (a), the S1 and S2 water storage tanks were part of the Zone F1 flushing plan. The flushing plan for Zone F1 included both water storage tanks in the five volumetric turnover calculations. The calculated turnover volume was 61.35 million gallons of water. The S1 tank was flushed by cycling the water tank for five volumetric flushes. In order to conserve the amount of water being used in the flushing of Zone F1, the S2 water storage tank was taken out of service and remains out of service to date. This decision resulted in the conservation of approximately 25 million gallons of water. The Hawaii Department of Health (HDOH) was notified of the Navy's modified flushing plan and provided concurrence. The S2 water storage tank is being scheduled for cleaning and maintenance. The Navy will provide details to HDOH on the method and procedures for cleaning and maintenance of the S2 water storage tank prior to the start of work. The Navy will notify the HDOH upon completion of the work and the tank being placed back into service.

2. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and the submitted information is true, accurate, and complete.

MENO.MICHAEL.WAYNE.JR.1088310035
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Date: 2022.02.12 14:33:42 -10'00'

M. W. Meno
Captain, U.S. Navy Civil Engineer Corps

ENCL(2)

25 February 2022

MEMORANDUM FOR RECORD

SUBJECT: Inspection, Maintenance, and Cleaning of Potable Water Tanks

1. This Memorandum for Record (MFR) is to document the summary processes for inspection, maintaining, and cleaning storage tanks within the Joint Base Pearl Harbor-Hickam potable water system. There are seven potable water storage tanks. Each tank holds water that is consistently in flux – rising and falling according to the dynamic demands for water under certain pressures at specific times. As such, the tanks are continually cycling fresh water recently pumped from the well and chlorinated at the treatment plant. JBPH-H does not drain and clean the tanks per a schedule, however the following records indicate recent cleaning. Tank cleaning follows AWWA M42 - Steel Water Storage Tanks.
    a. S1 tank inspected and cleaned in 2010, cleaned by in-house EV remediation shop, mainly to remove sediment from the tank floor.
    b. S2 tank inspected and cleaned 2007, cleaned by in-house remediation shop, mainly to remove sediment from the tank floor.
    c. Red Hill tank No. 685 was inspected in 2013, via remote camera vehicle
    d. Red Hill tank No. 316 was installed in 2017 and has not yet been inspected
    e. Camp Smith tanks (3) were inspected and cleaned in 2013.

2. As the seven tanks have not been inspected a group for several years, the Public Works Department shall funds and contract a complete inspection and cleaning for all tanks in accordance with AWWA standards by then end CY 2022.

3. Tanks are monitored and operated using a Supervisory Control and Data Acquisition (SCADA) system to ensure that they are at the right levels and pumps and valves are operating at prescribed times and speeds, overseen by Utilities staff 24/7. Our field team is regularly physically engaged with these tanks to ensure functionality, condition, and security of the tanks. There are frequent field actions near and connected to the tanks – they are routinely inspected per the requirements to manage the system.

4. As the tank hardware ages and requires repair and replacement, a tank may be isolated, drained and taken out of service to conduct this work. At these times, when work involved the interior of the tank, a full cleaning and refilling is conducted. This is typically done with a contract.

5. The S2 tank, a 6 MG tank that, with the S1 tank, provides the ability to keep pressurized water in the system for firefighting while serving the domestic demand, has been secured from the rest of the system since December 22, 2021. The water in the tank has been sampled and the results have shown a non-detect for TPH. Public work will make repairs and clean this tank within the next 90 days. The process to flush, clean and return the tank to the system is as follows:
    a. Repair S1/S2 overflow 24” drain line with Cured-in-Place Pipe
    b. Drain S2 tank via existing drain line, leading to the city storm drainage system
    c. Clean and Disinfect S2 tank (Following ANSI/AWWA C652-02: Disinfection of Water-Storage Facilities)
    d. Perform bacteriological and TPH sampling and testing
    e. Return S2 tank to service

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CAPT R. Harmeyer
Public Works Officer
Joint Base Pearl Harbor Hickam

22 February 2022

MEMORANDUM FOR RECORD

SUBJECT: Ford Island/Shipyard Water Transmission Line Status

1. This Memorandum for Record (MFR) is to document the status of the underwater crossing water transmission line (pipe) that connects the Ford Island and Shipyard areas of the Joint Base Pearl Harbor-Hickam Potable Water System.

2. As part of the P-209 Dry Dock 3 Replacement design effort, a contractor was performing soil borings at Hospital Point near the Shipyard. The contractor damaged the 24-inch underwater crossing during one of their borings on 15 June 21, by drilling through the casing and pipe.

3. JBPHH has begun plans for repairing or replacing this damaged line. A Design consultant is scheduled to start the design on the repairs in March of 2022. Construction funds for the repair are allocated for Fiscal Year 2023.

4. The water transmission line was secured from the JBPHH system via an isolation valve on the Ford Island side, and physical pipe removal on the Shipyard side. Enclosure [1] is a picture taken on 22 January 2022 of the physical pipe removal at Hospital Point.

5. The Ford Island isolation valve is less than 5 years old, and PWD personnel have verified in the field that there are no indications of leak-by, via audible tests and noting the lack of vibrations.

6. A pitot-style flow meter that has been sending false readings is located in the currently isolated section is, as there is no water flow in this not-in-service piping. Isolation was performed with in-house NAVFAC forces on 5 Dec 2021. PWD has not explored the root cause of the false reading, as the piping is isolated, and the meter is not used for any other purposes. Possible cause of the flow readings may be air trapped in the lines that shows pressure differentials as tide changes.

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CAPT R. Harmeyer
Public Works Officer
Joint Base Pearl Harbor Hickam

ENCL(4)

25 February 2022

MEMORANDUM FOR RECORD

SUBJECT: Joint Base Pearl Harbor-Hickam – Iroquois Point Water Connection

ENCL.: (1) Interconnection line drainage schematic

1. This Memorandum for Record (MFR) is to document the process to reopen and flush the 24" potable water system interconnection line between Iroquois Point and Bishop Point on Joint Base Pearl Harbor-Hickam.

2. Like most looped systems, the water in this interconnection flows in both directions depending on demand. On work days, when residents are typically not on Iroquois Point and the Joint Base is operating, water typically flows from west to east. On nights and weekends, the water may flow from east to west, depending on if the Kapilina Homes in Iroquois Point is operating the irrigation system, and similarly, what the demand is on the Joint Base proper from housing communities near Bishop Point. The long-term closure of the line is possible because each zone has multiple feeds. The presence of these looped interconnections allows redundancy – if one feed goes off-line for maintenance or unexpectedly, the area has a redundant feed to continue service.

3. The interconnection was secured on 05 Dec. 2021 by closing the gate valve on each end (shore) of the interconnection. The water between these valves has not moved since then. When we bring this section back online, the process will be as follows, and according to the diagram in Enclosure (1).

    a. Secure two additional valves (126 and 130 at West Loch). See Enclosure (1).
    b. Open valve 128 (currently shut) at West Loch
    c. Open valve at Hickam that is currently shut
    d. Open and flush from hydrant no. 64 at West Loch, located between valves 126 and 128.
    e. Flush transmission line for 6-8 hours to the sanitary sewer.
    f. Flushing, chlorination and testing of the transmission main will follow ANSI/AWWA C651-05: Disinfecting Water Mains.
    g. Collect first sample for bacteriological testing after flushing.
    h. Collect second sample (at least 24 hours after first sample) for bacteriological testing.
    i. Open valves 126 and 130 and valves on Bishop Point, completing the loop.

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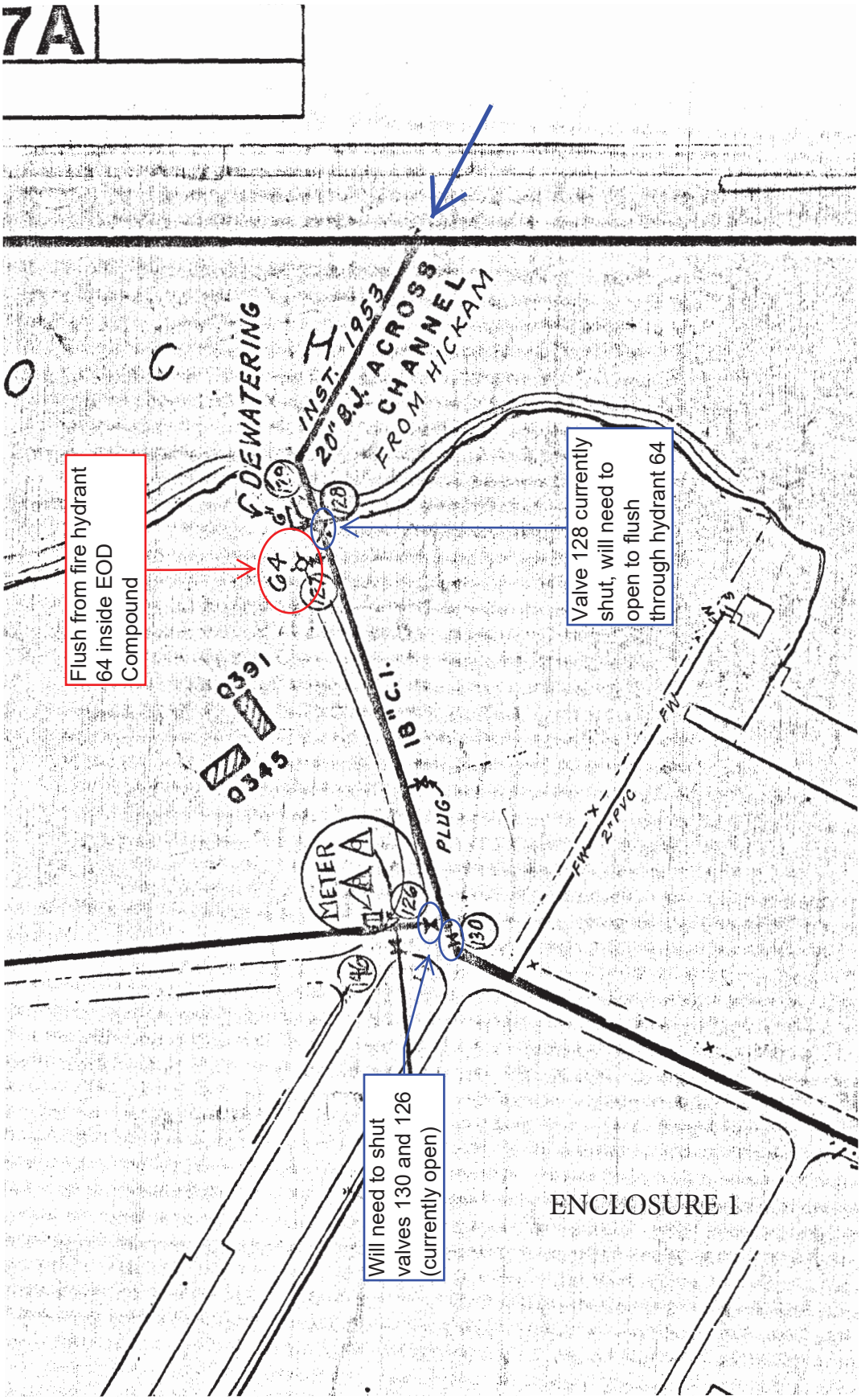
CAPT R. Harmeyer
Public Works Officer
Joint Base Pearl Harbor Hickam


7A
INST. 1953
20" B.J. ACROSS
CHANNEL
FROM HICKAM
DEWATERING
Flush from fire hydrant
64 inside EOD
Compound
Valve 128 currently
shut, will need to
open to flush
through hydrant 64
Will need to shut
valves 130 and 126
(currently open)
ENCLOSURE 1

22 February 2022

MEMORANDUM FOR RECORD

SUBJECT: Board of Water Supply Interconnection Status

Ref: [1] Management Inquiry Into Manana Booster/BWS dtd 29 Dec 2021

1. This Memorandum for Record (MFR) is to document the status of the Board of Water Supply (BWS) interconnections with the Joint Base Pearl Harbor Hickam Potable Water System. The JBPHH system has four interconnection points with BWS: (1) Puuloa Road, (2) Halawa Heights Road, (3) Manana Housing, and (4) Red Hill.

2. BWS physically removed the meters from two of the interconnections, creating an "air gap" between the BWS system and the Navy system at both the Puuloa Road location and the Halawa Heights Road location. BWS performed that work on or around 10 December 2021. PWD personnel confirmed that the meters were removed on 14 December 2021.

3. Red Hill and Manana Housing BWS interconnections are still physically connected. The Red Hill interconnection is isolated on both the BWS side and Navy side of the connection. Manana interconnection was opened on 16 November 2021, and is feeding Manana housing. Isolation valves have been secured from the Navy supply to Manana, to isolate Manana Housing from the JBPHH System (Reference [1]).

4. Prior to December 2017, there was a fifth BWS interconnection with the JBPHH system, located at Geiger Road. The Kalaeloa area of the JBPHH water system was transferred from Navy to the Kalaeloa Water Company in December 2017. The BWS interconnection was included in the transfer. Shortly after the transfer, PWD Utilities personnel physically removed the connection from West Loch to Geiger Road piping, "air gapping" the KWC system and the JBPHH system.

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CAPT R. Harmeyer
Public Works Officer
Joint Base Pearl Harbor Hickam

ENCL(6)

March 7, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: ZONE C1 DISTRIBUTION SYSTEM SAMPLE AND EXCEEDANCE RESAMPLE REPORT

Encl: (1) Zone C1 Stage 2 Distribution Sampling Report
(2) Zone C1 Distribution System Sampling Report
(3) Laboratory Report, SDG 580-109054-2, Level 2, Eurofins FGS, Seattle, 2022-02-09
(4) AECOM Technical Review of BCEE in sample results dtd 27 FEB 2022
(5) Eurofins Corrective Action Memo for AECOM bis (2-Chloroethyl) ether false positives
(6) DoH's Guidance on the Approach to Amending the Public Health Advisory, Addendum 1 dtd 12 FEB 2022
(7) DoH SVOC Sample Results for Zone C1 Distribution System and Buildings
(8) DoH TPH Sample Results for Zone C1 Distribution System and Buildings

1. The Zone C1 Distribution System sampling results are listed in enclosures (1) and (2). Enclosure (1) contains the initial distribution system sample results for Zone C1. Enclosure (2) documents additional distribution samples that were taken in Zone C1. The samples of the distribution system were taken at the hydrants. The categories of the results are broken down into non-detect, detect below limit levels, and exceedance. A non-detect occurs when the laboratory does not detect a measurable amount of an analyte. A detect below limit levels occurs when the laboratory detects a measurable amount of an analyte below Incident Specific Paramaters (ISPs), Department of Health (DoH) Environmental Action Levels (EALs) or Maximum Contaminant Levels (MCLs), or Environmental Protection Agency (EPA) MCLs. An exceedance occurs when the laboratory detects a chemical and the amount detected is higher than established acceptable thresholds. All chemical and metal detections are shown in enclosures (1) and (2). The various agency limits are listed for reference and the result along with the location of the exceedance sample is listed in tabular form. Results highlighted in yellow exceed the ISP. Results in purple font also exceed the EAL. Results in green font also exceed the DOH MCL. Results in blue font also exceed the EPA MCL.

2. Bis (2-chloroethyl) ether (BCEE) was detected in the Zone C1 screening sample taken on January 5, 2022 as shown in enclosure (1). The detection of this compound seemed to be an anomaly. As a result of this possibility, AECOM conducted a technical review of the lab procedure and found an error that resulted in a false detect. AECOM notified the laboratory of their technical review. On page 3 of enclosure (3), the laboratory report states that:

"02/07/2022: The report has been revised to report the 8270E analyte Bis (2-chloroethyl) ether as ND after further review of the data. Samples were initially reported to contain Bis (2-chloroethyl) ether above the reporting limit. Upon further review, these results do contain

ions 93 and 95 in adequate ratios and at a satisfactory retention time; however, the results do not contain ion 63 at an adequate ratio, nor does the overall fragmentation pattern match that of Bis (2-chloroethyl) ether. Therefore, these detections have been identified as false positives and the status of Bis (2-chloroethyl) ether has been revised as non-detect."

This is fully documented in enclosure (2) which reflects the corrected BCEE sample results for the screening sample taken on January 5, 2022. As a precaution, the Navy resampled the hydrant on February 4, 2022 that was previously sampled and the result was non-detect for BCEE as shown in enclosure (2). Enclosure (4) documents the technical review conducted by AECOM. The EPA stated in IDWST deliberations their concurrence with the conclusion of a false detect after independent review from the Region 9 laboratory and contractor resources. Enclosure (5) provides amplifying information from Eurofins Laboratory regarding the false detection of BCEE. Based upon the amplifying information from Eurofins Laboratory and discussion among the IDWST, it was concluded that neither BCEE nor the misidentified by-products of chlorine and the stabilizer of the lab's extraction agent, 2-methyl-2-butene (amylene), were in the sampled water. A reaction of normal chlorination in the water and the stabilizer of the lab's extraction agent caused the formation of a polychlorinated amylene that was misidentified as BCEE. This compound could not form in the distribution system in the presence of chlorine because the stabilizer in the lab's extraction agent would not be present to cause that reaction.

3. Enclosure (6) sets the DOH project screening level for copper at the action level of 1,300 parts per billion (ppb). Enclosure (7) and enclosure (8) are the test results for samples taken by DoH. There were no exceedances above the MCL and no exceedances of ISPs that required further action. Based on all of the information presented above, no further action was required regarding the distribution system for Zone C1. The laboratory reports will be made publically available at https://jbphh-safewaters.org/ upon amendment of the health advisory for Zone C1.

4. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and the submitted information is true, accurate, and complete.

MENO.MICHAEL.WAYNE.JR.1088310035 Digitally signed by MENO.MICHAEL.WAYNE.JR.1088310035 Date: 2022.03.07 19:59:40 -10'00'

M. W. Meno
CAPT, CEC, USN

Interagency Drinking Water System Team

Drinking Water Distribution System Recovery Plan: *Stage 2 Sampling Results for Zone C1*

Joint Base Pearl Harbor-Hickam (JBPHH)

04 February 2022

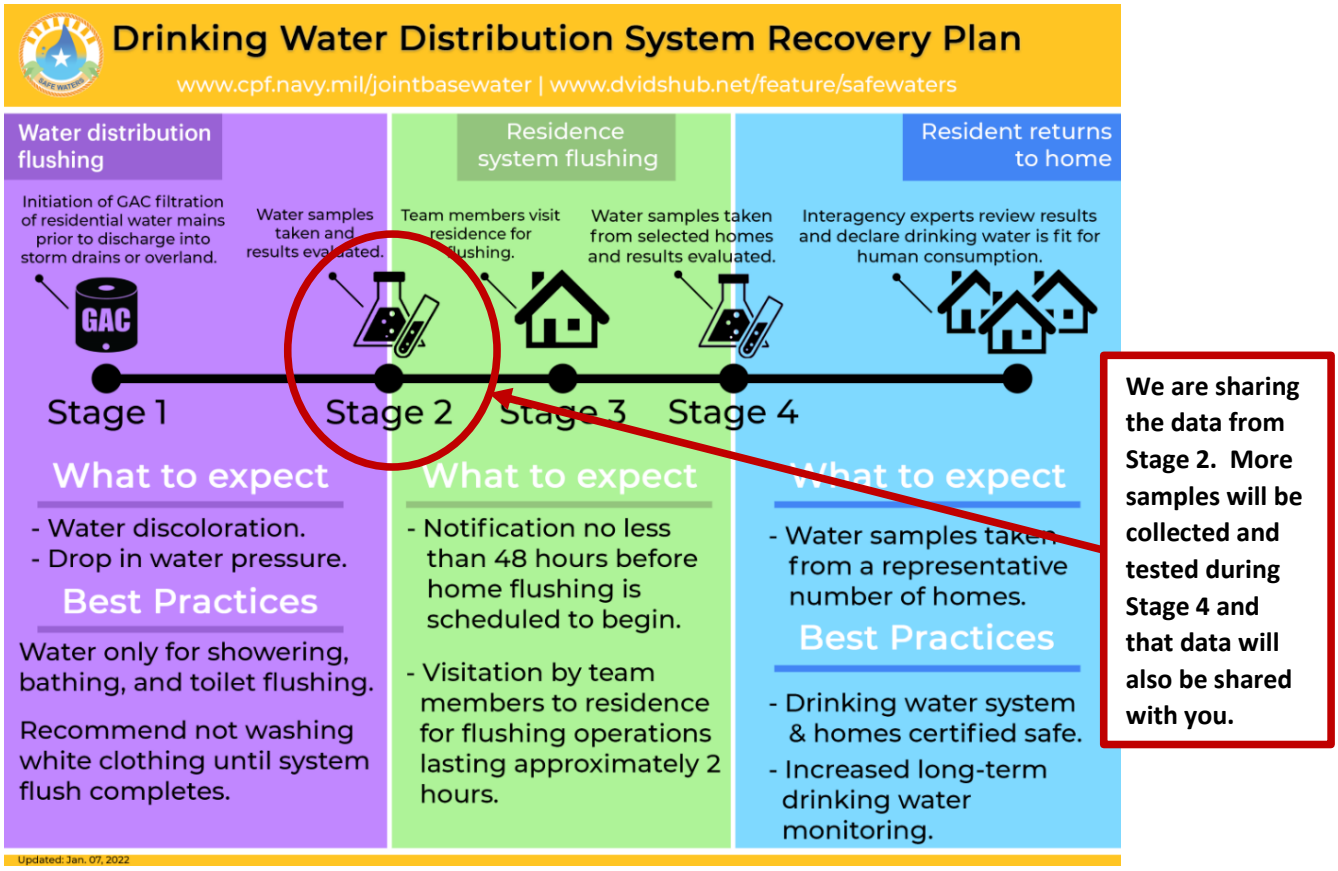
Neighborhoods included in Zone C1: SUB BASE

EXECUTIVE SUMMARY FOR ZONE C1

The State of Hawaii Department of Health's (DOH) November 29, 2021 Public Health Advisory for the JPBHH Public Water System for Zone C1 remains in effect. DOH recommends all Navy water system users should avoid using the water for drinking, cooking, or oral hygiene. This includes consumption by pets. Navy water system users who detect a fuel-like odor from their water should also avoid using the water for bathing, dishwashing or laundry.

We have thoroughly flushed, sampled, and tested the water distribution system lines (Water Mains) in Zone C1. This Zone has moved to Stage 3–Building Flushing/Stage 4-Building Sampling, in the Drinking Water Distribution System Recovery Plan (see the Figure below). Based on the samples collected and tested, to date, this water meets all U.S. Environmental Protection Agency (EPA) and State of Hawaii Department of Health (DOH) standards that are applicable to the Navy Water System Incident.

No final conclusions or recommendations can be made at this time for the drinking water in your zone because more drinking water samples are being collected and tested from Water Mains, residences, buildings, schools, and child development centers (after they have been flushed). We are sharing this information to keep you updated on our progress towards restoring the water supply being provided to your community.



For additional information, please visit: https://www.cpf.navy.mil/JBPHH-Water-Updates/.

Table 1. Contaminants Detected in Drinking Water Samples Collected from Water Mains in Zone C1

Contaminant	Sampling Date	Units	DOH Project Screening Level	Basis of DOH Screening Level[2]	Highest Level Detected	Meets DOH Screening Level? (Yes / No)	Typical Source of Contaminant
Contaminants of Concern[1]							
Benzene	01/06/2022	ppb	5	MCL	ND	**Yes**	Discharge from factories; Leaching from gas storage tanks and landfills
Ethylbenzene	01/06/2022	ppb	700	MCL	ND	**Yes**	Discharge from petroleum refineries
Toluene	01/06/2022	ppb	1000	MCL	ND	**Yes**	Discharge from petroleum factories
m,p-Xylenes	01/06/2022	ppb	10000	MCL	ND	**Yes**	Discharge from petroleum factories; Discharge from chemical factories
o-Xylenes	01/06/2022	ppb	10000	MCL	ND	**Yes**	
1-Methylnaphthalene	01/06/2022	ppb	2.1	ISP	ND	**Yes**	Used to make other chemicals such as dyes, and resins; also, present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites
2-Methylnaphthalene	01/06/2022	ppb	4.7	ISP	ND	**Yes**	Used to make other chemicals such as dyes, and resins; also used to make vitamin K; and is present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites
Naphthalene	01/06/2022	ppb	12	ISP	ND	**Yes**	Naphthalene is found in coal tar or crude oil and is used in the manufacture of plastics, resins, fuels, and dyes, and as a fumigant
Lead	01/06/2022	ppb	15	ISP	0.91	**Yes**	Corrosion of household plumbing systems; Erosion of natural deposits
Total Petroleum Hydrocarbons (TPH)-Gasoline	01/06/2022	ppb	200	ISP	ND	**Yes**	Gasoline is a petroleum product that can contaminate drinking water through spills and other releases into the environment
TPH-Diesel (C9-C25)	01/06/2022	ppb	200	ISP	ND	**Yes**	Diesel is a petroleum product that can contaminate drinking water through spills and other releases into the environment
TPH-Oil (C24-C40)	01/06/2022	ppb	200	ISP	ND	**Yes**	Oil is a petroleum product that can contaminate drinking water through spills and other releases into the environment
Total Organic Carbon (TOC)	01/06/2022	ppb	2000	ISP	310	**Yes**	Naturally present in the environment, but also can be an indicator of contamination, including petroleum or other sources

Contaminant	Sampling Date	Units	DOH Project Screening Level	Basis of DOH Screening Level[2]	Highest Level Detected	Meets DOH Screening Level? (Yes / No)	Typical Source of Contaminant
Metals							
Barium	01/06/2022	ppb	2000	MCL	4.0	**Yes**	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chromium	01/06/2022	ppb	100	MCL	1.5	**Yes**	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints
Copper	01/06/2022	ppb	1300	AL	2.6	**Yes**	Corrosion of household plumbing systems; Erosion of natural deposits
Volatile Organic Compounds							
Bromoform	01/05/2022	ppb	–	–	4.1	**Yes**	One of the trihalomethane compounds; see TTHM
Total Trihalomethanes (TTHM)	01/05/2022	ppb	80	MCL	4.1	**Yes**	By-product of drinking water disinfection
Synthetic Organic Compounds (SOCs) or Semi-Volatile Organic Compounds (SVOCs)							
3 & 4 Methylphenol (commonly referred to as meta-Cresol/para-Cresol)	01/05/2022	ppb	–	–	0.14	**Yes**	Cresols are used to dissolve other chemicals, to make other chemical compounds, and as disinfectants and deodorizers; enter the environment as the result of manufacture and use
Bis(2-Chloroethy)ether	01/05/2022	ppb	0.014	EAL	0.10	**No[5]**	Man-made intermediate chemical used in other compounds or pesticides; It can also be used as a solvent, cleaner, component of paint and varnish, and rust inhibitor; Enters the environment as the result of manufacture and use
Di(2-ethylhexyl) adipate (aka Bis(2-ethylhexyl) adipate)	01/06/2022	ppb	400	MCL	0.063	**Yes**	Discharge from chemical factories

Notes:

1. *These contaminants are listed whether detected or non-detect (ND) because these are incident specific. All other contaminants are only listed if detected.*
2. *DOH uses multiple criteria to assess the safety of the drinking water including maximum contaminant levels (MCLs) previously established environmental action levels (EALs) and incident specific parameters (ISPs).*
3. *Acronyms and explanation of terms used in this table are presented on the following pages. For assistance in understanding and interpreting information in this table, refer to FACT SHEET, Understanding You Water Quality Summary Table, available online at: https://www.cpf.navy.mil/JBPHH-Water-Updates/.*
4. *For more information regarding Total Petroleum Hydrocarbons, refer to the FACT SHEET What Are Petroleum Hydrocarbons?, available online at: https://health.hawaii.gov/about/files/2021/12/21.12.16_What-Are-Petroleum-Hydrocarbons.pdf.*
5. *In addition to testing drinking water for contaminants regulated under the Safe Drinking Water Act, we also tested for some contaminants that are not regulated. Unregulated contaminants do not have legal limits for drinking water (i.e., they do not have MCLs) but may have a screening level (e.g., Tier 1 EAL). Tier 1 EALs are*

concentrations of contaminants in drinking water and other media (e.g., soil, soil gas, and groundwater) below which the contaminants are assumed to not pose a significant threat to human health or the environment. Exceeding the Tier 1 EAL does not necessarily indicate that contamination at the site poses environmental hazards and may be set at levels that are impossible for water systems to meet (for example, large-scale treatment technology may not exist for a given contaminant). Per DOH's 12/30/2021 DOH's Guidance on the Approach to Amending the Drinking Water Health Advisory, if the Tier 1 EAL is exceeded, the Navy shall investigate the source(s) of the contamination under direction of the DOH. The DOH EAL is based on the EPA tapwater Regional Screening Level for Bis(2-Chloroethyl)ether (https://semspub.epa.gov/src/document/HQ/401655). Bis(2-Chloroethyl)ether (BCEE) was not detected in JP-5 product samples from the Red Hill Shaft. "In the past, BCEE has been used as a solvent for fats, waxes, greases, and esters (Schrenk et al. 1933). It has also been used as a constituent of paints and varnishes, as a cleaning fluid for textiles, in the purification of oils and gasoline, in the manufacture of medicines and pharmaceuticals, as an intermediate in the synthesis of other chemicals, and as an insecticide and a soil fumigant (Browning 1965; Hake and Rowe 1963; HSDB 1988; Verschueren 1977; Windholz 1983)." See the following link for more information: https://www.atsdr.cdc.gov/toxprofiles/tp127.pdf.

Drinking Water Distribution System Recovery Plan: Stage 2 Sampling Results for Zone C1

What is the purpose of this Stage 2 Sampling Results Report?

This is a progress report and presents the testing results from drinking water distribution system samples that have been collected, to date, from the water distribution system lines (Water Mains) in your Zone. These samples were collected after extensive flushing of the distribution system was performed using clean water from the Navy Waiawa Shaft. This is Stage 2 of the 4-Stage process described in the Drinking Water Distribution System Recovery Plan.

No final conclusions or recommendations can be made at this time for the drinking water in your zone because more drinking water samples are being collected and tested from Water Mains, residences, buildings, schools, and child development centers. We are sharing this information to keep you updated on our progress towards restoring the water supply being provided to your community.

What was found?

The table presented above (Table 1) presents all contaminants that were detected in drinking water samples that have been collected, to date, from the Water Mains in your Zone during Stage 2. Hawaii DOH used multiple standards/criteria (called DOH Project Screening Levels) to assess the safety of the drinking water to include:

- EPA and Hawaii DOH Maximum Contaminant Levels (MCLs) standards for drinking water,
- Previously established Environmental Action Levels (EALs); and
- Incident Specific Parameters (ISPs).

Based on these data, this Zone moved to Stage 3–Building/Home Flushing, in the Drinking Water Distribution System Recovery Plan.

What contaminants were tested?

Drinking water, including bottled water, can contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants tested can be obtained by calling the Hawaii DOH Safe Drinking Water Branch at 808-586-4258.

In order to ensure that drinking water is safe to drink, EPA and Hawaii DOH regulate the amount of certain contaminants in water provided by public water systems. The primary categories of monitored contaminants include volatile organic compounds (VOCs), synthetic organic chemicals (SOCs)/semi-volatile organic compounds (SVOCs), metals, Total Petroleum Hydrocarbons (TPH), Total Organic Carbon (TOC) chlorine and pH. A description of these contaminant categories can be found under Explanation of Terms located at the end of this report. The full list of contaminants that were tested for are

presented in the laboratory reports are located at: https://www.cpf.navy.mil/JBPHH-Water-Updates/.

What happened leading up to Public Health Advisory being issued?

After receiving reports of a fuel-like smell or visual sheen in the drinking water from residents of Joint Base Pearl Harbor – Hickam (JBPHH) on November 28, 2021, the Navy immediately stopped using water from the Red Hill Shaft. Out of abundance of caution, the Navy also stopped using water from the Navy Aiea Halawa Shaft. The Navy's water system provides drinking water to JBPHH, including the Army, Air Force, Marine Corps, and Hawaii residents in some neighborhoods close to JBPHH. The Hawaii DOH issued a Public Health Advisory on November 29, 2021. The Hawaii DOH, the United States Environmental Protection Agency (EPA), Navy, and Marine Corps Public Health Center, and Army formed the Interagency Drinking Water System Team (IDWST) to work on a coordinated effort to restore safe drinking water to all Navy Water System users.

Has the Public Health Advisory been amended or lifted?

No. Please continue to follow the Public Health Advisory for Navy Water System users and only use your drinking water for non-consumptive purposes as long as your water does not have a visible sheen and remains odor free. Your service may have provided more restrictive guidance. As stated above, we are at Stage 2 of the 4-Stage process described in the Drinking Water System Recovery Plan and the Public Health Advisory will be re-evaluated by Hawaii DOH after Stage 4 in the process.

Where does our water come from?

The source of all water for all Navy Water System users now comes only from the Navy Waiawa Shaft, which was not impacted by the release of Jet Fuel (JP-5) that occurred at Red Hill in late November 2021. The Waiawa Shaft has been sampled and EPA and DOH confirmed that it meets all federal and state drinking water standards and it will continue to be sampled in accordance with EPHA and DOH requirements.

What is the IDWST doing to clean the drinking water distribution system?

The IDWST evaluated multiple options for cleaning the Navy drinking water distribution system and determined that high-volume flushing of the Navy drinking water distribution system (all water mains/laterals/buildings) with 3 to 5 volumes of clean water from the Waiawa Shaft, followed by extensive testing to confirm that flushing worked, would restore safe drinking water to all Navy Water System users.

When was Water Main flushing conducted in Zone C1?

The final round of distribution water main flushing in Zone C1 was completed on January 04, 2022.

How much water was flushed through the water distribution system in Zone C1?

From January 02 – 04, 2022, a total of 0.8 million gallons was flushed through Zone C1.

Where can I get more information about the potential health effects associated with these contaminants?

Hawaii Department of Health (DOH)
https://health.hawaii.gov/about/navy-water-system-quality-updates/.
Call the DOH Safe Drinking Water Branch at 808-586-4258

US Environmental Protection Agency (EPA)
https://www.epa.gov/ground-water-and-drinking-water/forms/online-form-epas-office-ground-water-and-drinking-water.
Call EPA Region 9's Environmental Information Center at 1-866-372-9378

See the FACT SHEET, Understanding Your Water Quality Summary Table, available online at: https://www.cpf.navy.mil/JBPHH-Water-Updates/.

Acronyms used in the Table

AL	Action Level (for Lead and Copper)
DOH	Hawaii Department of Health
EAL	Environmental Action Level
EPA	U.S. Environmental Protection Agency
ISP	Incident Specific Parameter
MCL	Maximum Contaminant Level
ND	Non-Detect
ppb	parts per billion (or ug/L)
SDWA	Safe Drinking Water Act
SOCs	Synthetic Organic Compounds (also known as SVOCs)
SVOCs	Semi-Volatile Organic Compounds (same as SOCs)
TPH	Total Petroleum Hydrocarbons
TOC	Total Organic Carbon
ug/L	micrograms per liter (or ppb)
VOCs	Volatile Organic Compounds

Explanation of Terms used in this Report

Action Level (AL). This AL is for Lead and Copper. The AL is a measure of the effectiveness of the corrosion control treatment in water systems. The AL is not a standard for establishing a safe level of lead or copper. The AL is the point at which certain provisions of the proposed standards must be initiated.

Contaminant. Contaminant is any physical, chemical, biological, or radiological substance or matter in water, and can be either healthy or unhealthy, depending on the particular substance and concentration. It could also be a physical parameter monitored like pH or temperature.

Incident Specific Parameters (ISP). To more comprehensively monitor and respond to this specific petroleum contamination of drinking water, the DOH identified contaminants that require additional action prior to amending the Health Advisory. The ISP is used as a line of evidence to evaluate the data generated in each Zone during the investigation conducted by the IDWST.

Maximum Contaminant Level (MCL). An MCL is the maximum permissible level of a contaminant in water which is delivered to any user of a public water system. The MCL is set to protect the public from acute and chronic health risks associated with consuming water containing these contaminants.

Metals. Metals are chemicals that are not derived from living sources and in general do not contain carbon. Metals include antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, copper, cyanide, fluoride, lead, mercury, nitrate, nitrite, selenium, and thallium. These contaminants get into drinking water supplies through industrial discharge or spills, erosion of natural deposits, corrosion, sewage discharge, fertilizer runoff, and other sources.

Project Specific Screening Level. DOH uses multiple criteria to assess the safety of the drinking water including maximum contaminant levels (MCLs), previously established environmental action levels (EALs) and incident specific parameters (ISPs).

Synthetic Organic Compounds (SOCs)/Semi-Volatile Organic Compounds (SVOCs). SOCs and SVOCs may be used interchangeably and are man-made, organic (carbon-based) chemicals that are less volatile than Volatile Organic Contaminants (VOCs). They are used as pesticides, defoliants, fuel additives, and as ingredients for other organic chemicals.

Tier 1 Environmental Action Level (EAL). Tier 1 Environmental Action Levels (Tier 1 EALs) are concentrations of contaminants in drinking water and other media (e.g., soil, soil gas, and groundwater) below which the contaminants are assumed to not pose a significant threat to human health or the environment. Exceeding the Tier 1 EAL does not necessarily indicate that contamination at the site poses environmental hazards but generally warrants additional investigation.

Total Petroleum Hydrocarbons (TPH). TPH is a term used to describe a large family of several hundred chemical compounds that come from crude oil. Crude oil is used to make petroleum products, which can contaminate the environment. TPH is grouped by TPH-Gasoline, TPH-Diesel, and TPH-Oil.

Total Organic Carbon (TOC). TOC is naturally present in the environment, but also can be an indicator of contamination, including petroleum or other sources.

Units. A unit is the concentration of contaminant found in the water. For this report, the units are expressed in U.S. Standard Units.

U.S. Standard Unit (Name)	Acronym	Equivalent International System of Units (Name)	Acronym
parts per million	ppm*	milligrams per Liter	mg/L
parts per billion	ppb*	micrograms per Liter	ug/L

*One (1) part per million (ppm) is 1,000 parts per billion (ppb).

Volatile Organic Compounds (VOCs). VOCs are a class of chemicals that contain carbon and evaporate, or volatilize, easily into air at room temperature. VOCs are found in a variety of commercial, industrial, and residential products, including gasoline, solvents, cleaners and degreasers, paints, inks and dyes, and pesticides.

C1 Zone Distribution Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					C1-HYD1183	C1-HYD1183	C1-HYD1765	C1-HYD1769	C1-HYD354	C1-HYD444	C1-HYD817
Location Type:					Hydrant	Hydrant	Hydrant	Hydrant	Hydrant	Hydrant	Hydrant
Residence:					FH ID: 512	FH ID: 512	FH ID: FH 503	FHID: 563	FHID: 479	FHID: 413	FHID: 530A
Field Sample ID:					20220105-C1-ZT03	220203C1ZT03	20220106-C1-ZT06	220117-C1-XT06	220117-C1-XT02	220117-C1-XT03	220117-C1-XT01
Sample Date:					2022-01-05	2022-02-03	2022-01-06	2022-01-17	2022-01-17	2022-01-17	2022-01-17
Sample Type:					N	N	N	N	N	N	N
GENCHEM (mg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**			**SDG: 2A08001**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**
Total Organic Carbon	2	None	None	None	--	--	**0.311**	0.190 U	0.190 U	0.190 U	0.190 U
HC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 5801090542**			**SDG: 5801094391**	**SDG: 5801094391**	**SDG: 5801094391**	**SDG: 5801094391**
Petroleum Hydrocarbons (as Diesel)	200	400	None	None	87.0 U	--	--	91.0 U	92.0 U	**94.0 J**	93.0 U
Petroleum Hydrocarbons (as Gasoline)	200	300	None	None	31.0 U	--	--	31.0 U	31.0 U	31.0 U	31.0 U
Petroleum Hydrocarbons (as Motor Oil)	200	500	None	None	170 U	--	--	180 U	**180 J**	190 U	190 U
HG (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**			**SDG: 2A08001**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**
Mercury	0.025	0.025	2	2	--	--	0.0170 U	0.0170 U	0.0170 U	0.0170 U	0.0170 U
METAL (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**			**SDG: 2A08001**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**
Antimony	6	6	6	6	--	--	0.0889 U	0.0889 U	0.0889 U	0.0889 U	**0.115 J**
Arsenic	10	10	10	10	--	--	0.0741 U	**0.175 J**	**0.249 J**	**0.287 J**	**0.143 J**
Barium	220	220	2000	2000	--	--	**3.96**	**1.93**	**2.15**	**3.16**	**10.2**
Beryllium	0.66	0.66	4	4	--	--	0.0624 U	0.0624 U	0.0624 U	0.0624 U	0.0624 U
Cadmium	3	3	5	5	--	--	0.0416 U	0.0416 U	0.0416 U	0.0416 U	0.0416 U
Chromium	11	11	100	100	--	--	**1.51**	**1.30**	**1.09**	**1.39**	**1.13**
Copper	2.9	2.9	1300	1300	--	--	**2.58**	**2.62**	**16.3**	**0.877**	**0.427 J**
Lead	15	5.6	15	15	--	--	**0.906**	**0.362**	**1.19**	0.0827 U	**0.381**
Selenium	5	5	50	50	--	--	0.0666 U	**0.891**	**1.06**	**1.25**	**0.363 J**
Thallium	2	2	2	2	--	--	0.0210 U	0.0210 U	0.0210 U	0.0210 U	0.0210 U
SVOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 5801090542**	**SDG: 5801100361**	**SDG: 2A08001**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**
1,2,4-Trichlorobenzene	70	70	70	70	0.0940 U	0.0880 U	--	--	--	--	--
1,2-Dichlorobenzene	10	10	600	600	0.0520 U	0.0490 U	--	--	--	--	--
1,3-Dichlorobenzene	None	None	None	None	0.0420 U	0.0390 U	--	--	--	--	--

C1 Zone Distribution Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					C1-HYD1183	C1-HYD1183	C1-HYD1765	C1-HYD1769	C1-HYD354	C1-HYD444	C1-HYD817
Location Type:					Hydrant	Hydrant	Hydrant	Hydrant	Hydrant	Hydrant	Hydrant
Residence:					FH ID: 512	FH ID: 512	FH ID: FH 503	FHID: 563	FHID: 479	FHID: 413	FHID: 530A
Field Sample ID:					20220105-C1-ZT03	220203C1ZT03	20220106-C1-ZT06	220117-C1-XT06	220117-C1-XT02	220117-C1-XT03	220117-C1-XT01
Sample Date:					2022-01-05	2022-02-03	2022-01-06	2022-01-17	2022-01-17	2022-01-17	2022-01-17
Sample Type:					N	N	N	N	N	N	N
SVOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 5801090542**	**SDG: 5801100361**	**SDG: 2A08001**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**
1,4-Dichlorobenzene	5	5	75	None	0.0420 U	0.0390 U	--	--	--	--	--
1-Methylnaphthalene	2.1	10	None	None	--	--	0.00801 U	0.00801 U	0.00801 U	0.00801 U	0.00801 U
2,4,5-Trichlorophenol	None	None	None	None	--	0.0970 U	--	--	--	--	--
2,4,6-Trichlorophenol	None	None	None	None	--	0.0970 U	--	--	--	--	--
2,4-Dichlorophenol	None	None	None	None	--	0.190 U	--	--	--	--	--
2,4-Dimethylphenol	None	None	None	None	--	0.160 U	--	--	--	--	--
2,4-Dinitrophenol	None	None	None	None	--	1.60 U	--	--	--	--	--
2,4-Dinitrotoluene	None	None	None	None	0.100 U	0.0970 U	--	--	--	--	--
2,6-Dinitrotoluene	None	None	None	None	0.100 U	0.0970 U	--	--	--	--	--
2-Chloronaphthalene	None	None	None	None	0.0730 U	0.0680 U	--	--	--	--	--
2-Chlorophenol	None	None	None	None	--	0.0490 U	--	--	--	--	--
2-Ethylhexyl adipate	None	None	None	None	--	--	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
2-Methylnaphthalene	4.7	10	None	None	--	--	0.00904 U	0.00904 U	**0.00915 J**	0.00904 U	0.00904 U
2-Methylphenol (o-Cresol)	None	None	None	None	--	0.0490 U	--	--	--	--	--
2-Nitroaniline	None	None	None	None	0.100 U	0.0970 U	--	--	--	--	--
3,3'-Dichlorobenzidine	None	None	None	None	0.270 U	0.250 U	--	--	--	--	--
3-Nitroaniline	None	None	None	None	0.170 U	0.160 U	--	--	--	--	--
4,6-Dinitro-2-methylphenol	None	None	None	None	--	0.540 U	--	--	--	--	--
4-Bromophenyl phenyl ether	None	None	None	None	0.0630 U	0.0580 U	--	--	--	--	--
4-Chloro-3-methylphenol	None	None	None	None	--	0.130 U	--	--	--	--	--
4-Chloroaniline	None	None	None	None	0.620 U	0.570 U	--	--	--	--	--
4-Chlorophenyl phenyl ether	None	None	None	None	0.0520 U	0.0490 U	--	--	--	--	--
4-Nitroaniline	None	None	None	None	0.220 U	0.200 U	--	--	--	--	--
4-Nitrophenol	None	None	None	None	--	1.70 U	--	--	--	--	--
Acenaphthene	None	None	None	None	0.0520 U	0.0490 U	--	--	--	--	--
Acenaphthylene	None	None	None	None	0.0630 U	0.0580 U	--	--	--	--	--
Alachlor	None	None	None	None	--	--	0.0110 U	0.0110 U	0.0110 U	0.0110 U	0.0110 U
Anthracene	None	None	None	None	0.0520 U	0.0490 U	--	--	--	--	--
Atrazine	None	None	None	None	--	--	0.00734 U	0.00734 U	0.00734 U	0.00734 U	0.00734 U
Benzo(a)anthracene	None	None	None	None	0.0520 U	0.0490 U	--	--	--	--	--
Benzo(a)pyrene	0.06	0.06	0.2	0.2	0.0420 U	0.0390 U	0.0117 U	0.0117 UJ	0.0117 UJ	0.0117 UJ	0.0117 UJ
Benzo(b)fluoranthene	None	None	None	None	0.0420 U	0.0390 U	--	--	--	--	--
Benzo(g,h,i)perylene	None	None	None	None	0.0420 U	0.0390 U	--	--	--	--	--
Benzo(k)fluoranthene	None	None	None	None	0.0520 U	0.0490 U	--	--	--	--	--

C1 Zone Distribution Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					C1-HYD1183	C1-HYD1183	C1-HYD1765	C1-HYD1769	C1-HYD354	C1-HYD444	C1-HYD817
Location Type:					Hydrant	Hydrant	Hydrant	Hydrant	Hydrant	Hydrant	Hydrant
Residence:					FH ID: 512	FH ID: 512	FH ID: FH 503	FHID: 563	FHID: 479	FHID: 413	FHID: 530A
Field Sample ID:					20220105-C1-ZT03	220203C1ZT03	20220106-C1-ZT06	220117-C1-XT06	220117-C1-XT02	220117-C1-XT03	220117-C1-XT01
Sample Date:					2022-01-05	2022-02-03	2022-01-06	2022-01-17	2022-01-17	2022-01-17	2022-01-17
Sample Type:					N	N	N	N	N	N	N
SVOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 5801090542**	**SDG: 5801100361**	**SDG: 2A08001**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**
Benzyl butyl phthalate	None	None	None	None	0.280 U	0.260 U	--	--	--	--	--
Bis(2-chloroethoxy)methane	None	None	None	None	0.0520 U	0.0490 U	--	--	--	--	--
Bis(2-chloroethyl) ether (2-Chloroethyl ether)	None	None	None	None	0.0310 U	0.0290 U	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	3	3	6	6	0.770 U	0.720 U	0.437 U	0.437 U	0.437 U	0.437 U	0.437 U
Carbazole	None	None	None	None	0.100 U	0.0970 U	--	--	--	--	--
Chlordane	None	None	None	None	--	--	0.0669 U	0.0669 U	0.0669 U	0.0669 U	0.0669 U
Chrysene	None	None	None	None	0.0420 U	0.0390 U	--	--	--	--	--
Cresols, m- & p-	None	None	None	None	**0.140 J**	0.0970 U	--	--	--	--	--
Dibenz(a,h)anthracene	None	None	None	None	0.0730 U	0.0680 U	--	--	--	--	--
Dibenzofuran	None	None	None	None	0.100 U	0.0970 U	--	--	--	--	--
Diethyl phthalate	None	None	None	None	0.160 U	0.150 U	--	--	--	--	--
Dimethyl phthalate	None	None	None	None	0.0630 U	0.0580 U	--	--	--	--	--
Di-n-butyl phthalate	None	None	None	None	0.200 U	0.190 U	--	--	--	--	--
di-n-Octyl phthalate	None	None	None	None	0.140 U	0.130 U	--	--	--	--	--
Endrin	None	None	None	None	--	--	0.00991 U	0.00991 U	0.00991 U	0.00991 U	0.00991 U
Fluoranthene	None	None	None	None	0.0630 U	0.0580 U	--	--	--	--	--
Fluorene	None	None	None	None	0.0520 U	0.0490 U	--	--	--	--	--
gamma-BHC (Lindane)	None	None	None	None	--	--	0.00633 U	0.00633 U	0.00633 U	0.00633 U	0.00633 U
Heptachlor	None	None	None	None	--	--	0.00965 U	0.00965 U	0.00965 U	0.00965 U	0.00965 U
Heptachlor epoxide	None	None	None	None	--	--	0.0122 U	0.0122 U	0.0122 U	0.0122 U	0.0122 U
Hexachlorobenzene	0.0003	0.0003	1	1	0.0420 U	0.0390 U	0.0980 U	0.0980 U	0.0980 U	0.0980 U	0.0980 U
Hexachlorobutadiene	None	None	None	None	0.0630 U	0.0580 U	--	--	--	--	--
Hexachlorocyclopentadiene	50	None	50	50	0.150 U	0.140 U	0.00594 UJ	0.00594 U	0.00594 U	0.00594 U	0.00594 U
Hexachloroethane	None	None	None	None	0.0520 U	0.0490 U	--	--	--	--	--
Indeno(1,2,3-c,d)pyrene	None	None	None	None	0.140 U	0.130 U	--	--	--	--	--
Isophorone	None	None	None	None	0.100 U	0.0970 U	--	--	--	--	--
Methoxychlor	None	None	None	None	--	--	0.00863 U	0.00863 U	0.00863 U	0.00863 U	0.00863 U
Naphthalene	12	17	None	None	0.170 U	0.160 U	0.0103 U	0.0103 U	0.0103 U	0.0103 U	0.0103 U
Nitrobenzene	None	None	None	None	0.0420 U	0.0390 U	--	--	--	--	--
N-Nitrosodi-n-propylamine	None	None	None	None	0.0630 U	0.0580 UJ	--	--	--	--	--
N-Nitrosodiphenylamine	None	None	None	None	0.0730 U	0.0680 U	--	--	--	--	--
PCB, Total	None	None	None	None	--	--	0.0941 U	0.0940 U	0.0940 U	0.0940 U	0.0940 U
PCB-1016 (Aroclor 1016)	None	None	None	None	--	--	0.0157 U	0.0157 U	0.0157 U	0.0157 U	0.0157 U
PCB-1221 (Aroclor 1221)	None	None	None	None	--	--	0.0436 U	0.0436 U	0.0436 U	0.0436 U	0.0436 U

C1 Zone Distribution Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					C1-HYD1183	C1-HYD1183	C1-HYD1765	C1-HYD1769	C1-HYD354	C1-HYD444	C1-HYD817
Location Type:					Hydrant	Hydrant	Hydrant	Hydrant	Hydrant	Hydrant	Hydrant
Residence:					FH ID: 512	FH ID: 512	FH ID: FH 503	FHID: 563	FHID: 479	FHID: 413	FHID: 530A
Field Sample ID:					20220105-C1-ZT03	220203C1ZT03	20220106-C1-ZT06	220117-C1-XT06	220117-C1-XT02	220117-C1-XT03	220117-C1-XT01
Sample Date:					2022-01-05	2022-02-03	2022-01-06	2022-01-17	2022-01-17	2022-01-17	2022-01-17
Sample Type:					N	N	N	N	N	N	N
SVOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 5801090542**	**SDG: 5801100361**	**SDG: 2A08001**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**
PCB-1232 (Aroclor 1232)	None	None	None	None	--	--	0.0102 U	0.0102 U	0.0102 U	0.0102 U	0.0102 U
PCB-1242 (Aroclor 1242)	None	None	None	None	--	--	0.0737 U	0.0737 U	0.0737 U	0.0737 U	0.0737 U
PCB-1248 (Aroclor 1248)	None	None	None	None	--	--	0.0941 U	0.0941 U	0.0941 U	0.0941 U	0.0941 U
PCB-1254 (Aroclor 1254)	None	None	None	None	--	--	0.0869 U	0.0869 U	0.0869 U	0.0869 U	0.0869 U
PCB-1260 (Aroclor 1260)	None	None	None	None	--	--	0.0379 U	0.0379 U	0.0379 U	0.0379 U	0.0379 U
Pentachlorophenol	None	None	None	None	--	0.500 U	0.0242 U	1.00 U	0.0242 U	1.00 U	0.0242 U
Phenanthrene	None	None	None	None	0.130 U	0.120 U	--	--	--	--	--
Phenol	None	None	None	None	--	0.350 UJ	--	--	--	--	--
Pyrene	None	None	None	None	0.0420 U	0.0390 U	--	--	--	--	--
Simazine	None	None	None	None	--	--	0.00734 U	0.00734 U	0.00734 U	0.00734 U	0.00734 U
VOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 5801090542**		**SDG: 2A08001**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**
1,1,1-Trichloroethane	11	11	200	200	0.390 U	--	0.256 U	0.256 U	0.256 U	0.256 U	0.256 U
1,1,2,2-Tetrachloroethane	None	None	None	None	0.520 U	--	--	--	--	--	--
1,1,2-Trichloroethane	5	5	3	5	0.240 U	--	0.190 U	0.190 U	0.190 U	0.190 U	0.190 U
1,1-Dichloroethane	None	None	None	None	0.220 U	--	--	--	--	--	--
1,1-Dichloroethene	7	7	7	7	0.280 U	--	0.160 U	0.160 U	0.160 U	0.160 U	0.160 U
1,2,4-Trichlorobenzene	70	70	70	70	--	--	0.170 U	0.170 U	0.170 U	0.170 U	0.170 U
1,2-Dichlorobenzene	10	10	600	600	--	--	0.190 U	0.190 U	0.190 U	0.190 U	0.190 U
1,2-Dichloroethane	5	5	5	5	0.420 U	--	0.243 U	0.243 U	0.243 U	0.243 U	0.243 U
1,2-Dichloroethene	None	None	None	None	0.390 U	--	--	--	--	--	--
1,2-Dichloropropane	5	5	5	5	0.180 U	--	0.130 U	0.130 U	0.130 U	0.130 U	0.130 U
1,4-Dichlorobenzene	5	5	75	None	--	--	0.180 U	0.180 U	0.180 U	0.180 U	0.180 U
2-Butanone (MEK)	None	None	None	None	4.70 U	--	--	--	--	--	--
2-Hexanone	None	None	None	None	4.00 U	--	--	--	--	--	--
4-Methyl-2-pentanone (MIBK)	None	None	None	None	2.50 U	--	--	--	--	--	--
Acetone	None	None	None	None	3.20 U	--	--	--	--	--	--
Benzene	5	5	5	5	0.240 U	--	0.150 U	0.150 U	0.150 U	0.150 U	0.150 U
Bromodichloromethane	None	None	None	None	0.290 U	--	--	--	--	--	--
Bromoform	None	None	None	None	**4.10**	--	--	--	--	--	--
Bromomethane	None	None	None	None	0.210 U	--	--	--	--	--	--
Carbon disulfide	None	None	None	None	0.530 U	--	--	--	--	--	--

C1 Zone Distribution Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					C1-HYD1183	C1-HYD1183	C1-HYD1765	C1-HYD1769	C1-HYD354	C1-HYD444	C1-HYD817
Location Type:					Hydrant	Hydrant	Hydrant	Hydrant	Hydrant	Hydrant	Hydrant
Residence:					FH ID: 512	FH ID: 512	FH ID: FH 503	FHID: 563	FHID: 479	FHID: 413	FHID: 530A
Field Sample ID:					20220105-C1-ZT03	220203C1ZT03	20220106-C1-ZT06	220117-C1-XT06	220117-C1-XT02	220117-C1-XT03	220117-C1-XT01
Sample Date:					2022-01-05	2022-02-03	2022-01-06	2022-01-17	2022-01-17	2022-01-17	2022-01-17
Sample Type:					N	N	N	N	N	N	N
VOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 5801090542**		**SDG: 2A08001**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**	**SDG: 2A18019**
Carbon Tetrachloride	5	5	5	5	0.300 U	--	0.270 U	0.270 U	0.270 U	0.270 U	0.270 U
Chlorobenzene	25	25	100	100	0.440 U	--	0.150 U	0.150 U	0.150 U	0.150 U	0.150 U
Chloroethane	None	None	None	None	0.350 U	--	--	--	--	--	--
Chloroform	None	None	None	None	0.260 U	--	--	--	--	--	--
Chloromethane	None	None	None	None	0.280 U	--	--	--	--	--	--
cis-1,2-Dichloroethene	70	70	70	70	0.350 U	--	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
cis-1,3-Dichloropropene	None	None	None	None	0.200 U	--	--	--	--	--	--
Dibromochloromethane	None	None	None	None	0.430 U	--	--	--	--	--	--
Ethylbenzene	700	7.3	700	700	0.500 U	--	0.210 U	0.210 U	0.210 U	0.210 U	0.210 U
m,p-Xylene	10000	13	None	None	0.530 U	--	0.330 U	0.330 U	0.330 U	0.330 U	0.330 U
Methylene chloride	5	5	5	5	1.40 U	--	0.303 U	0.303 U	0.303 U	0.303 U	0.303 U
o-Xylene	10000	13	None	None	0.390 U	--	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
Styrene	10	10	100	100	0.530 U	--	0.190 U	0.190 U	0.190 U	0.190 U	0.190 U
Tetrachloroethene (PCE)	5	5	5	5	0.410 U	--	0.180 U	0.180 U	0.180 U	0.180 U	0.180 U
Toluene	1000	9.8	1000	1000	0.390 U	--	0.294 U	0.294 U	0.294 U	0.294 U	0.294 U
trans-1,2-Dichloroethene	100	100	100	100	0.390 U	--	0.259 U	0.259 U	0.259 U	0.259 U	0.259 U
trans-1,3-Dichloropropene	None	None	None	None	0.410 U	--	--	--	--	--	--
Trichloroethene (TCE)	5	5	5	5	0.260 U	--	0.180 U	0.180 U	0.180 U	0.180 U	0.180 U
Vinyl chloride	2	2	2	2	0.220 U	--	0.180 U	0.180 U	0.180 U	0.180 U	0.180 U
Xylenes, Total	10000	13	10000	10000	0.530 U	--	--	--	--	--	--

Notes:

-- indicates that the sample was Not Analyzed for the analyte

Results highlighted yellow exceed the ISP
Results in purple font also exceed the EALs
Results in green font also exceed the DOH MCL
Results in blue font also exceed the EPA MCL

µg/L = Micrograms per Liter

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-109054-2
Client Project/Site: Red Hill CV22F0106

For:
AECOM
1001 Bishop Street
Honolulu, Hawaii 96813

Attn: Margie F Pascua

Kristine D. Allen

Authorized for release by:
2/9/2022 5:05:01 PM
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Designee for

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Table of Contents

Job ID: 580-109054-2

Laboratory: Eurofins Seattle

Narrative

02/09/2022 - Report was revised to create separate reports for each zone.

02/07/2022: The report has been revised to report the 8270E analyte Bis(2-chloroethyl)ether as ND after further review of the data. Samples were initially reported to contain Bis(2-chloroethyl)ether above the reporting limit. Upon further review, these results do contain ions 93 and 95 in adequate ratios and at a satisfactory retention time; however, the results do not contain ion 63 at an adequate ratio, nor does the overall fragmentation pattern match that of Bis(2-chloroethyl)ether. Therefore, these detections have been identified as false positives and the status of Bis(2-chloroethyl)ether has been revised as non-detect.

01/15/2022: Report was revised to include the method 8015DRO QC samples which were not included in the original report.

Job Narrative
580-109054-2

Receipt
Three samples were received on 1/7/2022 11:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were -0.7º C and -0.2º C.

GC/MS VOA
Method 8260/CALUFT DOD: Surrogate recovery for the following QC samples was outside the upper control limit: (CCVIS 580-377719/4). This sample did not contain any target analytes; therefore, re-analysis was not performed.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-377897 recovered above the upper control limit for Carbon disulfide and Carbon tetrachloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 20220105-C1-ZT03 (580-109054-1) and (CCVIS 580-377897/3).

Method 8260D: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 580-377897 recovered outside control limits for the following analytes: Carbon disulfide and Carbon tetrachloride. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 580-377897 recovered outside control limits for the following analytes: Carbon disulfide.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Method 8270E: The minimum response factor (RF) criteria for the continuing calibration verification (CCV) analyzed in batch 580-377805 was outside criteria for the following analytes: Bis(2-chloroethyl)ether and N-Nitrosodi-n-propylamine. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analytes is considered estimated.

Method 8270E: The laboratory control sample duplicate (LCSD) for preparation batch 580-377698 and analytical batch 580-377805 recovered outside control limits for the following analytes: 4-Nitrophenol. 4-Nitrophenol has been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Method 8270E: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-377698 and analytical batch 580-377805 recovered outside control limits for the following analytes: 4-Nitroaniline and 4-Nitrophenol.

Method 8270E: Surrogate 2-Fluorophenol (Surr) and Phenol-d5 (Surr) recovery for the following samples was outside control limits: 20220105-C1-ZT03 (580-109054-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Job ID: 580-109054-2 (Continued)

Laboratory: Eurofins Seattle (Continued)

Organic Prep

Methods 3510C, CWA_Prep: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 580-377698. Laboratory control sample/laboratory control sample duplicate were created and substituted for MS/MSD/DUP.

Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 580-377700. Laboratory control sample/ laboratory control sample duplicate were created and substituted for MS/MSD/DUP.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: AECOM
Job ID: 580-109054-2
Project/Site: Red Hill CV22F0106

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*1	LCS/LCSD RPD exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: AECOM
Job ID: 580-109054-2
Project/Site: Red Hill CV22F0106

Client Sample ID: 20220105-C1-ZT03
Lab Sample ID: 580-109054-1
Date Collected: 01/05/22 15:35
Matrix: Water
Date Received: 01/07/22 11:00

Method: 8260/CALUFT DOD - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			01/07/22 18:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*69 - 133*		*01/07/22 18:56*	*1*

Method: 8260D - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	3.2	U	15	3.2	ug/L			01/07/22 18:56	1
Bromodichloromethane	0.29	U	1.0	0.29	ug/L			01/07/22 18:56	1
Bromomethane	0.21	U	1.0	0.21	ug/L			01/07/22 18:56	1
Chlorobenzene	0.44	U	1.0	0.44	ug/L			01/07/22 18:56	1
Chloromethane	0.28	U	1.0	0.28	ug/L			01/07/22 18:56	1
cis-1,2-Dichloroethene	0.35	U	1.0	0.35	ug/L			01/07/22 18:56	1
cis-1,3-Dichloropropene	0.20	U	1.0	0.20	ug/L			01/07/22 18:56	1
Dibromochloromethane	0.43	U	1.0	0.43	ug/L			01/07/22 18:56	1
1,1-Dichloroethane	0.22	U	1.0	0.22	ug/L			01/07/22 18:56	1
1,2-Dichloroethane	0.42	U	1.0	0.42	ug/L			01/07/22 18:56	1
1,1-Dichloroethene	0.28	U	1.0	0.28	ug/L			01/07/22 18:56	1
1,2-Dichloroethene, Total	0.39	U	1.0	0.39	ug/L			01/07/22 18:56	1
Dichloromethane	1.4	U	3.0	1.4	ug/L			01/07/22 18:56	1
1,2-Dichloropropane	0.18	U	1.0	0.18	ug/L			01/07/22 18:56	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/07/22 18:56	1
Ethyl Chloride	0.35	U	1.0	0.35	ug/L			01/07/22 18:56	1
2-Hexanone	4.0	U	15	4.0	ug/L			01/07/22 18:56	1
Methyl Ethyl Ketone	4.7	U	15	4.7	ug/L			01/07/22 18:56	1
Methyl isobutyl ketone (MIBK)	2.5	U	5.0	2.5	ug/L			01/07/22 18:56	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/07/22 18:56	1
Styrene	0.53	U	1.0	0.53	ug/L			01/07/22 18:56	1
1,1,2,2-Tetrachloroethane	0.52	U	1.0	0.52	ug/L			01/07/22 18:56	1
Tetrachloroethene	0.41	U	1.0	0.41	ug/L			01/07/22 18:56	1
Toluene	0.39	U	1.0	0.39	ug/L			01/07/22 18:56	1
trans-1,2-Dichloroethene	0.39	U	1.0	0.39	ug/L			01/07/22 18:56	1
trans-1,3-Dichloropropene	0.41	U	1.0	0.41	ug/L			01/07/22 18:56	1
1,1,1-Trichloroethane	0.39	U	1.0	0.39	ug/L			01/07/22 18:56	1
1,1,2-Trichloroethane	0.24	U	1.0	0.24	ug/L			01/07/22 18:56	1
Trichloroethene	0.26	U	1.0	0.26	ug/L			01/07/22 18:56	1
Vinyl chloride	0.22	U	1.0	0.22	ug/L			01/07/22 18:56	1
Xylenes, Total	0.53	U	2.0	0.53	ug/L			01/07/22 18:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*85 - 114*		*01/07/22 18:56*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 119*		*01/07/22 18:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*01/07/22 18:56*	*1*
Toluene-d8 (Surr)	*98*		*89 - 112*		*01/07/22 18:56*	*1*

Method: 8260D - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/10/22 14:56	1
Bromoform	**4.1**		1.0	0.51	ug/L			01/10/22 14:56	1
Carbon disulfide	0.53	U *+ *1	1.0	0.53	ug/L			01/10/22 14:56	1

Client Sample ID: 20220105-C1-ZT03
Date Collected: 01/05/22 15:35
Date Received: 01/07/22 11:00

Lab Sample ID: 580-109054-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds (GC/MS) - RA (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	0.30	U *+	1.0	0.30	ug/L			01/10/22 14:56	1
Chloroform	0.26	U	1.0	0.26	ug/L			01/10/22 14:56	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/10/22 14:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*85 - 114*		*01/10/22 14:56*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 119*		*01/10/22 14:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*81 - 118*		*01/10/22 14:56*	*1*
Toluene-d8 (Surr)	*100*		*89 - 112*		*01/10/22 14:56*	*1*

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	0.052	U	0.42	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1
Acenaphthylene	0.063	U	1.0	0.063	ug/L		01/07/22 15:14	01/08/22 19:58	1
Anthracene	0.052	U	1.0	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1
Benzo[a]anthracene	0.052	U	0.26	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1
Benzo[a]pyrene	0.042	U	0.26	0.042	ug/L		01/07/22 15:14	01/08/22 19:58	1
Benzo[b]fluoranthene	0.042	U	0.26	0.042	ug/L		01/07/22 15:14	01/08/22 19:58	1
Benzo[g,h,i]perylene	0.042	U	0.26	0.042	ug/L		01/07/22 15:14	01/08/22 19:58	1
Benzo[k]fluoranthene	0.052	U	0.26	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1
Bis(2-chloroethoxy)methane	0.052	U	0.63	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1
Bis(2-chloroethyl)ether	0.031	U	0.10	0.031	ug/L		01/07/22 15:14	01/08/22 19:58	1
Bis(2-ethylhexyl) phthalate	0.77	U	3.1	0.77	ug/L		01/07/22 15:14	01/08/22 19:58	1
4-Bromophenyl phenyl ether	0.063	U	0.63	0.063	ug/L		01/07/22 15:14	01/08/22 19:58	1
Butyl benzyl phthalate	0.28	U	4.2	0.28	ug/L		01/07/22 15:14	01/08/22 19:58	1
Carbazole	0.10	U	0.63	0.10	ug/L		01/07/22 15:14	01/08/22 19:58	1
4-Chloroaniline	0.62	U	2.1	0.62	ug/L		01/07/22 15:14	01/08/22 19:58	1
4-Chloro-3-methylphenol	0.14	U	0.63	0.14	ug/L		01/07/22 15:14	01/08/22 19:58	1
2-Chloronaphthalene	0.073	U	1.0	0.073	ug/L		01/07/22 15:14	01/08/22 19:58	1
2-Chlorophenol	0.052	U	1.0	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1
4-Chlorophenyl phenyl ether	0.052	U	0.63	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1
Chrysene	0.042	U	0.26	0.042	ug/L		01/07/22 15:14	01/08/22 19:58	1
Dibenz(a,h)anthracene	0.073	U	0.26	0.073	ug/L		01/07/22 15:14	01/08/22 19:58	1
Dibenzofuran	0.10	U	0.42	0.10	ug/L		01/07/22 15:14	01/08/22 19:58	1
1,2-Dichlorobenzene	0.052	U	0.42	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1
1,3-Dichlorobenzene	0.042	U	0.42	0.042	ug/L		01/07/22 15:14	01/08/22 19:58	1
1,4-Dichlorobenzene	0.042	U	0.42	0.042	ug/L		01/07/22 15:14	01/08/22 19:58	1
3,3'-Dichlorobenzidine	0.27	U	1.0	0.27	ug/L		01/07/22 15:14	01/08/22 19:58	1
2,4-Dichlorophenol	0.21	U	1.0	0.21	ug/L		01/07/22 15:14	01/08/22 19:58	1
Diethyl phthalate	0.16	U	1.0	0.16	ug/L		01/07/22 15:14	01/08/22 19:58	1
2,4-Dimethylphenol	0.17	U	4.2	0.17	ug/L		01/07/22 15:14	01/08/22 19:58	1
Dimethyl phthalate	0.063	U	0.63	0.063	ug/L		01/07/22 15:14	01/08/22 19:58	1
Di-n-butyl phthalate	0.20	U	3.1	0.20	ug/L		01/07/22 15:14	01/08/22 19:58	1
4,6-Dinitro-2-methylphenol	0.57	U	2.1	0.57	ug/L		01/07/22 15:14	01/08/22 19:58	1
2,4-Dinitrophenol	1.7	U	5.2	1.7	ug/L		01/07/22 15:14	01/08/22 19:58	1
2,4-Dinitrotoluene	0.10	U	1.0	0.10	ug/L		01/07/22 15:14	01/08/22 19:58	1
2,6-Dinitrotoluene	0.10	U	0.42	0.10	ug/L		01/07/22 15:14	01/08/22 19:58	1
Di-n-octyl phthalate	0.14	U	1.0	0.14	ug/L		01/07/22 15:14	01/08/22 19:58	1
Fluoranthene	0.063	U	0.26	0.063	ug/L		01/07/22 15:14	01/08/22 19:58	1
Fluorene	0.052	U	0.26	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1

Client: AECOM
Project/Site: Red Hill CV22F0106

Job ID: 580-109054-2

Client Sample ID: 20220105-C1-ZT03

Date Collected: 01/05/22 15:35
Date Received: 01/07/22 11:00

Lab Sample ID: 580-109054-1

Matrix: Water

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	0.042	U	0.63	0.042	ug/L		01/07/22 15:14	01/08/22 19:58	1
Hexachlorobutadiene	0.063	U	1.0	0.063	ug/L		01/07/22 15:14	01/08/22 19:58	1
Hexachlorocyclopentadiene	0.15	U	1.0	0.15	ug/L		01/07/22 15:14	01/08/22 19:58	1
Hexachloroethane	0.052	U	1.0	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1
Indeno[1,2,3-cd]pyrene	0.14	U	0.42	0.14	ug/L		01/07/22 15:14	01/08/22 19:58	1
Isophorone	0.10	U	0.42	0.10	ug/L		01/07/22 15:14	01/08/22 19:58	1
2-Methylphenol	0.052	U	0.63	0.052	ug/L		01/07/22 15:14	01/08/22 19:58	1
3 & 4 Methylphenol	**0.14**	**J**	0.63	0.10	ug/L		01/07/22 15:14	01/08/22 19:58	1
Naphthalene	0.17	U	0.42	0.17	ug/L		01/07/22 15:14	01/08/22 19:58	1
2-Nitroaniline	0.10	U	1.0	0.10	ug/L		01/07/22 15:14	01/08/22 19:58	1
3-Nitroaniline	0.17	U	3.1	0.17	ug/L		01/07/22 15:14	01/08/22 19:58	1
4-Nitroaniline	0.22	U *1	2.1	0.22	ug/L		01/07/22 15:14	01/08/22 19:58	1
Nitrobenzene	0.042	U	1.0	0.042	ug/L		01/07/22 15:14	01/08/22 19:58	1
4-Nitrophenol	1.8	U *- *1	10	1.8	ug/L		01/07/22 15:14	01/08/22 19:58	1
N-Nitrosodi-n-propylamine	0.063	U	0.42	0.063	ug/L		01/07/22 15:14	01/08/22 19:58	1
N-Nitrosodiphenylamine	0.073	U	1.0	0.073	ug/L		01/07/22 15:14	01/08/22 19:58	1
Pentachlorophenol	0.53	U	10	0.53	ug/L		01/07/22 15:14	01/08/22 19:58	1
Phenanthrene	0.13	U	1.0	0.13	ug/L		01/07/22 15:14	01/08/22 19:58	1
Phenol	0.38	U	1.0	0.38	ug/L		01/07/22 15:14	01/08/22 19:58	1
Pyrene	0.042	U	1.0	0.042	ug/L		01/07/22 15:14	01/08/22 19:58	1
1,2,4-Trichlorobenzene	0.094	U	0.42	0.094	ug/L		01/07/22 15:14	01/08/22 19:58	1
2,4,5-Trichlorophenol	0.10	U	0.42	0.10	ug/L		01/07/22 15:14	01/08/22 19:58	1
2,4,6-Trichlorophenol	0.10	U	0.63	0.10	ug/L		01/07/22 15:14	01/08/22 19:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*48*		*44 - 119*	*01/07/22 15:14*	*01/08/22 19:58*	*1*
2-Fluorophenol (Surr)	*6*	*S1-*	*19 - 119*	*01/07/22 15:14*	*01/08/22 19:58*	*1*
Nitrobenzene-d5 (Surr)	*72*		*44 - 120*	*01/07/22 15:14*	*01/08/22 19:58*	*1*
Phenol-d5 (Surr)	*0.3*	*S1-*	*10 - 120*	*01/07/22 15:14*	*01/08/22 19:58*	*1*
Terphenyl-d14	*120*		*50 - 134*	*01/07/22 15:14*	*01/08/22 19:58*	*1*
2,4,6-Tribromophenol	*140*		*43 - 140*	*01/07/22 15:14*	*01/08/22 19:58*	*1*

Method: 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	87	U	110	87	ug/L		01/07/22 15:12	01/08/22 01:13	1
C24-C40	170	U	340	170	ug/L		01/07/22 15:12	01/08/22 01:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*86*		*56 - 125*	*01/07/22 15:12*	*01/08/22 01:13*	*1*

Method: 8260/CALUFT DOD - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-377719/5
Matrix: Water
Analysis Batch: 377719

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			01/07/22 12:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*69 - 133*		*01/07/22 12:39*	*1*

Lab Sample ID: LCS 580-377719/8
Matrix: Water
Analysis Batch: 377719

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline Range Organics (C6-C12)			1000	1010		ug/L		101	78 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*107*		*69 - 133*

Lab Sample ID: LCSD 580-377719/9
Matrix: Water
Analysis Batch: 377719

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (C6-C12)			1000	1020		ug/L		102	78 - 122	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*109*		*69 - 133*

Method: 8260D - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-377771/5
Matrix: Water
Analysis Batch: 377771

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	3.2	U	15	3.2	ug/L			01/07/22 12:39	1
Bromodichloromethane	0.29	U	1.0	0.29	ug/L			01/07/22 12:39	1
Bromomethane	0.21	U	1.0	0.21	ug/L			01/07/22 12:39	1
Chlorobenzene	0.44	U	1.0	0.44	ug/L			01/07/22 12:39	1
Chloromethane	0.28	U	1.0	0.28	ug/L			01/07/22 12:39	1
cis-1,2-Dichloroethene	0.35	U	1.0	0.35	ug/L			01/07/22 12:39	1
cis-1,3-Dichloropropene	0.20	U	1.0	0.20	ug/L			01/07/22 12:39	1
Dibromochloromethane	0.43	U	1.0	0.43	ug/L			01/07/22 12:39	1
1,1-Dichloroethane	0.22	U	1.0	0.22	ug/L			01/07/22 12:39	1
1,2-Dichloroethane	0.42	U	1.0	0.42	ug/L			01/07/22 12:39	1
1,1-Dichloroethene	0.28	U	1.0	0.28	ug/L			01/07/22 12:39	1
1,2-Dichloroethene, Total	0.39	U	1.0	0.39	ug/L			01/07/22 12:39	1
Dichloromethane	1.4	U	3.0	1.4	ug/L			01/07/22 12:39	1
1,2-Dichloropropane	0.18	U	1.0	0.18	ug/L			01/07/22 12:39	1

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-377771/5
Matrix: Water
Analysis Batch: 377771

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/07/22 12:39	1
Ethyl Chloride	0.35	U	1.0	0.35	ug/L			01/07/22 12:39	1
2-Hexanone	4.0	U	15	4.0	ug/L			01/07/22 12:39	1
Methyl Ethyl Ketone	4.7	U	15	4.7	ug/L			01/07/22 12:39	1
Methyl isobutyl ketone (MIBK)	2.5	U	5.0	2.5	ug/L			01/07/22 12:39	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/07/22 12:39	1
Styrene	0.53	U	1.0	0.53	ug/L			01/07/22 12:39	1
1,1,2,2-Tetrachloroethane	0.52	U	1.0	0.52	ug/L			01/07/22 12:39	1
Tetrachloroethene	0.41	U	1.0	0.41	ug/L			01/07/22 12:39	1
Toluene	0.39	U	1.0	0.39	ug/L			01/07/22 12:39	1
trans-1,2-Dichloroethene	0.39	U	1.0	0.39	ug/L			01/07/22 12:39	1
trans-1,3-Dichloropropene	0.41	U	1.0	0.41	ug/L			01/07/22 12:39	1
1,1,1-Trichloroethane	0.39	U	1.0	0.39	ug/L			01/07/22 12:39	1
1,1,2-Trichloroethane	0.24	U	1.0	0.24	ug/L			01/07/22 12:39	1
Trichloroethene	0.26	U	1.0	0.26	ug/L			01/07/22 12:39	1
Vinyl chloride	0.22	U	1.0	0.22	ug/L			01/07/22 12:39	1
Xylenes, Total	0.53	U	2.0	0.53	ug/L			01/07/22 12:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*		*01/07/22 12:39*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 119*		*01/07/22 12:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*81 - 118*		*01/07/22 12:39*	*1*
Toluene-d8 (Surr)	*98*		*89 - 112*		*01/07/22 12:39*	*1*

Lab Sample ID: LCS 580-377771/6
Matrix: Water
Analysis Batch: 377771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	50.0	46.6		ug/L		93	39 - 160
Bromodichloromethane	10.0	10.5		ug/L		105	79 - 125
Bromomethane	10.0	11.3		ug/L		113	53 - 141
Chlorobenzene	10.0	10.4		ug/L		104	82 - 118
Chloromethane	10.0	8.94		ug/L		89	50 - 139
cis-1,2-Dichloroethene	10.0	10.8		ug/L		108	78 - 123
cis-1,3-Dichloropropene	10.0	9.85		ug/L		98	75 - 124
Dibromochloromethane	10.0	10.9		ug/L		109	74 - 126
1,1-Dichloroethane	10.0	10.6		ug/L		106	77 - 125
1,2-Dichloroethane	10.0	10.0		ug/L		100	73 - 128
1,1-Dichloroethene	10.0	11.7		ug/L		117	71 - 131
1,2-Dichloroethene, Total	20.0	22.3		ug/L		112	78 - 123
Dichloromethane	10.0	11.3		ug/L		113	74 - 124
1,2-Dichloropropane	10.0	10.6		ug/L		106	78 - 122
Ethylbenzene	10.0	10.6		ug/L		106	79 - 121
Ethyl Chloride	10.0	10.2		ug/L		102	60 - 138
2-Hexanone	50.0	49.5		ug/L		99	57 - 139
Methyl Ethyl Ketone	50.0	49.6		ug/L		99	56 - 143
Methyl isobutyl ketone (MIBK)	50.0	50.2		ug/L		100	67 - 130

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-377771/6
Matrix: Water
Analysis Batch: 377771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
o-Xylene			10.0	10.6		ug/L		106	78 - 122		
Styrene			10.0	10.2		ug/L		102	78 - 123		
1,1,2,2-Tetrachloroethane			10.0	9.46		ug/L		95	71 - 121		
Tetrachloroethene			10.0	10.6		ug/L		106	74 - 129		
Toluene			10.0	11.1		ug/L		111	80 - 121		
trans-1,2-Dichloroethene			10.0	11.5		ug/L		115	75 - 124		
trans-1,3-Dichloropropene			10.0	10.7		ug/L		107	73 - 127		
1,1,1-Trichloroethane			10.0	11.0		ug/L		110	74 - 131		
1,1,2-Trichloroethane			10.0	10.3		ug/L		103	80 - 119		
Trichloroethene			10.0	11.0		ug/L		110	79 - 123		
Vinyl chloride			10.0	9.81		ug/L		98	58 - 137		
Xylenes, Total			20.0	20.9		ug/L		105	79 - 121		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*85 - 114*
Dibromofluoromethane (Surr)	*101*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*95*		*81 - 118*
Toluene-d8 (Surr)	*106*		*89 - 112*

Lab Sample ID: LCSD 580-377771/7
Matrix: Water
Analysis Batch: 377771

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone			50.0	49.1		ug/L		98	39 - 160	5	20
Bromodichloromethane			10.0	10.1		ug/L		101	79 - 125	3	20
Bromomethane			10.0	10.8		ug/L		108	53 - 141	4	20
Chlorobenzene			10.0	10.1		ug/L		101	82 - 118	3	20
Chloromethane			10.0	8.99		ug/L		90	50 - 139	0	20
cis-1,2-Dichloroethene			10.0	10.4		ug/L		104	78 - 123	4	20
cis-1,3-Dichloropropene			10.0	9.63		ug/L		96	75 - 124	2	20
Dibromochloromethane			10.0	10.6		ug/L		106	74 - 126	3	20
1,1-Dichloroethane			10.0	10.6		ug/L		106	77 - 125	1	20
1,2-Dichloroethane			10.0	10.1		ug/L		101	73 - 128	1	20
1,1-Dichloroethene			10.0	11.4		ug/L		114	71 - 131	2	20
1,2-Dichloroethene, Total			20.0	21.4		ug/L		107	78 - 123	4	20
Dichloromethane			10.0	11.0		ug/L		110	74 - 124	2	20
1,2-Dichloropropane			10.0	9.94		ug/L		99	78 - 122	6	20
Ethylbenzene			10.0	10.2		ug/L		102	79 - 121	3	20
Ethyl Chloride			10.0	10.0		ug/L		100	60 - 138	2	20
2-Hexanone			50.0	52.2		ug/L		104	57 - 139	5	20
Methyl Ethyl Ketone			50.0	50.6		ug/L		101	56 - 143	2	20
Methyl isobutyl ketone (MIBK)			50.0	50.8		ug/L		102	67 - 130	1	20
o-Xylene			10.0	10.2		ug/L		102	78 - 122	3	20
Styrene			10.0	9.88		ug/L		99	78 - 123	3	20
1,1,2,2-Tetrachloroethane			10.0	9.60		ug/L		96	71 - 121	1	20
Tetrachloroethene			10.0	10.5		ug/L		105	74 - 129	1	20
Toluene			10.0	10.4		ug/L		104	80 - 121	6	20

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-377771/7
Matrix: Water
Analysis Batch: 377771

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
trans-1,2-Dichloroethene			10.0	11.0		ug/L		110	75 - 124	5	20
trans-1,3-Dichloropropene			10.0	10.2		ug/L		102	73 - 127	5	20
1,1,1-Trichloroethane			10.0	10.7		ug/L		107	74 - 131	3	20
1,1,2-Trichloroethane			10.0	9.97		ug/L		100	80 - 119	3	20
Trichloroethene			10.0	10.7		ug/L		107	79 - 123	3	20
Vinyl chloride			10.0	9.65		ug/L		97	58 - 137	2	20
Xylenes, Total			20.0	19.9		ug/L		99	79 - 121	5	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*85 - 114*
Dibromofluoromethane (Surr)	*100*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*96*		*81 - 118*
Toluene-d8 (Surr)	*105*		*89 - 112*

Lab Sample ID: MB 580-377897/7
Matrix: Water
Analysis Batch: 377897

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/10/22 12:52	1
Bromoform	0.51	U	1.0	0.51	ug/L			01/10/22 12:52	1
Carbon disulfide	0.53	U	1.0	0.53	ug/L			01/10/22 12:52	1
Carbon tetrachloride	0.30	U	1.0	0.30	ug/L			01/10/22 12:52	1
Chloroform	0.26	U	1.0	0.26	ug/L			01/10/22 12:52	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/10/22 12:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*		*01/10/22 12:52*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 119*		*01/10/22 12:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*81 - 118*		*01/10/22 12:52*	*1*
Toluene-d8 (Surr)	*99*		*89 - 112*		*01/10/22 12:52*	*1*

Lab Sample ID: LCS 580-377897/4
Matrix: Water
Analysis Batch: 377897

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene			5.00	5.52		ug/L		110	79 - 120
Bromoform			5.00	5.74		ug/L		115	66 - 130
Carbon disulfide			5.00	7.96	*+	ug/L		159	64 - 133
Carbon tetrachloride			5.00	7.43	*+	ug/L		149	72 - 136
Chloroform			5.00	5.30		ug/L		106	79 - 124
m-Xylene & p-Xylene			5.00	5.83		ug/L		117	80 - 121

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*85 - 114*
Dibromofluoromethane (Surr)	*100*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*95*		*81 - 118*

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-377897/4
Matrix: Water
Analysis Batch: 377897

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	*101*		*89 - 112*

Lab Sample ID: LCSD 580-377897/5
Matrix: Water
Analysis Batch: 377897

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			5.00	5.33		ug/L		107	79 - 120	3	20
Bromoform			5.00	5.57		ug/L		111	66 - 130	3	20
Carbon disulfide			5.00	5.92	*1	ug/L		118	64 - 133	29	20
Carbon tetrachloride			5.00	6.45		ug/L		129	72 - 136	14	20
Chloroform			5.00	5.05		ug/L		101	79 - 124	5	20
m-Xylene & p-Xylene			5.00	5.79		ug/L		116	80 - 121	1	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*104*		*85 - 114*
Dibromofluoromethane (Surr)	*99*		*80 - 119*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*
Toluene-d8 (Surr)	*94*		*89 - 112*

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-377698/1-A
Matrix: Water
Analysis Batch: 377805

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 377698

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	0.050	U	0.40	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
Acenaphthylene	0.060	U	1.0	0.060	ug/L		01/07/22 10:46	01/08/22 14:38	1
Anthracene	0.050	U	1.0	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
Benzo[a]anthracene	0.050	U	0.25	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
Benzo[a]pyrene	0.040	U	0.25	0.040	ug/L		01/07/22 10:46	01/08/22 14:38	1
Benzo[b]fluoranthene	0.040	U	0.25	0.040	ug/L		01/07/22 10:46	01/08/22 14:38	1
Benzo[g,h,i]perylene	0.040	U	0.25	0.040	ug/L		01/07/22 10:46	01/08/22 14:38	1
Benzo[k]fluoranthene	0.050	U	0.25	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
Bis(2-chloroethoxy)methane	0.050	U	0.60	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
Bis(2-chloroethyl)ether	0.030	U	0.10	0.030	ug/L		01/07/22 10:46	01/08/22 14:38	1
Bis(2-ethylhexyl) phthalate	0.74	U	3.0	0.74	ug/L		01/07/22 10:46	01/08/22 14:38	1
4-Bromophenyl phenyl ether	0.060	U	0.60	0.060	ug/L		01/07/22 10:46	01/08/22 14:38	1
Butyl benzyl phthalate	0.27	U	4.0	0.27	ug/L		01/07/22 10:46	01/08/22 14:38	1
Carbazole	0.10	U	0.60	0.10	ug/L		01/07/22 10:46	01/08/22 14:38	1
4-Chloroaniline	0.59	U	2.0	0.59	ug/L		01/07/22 10:46	01/08/22 14:38	1
4-Chloro-3-methylphenol	0.13	U	0.60	0.13	ug/L		01/07/22 10:46	01/08/22 14:38	1
2-Chloronaphthalene	0.070	U	1.0	0.070	ug/L		01/07/22 10:46	01/08/22 14:38	1
2-Chlorophenol	0.050	U	1.0	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
4-Chlorophenyl phenyl ether	0.050	U	0.60	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
Chrysene	0.040	U	0.25	0.040	ug/L		01/07/22 10:46	01/08/22 14:38	1
Dibenz(a,h)anthracene	0.070	U	0.25	0.070	ug/L		01/07/22 10:46	01/08/22 14:38	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-377698/1-A
Matrix: Water
Analysis Batch: 377805

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 377698

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenzofuran	0.10	U	0.40	0.10	ug/L		01/07/22 10:46	01/08/22 14:38	1
1,2-Dichlorobenzene	0.050	U	0.40	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
1,3-Dichlorobenzene	0.040	U	0.40	0.040	ug/L		01/07/22 10:46	01/08/22 14:38	1
1,4-Dichlorobenzene	0.040	U	0.40	0.040	ug/L		01/07/22 10:46	01/08/22 14:38	1
3,3'-Dichlorobenzidine	0.26	U	1.0	0.26	ug/L		01/07/22 10:46	01/08/22 14:38	1
2,4-Dichlorophenol	0.20	U	1.0	0.20	ug/L		01/07/22 10:46	01/08/22 14:38	1
Diethyl phthalate	0.15	U	1.0	0.15	ug/L		01/07/22 10:46	01/08/22 14:38	1
2,4-Dimethylphenol	0.16	U	4.0	0.16	ug/L		01/07/22 10:46	01/08/22 14:38	1
Dimethyl phthalate	0.060	U	0.60	0.060	ug/L		01/07/22 10:46	01/08/22 14:38	1
Di-n-butyl phthalate	0.19	U	3.0	0.19	ug/L		01/07/22 10:46	01/08/22 14:38	1
4,6-Dinitro-2-methylphenol	0.55	U	2.0	0.55	ug/L		01/07/22 10:46	01/08/22 14:38	1
2,4-Dinitrophenol	1.6	U	5.0	1.6	ug/L		01/07/22 10:46	01/08/22 14:38	1
2,4-Dinitrotoluene	0.10	U	1.0	0.10	ug/L		01/07/22 10:46	01/08/22 14:38	1
2,6-Dinitrotoluene	0.10	U	0.40	0.10	ug/L		01/07/22 10:46	01/08/22 14:38	1
Di-n-octyl phthalate	0.13	U	1.0	0.13	ug/L		01/07/22 10:46	01/08/22 14:38	1
Fluoranthene	0.060	U	0.25	0.060	ug/L		01/07/22 10:46	01/08/22 14:38	1
Fluorene	0.050	U	0.25	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
Hexachlorobenzene	0.040	U	0.60	0.040	ug/L		01/07/22 10:46	01/08/22 14:38	1
Hexachlorobutadiene	0.060	U	1.0	0.060	ug/L		01/07/22 10:46	01/08/22 14:38	1
Hexachlorocyclopentadiene	0.14	U	1.0	0.14	ug/L		01/07/22 10:46	01/08/22 14:38	1
Hexachloroethane	0.050	U	1.0	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
Indeno[1,2,3-cd]pyrene	0.13	U	0.40	0.13	ug/L		01/07/22 10:46	01/08/22 14:38	1
Isophorone	0.10	U	0.40	0.10	ug/L		01/07/22 10:46	01/08/22 14:38	1
2-Methylphenol	0.050	U	0.60	0.050	ug/L		01/07/22 10:46	01/08/22 14:38	1
3 & 4 Methylphenol	0.10	U	0.60	0.10	ug/L		01/07/22 10:46	01/08/22 14:38	1
Naphthalene	0.16	U	0.40	0.16	ug/L		01/07/22 10:46	01/08/22 14:38	1
2-Nitroaniline	0.10	U	1.0	0.10	ug/L		01/07/22 10:46	01/08/22 14:38	1
3-Nitroaniline	0.16	U	3.0	0.16	ug/L		01/07/22 10:46	01/08/22 14:38	1
4-Nitroaniline	0.21	U	2.0	0.21	ug/L		01/07/22 10:46	01/08/22 14:38	1
Nitrobenzene	0.040	U	1.0	0.040	ug/L		01/07/22 10:46	01/08/22 14:38	1
4-Nitrophenol	1.7	U	10	1.7	ug/L		01/07/22 10:46	01/08/22 14:38	1
N-Nitrosodi-n-propylamine	0.060	U	0.40	0.060	ug/L		01/07/22 10:46	01/08/22 14:38	1
N-Nitrosodiphenylamine	0.070	U	1.0	0.070	ug/L		01/07/22 10:46	01/08/22 14:38	1
Pentachlorophenol	0.51	U	10	0.51	ug/L		01/07/22 10:46	01/08/22 14:38	1
Phenanthrene	0.12	U	1.0	0.12	ug/L		01/07/22 10:46	01/08/22 14:38	1
Phenol	0.36	U	1.0	0.36	ug/L		01/07/22 10:46	01/08/22 14:38	1
Pyrene	0.040	U	1.0	0.040	ug/L		01/07/22 10:46	01/08/22 14:38	1
1,2,4-Trichlorobenzene	0.090	U	0.40	0.090	ug/L		01/07/22 10:46	01/08/22 14:38	1
2,4,5-Trichlorophenol	0.10	U	0.40	0.10	ug/L		01/07/22 10:46	01/08/22 14:38	1
2,4,6-Trichlorophenol	0.10	U	0.60	0.10	ug/L		01/07/22 10:46	01/08/22 14:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*60*		*44 - 119*	*01/07/22 10:46*	*01/08/22 14:38*	*1*
2-Fluorophenol (Surr)	*32*		*19 - 119*	*01/07/22 10:46*	*01/08/22 14:38*	*1*
Nitrobenzene-d5 (Surr)	*60*		*44 - 120*	*01/07/22 10:46*	*01/08/22 14:38*	*1*
Phenol-d5 (Surr)	*20*		*10 - 120*	*01/07/22 10:46*	*01/08/22 14:38*	*1*
Terphenyl-d14	*95*		*50 - 134*	*01/07/22 10:46*	*01/08/22 14:38*	*1*
2,4,6-Tribromophenol	*53*		*43 - 140*	*01/07/22 10:46*	*01/08/22 14:38*	*1*

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-377698/2-A
Matrix: Water
Analysis Batch: 377805

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 377698

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	2.00	1.24		ug/L		62	47 - 122
Acenaphthylene	2.00	1.26		ug/L		63	41 - 130
Anthracene	2.00	1.40		ug/L		70	57 - 123
Benzo[a]anthracene	2.00	1.62		ug/L		81	58 - 125
Benzo[a]pyrene	2.00	1.61		ug/L		80	54 - 128
Benzo[b]fluoranthene	2.00	1.41		ug/L		70	53 - 131
Benzo[g,h,i]perylene	2.00	1.57		ug/L		79	50 - 134
Benzo[k]fluoranthene	2.00	1.79		ug/L		89	57 - 129
Bis(2-chloroethoxy)methane	2.00	1.39		ug/L		69	48 - 120
Bis(2-ethylhexyl) phthalate	2.00	1.85	J	ug/L		93	55 - 135
4-Bromophenyl phenyl ether	2.00	1.36		ug/L		68	55 - 124
Butyl benzyl phthalate	2.00	1.88	J	ug/L		94	53 - 134
Carbazole	2.00	1.71		ug/L		85	60 - 122
4-Chloroaniline	2.00	0.922	J	ug/L		46	33 - 117
4-Chloro-3-methylphenol	2.00	1.29		ug/L		64	52 - 119
2-Chloronaphthalene	2.00	1.38		ug/L		69	40 - 116
2-Chlorophenol	2.00	1.26		ug/L		63	38 - 117
4-Chlorophenyl phenyl ether	2.00	1.35		ug/L		68	53 - 121
Chrysene	2.00	1.82		ug/L		91	59 - 123
Dibenz(a,h)anthracene	2.00	1.56		ug/L		78	51 - 134
Dibenzofuran	2.00	1.45		ug/L		73	53 - 118
1,2-Dichlorobenzene	2.00	1.12		ug/L		56	32 - 111
1,3-Dichlorobenzene	2.00	1.10		ug/L		55	28 - 110
1,4-Dichlorobenzene	2.00	1.07		ug/L		53	29 - 112
3,3'-Dichlorobenzidine	4.00	3.32		ug/L		83	27 - 129
2,4-Dichlorophenol	2.00	1.14		ug/L		57	47 - 121
Diethyl phthalate	2.00	1.74		ug/L		87	56 - 125
2,4-Dimethylphenol	2.00	1.37	J	ug/L		69	31 - 124
Dimethyl phthalate	2.00	1.54		ug/L		77	45 - 127
Di-n-butyl phthalate	2.00	1.68	J	ug/L		84	59 - 127
4,6-Dinitro-2-methylphenol	4.00	2.56		ug/L		64	44 - 137
2,4-Dinitrophenol	4.00	2.71	J	ug/L		68	23 - 143
2,4-Dinitrotoluene	2.00	1.43		ug/L		71	57 - 128
2,6-Dinitrotoluene	2.00	1.39		ug/L		70	57 - 124
Di-n-octyl phthalate	2.00	1.72		ug/L		86	51 - 140
Fluoranthene	2.00	1.61		ug/L		80	57 - 128
Fluorene	2.00	1.42		ug/L		71	52 - 124
Hexachlorobenzene	2.00	1.30		ug/L		65	53 - 125
Hexachlorobutadiene	2.00	0.999	J	ug/L		50	22 - 124
Hexachlorocyclopentadiene	2.00	0.718	J	ug/L		36	20 - 125
Hexachloroethane	2.00	1.12		ug/L		56	21 - 115
Indeno[1,2,3-cd]pyrene	2.00	1.73		ug/L		87	52 - 134
Isophorone	2.00	1.34		ug/L		67	42 - 124
2-Methylphenol	2.00	1.08		ug/L		54	30 - 117
3 & 4 Methylphenol	2.00	1.16		ug/L		58	29 - 110
Naphthalene	2.00	1.20		ug/L		60	40 - 121
2-Nitroaniline	2.00	1.31		ug/L		65	55 - 127
3-Nitroaniline	2.00	1.30	J	ug/L		65	41 - 128

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-377698/2-A
Matrix: Water
Analysis Batch: 377805

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 377698

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
4-Nitroaniline			2.00	1.45	J	ug/L		73	70 - 125		
Nitrobenzene			2.00	1.40		ug/L		70	45 - 121		
4-Nitrophenol			4.00	2.03	J	ug/L		51	35 - 145		
N-Nitrosodi-n-propylamine			2.00	1.44		ug/L		72	49 - 119		
N-Nitrosodiphenylamine			2.00	1.36		ug/L		68	51 - 123		
Pentachlorophenol			4.00	1.95	J	ug/L		49	35 - 138		
Phenanthrene			2.00	1.38		ug/L		69	59 - 120		
Phenol			2.00	0.573	J	ug/L		29	13 - 120		
Pyrene			2.00	1.62		ug/L		81	57 - 126		
1,2,4-Trichlorobenzene			2.00	1.17		ug/L		58	29 - 116		
2,4,5-Trichlorophenol			2.00	1.49		ug/L		74	53 - 123		
2,4,6-Trichlorophenol			2.00	1.24		ug/L		62	50 - 125		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*66*		*44 - 119*
2-Fluorophenol (Surr)	*42*		*19 - 119*
Nitrobenzene-d5 (Surr)	*70*		*44 - 120*
Phenol-d5 (Surr)	*25*		*10 - 120*
Terphenyl-d14	*90*		*50 - 134*
2,4,6-Tribromophenol	*72*		*43 - 140*

Lab Sample ID: LCSD 580-377698/3-A
Matrix: Water
Analysis Batch: 377805

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 377698

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene			2.00	1.47		ug/L		74	47 - 122	17	20
Acenaphthylene			2.00	1.43		ug/L		71	41 - 130	13	20
Anthracene			2.00	1.45		ug/L		72	57 - 123	3	20
Benzo[a]anthracene			2.00	1.51		ug/L		75	58 - 125	7	20
Benzo[a]pyrene			2.00	1.64		ug/L		82	54 - 128	2	20
Benzo[b]fluoranthene			2.00	1.72		ug/L		86	53 - 131	20	20
Benzo[g,h,i]perylene			2.00	1.69		ug/L		84	50 - 134	7	20
Benzo[k]fluoranthene			2.00	1.59		ug/L		79	57 - 129	12	20
Bis(2-chloroethoxy)methane			2.00	1.63		ug/L		81	48 - 120	16	20
Bis(2-ethylhexyl) phthalate			2.00	1.79	J	ug/L		90	55 - 135	3	20
4-Bromophenyl phenyl ether			2.00	1.47		ug/L		73	55 - 124	7	20
Butyl benzyl phthalate			2.00	1.74	J	ug/L		87	53 - 134	8	20
Carbazole			2.00	1.69		ug/L		84	60 - 122	1	20
4-Chloroaniline			2.00	1.03	J	ug/L		52	33 - 117	11	20
4-Chloro-3-methylphenol			2.00	1.42		ug/L		71	52 - 119	10	20
2-Chloronaphthalene			2.00	1.46		ug/L		73	40 - 116	6	20
2-Chlorophenol			2.00	1.46		ug/L		73	38 - 117	15	20
4-Chlorophenyl phenyl ether			2.00	1.49		ug/L		75	53 - 121	10	20
Chrysene			2.00	1.73		ug/L		87	59 - 123	5	20
Dibenz(a,h)anthracene			2.00	1.57		ug/L		79	51 - 134	1	20
Dibenzofuran			2.00	1.58		ug/L		79	53 - 118	8	20
1,2-Dichlorobenzene			2.00	1.30		ug/L		65	32 - 111	15	20

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-377698/3-A
Matrix: Water
Analysis Batch: 377805

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 377698

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,3-Dichlorobenzene			2.00	1.24		ug/L		62	28 - 110	12	20
1,4-Dichlorobenzene			2.00	1.27		ug/L		63	29 - 112	17	20
3,3'-Dichlorobenzidine			4.00	3.13		ug/L		78	27 - 129	6	20
2,4-Dichlorophenol			2.00	1.29		ug/L		65	47 - 121	13	20
Diethyl phthalate			2.00	1.77		ug/L		88	56 - 125	2	20
2,4-Dimethylphenol			2.00	1.64	J	ug/L		82	31 - 124	17	20
Dimethyl phthalate			2.00	1.67		ug/L		83	45 - 127	8	20
Di-n-butyl phthalate			2.00	1.69	J	ug/L		84	59 - 127	0	20
4,6-Dinitro-2-methylphenol			4.00	2.35		ug/L		59	44 - 137	9	20
2,4-Dinitrophenol			4.00	2.33	J	ug/L		58	23 - 143	15	20
2,4-Dinitrotoluene			2.00	1.55		ug/L		77	57 - 128	8	20
2,6-Dinitrotoluene			2.00	1.50		ug/L		75	57 - 124	7	20
Di-n-octyl phthalate			2.00	1.75		ug/L		88	51 - 140	2	20
Fluoranthene			2.00	1.64		ug/L		82	57 - 128	2	20
Fluorene			2.00	1.60		ug/L		80	52 - 124	12	20
Hexachlorobenzene			2.00	1.39		ug/L		70	53 - 125	7	20
Hexachlorobutadiene			2.00	1.16		ug/L		58	22 - 124	15	20
Hexachlorocyclopentadiene			2.00	0.855	J	ug/L		43	20 - 125	17	20
Hexachloroethane			2.00	1.34		ug/L		67	21 - 115	18	20
Indeno[1,2,3-cd]pyrene			2.00	1.71		ug/L		85	52 - 134	1	20
Isophorone			2.00	1.61		ug/L		81	42 - 124	18	20
2-Methylphenol			2.00	1.31		ug/L		66	30 - 117	20	20
3 & 4 Methylphenol			2.00	1.09		ug/L		55	29 - 110	6	20
Naphthalene			2.00	1.35		ug/L		68	40 - 121	12	20
2-Nitroaniline			2.00	1.50		ug/L		75	55 - 127	14	20
3-Nitroaniline			2.00	1.37	J	ug/L		69	41 - 128	6	20
4-Nitroaniline			2.00	1.83	J *1	ug/L		92	70 - 125	23	20
Nitrobenzene			2.00	1.70		ug/L		85	45 - 121	19	20
4-Nitrophenol			4.00	1.7	U *- *1	ug/L		32	35 - 145	44	20
N-Nitrosodi-n-propylamine			2.00	1.76		ug/L		88	49 - 119	20	20
N-Nitrosodiphenylamine			2.00	1.48		ug/L		74	51 - 123	9	20
Pentachlorophenol			4.00	1.84	J	ug/L		46	35 - 138	6	20
Phenanthrene			2.00	1.49		ug/L		74	59 - 120	8	20
Phenol			2.00	0.667	J	ug/L		33	13 - 120	15	20
Pyrene			2.00	1.61		ug/L		81	57 - 126	1	20
1,2,4-Trichlorobenzene			2.00	1.36		ug/L		68	29 - 116	15	20
2,4,5-Trichlorophenol			2.00	1.59		ug/L		79	53 - 123	7	20
2,4,6-Trichlorophenol			2.00	1.37		ug/L		68	50 - 125	10	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl	*71*		*44 - 119*
2-Fluorophenol (Surr)	*51*		*19 - 119*
Nitrobenzene-d5 (Surr)	*78*		*44 - 120*
Phenol-d5 (Surr)	*30*		*10 - 120*
Terphenyl-d14	*90*		*50 - 134*
2,4,6-Tribromophenol	*76*		*43 - 140*

Method: 8015D DRO - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-377700/1-A
Matrix: Water
Analysis Batch: 377794

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 377700

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		01/07/22 10:54	01/07/22 20:31	1
C24-C40	180	U	350	180	ug/L		01/07/22 10:54	01/07/22 20:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*88*		*56 - 125*	*01/07/22 10:54*	*01/07/22 20:31*	*1*

Lab Sample ID: LCS 580-377700/2-A
Matrix: Water
Analysis Batch: 377794

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 377700

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
C9-C25			4000	2870		ug/L		72	36 - 132		
C24-C40			4000	3620		ug/L		91	41 - 113		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*77*		*56 - 125*

Lab Sample ID: LCSD 580-377700/3-A
Matrix: Water
Analysis Batch: 377794

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 377700

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C9-C25			4000	2890		ug/L		72	36 - 132	1	20
C24-C40			4000	3570		ug/L		89	41 - 113	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*76*		*56 - 125*

Lab Chronicle

Client: AECOM
Job ID: 580-109054-2
Project/Site: Red Hill CV22F0106

Client Sample ID: 20220105-C1-ZT03
Lab Sample ID: 580-109054-1

Date Collected: 01/05/22 15:35
Matrix: Water
Date Received: 01/07/22 11:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260/CALUFT DOD		1	377719	01/07/22 18:56	JSM	FGS SEA
Total/NA	Analysis	8260D		1	377771	01/07/22 18:56	JSM	FGS SEA
Total/NA	Analysis	8260D	RA	1	377897	01/10/22 14:56	B1M	FGS SEA
Total/NA	Prep	3510C			377698	01/07/22 15:14	M1E	FGS SEA
Total/NA	Analysis	8270E		1	377805	01/08/22 19:58	TL1	FGS SEA
Total/NA	Prep	3510C			377700	01/07/22 15:12	M1E	FGS SEA
Total/NA	Analysis	8015D DRO		1	377794	01/08/22 01:13	JAE	FGS SEA

Laboratory References:

FGS SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: AECOM
Job ID: 580-109054-2
Project/Site: Red Hill CV22F0106

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-18-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8260D		Water	1,2-Dichloroethene, Total

Sample Summary

Client: AECOM
Project/Site: Red Hill CV22F0106

Job ID: 580-109054-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-109054-1	20220105-C1-ZT03	Water	01/05/22 15:35	01/07/22 11:00

580-109054 Chain of Custody

Chain of Custody Record

eurofins Environment Testing America

	Sampler: AECOM	Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No: 01062022 DW-01
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone:	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: AECOM	PWSID:	Analysis Requested		Job #:
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
City: Honolulu	TAT Requested (days): 48hrs			
State, Zip: Hawaii 96813	Compliance Project: Δ Yes Δ No			Other:
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:			
Email: alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO #:			
Project Name: CV22F0106	Project #: 60674414			
Site: RHSF	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	EPA 8260 TPH-g (HCl) 4 VOCs	EPA 8270 SVOCs (none)	EPA 8015 TPH-d/o	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	I	I		
20220105-C1-ZT03	1/5/22	1535	G	W	N	N	Y	Y	Y	8	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Prelim data (Level 1or2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQuIS EDD

Special Instructions/QC Requirements: DOD QSM project.

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 1/5/22 16:15	Company: AECOM	Received by: Thomas Aguilo	Date/Time: 01/03/22 16:15	Company: AECOM
Relinquished by: Thomas Aguilo	Date/Time: 01/06/22 12:00	Company: AECOM	Received by:	Date/Time: 1/7/21 1100	Company: EEGS
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler: AECOM	Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No: 0106c22DW-05
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone:	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: AECOM	PWSID:			Job #:
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract			
City: Honolulu	TAT Requested (days): Rush (2 days)			
State, Zip: Hawaii 96813	Compliance Project: Δ Yes Δ No			
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:			
Email: alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO #:			
Project Name: CV22F0106	Project #: 60674414			
Site: RHSF	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - Di Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	EPA 8260 ~~HOCs~~ TPH-g (HCl)	EPA 8270 SVOCs (none)	EPA 8015 TPH-d/o	Total Number of containers	Special Instructions/Note:
Preservation Code:							A	N	N		
20220106-D3-ZT02	01/06/22	1310	G	W	N	N	X			2	
20220106-D3-ZT03	01/06/22	1315	G	W	N	N	X		X	5	

Lea 01/06/22

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Prelim data (Level 1or2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQuIS EDD.

Special Instructions/QC Requirements: DOD QSM project.

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Thomas Aguilo	01/06/22 1350	AECOM		1/7/21 1100	EFGS
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

ENCL (3)

48 hr
Therm. ID: A2 Cor: -0.7 ° Unc: 0.0 °
Cooler Dsc: 01 FedEx: PO
Packing: Bulk UPS:
Cust. Seal: Yes X No Lab Cour:
Blue Ice, (Wet) Dry, None Other:

48 hr
Therm. ID: A2 Cor: -0.2 ° Unc: 0.5 °
Cooler Dsc: 05 FedEx: PO
Packing: Bulk UPS:
Cust. Seal: Yes X No Lab Cour:
Blue Ice, (Wet) Dry, None Other:

~~Standard~~
~~Therm. ID: IR9 Cor: -0.0 ° Unc: -1.1 °~~
~~Cooler Dsc: 03 FedEx: PO~~
~~Packing: Bulk UPS:~~
~~Cust. Seal: Yes X No Lab Cour:~~
~~Blue Ice, (Wet) Dry, None Other:~~

~~Std~~
~~Therm. ID: A2 Cor: -0.7 ° Unc: 0.0 °~~
~~Cooler Dsc: 04 FedEx: PO~~
~~Packing: Bulk UPS:~~
~~Cust. Seal: Yes X No Lab Cour:~~
~~Blue Ice, (Wet) Dry, None Other:~~

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-109054-2

Login Number: 109054
List Number: 1
Creator: Greene, Ashton R

List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

AECOM
1001 Bishop Street
Suite 1600
Honolulu, HI 96813
www.aecom.com

5 March 2022

NAVFAC Hawaii
400 Marshall Road
JBPHH HI 96860-3139

Subject: **Red Hill Bulk Fuel Storage Facility**
AECOM Follow-up Technical Review of Bis(2-chloroethyl)ether in Hydrant Flushing Samples
Sample ID: Multiple
Zone: A3, B1, C1, C2, F2, H1, H2 and H3
Address: Multiple
Collection Date: Multiple

Attention Engineering Working Group:

Bis(2-chloroethyl)ether (BC2EE) is primarily used as a chemical intermediate for the manufacture of pesticides and as a solvent for fats, waxes, greases, and esters. It has also been used as a constituent in paints and varnishes, as a cleaning fluid for textiles, and in the purification of oils and gasoline. This analyte is not regulated under the Safe Drinking Water Act and for that reason does not have an associated Maximum Contamination Level.

BC2EE properties and Chemical Abstracts Service (CAS):

- CAS number: 111-44-4.
- BC2EE is a colorless, nonflammable liquid with a strong unpleasant odor.
- The odor threshold for BC2EE is 0.049 part per million.
- The chemical formula for BC2EE is $C_4H_8Cl_2O$, and the molecular weight is 143.01-gram moles.
- The vapor pressure for BC2EE is 0.71 millimeter of mercury at 20 degrees Celsius, and it has a log octanol/water partition coefficient of 1.58.

The initial evaluation of this issue involved the review of the Eurofins Seattle's SOP for Semi-volatile Organic Compounds (Base Neutrals and Acids) Analysis by GC/MS [Method 8270E]. The standard operating procedure (SOP) was used in conjunction with the extracted ion current profile (ECIP) for the referenced sample to derive the following conclusions.

A review of the laboratory analytical data packages indicates the associated method blanks and reagent/bottle blanks were all no-detect for BC2EE. In addition, the samples with detections of BC2EE were scattered throughout several preparation and analytical batches with passing quality control, thereby eliminating most types of laboratory contributed artifacts because of carryover or cross contamination. Based on a review of the analytical data, a laboratory contribution resulting in the detection of BC2EE is unlikely.

After discussion with the laboratory, they are not 100% confident that detection of BC2EE in the referenced sample is a true detection and could possibly be a false-positive based on the mass spectra. In addition, all samples that displayed detections for BC2EE coincide with low recovery of phenol-d5 surrogate in Method 8270 and low recovery of toluene-d8 surrogate in Method 8260. The detection of BC2EE could potentially be an isomer of BC2EE. Chromatograms show hits for dichlorinated alkanes and alcohols/ethers. The detections of the dichlorinated alkanes, alcohols, and ethers could be a by-product of reactions with the chlorination/bromination agent used to disinfect potable water. It is possible the chlorination/bromination agents are reacting with the 50 µL of acetone from the 1:1 methylene chloride/acetone solution used to contain the surrogate for the Method 8270

analysis. Acetone, under acidic or basic conditions, can form an intermediate that can react with chlorinating/brominating agents just as aromatic/BTEX compounds, as indicated by the low surrogate recovery of toluene-d8 and phenol-d5.

A closer evaluation of the mass spectra provided by the laboratory, (**Figure 1**, middle spectra in red font) reveals the secondary ion, mass 63, is virtually absent. EPA Method 8270E requires three specific quantitation ions to be present at specific abundances for qualitative identification of analytes of interest. For BC2EE (Figure 1, bottom spectra in green font), mass (m/z) 93 is the parent ion and should be present at 100%, m/z 63 is the secondary ion and should be present at approximately 60% abundance of mass 93, and m/z 95 is the tertiary ion and should be present at approximately 20% of mass 93. According to the Quality Fit Evaluation provided by the laboratory (**Figure 2**), the ECIP passed the ion ratio test, (reference the spectral test and retention time test in **Figure 1** [chromatogram on the right]); however, the "Q" or quality fit test failed because the percent match to the reference spectra is 71%. This analysis has a lower control limit of 80% to be considered a valid spectra match for the identification of the analyte(s) of interest. Based on the passing of the ion ratio test, the spectral test and almost complete absence of m/z 63, it is suspected the ion abundance ratio window was not set up in the calibration quantitation file. A review of the laboratory's SOP sections 16.1.1.2 through 16.1.1.4 confirmed an ion abundance window should be set for each quantitation ion. The referenced sections of the laboratory SOP provide the acceptance criteria for ion abundance and qualitative identification of analyte(s) of interest.

On February 7, 2022 at 0830 HST in a conversation with the laboratory's analyst that performed the method, the section supervisor, the QAM, and the laboratory director, they confirmed the abundance windows were not defined, resulting in the reporting of BC2EE. Based on the absence of m/z 63 and adherence with the laboratory's SOP, the laboratory will retract the impacted sample delivery groups (SDGs) and the detection of BC2EE and re-issue the reports with BC2EE reported as non-detect. In addition, the laboratory confirmed the other seven detections of BC2EE were also absent of m/z 63 and these reports would also be reissued with a discussion of the events provided in the case narrative. A National Institute of Standards and Technology mass spectra of BC2EE (**Figure 3**) was provided to the laboratory in addition to the spectra provided by the GCMS system for reference.

Based on the information obtained from the laboratory and re-evaluation of the associated data, AECOM re-collected the sample locations in question for EPA Method 8270. AECOM also collected a Method 8270 sample using a 525.2 pre-preserved sample bottle with 45 mg sodium sulfite preservative to mitigate the disinfect agents used with potable water suppliers. An empty 1-L amber bottle with the 45 mg sodium sulfite was also sent to the laboratory. The laboratory will fill the empty bottle with laboratory grade deionized water to assist in ascertaining any possible contributions from the sample containers and/or preservation. It is recommended AECOM continue with the re-analysis of the re-collected samples to confirm the absence of BC2EE and evaluate the effects that the disinfectant process has on the samples in question, if any.

Table 1 below summarizes the sample delivery groups (SDGs) initially issued reporting of bis(2-chloroethyl)ether (BC2EE) from fire hydrant zone screening samples in error. On February 12, 2022, AECOM issued a *Technical Review of Bis(2-chloroethyl)ether Hydrant Flushing Samples* memo which detailed the findings of an in-depth review of the analytical data and supporting documents, the contents of which are contained in this memo. As a result of the findings, Eurofins Seattle concurred with the finding conclusions and implemented the required corrective action in accordance with the laboratories SOP for EPA Method SW-846 8270E

The corrective action also determined the qualitative identification of BC2EE did not meet the analytical method or laboratories SOP requirements and the detections for BC2EE were retracted and the laboratory certificates of analysis reissued indicating the referenced analytes were non-detect. **Table 2** provides a list of the SDGs re-issued and the revised results.

Table 1

Laboratory Sample ID	Sampling Date	Field Sample ID	LOC ID	Analyte	Result	Unit
580-109090-4	01/06/22	20220106-F2-ZT08	FH17	BC2EE	1.6	µg/L
580-109117-5	01/08/22	20220108-B1-ZT04	FH8	BC2EE	2.6	µg/L
580-109117-6	01/08/22	20220108-A3-ZT01	SA-LFH2	BC2EE	3	µg/L
580-109117-8	01/07/22	220107-C2-YT02	FH315	BC2EE	0.76	µg/L
580-109054-1	01/05/22	20220105-C1-ZT03	FH512	BC2EE	0.1	µg/L
580-109239-2	01/11/22	20220111-H1-YT12	FH1396	BC2EE	3.3	µg/L
580-109243-1	01/11/22	20220111-H2-YT02	FH377	BC2EE	1.2 F1	µg/L
580-109243-3	01/11/22	20220111-H2-YT04	FH1331	BC2EE	1.7	µg/L
580-109243-4	01/11/22	20220111-H2-YT06	FH1646	BC2EE	2.3	µg/L
580-109289-1	01/12/22	220112-H3-ZT13	FH1651	BC2EE	1.7	µg/L
580-109289-3	01/12/22	220112-H3-ZT09	FH1641	BC2EE	2.4	µg/L
580-109289-5	01/12/22	220112-H3-ZT05	FH1676	BC2EE	1.7	µg/L

F1- MS and/or MSD recovery exceeds the control limit

Table 2

Laboratory Sample ID	Sampling Date	Field Sample ID	LOC ID	Analyte	Result	Unit
580-109090-4	01/06/22	20220106-F2-ZT08	FH17	BC2EE	0.031 U	µg/L
580-109117-5	01/08/22	20220108-B1-ZT04	FH8	BC2EE	0.031 U	µg/L
580-109117-6	01/08/22	20220108-A3-ZT01	SA-LFH2	BC2EE	0.030 U	µg/L
580-109117-8	01/07/22	220107-C2-YT02	FH315	BC2EE	0.031 U	µg/L
580-109054-1	01/05/22	20220105-C1-ZT03	FH512	BC2EE	0.031 U	µg/L
580-109239-2	01/11/22	20220111-H1-YT12	FH1396	BC2EE	0.032 U	µg/L
580-109243-1	01/11/22	20220111-H2-YT02	FH377	BC2EE	0.032 U	µg/L

Laboratory Sample ID	Sampling Date	Field Sample ID	LOC ID	Analyte	Result	Unit
580-109243-3	01/11/22	20220111-H2-YT04	FH1331	BC2EE	0.032 U	µg/L
580-109243-4	01/11/22	20220111-H2-YT06	FH1646	BC2EE	0.030 U	µg/L
580-109289-1	01/12/22	220112-H3-ZT13	FH1651	BC2EE	0.031 U	µg/L
580-109289-3	01/12/22	220112-H3-ZT09	FH1641	BC2EE	0.031 U	µg/L
580-109289-5	01/12/22	220112-H3-ZT05	FH1676	BC2EE	0.031 U	µg/L

F1- MS and/or MSD recovery exceeds the control limit

U Indicates the analyte was analyzed for but not detected

It was suspected the disinfection process (residual chlorine) was having an adverse effect on the recovery of the acid surrogates used in EPA Method 8270E for samples collected from January 6, 2022 through January 11, 2022. The failing acid surrogate recoveries could result in the rejection of the associated data. As a result, when AECOM re-collected the samples from the locations where the initial laboratory results indicated the presence of BC2EE, both unpreserved and preserved samples were collected. With the exception of location IDs FH512, FH17, FH315 and B1-8, only unpreserved samples were collected because these samples were collected before the decision to collect an additional preserved sample was made.

Sample location FH512 exhibited low but passing surrogate recoveries whereas locations FH17, FH315 and B1-8 all had failing acid surrogate recoveries. All four of the referenced samples were also non-detect for BC2EE. Two empty bottles were also sent to the lab as reagent/bottle blanks to eliminate both a bottle or a preservative contribution to the detection of BC2EE by having the lab fill the bottles with laboratory reagent grade laboratory ASTM Type II water and then analyzed. Both the reagent and bottle blank were non-detect for BC2EE. The 525.2 preservative, 45 milligrams (mg) sodium sulfite was used as the preservation method.

The results from the unpreserved samples collected from February 2, 2022 through February 4, 2022 exhibited a suppression of the acid surrogate recoveries as suspected, however the samples preserved with the 525.2 preservative exhibited passing acid surrogate recoveries for all samples analyzed. In addition, BC2EE was non-detect for all samples analyzed, both unpreserved and preserved, confirming the absence of BC2EE at the sampling locations in question.

Table 3 provides a list of the SDGs for the zone locations that were re-sampled, extracted and analyzed to confirm the absence of BC2EE for the referenced sampling locations. A complete listing of all the samples discussed is provided in **Attachment 1**, *Bis(2-chloroethyl)ether Fire Hydrant Zone Screening Sample Resolution Cross Walk*. This attachment provides the original sample results and SDGs, prior to the lab restating the results as well as the resample results with notes as to whether they were unpreserved or preserved.

Table 3

Laboratory Sample ID	Sampling Date	Field Sample ID	LOC ID	Analyte	Result	Unit
580-110026-1	02/04/22	220204H2HT02	FH377	BC2EE	0.029 U	µg/L
580-110026-2	02/04/22	220204H2HT02-1	FH377	BC2EE	0.029 U	µg/L
580-110026-3	02/04/22	220204H2HT03	FH1331	BC2EE	0.029 U	µg/L
580-110026-4	02/04/22	220204H2HT04	FH1646	BC2EE	0.029 U	µg/L
580-110026-5	02/04/22	220204H2HT03-1	FH1331	BC2EE	0.029 U	µg/L
580-110026-6	02/04/22	220204H2HT04-1	FH1646	BC2EE	0.029 U	µg/L
580-110026-7	02/04/22	A3-TW-HYDLFH2-22035-N	SA-LFH2	BC2EE	0.029 U	µg/L
580-110026-8	02/04/22	A3-TW-HYDLFH2-22035-N-1	SA-LFH2	BC2EE	0.031 U	µg/L
580-110029-1	02/04/22	220204H3IT01	FH1641	BC2EE	0.028 U	µg/L
580-110029-2	02/04/22	220204H3IT02	FH1641	BC2EE	0.028 U	µg/L
580-110029-3	02/04/22	220204H3IT01-1	FH1641	BC2EE	0.028 U	µg/L
580-110029-4	02/04/22	220204H3IT02-1	FH1641	BC2EE	0.028 U	µg/L
580-110029-5	02/04/22	220204H3IT03	FH1651	BC2EE	0.028 U	µg/L
580-110029-6	02/04/22	220204H3IT04	FH1676	BC2EE	0.028 U	µg/L
580-110029-7	02/04/22	220204H3IT03-1	FH1651	BC2EE	0.028 U	µg/L
580-110029-8	02/04/22	220204H3IT04-1	FH1676	BC2EE	0.028 U	µg/L
580-110034-1	02/03/22	220203C2ZT02	FH315	BC2EE	0.029 U	µg/L
580-110035-1	02/04/22	220204H1HT01	FH1396	BC2EE	0.029 U	µg/L
580-110035-2	02/04/22	220204H1HT01-1	FH1396	BC2EE	0.029 U	µg/L
580-110036-1	02/03/22	220203C1ZT03	FH512	BC2EE	0.029 U	µg/L
580-110037-1	02/03/22	220203F2ZT01	FH17	BC2EE	0.029 U	µg/L
580-110038-1	02/03/22	220203B1ZT04	FH8	BC2EE	0.029 U	µg/L

U Indicates the analyte was analyzed for but not detected

Therefore, based on a thorough re-evaluation of the referenced analytical data and professional judgment, the results of these twelve indicated samples were preliminarily reported in error and have been amended in the final results to be non-detect for bis(2-chloroethyl)ether.

Questions regarding this memo should be addressed to the Red Hill Drinking Water Task Manager, Bill Craig.

Yours sincerely,

Jim Refermat
Senior Program Chemist
jim.refermat@aecom.com

Robin Cababa
CLEAN Program Manager
robin.cababa@aecom.com

Attachments

Attachment 1: *Bis(2-chloroethyl)ether Fire Hydrant Zone Screening Sample Resolution Cross Walk*.

cc:
Bill Craig, AECOM Drinking Water Task Manager
Ken Vinson, AECOM Senior VP Program Manager
Jim Refermat, AECOM Senior Program Chemist
Contracting Officer
Victor Gonzalez, NAVFAC

Figure 1. Sample 580-109090-F-4-A Mass Spectra and EICP

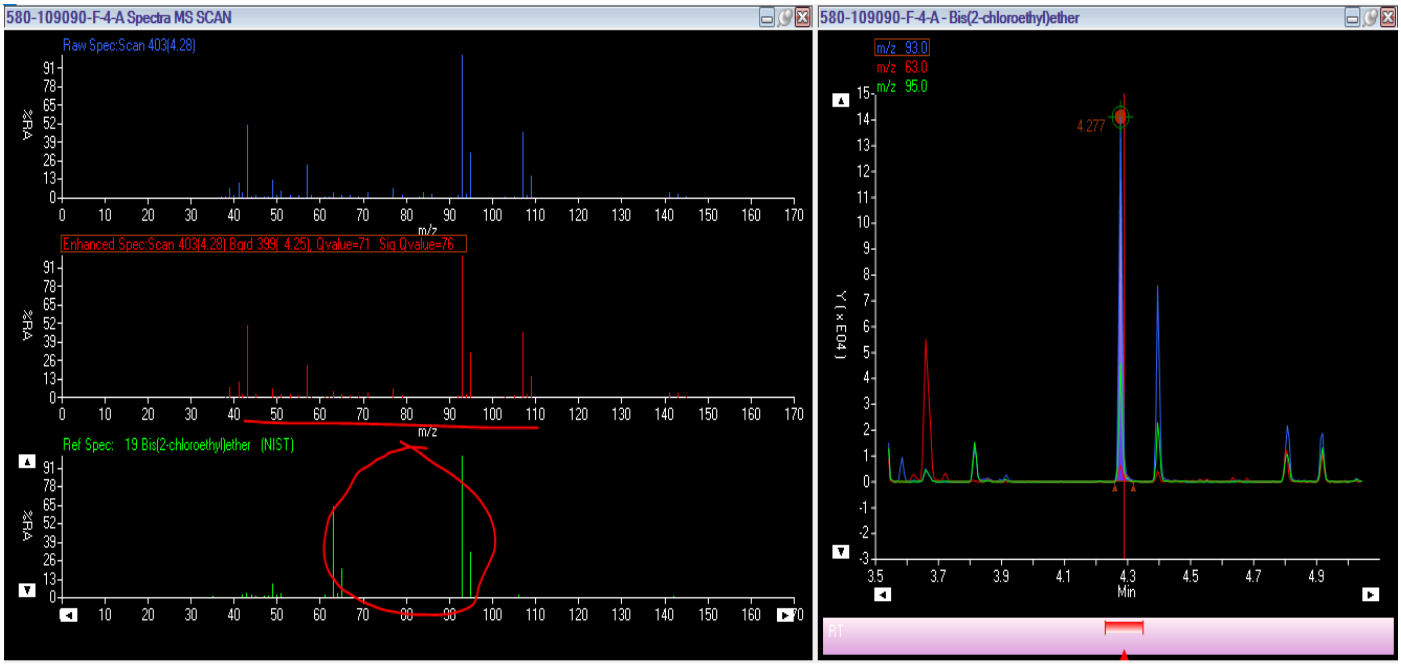
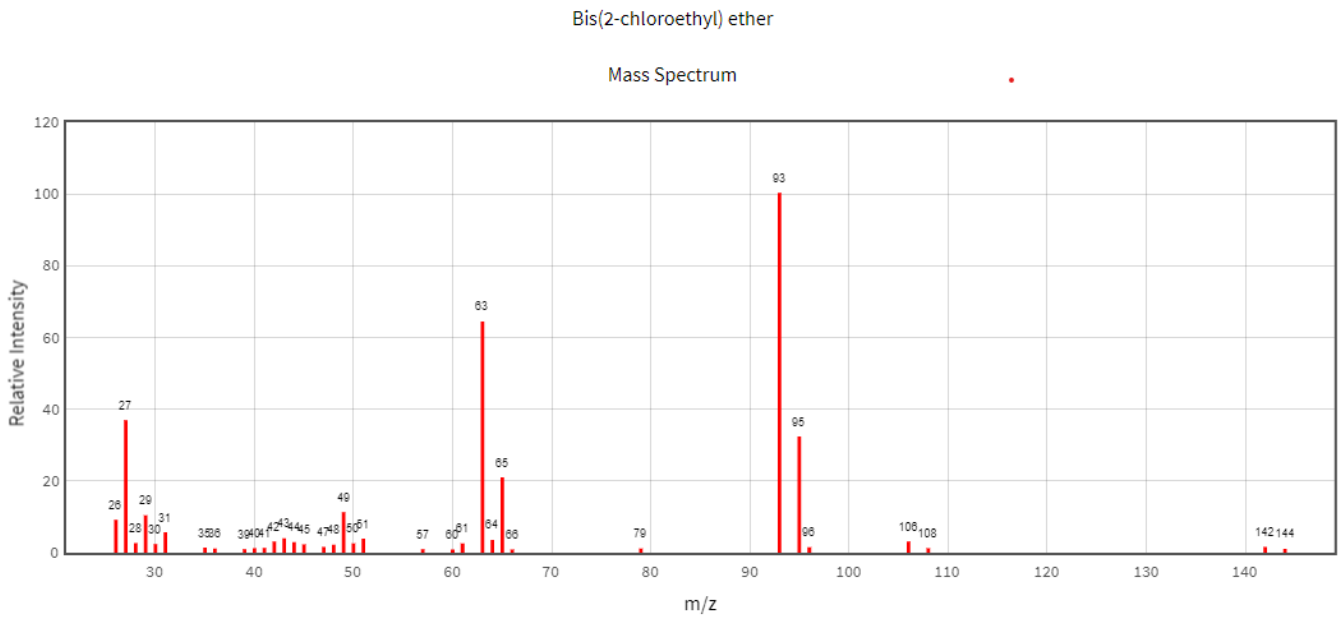


Figure 2. Quality Fit Evaluation Provided by the Laboratory

Hits / Signals for Bis(2-chloroethyl)ether

	RT	RRT	Amt	Q	Ratios	RTs	Spec	Flags
1	4.277	0.954	762.691	71	PASS	PASS	PASS	

Figure 3. Reference Mass Spectra for Bis(2-chloroethyl)ether



Attachment 1

Bis(2-chloroethyl)ether Fire Hydrant Zone Screening Sample Resolution Cross Walk

Field Sample ID	Sampling Date	Zone	Lab Sample ID	Analyte	Result	Unit	Loc Id	Field Sample ID	Sampling Date	Zone	Lab Sample ID	Analyte	Result	Unit	Loc Id
20220108-A3-ZT01	01/08/22	A3	580-109117-6	BC2EE	0.030 U	µg/L	SA-LFH2	A3-TW-HYDLFH2-22035	02/04/22	A3	580-110026-7 580-110026-8	BC2EE	0.029 U	µg/L	SA-LFH2
								A3-TW-HYDLFH2-22035-1	02/04/22				0.029 U	µg/L	
20220111-H2-YT02	01/11/22	H2	580-109243-1	BC2EE	0.032 F1	µg/L	FH377	220204H2HT02	02/04/22	H2	580-110026-1 580-110026-2	BC2EE	0.029 U	µg/L	FH377
								220204H2HT02-1	02/04/22				0.029 U	µg/L	
20220111-H2-YT04	01/11/22	H2	580-109243-3	BC2EE	0.032 U	µg/L	FH1331	220204H2HT03	02/04/22	H2	580-110026-3 580-110026-5	BC2EE	0.029 U	µg/L	FH1331
								220204H2HT03-1	02/04/22				0.029 U	µg/L	
20220111-H2-YT06	01/11/22	H2	580-109243-4	BC2EE	0.030 U	µg/L	FH1646	220204H2HT04	02/04/22	H2	580-110026-4 580-110026-6	BC2EE	0.029 U	µg/L	FH1646
								220204H2HT04-1	02/04/22				0.029 U	µg/L	
20220111-H1-YT12	01/11/22	H1	580-109239-2	BC2EE	0.031 U	µg/L	FH1396	220204H1HT01	02/04/22	H1	580-110035-1 580-110035-2	BC2EE	0.029 U	µg/L	FH1396
								220204H1HT01-1	02/04/22				0.029 U	µg/L	
220112-H3-ZT09	01/12/22	H3	580-109289-3	BC2EE	0.031 U	µg/L	FH1641	220204H3IT01	02/04/22	H3	580-110029-1 580-110029-3 580-110029-2 580-110029-4	BC2EE	0.028 U	µg/L	FH1641
								220204H3IT01-1	02/04/22				0.028 U	µg/L	
								220204H3IT02	02/04/22				0.028 U	µg/L	
								220204H3IT02-1	02/04/22				0.028 U	µg/L	
220112-H3-ZT13	01/12/22	H3	580-109289-1	BC2EE	0.031	µg/L	FH1651	220204H3IT03	02/04/22	H3	580-110029-7 580-110029-8	BC2EE	0.028 U	µg/L	FH1651
								220204H3IT03-1	02/04/22				0.028 U	µg/L	
220112-H3-ZT05	01/12/22	H3	580-109289-5	BC2EE	0.031 U	µg/L	FH1676	220204H3IT04-1	02/04/22	H3	580-110029-5 580-110029-6	BC2EE	0.028 U	µg/L	FH1676
								220204H3IT04	02/04/22				0.028 U	µg/L	
20220105-C1-ZT03	01/05/22	C1	580-109054-1	BC2EE	0.031 U	µg/L	FH512	220203C1ZT03	02/03/22	C1	580-110036-1	BC2EE	0.029 U	µg/L	FH512
20220106-F2-ZT08	01/06/22	F2	580-109090-4	BC2EE	0.031 U	µg/L	FH17	220203F2ZT01	02/03/22	F2	580-110037-1	BC2EE	0.029 U	µg/L	FH17
220107-C2-YT02	01/07/22	C2	580-109117-8	BC2EE	0.031 U	µg/L	FH315	220203C2ZT02	02/03/22	C2	580-110034-1	BC2EE	0.029 U	µg/L	FH315
20220108-B1-ZT04	01/08/22	B1	580-109117-5	BC2EE	0.031 U	µg/L	FH8	220203B1ZT04	02/03/22	B1	580-110038-1	BC2EE	0.029 U	µg/L	FH8

ENCL (4)

eurofins | Frontier Global Sciences

CORRECTIVE ACTION – SEATTLE LABORATORY

Date Initiated: 2/7/2022

Terri Torres, Quality Assurance Manager

Subject: bis(2-Chloroethyl)ether false positive results

Client: AECOM

3/1/2022
Date Approved

Samples Affected: 580-109090-4 (20220106-F2-ZT08), 580-109117-5 (20220208-B1-ZT04), 580-109117-6 (20220108-A3-ZT01), 580-109117-8 (20220107-C2-YT02), 580-109054-1 (20220105-C1-ZT03), 580-109239-2 (20220111-H1-YT12), 580-109243-1 (2022011-H2-YT02), 580-109243-3 (2022011-H2-YT04), 580-109243-4 (2022011-H2-YT06), 580-109289-1 (2022112-H3-ZT13), 580-109289-3 (2022112-H3-ZT09) and 580-109289-5 (2022112-H3-ZT05)

Method: 8270E

Problem
The detections of the 8270E analyte bis(2-Chloroethyl)ether was determined to be due to false positive detections in several samples.

Assessment/Investigation
Bis(2-chloroethyl)ether is a relatively uncommon environmental contaminant and hits reported by Eurofins Seattle prompted confirmation by the client. Upon further review, it was determined that though a compound similar to Bis(2-chloroethyl)ether was detected, the compound lacked qualifying features: 1) overall mass spectral breakdown was inconsistent with that of Bis(2-chloroethyl)ether, 2) the ion ratio for m/z 95 was inconsistent with that of Bis(2-chloroethyl)ether. It was known to the lab that samples from this project occasionally contained a brominating or chlorinating agent, such as elemental bromine, elemental chlorine, or hypobromous or hypochlorous acid formed in situ from the addition of sodium hypochlorite or sodium hypobromite. These compounds, commonly added to drinking water to treat or disinfect, caused reactive halogenation of 2-methyl-2-butene (amylene), a stabilizer for methylene chloride used at the laboratory. By mass spectral interpretation, it was determined that a polychlorinated amylene was the cause of the false positive.

Final Assessment/Corrective Action
There were two main root causes for the miss-identification, overall mass spectral breakdown and ion ratio inconsistency. The overall mass spectral breakdown pattern was overlooked by analysts because the analyte eluted at the correct retention time, contained all quantifier and qualifier ions, and the ions appeared to present at the correct ratios. However there was a discrepancy of the mass spectral breakdown pattern that may have been caused by a coelution of another unknown analyte. Additionally there was an ion ratio inconsistency. After looking through settings in the quantitation software, it was determined that a setting which would flag false positives for inaccurate ion ratios was turned off. The analyst, unaware of any qualitative flags to the data as they had been turned off, would see a "PASS" for ions whose ratios were not necessarily consistent with the ratios obtained in the analyte ICAL.

To improve the data quality of the project, the samples were re-sampled using sodium sulfite, which quenches halogenated species, as a preservative. Use of this preservative was found to eliminate presence of the false positive amylene derivative. Additionally the setting in the software to flag analytes with inconsistent ion ratio results has been turned on with an ion ratio acceptance criteria of +-30% as specified by EPA 8270E. Analysts were instructed to contact additional resources or reviewers in the case of any doubt with regards to the qualitative identification of analytes.

Kathleen Ho

02/12/2022

KATHLEEN S. HO DATE
Deputy Director of Environmental Health

DOH's Guidance on the Approach to Amending the Public Health Advisory, Addendum 1
Public Health Advisory initiated November 29, 2021
Joint Base Pearl Harbor-Hickam Public Water System No. 360
HEER Incident Case No.: 20211128-1848

Purpose: This guidance provides the criteria that the Hawaii Department of Health (DOH) will be using to **amend** the Public Health Advisory (Advisory) issued on November 29, 2021.

DOH's priority is to protect the public health of the people of Hawaii. The guidance is based on "lines of evidence" (Table 1) that must be met before DOH will amend the health advisory and issue notices that the water can be used for drinking. The Navy must also commit to following the long-term monitoring (LTM) of system water quality for this incident under the IDWST Drinking Water Sampling Plan, as amended.

Background: A chemical release of petroleum, which is a hazardous substance, entered the Joint Base Pearl Harbor-Hickam (JBPHH) drinking water distribution system and the Red Hill Shaft. This release triggered an emergency response and DOH issuance of an Advisory on November 29, 2021. State and Federal Drinking Water (DW) Maximum Contaminant Levels (MCLs) under the Safe Drinking Water Act do not adequately address petroleum contamination of drinking water. DOH has established Environmental Action Levels (EALs) and Incident Specific Parameters (ISPs) to more comprehensively monitor and respond to petroleum contaminated drinking water. Any contaminants that exceed the State and Federal DW MCLs, EALs, or ISPs require additional action prior to amending the Advisory. Lines of evidence will be achieved by evaluating the data generated during the investigation conducted by the Interagency Drinking Water System Team (IDWST). The data will be assessed for each Flushing Zone of the Drinking Water Distribution System Recovery Plan. All lines of evidence will require documentation.

DOH Project Screening Levels: State and Federal Drinking Water MCLs, specified State EALs, and ISPs are considered in development of Project Screening Levels. The actions for the thresholds for each contaminant are listed in Tables 2 and 3.

Table 1: Lines of Evidence Under Evaluation

1. Ensure no contamination is entering the water system.		
Objective	**Lines of Evidence**	**Incident Specific Criteria**
1a	All reported sources of contamination are isolated and contained.	Contamination from Red Hill Shaft is isolated from Navy's water distribution system.
1b	The regulated public water system's water quality data is compliant.	Data meets Federal DW MCLs, specified State EALs, and ISPs.
1c	No additional contamination through the distribution system is occurring.	Cross Connection Control investigation shows distribution system is protected, resulting in no additional sources of contamination.

2. Ensure no contamination remains in the system and water chemistry concerns are addressed.		
Objective	**Lines of Evidence**	**Incident Specific Criteria**
2a	Water within the distribution system meets State and Federal DW MCLs, specified State EALs, and ISPs.	• Zone flushing plan demonstrates entire distribution system is flushed. • Certification of Water Storage Tank(s) Flushing. • Sample results show the water in distribution system meets State and Federal DW MCLs, specified State EALs, and ISPs. • Drinking water does not show sheen, olfactory evidence, or other qualitative methods of petroleum.
2b	Water in premise plumbing of homes/buildings meets State and Federal DW MCLs, specified State EALs, and ISPs.	• Flushing Plan includes procedures to ensure no service connections will re-contaminate the distribution system. • Certification of Completed Irrigation Line Flushing. • Sample Plan includes 72-hour stagnation to account for leaching of contaminants from premise plumbing. • Sample results show water in homes/buildings meets State and Federal DW MCLs, specified State EALs, and ISPs.

Table 2: Threshold Determinations that Drinking Water is NOT Fit For Human Consumption

If the DOH MCLs or DOH Project Screening Levels are exceeded, the Drinking Water Health Advisory shall NOT be amended and the drinking water is considered NOT fit for human consumption.

Table 2 Contaminant	DOH MCL (ug/L)	DOH Project Screening Level (ug/L)	Basis	Notes
Benzene	5	5	DOH MCL[1]	
Toluene	1,000	1,000		
Ethylbenzene	700	700		
Xylenes (total)	10,000	10,000		
JP-5 as Combined Total Petroleum Hydrocarbons (TPH)-Gasoline, Diesel, and Oil Ranges [Incident Specific Parameter]	Not Applicable	211	Release of fresh fuel and potential direct release.	The 211 ug/L screening level is based on risk-based action levels for TPH associated with JP-5 jet fuel described in a HIDOH Technical Memorandum dated January 27, 2022, revised February 12, 2022 (HIDOH 2022). The action (screening) level conservatively assumes that TPH detected in the water is associated with non-degraded, dissolved-phase, fuel in the drinking water system. The memorandum serves as an addendum to the *HIDOH 2017 EAL Guidance*[2].
1,1,1-Trichloroethane	200	200	DOH MCL[1]	
1,1,2-Trichloroethane	5	5		
1,1-Dichloroethylene	7	7		
1,2,4-Trichlorobenzene	70	70		
1,2-Dichlorobenzene	600	600		
1,2-Dichloroethane (EDC)	5	5		
1,2-Dichloropropane (DCP)	5	5		
1,4-Dichlorobenzene	75	75		
Carbon tetrachloride (CTC)	5	5		
Chlorobenzene	100	100		
cis-1,2-Dichloroethylene	70	70		
Dichloromethane	5	5		
Styrene	100	100		
Tetrachloroethylene	5	5		
trans-1,2-Dichloroethylene	100	100		
Trichloroethylene (TCE)	5	5		
Vinyl Chloride	2	2		
Benzo[a]pyrene	0.2	0.2		
Di(2-ethylhexyl)phthalate	6	6		
Antimony	6	6		
Arsenic	10	10		

Table 2 Contaminant	DOH MCL (ug/L)	DOH Project Screening Level (ug/L)	Basis	Notes
Barium	2000	2000	DOH MCL[1]	
Beryllium	4	4		
Cadmium	5	5		
Chromium	100	100		
Copper [3]	1300	1300	DOH AL[1]	
Lead [3]	15	15		
Mercury	2	2	DOH MCL[1]	
Selenium	50	50		
Thallium	2	2		
Dichloroethylene, 1,2-(Mixed Isomers)	70	70		
Total trihalomethanes (TTHM) (sum of chloroform, bromoform, bromodichloromethane, and dibromochloromethane).	80	80		
Total Haloacetic acids (five) (HAA5) (sum of mono-, di-, trichloroacetic acids and mono- and dibromoacetic acids).	60	60		
Bromate	10	10		
Chlorite	1000	1000		

Notes:
[1] CONTAMINANTS REGULATED BY THE SAFE DRINKING WATER BRANCH (updated 7/10/14) at https://health.hawaii.gov/sdwb/files/2014/07/MCL-Fct-2014-07-10.pdf
[2] HIDOH, 2017, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater – Hawaii Edition (Fall 2017): Hawai'i Department of Health, Office of Hazard Evaluation and Emergency Response. https://health.hawaii.gov/heer/guidance/ehe-and-eals/. HIDOH, 2022, Recommended Risk-Based Drinking Water Action Levels for Total Petroleum Hydrocarbons (TPH) Associated with Releases of JP-5 Jet Fuel: Hawaii Department of Health, Hazard Evaluation and Emergency Response Office, January 27, 2022, revised February 12, 2022.
[3] Action Levels.

Table 3: Threshold Concentrations to Trigger Investigation(s)

If the DOH Project Screening Level is exceeded, the Navy shall investigate the source(s) of the contamination under direction of the DOH.

Table 3 Contaminant	DOH MCL (ug/L)	DOH Project Screening Level (ug/L)	Basis	Notes
1-methylnaphthalene	None	10	HIDOH EALs Table D-1a[1]	HIDOH 2017[2] (lowest of drinking water toxicity and taste and odor action levels). If the Project Screening Level for the listed contaminants are exceeded, the Navy shall: 1. Notify the DOH within 24 hours of receipt of the preliminary analytical results; 2. Start the investigation of the source of the contamination pursuant to the DOH *Technical Guidance Manual*[3]; 3. Submit a draft Corrective Action Plan to the DOH for approval within 72 hours of receipt of the preliminary analytical results; and 4. Comply with interim actions as identified by DOH.
2-methylnaphthalene	None	10		
Naphthalene	None	17		
Total Organic Carbon (TOC) [Incident Specific Parameter]	None	2000	Additional surrogate for TPH	TOC used as an additional surrogate for TPH to increase confidence in representativeness of sample data. • While most Oahu ground water sources are closer to 1000 ug/l or below, the proposed EAL acknowledges that distribution system conditions and operational changes may cause a temporary increase in baseline TOC fluctuations. • The proposed EAL can be supported by all current EPA approved drinking water methods utilized for compliance with 40 CFR 141.132(d)(3) as revised: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100WD1L.txt Results with Detection Limits up to 1500 ug/L may be used to meet the criteria for amending the health advisory.
Fuel-like Odor in the Water or Obvious Petroleum Sheen, or Dermal Irritation due to water [Incident Specific Parameter]	N/A	Present	Public Health Advisory	Within 12 hours of field observations by Navy or DOH or EPA or within 24 hours of receipt of a complaint by the Navy or DOH, the Navy shall follow the *JBPHH Water Response Resident Resources* or the Water Rapid Response Team process and notify DOH of the status of the response. This continues to be a trigger under the Long Term Monitoring Plan.

[1] HIDOH EALs Table D-1a. Groundwater Action Levels. https://health.hawaii.gov/heer/files/2019/11/HDOH-EAL-Surfer-Fall-2017.xlsx

[2] HIDOH, 2017, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater – Hawaii Edition (Fall 2017): Hawai'i Department of Health, Office of Hazard Evaluation and Emergency Response. https://health.hawaii.gov/heer/guidance/ehe-and-eals/

[3] HIDOH, 2017, DOH *Technical Guidance Manual*, https://health.hawaii.gov/heer/tgm/.

DOH SVOCs-Results
Navy Water System Incident
Red Hill, Post-Flushing, Flushing Area C1

Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/6/2022	Zone C-1 Distribution			1-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/6/2022	Zone C-1 Distribution			2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			2-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/6/2022	Zone C-1 Distribution			4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Acetochlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Alachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Atrazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Bromacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Butachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Caffeine by method 525mod	ND	U(R7)	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Chloroneb	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Chrysene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Di(2-Ethylhexyl)phthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Diazinon (Qualitative)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Dieldrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Diethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Dimethoate	ND	U(R7)	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/6/2022	Zone C-1 Distribution			Di-n-Butylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Endrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			EPTC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Fluorene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Heptachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Isophorone	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Lindane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Malathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Metolachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Metribuzin	ND	U(LE)	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Molinate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Naphthalene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Parathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Phenanthrene	ND	U(BM)	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Propachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Simazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Terbacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Trifluralin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	1-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-02	Neches St	Arizona St	4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Acetochlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Alachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Atrazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Bromacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Butachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Caffeine by method 525mod	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Chloroneb	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Chrysene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Di(2-Ethylhexyl)phthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Diazinon (Qualitative)	ND	U	UJ	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Dieldrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Diethylphthalate	0.043	J	J	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Dimethoate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Di-n-Butylphthalate	0.083	J	J	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Endrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-02	Neches St	Arizona St	EPTC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Fluorene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Heptachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Isophorone	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Lindane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Malathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Metolachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Metribuzin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Molinate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Naphthalene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Parathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Phenanthrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Propachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Simazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Terbacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Trifluralin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	1-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Acetochlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Alachlor	ND	U	U	ug/L	Not Detected	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Atrazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Bromacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Butachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Caffeine by method 525mod	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Chloroneb	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Chrysene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Di(2-Ethylhexyl)phthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Diazinon (Qualitative)	ND	U	UJ	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Dieldrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Diethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Dimethoate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Di-n-Butylphthalate	0.10	J	J	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Endrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	EPTC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Fluorene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Heptachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Isophorone	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Lindane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Malathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Metolachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Metribuzin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Molinate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Naphthalene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Parathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Phenanthrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Propachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Simazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Terbacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Trifluralin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	1-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Acetochlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Alachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Atrazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Bromacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Butachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Caffeine by method 525mod	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Chloroneb	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Chrysene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Di(2-Ethylhexyl)phthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Diazinon (Qualitative)	ND	U	UJ	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Dieldrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Diethylphthalate	0.043	J	J	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Dimethoate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Di-n-Butylphthalate	0.50	J	J	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Endrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	EPTC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Fluorene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Heptachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Isophorone	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Lindane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Malathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Metolachlor	ND	U	U	ug/L	Not Detected	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Metribuzin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Molinate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Naphthalene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Parathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Phenanthrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Propachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Simazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Terbacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Trifluralin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/27/2022	012722-27-01	North Rd.	Nimitz St	1-Methylnaphthalene	ND			ug/L	Non Detect	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2-Methylnaphthalene	ND			ug/L	Non Detect	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Acetochlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Alachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Atrazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Bromacil	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Butachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Caffeine by method 525mod	ND	U	U	ug/L	Not Detected	C1	Non-Residential

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/27/2022	012722-27-01	North Rd.	Nimitz St	Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Chloroneb	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Chrysene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Di(2-Ethylhexyl)phthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Diazinon (Qualitative)	ND	U	UJ	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Dieldrin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Diethylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Dimethoate	ND	U(R7)	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Di-n-Butylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Endrin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	EPTC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Fluorene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Heptachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Isophorone	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Lindane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Malathion	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Metolachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Metribuzin	ND	U(R7)	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Molinate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Naphthalene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Parathion	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Phenanthrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/27/2022	012722-27-01	North Rd.	Nimitz St	Propachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Simazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Terbacil	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Trifluralin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	1-Methylnaphthalene	ND			ug/L	Non Detect	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2-Methylnaphthalene	ND			ug/L	Non Detect	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Acetochlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Alachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Atrazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Bromacil	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Butachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Caffeine by method 525mod	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Chloroneb	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Chrysene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Non-Residential

DOH SVOCs-Results
Navy Water System Incident
Red Hill, Post-Flushing, Flushing Area C1

Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/27/2022	012722-34-01	North Rd.	Nimitz St	Di(2-Ethylhexyl)phthalate	0.23	J	J	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Diazinon (Qualitative)	ND	U	UJ	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Dieldrin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Diethylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Dimethoate	ND	U(R7)	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Di-n-Butylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Endrin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	EPTC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Fluorene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Heptachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Isophorone	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Lindane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Malathion	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Metolachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Metribuzin	ND	U(R7)	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Molinate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Naphthalene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Parathion	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Phenanthrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Propachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Simazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Terbacil	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential

DOH SVOCs-Results
Navy Water System Incident
Red Hill, Post-Flushing, Flushing Area C1

Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/27/2022	012722-34-01	North Rd.	Nimitz St	Trifluralin	ND	U	U	ug/L	Not Detected	C1	Non-Residential

Exceeds the ISP
Bold= Detected

DOH TPH-Results
Navy Water System Incident
Red Hill, Post-Flushing, Flushing Area C1

Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit (ug/L = ppb	Results Category	Zone	Feature Type	Sheen Present	Odor
1/6/2022	Zone C-1 Distribution			C8-C44	**49**	J	J+	ug/L	Detected	C1	Distribution	No	No
1/6/2022	Zone C-1 Distribution			TPH-g	ND	U	U	ug/L	Not Detected	C1	Distribution	No	No
1/6/2022	Zone C-1 Distribution			Diesel Range Organics (DRO)-C10-C28	ND	U	U	ug/L	Not Detected	C1	Distribution	No	No
1/6/2022	Zone C-1 Distribution			Gas Range Organics C8-C10	ND	U	U	ug/L	Not Detected	C1	Distribution	No	No
1/6/2022	Zone C-1 Distribution			Oil Range Organics (C28-C40)	ND	U	U	ug/L	Not Detected	C1	Distribution	No	No
1/17/2022	011722-20-02	Neches St	Arizona St	TPH-g	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-02	Neches St	Arizona St	C8-C44	**56**		J+	ug/L	Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-02	Neches St	Arizona St	Diesl Range Organics (DRO)-C10-C28	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-02	Neches St	Arizona St	Gas Range Organics C8-C10	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-02	Neches St	Arizona St	Oil Range Organics (C28-C40)	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	TPH-g	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	C8-C44	47	J	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Diesl Range Organics (DRO)-C10-C28	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Gas Range Organics C8-C10	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Oil Range Organics (C28-C40)	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/18/2022	011822-48-03	Makalapa Dr	Kamakani Pl	Oil Range Organics (C28-C40)	ND	U	U	ug/L	Not Detected	C1	Distribution	No	No
1/27/2022	012722-27-01	North Rd.	Nimitz St	TPH as Gas	ND	U	U	ug/L	Not Detected	C1	Non-Residential	No	No odor
1/27/2022	012722-27-01	North Rd.	Nimitz St	C9-C40	**48**	J	J	ug/L	Detected	C1	Non-Residential	No	No odor
1/27/2022	012722-27-01	North Rd.	Nimitz St	Diesel Range Organic C9-C25	**37**	J	J	ug/L	Detected	C1	Non-Residential	No	No odor
1/27/2022	012722-27-01	North Rd.	Nimitz St	Oil Range Organic C24-C40	ND	U	U	ug/L	Not Detected	C1	Non-Residential	No	No odor
1/27/2022	012722-34-01	North Rd.	Nimitz St	TPH as Gas	ND	U	U	ug/L	Not Detected	C1	Non-Residential	No	No
1/27/2022	012722-34-01	North Rd.	Nimitz St	C9-C40	**44**	J	J	ug/L	Detected	C1	Non-Residential	No	No
1/27/2022	012722-34-01	North Rd.	Nimitz St	Diesel Range Organic C9-C25	**35**	J	J	ug/L	Detected	C1	Non-Residential	No	No
1/27/2022	012722-34-01	North Rd.	Nimitz St	Oil Range Organic C24-C40	ND	U	U	ug/L	Not Detected	C1	Non-Residential	No	No
1/17/2022	011722-20-04	Waterfront St	Waterfront St	C8-C44	47	J	U	ug/L	Not Detected	C1	Distribution	Not Noted	Not Noted
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Diesl Range Organics (DRO)-C10-C28	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	Not Noted
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Gas Range Organics C8-C10	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	Not Noted
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Oil Range Organics (C28-C40)	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	Not Noted
1/17/2022	011722-20-04	Waterfront St	Waterfront St	TPH as Gas	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	Not Noted

Exceeds the ISP
Bold= Detected

Section 2a.6 Distribution System Sample and Exceedance Resample Report

Interagency Drinking Water System Team
Zone C1 Removal Action Report
March 2022

Line of Evidence 2b

Water in Premise Plumbing of Homes/Buildings does not exceed State and Federal Drinking Water MCLs, specified State EALs, and ISPs

Table 1: Lines of Evidence Under Evaluation – Ensure no contamination remains in the system and water chemistry concerns are addressed.

Objective 2b - Water in premise plumbing of homes/buildings does not exceed State and Federal DW MCLs, specified State EALs, and ISPs.

Incident Specific Criteria –

- Flushing Plan includes procedures to ensure no service connections will re-contaminate the distribution system.
- Sample Plan includes 72-hour stagnation to account for leaching of contaminants from premise plumbing.
- Sample results show water in homes/buildings does not exceed State and Federal DW MCLs, specified State EALs, and ISPs.

Lines of Evidence	Completion Status	Outstanding Items
Flushing Plan includes procedures to ensure no service connections will re-contaminate the distribution system.	Complete	• None.

February 20, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: SUMMARY OF LINE OF EVIDENCE OBJECTIVE 2B – WATER IN PREMISE OF PLUMBING OF HOMES/BUILDINGS DOES NOT EXCEED STATE AND FEDERAL DW MCLs, SPECIFIED STATE EALs, AND ISPs

Encl: (1) 2b.1 Flushing Records and Distribution System Pressure Logs During Residential Flushing
(2) 2b.2 Residential Sampling Report for Flushing Zone
(3) 2b.3 Exceedance Investigation Summary and Results
(4) 2b.4 Certification of Completed Irrigation Flushing
(5) 2b.5 DOH Guidance for Active Irrigation Line Purging and Flushing

1. Enclosures (1) through (5) document completion of Line of Evidence 2b, that water in premise of plumbing of homes/buildings does not exceed State of Hawaii and Federal Drinking Water standards, Maximum Contaminant Levels, Environmental Action Levels and Incident Specific Parameters. On the evening of November 28, 2021, the Red Hill Shaft was secured from operation and all pumping operations ceased. The Aiea/Halawa shaft briefly served as the secondary source starting on November 28, 2021, but it was shut down on December 3, 2021 to prevent potential westward contaminant migration in the aquifer and because there were concerns over high chloride concentrations caused by saltwater intrusion. Since December 3, 2021, the Waiawa Shaft has been the sole water source providing potable water to the Joint Base Pearl Harbor-Hickam (JBPHH) distribution network. Zone C1 is part of the JBPHH Drinking Water system that is operated and maintained by the United States Navy. Flushing operations are summarized in Enclosure (1), signed by CDR Trevor Bingham, team lead for the Drinking Water Residential and Non-residential Recovery Team.

2. Enclosure (1) documents the flushing records for all facilities within Zone C1, as well as pressure logs for the distribution system during facility flushing operations. The completion of irrigation flushing in Zone C1, described in Enclosure (5), is documented in Enclosure (4). Sampling data collected after flushing is summarized in Enclosure (2).

3. Sample results with analyte detections exceeding the prescribed Maximum Contaminant Level (MCL), Environmental Action Level (EAL), or Incident Specific Parameter (ISP) are documented in Enclosure (3). The follow-on investigation summary and additional sampling results are also documented in Enclosure (3).

4. This information documents completion of Line of Evidence 2b, that water in premise of plumbing of homes/buildings does not exceed State of Hawaii and Federal Drinking Water standards, MCLs, EALs, or ISPs.

5. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and I believe the submitted information is true, accurate, and complete.

WETZEL.CHRISTOPHER.JAMES.1540194862

Digitally signed by WETZEL.CHRISTOPHER.JAMES.1540194862
Date: 2022.02.20 13:54:53 -08'00'

C. J. Wetzel
LT, CEC, USN

1 March 2022

MEMORANDUM

From: Naval Facilities Engineering Systems Command Representative, EWG Team
To: Interagency Drinking Water System Team

Subj: RECORDS OF COMPLETED NON-RESIDENTIAL FLUSHING ZONE C1

Ref: (a) Non-Residential Flushing Plan, January 2022

Encl: (1) EDMS Non-Residential Flushing Records Zone C1
(2) JBPHH System Pressure SCADA Data

1. This memo documents the completion of non-residential flushing in Zone C1. There are no residents in Zone C1. The completed records of non-residential flushing, as shown in Enclosure (1), document the flushing of all 181 facilities in EDMS.

2. Meter 7158, located at the Fleet and Industrial Supply Center Print Shop, is the nearest meter to Zone C1. Meter readings for this meter document that the distribution system maintained a pressure of at least 30 pounds per square inch (psi) for the duration of non-residential flushing, as shown in Enclosure (2).

3. I certify under penalty of law that I have personally examined and I am familiar with the information submitted, and the submitted information is true, accurate, and complete.

Very respectfully,

BINGHAM.TREVOR.AMMON.1131940048

Digitally signed by BINGHAM.TREVOR.AMMON.1131940048
Date: 2022.03.01 13:06:46 -10'00'

T. A. BINGHAM
CDR, CEC, USN

Flushing Zone C1

2022-01-07 - 2022-02-04

Total Facilities	Total	Percent Complete	No	Flushed on
181	181	100.0 %	0	181

Zone	Address	Arrive Date	Start Time	Finish Time	Certified	Summary General Notes	Unable To Access	Access Reason
Flushing Zone C1	Building 1172,DAC OFFSITE STORAGE	27-Jan-22	09:00	09:54	☑		☐	
Flushing Zone C1	Building 1181,TRAINING BUILDING	27-Jan-22	09:00	09:57	☑		☐	
Flushing Zone C1	Building 1232,PTSG FACILITY (C1-	26-Jan-22	09:00	14:17	☑		☐	
Flushing Zone C1	Building 1252,NEX AUTO SERVICE	28-Jan-22	09:00	09:56	☑		☐	
Flushing Zone C1	Building 1257,NEX AUTO SERVICE CTR	27-Jan-22	09:00	09:57	☑		☐	
Flushing Zone C1	Building 1262,SUBTRACENPAC BLDG (C1-	26-Jan-22	09:00	12:58	☑		☐	
Flushing Zone C1	Building 1272,PUBLIC TOILET (C1-	27-Jan-22	00:00	15:15	☑		☐	
Flushing Zone C1	Building 1280,EQUIPMENT	26-Jan-22	09:00	09:56	☑		☐	
Flushing Zone C1	Building 1289,GABRUNAS PARKING	24-Jan-22	11:00	12:36	☑		☐	
Flushing Zone C1	Building 1310,ADMINISTRATION BLDG	26-Jan-22	06:00	14:11	☑		☐	
Flushing Zone C1	Building 1320,NITROGEN FACILITY (C1-	27-Jan-22	09:00	14:39	☑		☐	
Flushing Zone C1	Building 1323,GABRUNAS BEQ BLDG A	27-Jan-22	09:00	14:41	☑		☐	
Flushing Zone C1	Building 1324,GABRUNAS BEQ BLDG B,	27-Jan-22	09:00	14:45	☑		☐	
Flushing Zone C1	Building 1330,EM BARRACKS,ZELINA	26-Jan-22	08:00	13:03	☑		☐	
Flushing Zone C1	Building 1331,GABRUNAS RECREATION	27-Jan-22	09:00	14:48	☑		☐	
Flushing Zone C1	Building 1332,GABRUNAS PAVILION (C1-	02-Feb-22	09:00	12:27	☑		☐	
Flushing Zone C1	Building 1334,EastM. BARRACKS,	26-Jan-22	07:00	12:50	☑		☐	
Flushing Zone C1	Building 1335,EastM. BARRACKS,	26-Jan-22	06:00	12:55	☑		☐	
Flushing Zone C1	Building 1341,SUBPAC ADMIN N7 (C1-	26-Jan-22	09:00	09:58	☑		☐	
Flushing Zone C1	Building 1366,NGIS - NAVY TDY (ANNEX	25-Jan-22	08:00	10:49	☑		☐	
Flushing Zone C1	Building 1367,East M. BARRACKS,	26-Jan-22	00:00	12:45	☑		☐	
Flushing Zone C1	Building 1368,East M. BARRACKS, WHITE	26-Jan-22	08:00	12:41	☑		☐	
Flushing Zone C1	Building 1378,TECHNICAL TRNG BLDG	26-Jan-22	08:00	13:01	☑		☐	
Flushing Zone C1	Building 1398A,SEWAGE PMP BLDG STA	26-Jan-22	09:00	10:08	☑		☐	
Flushing Zone C1	Building 1407,MAKALAPA	21-Jan-22	09:00	12:15	☑		☐	
Flushing Zone C1	Building 1440,DENTAL EQUIPMENT	24-Jan-22	12:00	12:34	☑		☐	
Flushing Zone C1	Building 1441A,GABRUNAS BEQ UTILITY	27-Jan-22	06:00	09:58	☑		☐	
Flushing Zone C1	Building 1487,STANDBY GENERATOR	27-Jan-22	07:00	09:58	☑		☐	
Flushing Zone C1	Building 1496,EM	26-Jan-22	11:00	12:53	☑		☐	
Flushing Zone C1	Building 1497,EM BARRACKS,	26-Jan-22	09:00	12:52	☑		☐	
Flushing Zone C1	Building 1498,A/C PLANT BLD BEQ (C1-	26-Jan-22	12:00	12:56	☑		☐	
Flushing Zone C1	Building 1506,NGIS - NAVY TDY (C1-	07-Jan-22	13:00	09:17	☑		☐	
Flushing Zone C1	Building 1514,SMART CLINIC/NAVY	19-Jan-22	00:00	13:01	☑		☐	
Flushing Zone C1	Building 1535,MEDICAL CLINIC/SARP-	26-Jan-22	09:00	12:21	☑		☐	
Flushing Zone C1	Building 1536,SUBSTA BLDG J-17A	19-Jan-22	12:00	09:59	☑		☐	
Flushing Zone C1	Building 1538,MEDICAL STORAGE-PEARL	26-Jan-22	09:00	12:23	☑		☐	
Flushing Zone C1	Building 1542,BOILER BUILDING (C1-	28-Jan-22	09:00	09:59	☑		☐	
Flushing Zone C1	Building 1544,OIL GRAVITY SEPARATOR	27-Jan-22	09:00	10:29	☑		☐	
Flushing Zone C1	Building 1554,JP8 JET FUEL PUMP	27-Jan-22	09:00	10:02	☑		☐	
Flushing Zone C1	Building 1588,TORP RETREIVER	25-Jan-22	09:00	13:59	☑		☐	
Flushing Zone C1	Building 1594,NEX AUTO REPAIR SHOP	27-Jan-22	12:00	10:01	☑		☐	
Flushing Zone C1	Building 1613,AFFF 3800 GAL FOAM	27-Jan-22	08:00	10:01	☑		☐	
Flushing Zone C1	Building 1616,HONOR AND CEREMONY	27-Jan-22	15:00	10:02	☑		☐	
Flushing Zone C1	Building 1640,RESTROOM FACILITY (C1-	27-Jan-22	09:00	10:43	☑		☐	
Flushing Zone C1	Building 1650,MWR STORAGE	27-Jan-22	09:00	10:02	☑		☐	
Flushing Zone C1	Building 1655,CHILD CARE CENTER-	24-Jan-22	16:00	09:48	☑		☐	
Flushing Zone C1	Building 1663A,BATH HOUSE (C1-	27-Jan-22	09:00	10:03	☑		☐	
Flushing Zone C1	Building 1664A,MILLICAN CONCESSION	27-Jan-22	09:00	10:04	☑		☐	
Flushing Zone C1	Building 1666,PARKING (C1-BLDG1666)	27-Jan-22	09:00	10:04	☑		☐	
Flushing Zone C1	Building 1668,LOX/NITRO CLEAN ROOM	28-Jan-22	09:00	09:07	☑		☐	
Flushing Zone C1	Building 1682,PILOT BOATHOUSE-	27-Jan-22	09:00	13:26	☑		☐	
Flushing Zone C1	Building 1685,POL	27-Jan-22	14:00	15:09	☑		☐	
Flushing Zone C1	Building 1694,SEAWOLF TOWER (C1-	27-Jan-22	07:00	09:42	☑		☐	
Flushing Zone C1	Building 1716,DTRA PTSG STORAGE (C1-	26-Jan-22	01:00	14:41	☑		☐	
Flushing Zone C1	Building 1723,SMALLWOOD HALL BEQ	26-Jan-22	09:00	09:44	☑		☐	
Flushing Zone C1	Building 1724,STAND-BY GENERATOR	27-Jan-22	12:00	10:06	☑		☐	
Flushing Zone C1	Building 1729,NGIS - NAVY TDY	25-Jan-22	08:00	10:50	☑		☐	
Flushing Zone C1	Building 1730,MAKALAPA ROAD GATE	26-Jan-22	12:00	12:01	☑		☐	

Section 2b.1 Flushing Records and Distribution System Pressure Logs During Residential Flushing

Flushing Zone C1

2022-01-07 - 2022-02-04

Section 2b.1 Flushing Records and Distribution System Pressure Logs During Residential Flushing

Flushing Zone C1	Building 1731,BOQ STAND-BY	27-Jan-22	09:00	10:05	☑	☐
Flushing Zone C1	Building 1732,REGION FOOD SERVICE	24-Jan-22	13:00	13:27	☑	☐
Flushing Zone C1	Building 1733,WAREHOUSE/ADMIN (C1-	27-Jan-22	14:00	15:01	☑	☐
Flushing Zone C1	Building 1736,SUBASE BOWLING ALLEY	27-Jan-22	09:00	09:54	☑	☐
Flushing Zone C1	Building 1739,GEN BLD SUPPORTS	27-Jan-22	12:00	10:06	☑	☐
Flushing Zone C1	Building 1747,HAZARDOUS/FLAMMABLE	24-Jan-22	11:00	10:59	☑	☐
Flushing Zone C1	Building 1748,ADMIRAL BOATHOUSE	27-Jan-22	09:00	10:07	☑	☐
Flushing Zone C1	Building 1749,WATERFRONT OPS	27-Jan-22	08:00	09:45	☑	☐
Flushing Zone C1	Building 1757,FUEL DEPT CENTER	24-Jan-22	15:00	09:32	☑	☐
Flushing Zone C1	Building 1758,MAINTENANCE SHOP (C1-	24-Jan-22	15:00	09:31	☑	☐
Flushing Zone C1	Building 1759,STORAGE SHED (C1-	27-Jan-22	14:00	10:30	☑	☐
Flushing Zone C1	Building 1763,POV LOT OPERATIONS	27-Jan-22	09:00	10:09	☑	☐
Flushing Zone C1	Building 1764,LAUNDRY/UTIL-BEQ	26-Jan-22	09:00	12:49	☑	☐
Flushing Zone C1	Building 1766,CONTROLLED INDUSTRIAL	28-Jan-22	10:00	08:43	☑	☐
Flushing Zone C1	Building 1768,SUBSTA K-30 BLDG (C1-	27-Jan-22	07:00	10:08	☑	☐
Flushing Zone C1	Building 1769,SUBSTATION K34 BLDG	27-Jan-22	12:00	10:08	☑	☐
Flushing Zone C1	Building 1770,INTERMEDIATE	27-Jan-22	06:00	10:39	☑	☐
Flushing Zone C1	Building 1771,SEWAGE PUMP BLDG STA	27-Jan-22	12:00	10:10	☑	☐
Flushing Zone C1	Building 1772,IMF HAZMIN CENTER (C1-	26-Jan-22	09:00	14:26	☑	☐
Flushing Zone C1	Building 1776,PUBLIC RESTROOM (C1-	24-Jan-22	15:00	09:36	☑	☐
Flushing Zone C1	Building 1778,WATERFRONT OPS	27-Jan-22	06:00	10:12	☑	☐
Flushing Zone C1	Building 1784,STANDBY GENERATOR	27-Jan-22	12:00	10:12	☑	☐
Flushing Zone C1	Building 1900,CENTRAL	24-Jan-22	13:00	11:01	☑	☐
Flushing Zone C1	Building 2184,WATERFRONT OPS	27-Jan-22	09:00	10:13	☑	☐
Flushing Zone C1	Building 2186,NEX MINI-MART	27-Jan-22	06:00	09:50	☑	☐
Flushing Zone C1	Building 2188,OFFICE/ REC CTR BQ	26-Jan-22	09:00	12:47	☑	☐
Flushing Zone C1	Building 236,OPERATIONAL STORAGE	27-Jan-22	09:00	13:09	☑	☐
Flushing Zone C1	Building 404B,GENERAL WAREHOUSE	24-Jan-22	09:00	11:02	☑	☐
Flushing Zone C1	Building 405B,GENERAL DEPOT	04-Feb-22	09:00	10:13	☑	☐
Flushing Zone C1	Building 406B,GENERAL DEPOT	24-Jan-22	13:00	11:03	☑	☐
Flushing Zone C1	Building 414,RIGGERS STORE HOUSE	27-Jan-22	09:00	11:09	☑	☐
Flushing Zone C1	Building 416,NATIONAL PARK SERVICE	25-Jan-22	10:00	13:29	☑	☐
Flushing Zone C1	Building 417,IMF RIGGER DIVER SHOP,	27-Jan-22	12:00	10:45	☑	☐
Flushing Zone C1	Building 418,NEX STOREHOUSE (C1-	27-Jan-22	12:00	10:49	☑	☐
Flushing Zone C1	Building 425,STORAGE (C1-BLDG0425)	11-Jan-22	14:00	16:18	☑	☐
Flushing Zone C1	Building 427,NEX BLDG (C1-BLDG0427)	27-Jan-22	09:00	11:14	☑	☐
Flushing Zone C1	Building 434,NIOC FES FACILITY (C1-	12-Jan-22	08:00	13:49	☑	☐
Flushing Zone C1	Building 444,WAREHOUSE, 2525 Kuahua	27-Jan-22	09:00	11:11	☑	☐
Flushing Zone C1	Building 445,WAREHOUSE/CARPENTRY	27-Jan-22	12:00	09:38	☑	☐
Flushing Zone C1	Building 448,GENERAL DEPOT	27-Jan-22	12:00	11:22	☑	☐
Flushing Zone C1	Building 449,AUTO VEHICLE SHOP (C1-	27-Jan-22	10:00	11:17	☑	☐
Flushing Zone C1	Building 451K,PACKING PLANT (C1-	27-Jan-22	09:00	14:32	☑	☐
Flushing Zone C1	Building 452K,SORTING/ASSEMBLY	27-Jan-22	09:00	14:35	☑	☐
Flushing Zone C1	Building 473,WATERFRONT TRANSIT	27-Jan-22	14:00	09:42	☑	☐
Flushing Zone C1	Building 474,GENERAL WAREHOUSE	27-Jan-22	06:00	14:52	☑	☐
Flushing Zone C1	Building 475,GENERAL WAREHOUSE	24-Jan-22	10:00	09:42	☑	☐
Flushing Zone C1	Building 479,WAREHOUSE GENERAL	02-Feb-22	08:00	12:54	☑	☐
Flushing Zone C1	Building 482,EXCHANGE CENTRAL WHSE	27-Jan-22	14:00	10:28	☑	☐
Flushing Zone C1	Building 489,GENERAL WAREHOUSE	24-Jan-22	08:00	11:04	☑	☐
Flushing Zone C1	Building 490,GENERAL WAREHOUSE	19-Jan-22	00:00	13:47	☑	☐
Flushing Zone C1	Building 491,GENERAL WAREHOUSE	19-Jan-22	00:00	09:03	☑	☐
Flushing Zone C1	Building 550,NAVFAC PAC GPMO, B550	31-Jan-22	08:00	13:24	☑	☐
Flushing Zone C1	Building 584,CAREER INFORMATION	26-Jan-22	13:00	13:06	☑	☐
Flushing Zone C1	Building 59,PUMPHOUSE FUEL OIL UG	14-Jan-22	15:19	13:09	☑	☐
Flushing Zone C1	Building 60,PLANT DIESEL PURIFICATION	27-Jan-22	12:00	10:14	☑	☐
Flushing Zone C1	Building 615, GATE HOUSE 1 HALAWA	20-Jan-22	09:00	09:21	☑	☐
Flushing Zone C1	Building 619,COMSUBPAC	26-Jan-22	07:00	14:10	☑	☐
Flushing Zone C1	Building 626,SUBSTA BLDG J-4 750KVA	27-Jan-22	07:00	10:15	☑	☐
Flushing Zone C1	Building 628,SHARKEY THEATRE (C1-	28-Jan-22	12:00	10:28	☑	☐
Flushing Zone C1	Building 640,PWC COMPRESSOR PLANT	28-Jan-22	11:00	10:16	☑	☐
Flushing Zone C1	Building 641,AIR COMPR BLDG/SUBASE	20-Jan-22	12:00	15:13	☑	☐
Flushing Zone C1	Building 644,MWR ISSUE STORAGE (C1-	27-Jan-22	00:00	10:41	☑	☐
Flushing Zone C1	Building 650,COMSUBPAC BLDG (C1-	26-Jan-22	09:00	14:15	☑	☐

Flushing Zone C1

2022-01-07 - 2022-02-04

Flushing Zone C1	Building 651,OUTSIDE	26-Jan-22	10:00	13:46	☑	☐
Flushing Zone C1	Building 652,SUBSTA BLDG J-11/SUBASE	27-Jan-22	10:00	10:15	☑	☐
Flushing Zone C1	Building 653,CHRIMP STORAGE (C1-	26-Jan-22	12:00	14:27	☑	☐
Flushing Zone C1	Building 654,BEQ/PAQUET HALL/GALLEY,	27-Jan-22	06:00	09:48	☑	☐
Flushing Zone C1	Building 657,GUARD SHACK HOTEL 1-4	02-Feb-22	08:00	13:13	☑	☐
Flushing Zone C1	Building 659A,COMSUBPAC ADMIN	26-Jan-22	07:00	14:23	☑	☐
Flushing Zone C1	Building 660,FUEL OPERATIONS	28-Jan-22	08:00	09:05	☑	☐
Flushing Zone C1	Building 661,ADMINISTRATION	26-Jan-22	10:00	14:04	☑	☐
Flushing Zone C1	Building 662,NGIS - NAVY TDY	25-Jan-22	08:00	10:48	☑	☐
Flushing Zone C1	Building 663,SNIPES SHOWER (C1-	26-Jan-22	09:00	14:25	☑	☐
Flushing Zone C1	Building 664,TRK CNTRL GUARD HOUSE	27-Jan-22	00:00	10:17	☑	☐
Flushing Zone C1	Building 665,COMSUBPAC BLDG (C1-	25-Jan-22	09:00	13:56	☑	☐
Flushing Zone C1	Building 666,COMSUBPAC STORAGE (C1-	26-Jan-22	09:00	14:34	☑	☐
Flushing Zone C1	Building 667,MWR PIER SIDE FITNESS	26-Jan-22	09:00	14:38	☑	☐
Flushing Zone C1	Building 672,OVERWATCH 2 HALAW	02-Feb-22	10:00	13:13	☑	☐
Flushing Zone C1	Building 673,OPERATIONAL STORAGE	27-Jan-22	14:00	10:17	☑	☐
Flushing Zone C1	Building 674,NAVAL SUBMARINE	26-Jan-22	08:00	13:49	☑	☐
Flushing Zone C1	Building 676,SVC DIV CODE 714 (C1-	26-Jan-22	07:00	13:32	☑	☐
Flushing Zone C1	Building 679,NAVY EDUCATION CENTER	18-Jan-22	00:00	13:43	☑	☐
Flushing Zone C1	Building 680, JBPHH Federal FIRE	26-Jan-22	09:00	14:02	☑	☐
Flushing Zone C1	Building 681,N2 SECURITY BLDG (C1-	26-Jan-22	09:00	14:14	☑	☐
Flushing Zone C1	Building 683,DIVING/PERISCOPE SHOP,	26-Jan-22	08:00	14:28	☑	☐
Flushing Zone C1	Building 696,PUMPHOUSE FUEL OIL	26-Jan-22	09:00	10:17	☑	☐
Flushing Zone C1	Building 698,GUARD SHACK SIERRA 1	27-Jan-22	07:00	10:18	☑	☐
Flushing Zone C1	Building 708,SUBMARINE MEMORIAL	26-Jan-22	10:00	10:19	☑	☐
Flushing Zone C1	Building 709,RMMCO ADMIN (C1-	26-Jan-22	10:00	13:18	☑	☐
Flushing Zone C1	Building 711,BEEMAN CENTER (C1-	26-Jan-22	08:00	14:06	☑	☐
Flushing Zone C1	Building 718,LAUNDRY-BOQ 1729, 1260	26-Jan-22	09:00	13:09	☑	☐
Flushing Zone C1	Building 772,GUARD SHACK SIERRA 14	28-Jan-22	09:00	10:18	☑	☐
Flushing Zone C1	Building 790,OP STORAGE/PAINT (C1-	26-Jan-22	07:00	10:19	☑	☐
Flushing Zone C1	Building 795,EXCHANGE FILLING	27-Jan-22	09:00	10:17	☑	☐
Flushing Zone C1	Building 796,DIVE LOCKER REPAIR SHOP	26-Jan-22	09:00	10:18	☑	☐
Flushing Zone C1	Building 797,DIVE LOCKER/ADMIN	26-Jan-22	09:00	10:16	☑	☐
Flushing Zone C1	Building 823,DOG KENNEL (C1-	12-Jan-22	11:00	13:34	☑	☐
Flushing Zone C1	Building 826,READY MAGAZINE (C1-	28-Jan-22	09:00	10:16	☑	☐
Flushing Zone C1	Building 861,GEN BLDG FOR PIER	27-Jan-22	06:00	10:16	☑	☐
Flushing Zone C1	Building 862,GEN BLDG NR SUBSTA	26-Jan-22	09:00	10:15	☑	☐
Flushing Zone C1	Building 863,GEN BLDG NR SUBSTA	27-Jan-22	06:00	10:13	☑	☐
Flushing Zone C1	Building 864,GEN BLDG NR SUBSTA	28-Jan-22	09:00	10:14	☑	☐
Flushing Zone C1	Building 865,GEN BLDG NR SUBSTA 652	27-Jan-22	09:00	10:12	☑	☐
Flushing Zone C1	Building 866,GEN BLDG NR SUBSTA	27-Jan-22	09:00	10:09	☑	☐
Flushing Zone C1	Building 947,GUARD HOUSE YANKEE 3A	27-Jan-22	09:00	10:13	☑	☐
Flushing Zone C1	Building 9478,OCEAN TERMINAL	24-Jan-22	00:00	13:35	☑	☐
Flushing Zone C1	Building S235A,PUMPHOUSE SLOP OIL	27-Jan-22	09:00	10:08	☑	☐
Flushing Zone C1	Building S483,TRANSF STATION K-1	27-Jan-22	07:00	10:06	☑	☐
Flushing Zone C1	Building S484,SUBSTATION K-20	27-Jan-22	09:00	10:06	☑	☐
Flushing Zone C1	Building S485,SUBSTATION K-14	27-Jan-22	06:00	10:05	☑	☐
Flushing Zone C1	Building S493,TRANSFORMER K-15	27-Jan-22	07:00	10:05	☑	☐
Flushing Zone C1	Building S633,SWITCH STATION	27-Jan-22	10:00	10:04	☑	☐
Flushing Zone C1	Building S637,SUBSTA J15 6500KVA	27-Jan-22	10:00	10:03	☑	☐
Flushing Zone C1	Building S638,SWITCH STA E/SUBASE	25-Jan-22	08:00	10:58	☑	☐
Flushing Zone C1	Building S643,SUBSTA K10 BLDG	27-Jan-22	08:00	10:02	☑	☐
Flushing Zone C1	Building S699,TRANSFORMER J-21	27-Jan-22	07:00	10:01	☑	☐
Flushing Zone C1	Building S714,XFMR STA J-24	27-Jan-22	07:00	10:03	☑	☐
Flushing Zone C1	Building S830,FALLOUT SHELTER (C1-	26-Jan-22	08:00	13:15	☑	☐
Flushing Zone C1	Building S936,PERSONNEL PROTECTIVE	26-Jan-22	09:00	13:13	☑	☐
Flushing Zone C1	Building S938,PERSONNEL PROTECTIVE	26-Jan-22	07:00	13:11	☑	☐
Flushing Zone C1	Building S946,PERSONNEL PROTECTIVE	26-Jan-22	09:00	13:14	☑	☐
Flushing Zone C1	Building S950,SWITCH STATION I (C1-	27-Jan-22	07:00	09:58	☑	☐
Flushing Zone C1	Building S965,TRANSF STATION K-23	27-Jan-22	09:00	09:57	☑	☐

Section 2b.1 Flushing Records and Distribution System Pressure Logs During Residential Flushing

Key

Not Started

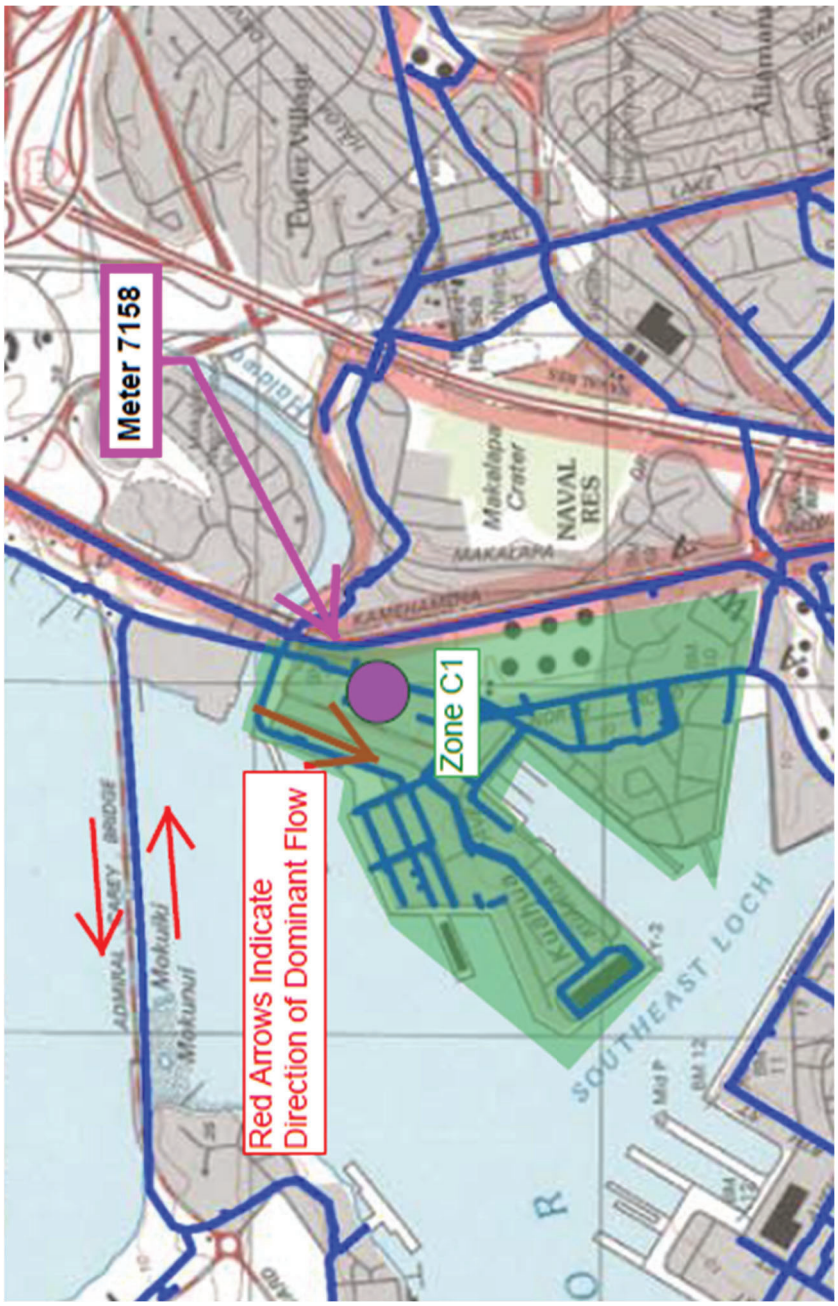
Flushing Zone C1

2022-01-07 - 2022-02-04

- No Access
- In Progress
- Complete

Section 2b.1 Flushing Records and Distribution System Pressure Logs During Residential Flushing

ENCL (1)


Meter 7158
Zone C1
Red Arrows Indicate
Direction of Dominant Flow
Makalapa Crater
NAVAL RES
MAKALAPA
KAMEHAMEHA
SOUTHEAST LOCH
ADMIRAL
Mokuiki
Mokuoi

Section 2b.1 Flushing Records and Distribution System Pressure Logs During Residential Flushing

			Meter										
Date	Time	Date/Time	4787	4127	4710	5004	5002	9050	7158	6780	2550	1846	1485
7-Jan-22	0:00:00	07-Jan-2200:00	69.3	32.8	78.0	74.8	74.0	70.0	72.7	64.0	36.0	61.7	64.0
7-Jan-22	0:30:00	07-Jan-2200:00	69.3	34.5	78.0	74.9	74.3	70.0	73.0	64.0	36.0	62.0	64.0
7-Jan-22	1:00:00	07-Jan-2201:00	69.3	34.9	78.0	75.0	74.5	70.0	73.0	64.0	36.0	62.0	64.0
7-Jan-22	1:30:00	07-Jan-2201:00	69.3	35.5	78.0	75.0	74.9	70.0	73.0	64.0	36.1	62.0	64.1
7-Jan-22	2:00:00	07-Jan-2202:00	69.3	36.0	78.0	75.6	75.0	70.0	73.0	64.3	37.0	62.4	65.0
7-Jan-22	2:30:00	07-Jan-2202:00	69.3	35.5	78.8	75.3	75.3	70.8	73.4	64.7	37.0	63.0	65.0
7-Jan-22	3:00:00	07-Jan-2203:00	65.4	35.4	79.0	75.1	75.0	70.7	73.4	64.5	36.6	62.6	64.5
7-Jan-22	3:30:00	07-Jan-2203:00	60.3	34.5	77.2	69.0	69.0	68.3	70.1	62.3	35.0	61.0	63.0
7-Jan-22	4:00:00	07-Jan-2204:00	60.3	34.5	71.7	68.7	68.3	68.0	70.0	61.7	34.5	60.1	62.2
7-Jan-22	4:30:00	07-Jan-2204:00	60.3	35.1	71.5	68.8	68.3	67.8	69.7	61.9	34.0	60.0	62.0
7-Jan-22	5:00:00	07-Jan-2205:00	60.3	35.2	71.0	68.0	68.0	67.0	69.0	61.0	34.0	59.1	61.2
7-Jan-22	5:30:00	07-Jan-2205:00	60.3	34.5	71.0	67.5	67.2	66.8	69.0	61.0	33.4	59.0	61.0
7-Jan-22	6:00:00	07-Jan-2206:00	58.5	34.3	70.7	66.7	66.7	66.0	68.6	60.3	33.0	58.8	61.0
7-Jan-22	6:30:00	07-Jan-2206:00	58.3	37.2	69.8	66.0	66.2	65.8	68.0	60.0	32.5	58.0	60.1
7-Jan-22	7:00:00	07-Jan-2207:00	58.3	36.6	69.0	66.0	66.0	65.0	67.4	59.2	31.7	58.0	60.0
7-Jan-22	7:30:00	07-Jan-2207:00	56.4	36.4	68.5	65.3	65.2	64.6	67.2	58.3	31.2	56.1	58.6
7-Jan-22	8:00:00	07-Jan-2208:00	56.7	35.7	68.0	65.0	65.0	64.0	66.4	58.0	30.3	56.0	58.3
7-Jan-22	8:30:00	07-Jan-2208:00	66.0	35.5	74.0	70.7	70.0	66.9	69.7	60.7	32.8	58.7	61.1
7-Jan-22	9:00:00	07-Jan-2209:00	67.3	35.5	76.0	73.0	72.9	68.6	71.0	62.3	34.0	60.0	62.3
7-Jan-22	9:30:00	07-Jan-2209:00	67.3	35.5	76.3	73.2	72.9	69.0	71.0	62.5	34.0	60.0	62.6
7-Jan-22	10:00:00	07-Jan-2210:00	67.8	35.5	76.6	72.8	72.9	68.7	71.4	62.4	34.3	60.5	63.0
7-Jan-22	10:30:00	07-Jan-2210:00	67.6	35.1	77.0	73.7	73.7	68.4	72.0	63.0	35.0	60.7	63.0
7-Jan-22	11:00:00	07-Jan-2211:00	67.4	34.5	77.9	74.3	74.6	69.6	72.0	63.1	35.0	61.0	63.4
7-Jan-22	11:30:00	07-Jan-2211:00	67.4	34.4	77.7	74.3	74.7	70.0	72.0	63.7	35.0	61.0	63.7
7-Jan-22	12:00:00	07-Jan-2212:00	68.9	34.1	78.0	74.9	74.7	70.0	72.3	64.0	35.3	61.8	64.0
7-Jan-22	12:30:00	07-Jan-2212:00	69.4	34.4	78.0	74.7	74.3	70.0	72.0	63.8	35.0	61.4	63.8
7-Jan-22	13:00:00	07-Jan-2213:00	69.4	32.5	78.0	75.0	74.8	70.0	72.3	64.0	35.0	61.0	63.9
7-Jan-22	13:30:00	07-Jan-2213:00	69.4	32.5	78.0	75.0	74.7	70.0	73.0	64.0	36.0	61.6	64.0
7-Jan-22	14:00:00	07-Jan-2214:00	69.4	34.2	78.0	74.8	75.1	70.0	73.0	64.0	36.0	61.6	64.0
7-Jan-22	14:30:00	07-Jan-2214:00	69.4	34.5	78.0	74.3	74.5	70.0	73.0	64.0	35.7	61.6	64.0
7-Jan-22	15:00:00	07-Jan-2215:00	69.4	34.5	78.0	74.0	73.3	70.0	72.5	63.7	36.0	61.7	64.0
7-Jan-22	15:30:00	07-Jan-2215:00	69.4	34.5	78.0	74.0	73.6	70.0	72.7	64.0	36.0	61.7	64.0
7-Jan-22	16:00:00	07-Jan-2216:00	69.4	34.5	77.4	74.0	73.4	70.0	72.5	64.0	36.0	62.0	64.0
7-Jan-22	16:30:00	07-Jan-2216:00	69.4	34.5	77.1	74.0	73.4	69.7	72.0	64.0	36.0	62.0	64.0
7-Jan-22	17:00:00	07-Jan-2217:00	69.4	34.5	77.0	73.7	73.1	69.0	72.0	63.5	35.2	61.1	64.0
7-Jan-22	17:30:00	07-Jan-2217:00	69.4	34.5	77.0	74.0	73.5	69.0	72.0	63.6	35.6	61.9	64.0

7-Jan-22	18:00:00	07-Jan-2218:00	67.6	34.5	77.0	73.4	72.3	69.0	72.0	63.0	35.0	61.0	63.3
7-Jan-22	18:30:00	07-Jan-2218:00	67.2	34.5	77.0	73.0	73.1	69.0	72.0	63.0	35.0	61.3	63.3
7-Jan-22	19:00:00	07-Jan-2219:00	67.2	33.6	77.0	73.0	72.7	69.0	72.0	63.0	35.0	61.0	63.3
7-Jan-22	19:30:00	07-Jan-2219:00	67.2	33.5	77.0	73.0	72.8	69.0	72.0	63.0	35.0	61.0	63.0
7-Jan-22	20:00:00	07-Jan-2220:00	67.2	33.5	77.0	73.0	72.4	69.0	72.0	63.0	35.0	61.0	63.0
7-Jan-22	20:30:00	07-Jan-2220:00	67.2	33.5	77.0	73.5	73.4	69.0	72.0	63.0	35.0	61.0	63.0
7-Jan-22	21:00:00	07-Jan-2221:00	67.2	33.6	77.0	74.0	74.7	69.0	72.0	63.0	35.0	61.0	63.1
7-Jan-22	21:30:00	07-Jan-2221:00	67.9	34.5	77.0	74.0	73.7	69.1	72.5	63.3	35.5	61.4	64.0
7-Jan-22	22:00:00	07-Jan-2222:00	69.2	34.5	77.9	74.6	74.0	70.0	73.0	64.0	36.0	62.0	64.0
7-Jan-22	22:30:00	07-Jan-2222:00	69.2	34.5	78.0	75.0	75.0	71.0	73.0	64.3	36.0	62.1	64.5
7-Jan-22	23:00:00	07-Jan-2223:00	69.2	34.5	78.0	75.0	74.4	71.0	73.1	65.0	36.6	62.4	65.0
7-Jan-22	23:30:00	07-Jan-2223:00	69.2	34.5	79.0	75.0	75.0	71.1	73.7	65.0	37.0	63.0	65.0
8-Jan-22	0:00:00	08-Jan-2200:00	69.2	34.5	79.0	75.0	75.0	71.2	74.0	65.0	37.0	63.0	65.0
8-Jan-22	0:30:00	08-Jan-2200:00	69.2	34.5	79.0	76.0	75.3	71.3	74.0	65.5	37.0	63.0	65.5
8-Jan-22	1:00:00	08-Jan-2201:00	69.2	34.5	79.2	76.5	76.0	72.0	74.0	66.0	37.0	63.4	66.0
8-Jan-22	1:30:00	08-Jan-2201:00	61.9	34.5	77.6	70.5	65.6	70.5	72.2	64.5	36.6	62.3	65.1
8-Jan-22	2:00:00	08-Jan-2202:00	62.1	34.5	73.0	70.0	70.0	70.0	71.0	63.4	36.0	62.0	64.0
8-Jan-22	2:30:00	08-Jan-2202:00	62.1	34.5	73.0	70.0	70.0	70.0	71.0	63.0	36.0	62.0	64.0
8-Jan-22	3:00:00	08-Jan-2203:00	62.1	33.9	73.0	70.0	70.0	70.0	71.0	63.3	35.5	61.0	63.5
8-Jan-22	3:30:00	08-Jan-2203:00	62.1	32.7	73.0	70.0	69.7	69.2	71.0	63.0	35.0	61.0	63.0
8-Jan-22	4:00:00	08-Jan-2204:00	62.1	32.4	73.0	69.4	69.7	69.0	70.2	63.0	35.0	61.0	63.0
8-Jan-22	4:30:00	08-Jan-2204:00	60.5	33.8	72.5	69.2	70.0	69.0	70.0	63.0	35.0	61.0	63.0
8-Jan-22	5:00:00	08-Jan-2205:00	60.1	36.3	72.0	69.0	69.7	68.1	70.0	62.2	35.0	60.1	63.0
8-Jan-22	5:30:00	08-Jan-2205:00	60.1	36.4	72.0	69.0	69.2	68.5	70.0	62.0	34.5	60.0	62.1
8-Jan-22	6:00:00	08-Jan-2206:00	60.1	36.7	71.7	68.4	69.0	68.3	70.0	62.0	34.0	60.0	62.0
8-Jan-22	6:30:00	08-Jan-2206:00	60.1	37.4	71.0	68.8	69.0	68.0	69.5	61.7	34.0	60.0	62.0
8-Jan-22	7:00:00	08-Jan-2207:00	60.1	36.4	71.0	68.0	68.4	68.0	69.0	62.0	34.0	60.0	62.0
8-Jan-22	7:30:00	08-Jan-2207:00	60.1	35.5	71.0	68.0	68.0	67.6	69.0	61.1	33.5	59.0	61.7
8-Jan-22	8:00:00	08-Jan-2208:00	60.1	34.3	70.4	67.1	68.0	67.0	68.9	61.0	33.0	59.0	61.0
8-Jan-22	8:30:00	08-Jan-2208:00	58.8	34.2	70.0	66.9	67.1	66.6	68.0	60.4	33.0	58.6	60.5
8-Jan-22	9:00:00	08-Jan-2209:00	58.1	34.5	69.1	66.0	66.9	66.3	68.0	60.0	32.1	58.0	60.0
8-Jan-22	9:30:00	08-Jan-2209:00	59.8	34.5	69.6	66.7	68.1	66.2	68.0	60.0	32.0	58.0	60.0
8-Jan-22	10:00:00	08-Jan-2210:00	67.1	34.1	69.0	71.9	74.8	68.0	70.5	61.8	33.7	60.0	61.8
8-Jan-22	10:30:00	08-Jan-2210:00	67.1	32.5	76.0	73.6	73.7	68.9	71.0	62.4	34.0	60.0	62.0
8-Jan-22	11:00:00	08-Jan-2211:00	67.1	32.5	76.6	73.3	73.5	69.0	71.0	62.7	34.0	60.0	62.3
8-Jan-22	11:30:00	08-Jan-2211:00	67.1	33.2	76.6	73.9	73.9	69.0	71.0	62.7	34.1	60.2	62.7
8-Jan-22	12:00:00	08-Jan-2212:00	67.1	35.5	77.0	74.0	74.0	69.0	72.0	63.0	35.0	61.0	63.0
8-Jan-22	12:30:00	08-Jan-2212:00	67.1	35.9	77.0	74.0	74.5	69.3	72.0	63.0	35.0	61.0	63.0

8-Jan-22	13:00:00	08-Jan-22	13:00:00	68.1	35.3	77.0	74.9	74.4	69.6	72.0	63.6	35.0	61.0	63.7
8-Jan-22	13:30:00	08-Jan-22	13:00:00	69.0	34.9	78.0	75.0	75.0	70.0	72.5	63.9	35.0	61.0	64.0
8-Jan-22	14:00:00	08-Jan-22	14:00:00	69.0	36.4	78.0	75.0	75.0	70.0	72.7	64.0	35.4	61.8	64.0
8-Jan-22	14:30:00	08-Jan-22	14:00:00	69.0	36.4	78.0	74.7	75.0	70.1	73.0	64.0	36.0	62.0	64.0
8-Jan-22	15:00:00	08-Jan-22	15:00:00	69.0	36.4	78.0	75.6	75.9	70.7	73.0	64.1	36.0	62.0	64.0
8-Jan-22	15:30:00	08-Jan-22	15:00:00	69.0	36.2	78.0	75.1	75.7	71.0	73.0	65.0	36.0	62.0	64.0
8-Jan-22	16:00:00	08-Jan-22	16:00:00	69.0	34.9	78.8	75.7	76.0	71.0	73.0	65.0	36.0	62.0	64.4
8-Jan-22	16:30:00	08-Jan-22	16:00:00	69.0	34.5	79.0	76.0	76.0	71.0	73.3	65.0	36.0	62.0	65.0
8-Jan-22	17:00:00	08-Jan-22	17:00:00	69.0	34.5	79.0	75.2	75.4	71.0	73.0	65.0	36.0	62.0	65.0
8-Jan-22	17:30:00	08-Jan-22	17:00:00	69.0	34.5	79.0	75.4	76.0	71.0	74.0	65.0	36.7	62.6	65.0
8-Jan-22	18:00:00	08-Jan-22	18:00:00	69.0	34.5	79.0	76.0	76.3	71.0	74.0	65.0	37.0	63.0	65.0
8-Jan-22	18:30:00	08-Jan-22	18:00:00	69.0	34.5	79.0	76.0	76.3	71.3	74.0	65.0	36.7	63.0	65.0
8-Jan-22	19:00:00	08-Jan-22	19:00:00	69.0	34.5	79.0	76.0	76.0	71.3	74.0	65.0	37.0	63.0	65.0
8-Jan-22	19:30:00	08-Jan-22	19:00:00	69.0	34.5	79.0	76.0	76.0	71.0	74.0	65.0	37.0	63.0	65.0
8-Jan-22	20:00:00	08-Jan-22	20:00:00	69.0	33.9	79.0	76.0	76.0	71.4	74.0	65.0	37.0	63.0	65.2
8-Jan-22	20:30:00	08-Jan-22	20:00:00	60.9	33.5	73.9	70.7	71.1	69.6	72.2	63.7	35.0	61.5	62.7
8-Jan-22	21:00:00	08-Jan-22	21:00:00	60.8	33.5	72.4	69.0	69.9	69.0	71.0	63.0	35.0	61.0	63.0
8-Jan-22	21:30:00	08-Jan-22	21:00:00	60.8	33.5	72.5	69.0	69.0	69.0	70.8	63.0	35.0	61.0	63.0
8-Jan-22	22:00:00	08-Jan-22	22:00:00	60.8	33.4	72.0	69.0	69.0	69.0	70.0	62.9	35.0	60.8	63.0
8-Jan-22	22:30:00	08-Jan-22	22:00:00	60.8	32.5	72.0	68.7	69.0	68.3	70.0	62.0	35.0	60.3	62.8
8-Jan-22	23:00:00	08-Jan-22	23:00:00	60.8	32.5	72.0	68.4	68.7	68.0	70.0	62.0	34.1	60.0	62.0
8-Jan-22	23:30:00	08-Jan-22	23:00:00	60.8	32.5	71.6	68.0	68.3	68.0	70.0	62.0	34.0	60.0	62.0
9-Jan-22	0:00:00	09-Jan-22	0:00:00	60.8	32.5	71.0	68.0	68.0	68.0	69.4	61.7	34.0	59.4	61.7
9-Jan-22	0:30:00	09-Jan-22	0:00:00	60.8	33.1	71.0	68.0	68.1	68.0	69.0	62.0	34.0	60.0	62.0
9-Jan-22	1:00:00	09-Jan-22	1:00:00	60.8	33.5	71.0	68.0	68.2	68.0	69.0	61.7	34.0	60.0	62.0
9-Jan-22	1:30:00	09-Jan-22	1:00:00	60.8	33.9	71.0	67.9	68.0	68.0	69.0	61.3	34.0	59.7	62.0
9-Jan-22	2:00:00	09-Jan-22	2:00:00	60.8	34.5	71.0	67.5	68.0	68.0	69.0	61.0	34.0	59.3	61.4
9-Jan-22	2:30:00	09-Jan-22	2:00:00	58.8	34.5	71.0	68.0	68.0	67.4	69.0	61.0	33.4	59.0	61.0
9-Jan-22	3:00:00	09-Jan-22	3:00:00	58.8	34.5	71.0	68.0	68.0	67.3	69.0	61.0	33.2	59.0	61.0
9-Jan-22	3:30:00	09-Jan-22	3:00:00	58.8	34.5	70.4	67.4	68.0	67.0	68.7	61.0	33.0	59.0	61.0
9-Jan-22	4:00:00	09-Jan-22	4:00:00	58.8	34.5	70.0	67.0	67.4	67.0	68.5	61.0	33.0	59.0	61.0
9-Jan-22	4:30:00	09-Jan-22	4:00:00	64.8	34.5	72.4	74.6	72.4	69.5	69.4	62.0	33.7	60.0	61.9
9-Jan-22	5:00:00	09-Jan-22	5:00:00	68.1	34.5	78.0	75.0	75.6	69.7	72.0	63.1	35.0	61.0	63.5
9-Jan-22	5:30:00	09-Jan-22	5:00:00	68.1	34.5	78.0	75.0	75.6	70.0	72.3	64.0	35.0	61.0	63.7
9-Jan-22	6:00:00	09-Jan-22	6:00:00	68.1	35.7	78.1	75.4	76.0	70.1	72.8	64.0	35.2	61.9	64.0
9-Jan-22	6:30:00	09-Jan-22	6:00:00	68.1	35.9	78.2	75.4	76.0	70.8	72.7	64.0	35.7	61.5	64.0
9-Jan-22	7:00:00	09-Jan-22	7:00:00	68.1	34.6	78.0	75.0	75.6	70.0	72.7	64.0	36.0	61.9	64.0
9-Jan-22	7:30:00	09-Jan-22	7:00:00	68.1	35.7	78.0	75.0	75.3	70.0	72.7	64.0	36.0	61.5	64.0

9-Jan-22	8:00:00	09-Jan-22	08:00	68.1	36.4	78.0	75.0	75.0	70.0	73.0	64.0	36.0	61.3	64.0
9-Jan-22	8:30:00	09-Jan-22	08:00	68.1	35.5	78.0	75.0	75.0	70.0	72.7	64.0	36.0	61.6	64.0
9-Jan-22	9:00:00	09-Jan-22	09:00	68.1	35.5	78.0	75.0	75.1	70.0	73.0	64.0	36.0	61.9	64.0
9-Jan-22	9:30:00	09-Jan-22	09:00	68.8	35.5	78.8	75.3	75.5	70.5	73.0	64.6	36.0	61.7	64.0
9-Jan-22	10:00:00	09-Jan-22	10:00	70.1	35.5	79.0	75.3	75.0	70.7	73.0	64.5	36.0	62.0	64.0
9-Jan-22	10:30:00	09-Jan-22	10:00	70.1	35.5	78.2	75.0	75.0	70.0	73.0	64.0	36.0	62.0	64.0
9-Jan-22	11:00:00	09-Jan-22	11:00	70.1	35.5	78.0	75.0	75.0	70.3	73.0	64.5	36.0	62.0	64.3
9-Jan-22	11:30:00	09-Jan-22	11:00	70.1	35.5	79.0	75.3	75.0	71.0	73.0	64.7	36.0	62.0	64.3
9-Jan-22	12:00:00	09-Jan-22	12:00	70.1	35.5	79.0	75.6	75.3	71.0	73.0	64.7	36.3	62.5	65.0
9-Jan-22	12:30:00	09-Jan-22	12:00	70.1	34.9	79.0	75.7	76.0	71.0	74.0	64.4	36.5	62.7	65.0
9-Jan-22	13:00:00	09-Jan-22	13:00	70.1	32.5	79.0	76.0	76.0	71.0	74.0	65.0	36.7	63.0	65.0
9-Jan-22	13:30:00	09-Jan-22	13:00	70.1	32.5	79.0	76.0	76.0	71.0	74.0	65.0	37.0	63.0	65.0
9-Jan-22	14:00:00	09-Jan-22	14:00	70.1	33.3	79.0	76.0	76.0	71.0	74.0	65.0	37.0	63.0	65.0
9-Jan-22	14:30:00	09-Jan-22	14:00	62.6	33.5	76.4	71.3	71.8	69.7	71.7	64.0	36.1	61.8	62.6
9-Jan-22	15:00:00	09-Jan-22	15:00	61.4	33.6	72.0	69.0	69.0	68.7	70.0	62.4	35.0	60.4	63.0
9-Jan-22	15:30:00	09-Jan-22	15:00	61.4	34.8	72.0	69.0	68.7	68.1	70.0	62.0	34.0	60.2	62.9
9-Jan-22	16:00:00	09-Jan-22	16:00	59.8	35.5	71.6	68.0	68.3	68.0	70.0	62.0	34.0	60.0	62.0
9-Jan-22	16:30:00	09-Jan-22	16:00	59.4	35.5	71.0	68.0	68.0	68.0	69.7	61.9	34.0	59.5	62.0
9-Jan-22	17:00:00	09-Jan-22	17:00	59.4	35.5	71.0	68.0	68.0	67.6	69.0	61.3	33.5	59.0	61.2
9-Jan-22	17:30:00	09-Jan-22	17:00	64.4	35.5	75.6	73.8	69.3	69.7	69.8	61.8	33.6	59.9	62.0
9-Jan-22	18:00:00	09-Jan-22	18:00	68.1	34.8	78.2	74.2	74.3	70.0	72.0	63.7	35.0	61.0	63.9
9-Jan-22	18:30:00	09-Jan-22	18:00	68.1	34.5	78.0	74.3	74.2	70.0	72.3	63.7	35.0	61.3	63.9
9-Jan-22	19:00:00	09-Jan-22	19:00	68.1	33.0	77.7	74.0	74.4	70.0	72.3	63.6	35.0	61.6	63.9
9-Jan-22	19:30:00	09-Jan-22	19:00	68.1	33.1	77.4	74.4	74.1	70.0	72.0	63.3	35.0	61.0	63.8
9-Jan-22	20:00:00	09-Jan-22	20:00	68.1	33.5	78.0	74.8	75.0	70.0	72.6	63.9	35.9	61.7	64.0
9-Jan-22	20:30:00	09-Jan-22	20:00	68.1	33.5	78.0	74.4	74.7	70.0	73.0	64.0	36.0	61.7	64.0
9-Jan-22	21:00:00	09-Jan-22	21:00	68.1	33.5	78.2	75.2	75.2	70.5	73.0	64.0	36.0	62.0	64.0
9-Jan-22	21:30:00	09-Jan-22	21:00	68.1	33.5	79.0	76.0	76.0	71.0	73.0	64.8	36.0	62.0	64.7
9-Jan-22	22:00:00	09-Jan-22	22:00	69.5	33.5	79.0	76.0	76.0	71.0	73.0	65.0	36.0	62.4	65.0
9-Jan-22	22:30:00	09-Jan-22	22:00	70.1	33.5	79.0	76.0	76.0	71.0	73.4	65.0	36.7	62.7	65.0
9-Jan-22	23:00:00	09-Jan-22	23:00	70.1	33.5	79.0	76.0	76.0	71.1	74.0	65.0	37.0	63.0	65.0
9-Jan-22	23:30:00	09-Jan-22	23:00	70.1	33.6	79.8	76.5	76.2	72.0	74.0	65.0	37.0	63.0	65.0
10-Jan-22	0:00:00	10-Jan-22	00:00	70.1	34.5	79.0	76.0	76.3	71.4	74.0	65.0	37.0	63.0	65.0
10-Jan-22	0:30:00	10-Jan-22	00:00	70.1	34.3	79.8	76.8	76.8	72.0	74.3	65.6	37.0	63.1	65.3
10-Jan-22	1:00:00	10-Jan-22	01:00	70.1	32.5	80.0	76.7	77.0	72.0	74.0	66.0	37.3	63.2	66.0
10-Jan-22	1:30:00	10-Jan-22	01:00	70.1	32.8	80.0	77.0	77.6	72.7	74.8	66.0	37.8	63.6	66.0
10-Jan-22	2:00:00	10-Jan-22	02:00	62.6	34.5	76.0	71.2	71.9	70.5	70.6	64.6	36.4	62.5	64.7
10-Jan-22	2:30:00	10-Jan-22	02:00	62.5	34.9	73.0	70.6	70.7	70.0	71.5	64.0	36.0	62.0	64.0

10-Jan-22	3:00:00	10-Jan-2203:00	62.5	35.5	73.0	70.0	70.2	70.0	71.0	63.9	36.0	61.5	63.7
10-Jan-22	3:30:00	10-Jan-2203:00	62.5	35.4	73.0	69.9	70.3	69.7	71.0	63.0	35.7	61.0	63.5
10-Jan-22	4:00:00	10-Jan-2204:00	60.9	34.5	73.0	69.0	70.0	69.2	70.4	63.0	35.1	61.0	63.0
10-Jan-22	4:30:00	10-Jan-2204:00	60.5	34.5	73.0	69.0	70.0	69.0	70.0	63.0	35.0	61.0	63.0
10-Jan-22	5:00:00	10-Jan-2205:00	60.5	34.5	72.2	69.0	69.5	69.0	70.0	62.1	34.8	60.7	62.7
10-Jan-22	5:30:00	10-Jan-2205:00	60.5	35.4	72.0	69.0	69.0	68.2	70.0	62.0	34.3	60.2	62.0
10-Jan-22	6:00:00	10-Jan-2206:00	60.5	35.5	71.0	68.0	68.6	68.0	69.8	62.0	34.0	59.9	62.0
10-Jan-22	6:30:00	10-Jan-2206:00	60.5	35.1	71.0	68.0	68.0	67.8	69.0	61.0	33.7	59.0	61.6
10-Jan-22	7:00:00	10-Jan-2207:00	58.6	35.2	71.0	67.4	68.0	67.0	69.0	61.0	33.3	59.0	61.0
10-Jan-22	7:30:00	10-Jan-2207:00	58.4	35.5	71.0	67.5	68.0	67.3	69.0	60.9	33.0	59.0	60.9
10-Jan-22	8:00:00	10-Jan-2208:00	66.1	33.9	71.4	71.2	72.0	68.3	70.6	61.2	33.9	59.5	62.6
10-Jan-22	8:30:00	10-Jan-2208:00	67.6	33.0	77.0	74.0	74.0	69.0	71.1	62.7	34.7	61.0	63.0
10-Jan-22	9:00:00	10-Jan-2209:00	67.6	34.3	77.0	74.0	74.2	69.3	72.0	63.0	35.0	60.8	63.0
10-Jan-22	9:30:00	10-Jan-2209:00	67.6	35.3	77.3	74.0	74.0	69.7	72.0	63.0	35.0	61.0	63.0
10-Jan-22	10:00:00	10-Jan-2210:00	67.6	36.9	77.3	74.0	74.0	69.4	72.0	63.0	35.0	61.0	63.3
10-Jan-22	10:30:00	10-Jan-2210:00	67.6	35.5	78.0	74.0	74.0	69.6	72.0	63.0	35.0	61.3	63.6
10-Jan-22	11:00:00	10-Jan-2211:00	68.1	34.9	78.0	74.3	74.3	69.8	72.3	63.4	35.0	61.3	63.9
10-Jan-22	11:30:00	10-Jan-2211:00	69.7	32.5	78.0	74.4	74.4	70.0	72.7	64.0	35.7	61.9	64.0
10-Jan-22	12:00:00	10-Jan-2212:00	69.7	32.5	78.0	75.0	75.0	70.2	73.0	64.0	36.0	61.7	64.0
10-Jan-22	12:30:00	10-Jan-2212:00	69.7	32.7	78.3	75.0	75.0	70.1	73.0	64.0	36.0	62.0	64.0
10-Jan-22	13:00:00	10-Jan-2213:00	69.7	35.0	79.0	75.0	75.3	70.4	73.0	64.6	36.0	62.0	64.3
10-Jan-22	13:30:00	10-Jan-2213:00	69.7	35.5	78.4	75.0	75.3	71.0	73.0	64.1	36.0	62.0	64.6
10-Jan-22	14:00:00	10-Jan-2214:00	69.7	34.7	78.0	75.0	75.0	71.0	73.0	64.7	36.3	62.3	64.8
10-Jan-22	14:30:00	10-Jan-2214:00	69.7	34.5	78.0	75.0	75.3	70.9	73.0	64.7	36.3	62.1	64.7
10-Jan-22	15:00:00	10-Jan-2215:00	69.7	34.5	78.0	75.3	75.2	71.1	73.0	64.9	36.3	62.5	64.6
10-Jan-22	15:30:00	10-Jan-2215:00	69.7	35.1	78.6	75.6	75.6	71.0	74.0	64.8	37.0	62.9	64.8
10-Jan-22	16:00:00	10-Jan-2216:00	69.7	35.5	79.0	75.0	74.9	71.0	74.0	65.0	37.0	62.7	65.0
10-Jan-22	16:30:00	10-Jan-2216:00	69.7	35.5	79.0	75.8	75.4	71.3	74.0	65.0	37.0	63.0	65.0
10-Jan-22	17:00:00	10-Jan-2217:00	69.7	35.5	79.0	75.1	75.0	71.0	74.0	65.0	37.0	63.0	65.0
10-Jan-22	17:30:00	10-Jan-2217:00	69.7	35.5	79.0	75.0	74.7	71.1	74.0	65.0	37.0	63.0	65.0
10-Jan-22	18:00:00	10-Jan-2218:00	67.8	35.5	78.9	74.4	73.4	71.4	73.8	65.0	36.9	63.0	64.5
10-Jan-22	18:30:00	10-Jan-2218:00	61.1	34.8	72.0	68.0	67.6	69.0	70.8	63.0	35.2	61.1	62.7
10-Jan-22	19:00:00	10-Jan-2219:00	59.1	31.8	71.4	67.1	66.1	68.2	70.0	62.0	34.4	60.2	62.0
10-Jan-22	19:30:00	10-Jan-2219:00	59.1	32.3	71.0	67.0	66.0	67.7	69.5	61.7	34.0	59.7	62.0
10-Jan-22	20:00:00	10-Jan-2220:00	59.1	34.5	70.5	66.2	65.2	67.2	69.0	61.3	34.0	59.2	61.6
10-Jan-22	20:30:00	10-Jan-2220:00	59.1	34.5	70.0	66.0	65.0	67.0	69.0	61.0	33.0	59.0	61.0
10-Jan-22	21:00:00	10-Jan-2221:00	62.6	34.5	70.0	67.5	66.4	67.0	70.7	61.1	33.0	59.3	61.1
10-Jan-22	21:30:00	10-Jan-2221:00	68.6	34.5	72.4	72.4	71.0	69.4	72.0	63.5	34.4	61.0	63.4

Section 2b.1 Flushing Records and Distribution System Pressure Logs During Residential Flushing

10-Jan-22	22:00:00	10-Jan-2222:00	68.6	32.3	77.0	72.7	70.7	70.0	72.0	64.0	35.0	61.4	64.0
10-Jan-22	22:30:00	10-Jan-2222:00	68.6	31.6	77.0	73.0	71.9	70.0	72.0	64.0	35.9	62.0	64.0
10-Jan-22	23:00:00	10-Jan-2223:00	68.6	31.8	77.0	73.0	71.0	70.0	72.0	64.0	36.0	62.0	64.0
10-Jan-22	23:30:00	10-Jan-2223:00	68.6	33.4	77.3	73.3	72.1	70.8	72.9	64.0	36.0	62.0	64.0
11-Jan-22	0:00:00	11-Jan-2200:00	68.6	33.6	77.9	73.0	71.6	70.4	73.0	64.0	36.0	62.0	64.0
11-Jan-22	0:30:00	11-Jan-2200:00	68.6	34.5	77.6	73.0	71.0	71.0	73.0	64.7	36.0	62.0	64.4
11-Jan-22	1:00:00	11-Jan-2201:00	68.6	34.5	78.0	73.4	71.0	71.0	73.0	65.0	36.2	62.6	65.0
11-Jan-22	1:30:00	11-Jan-2201:00	68.6	35.2	78.0	74.0	71.5	71.0	73.3	65.0	36.7	63.0	65.0
11-Jan-22	2:00:00	11-Jan-2202:00	68.6	35.5	78.0	74.0	72.0	71.7	74.0	65.0	37.0	63.0	65.0
11-Jan-22	2:30:00	11-Jan-2202:00	68.6	35.5	78.0	74.2	72.8	72.0	74.0	65.4	37.0	63.0	65.3
11-Jan-22	3:00:00	11-Jan-2203:00	68.6	35.3	78.9	74.7	73.7	72.0	74.0	66.0	37.0	63.0	66.0
11-Jan-22	3:30:00	11-Jan-2203:00	70.0	34.5	79.0	75.3	74.0	72.0	74.0	66.0	37.9	64.0	66.0
11-Jan-22	4:00:00	11-Jan-2204:00	63.0	34.5	79.0	71.2	69.8	70.5	72.2	64.3	36.3	62.6	64.1
11-Jan-22	4:30:00	11-Jan-2204:00	61.9	35.2	75.8	68.3	67.0	69.3	70.8	63.0	35.5	61.0	63.0
11-Jan-22	5:00:00	11-Jan-2205:00	59.9	35.5	72.0	67.7	67.0	68.7	70.0	62.6	35.0	60.7	62.7
11-Jan-22	5:30:00	11-Jan-2205:00	59.9	35.5	71.0	68.0	67.0	68.0	70.0	62.0	34.2	60.3	62.2
11-Jan-22	6:00:00	11-Jan-2206:00	59.9	35.5	71.0	67.2	66.7	68.0	69.1	61.9	34.0	60.0	62.0
11-Jan-22	6:30:00	11-Jan-2206:00	59.9	35.5	71.0	66.7	66.0	67.6	69.0	61.0	34.0	59.4	61.2
11-Jan-22	7:00:00	11-Jan-2207:00	57.9	35.5	69.3	66.1	65.7	66.2	68.1	60.3	32.4	57.4	60.2
11-Jan-22	7:30:00	11-Jan-2207:00	57.7	35.5	69.0	65.7	65.4	65.7	67.5	59.7	31.8	57.0	59.6
11-Jan-22	8:00:00	11-Jan-2208:00	59.4	34.7	69.0	65.1	65.1	64.9	67.2	59.1	31.2	56.5	59.2
11-Jan-22	8:30:00	11-Jan-2208:00	66.2	34.4	75.9	69.9	72.3	67.8	70.8	62.2	33.2	58.7	61.8
11-Jan-22	9:00:00	11-Jan-2209:00	66.2	33.5	76.0	72.7	73.0	68.3	70.9	62.0	33.6	59.0	62.0
11-Jan-22	9:30:00	11-Jan-2209:00	66.2	33.5	76.0	73.0	72.8	68.0	71.0	62.0	34.0	59.3	62.0
11-Jan-22	10:00:00	11-Jan-2210:00	67.0	33.5	76.5	73.0	73.4	68.0	71.0	62.0	33.7	59.0	62.0
11-Jan-22	10:30:00	11-Jan-2210:00	68.2	34.0	77.0	73.1	73.6	68.0	71.0	62.0	34.0	59.0	62.0
11-Jan-22	11:00:00	11-Jan-2211:00	68.2	33.1	76.8	73.5	73.8	68.0	71.0	62.3	34.0	59.4	62.0
11-Jan-22	11:30:00	11-Jan-2211:00	68.2	32.5	76.6	73.0	73.4	68.6	71.9	62.8	34.0	60.0	62.0
11-Jan-22	12:00:00	11-Jan-2212:00	68.2	32.6	77.0	74.0	73.5	69.0	71.6	62.4	34.0	60.0	62.0
11-Jan-22	12:30:00	11-Jan-2212:00	68.2	34.6	77.0	73.7	73.7	68.7	71.4	62.8	34.0	60.0	62.7
11-Jan-22	13:00:00	11-Jan-2213:00	68.2	35.5	77.0	74.0	74.0	69.0	72.0	63.0	34.0	60.0	63.0
11-Jan-22	13:30:00	11-Jan-2213:00	68.2	35.5	77.0	74.0	74.0	69.0	71.7	63.0	34.0	60.0	62.9
11-Jan-22	14:00:00	11-Jan-2214:00	68.2	34.8	77.0	74.0	74.0	69.0	72.0	63.0	34.0	60.0	62.8
11-Jan-22	14:30:00	11-Jan-2214:00	68.2	33.7	77.0	74.0	73.7	69.0	72.0	63.0	34.0	60.0	63.0
11-Jan-22	15:00:00	11-Jan-2215:00	68.2	33.5	77.0	74.0	74.0	69.0	72.0	63.0	34.4	60.0	63.0
11-Jan-22	15:30:00	11-Jan-2215:00	68.2	33.5	77.0	74.0	74.0	69.0	72.0	63.0	34.1	60.0	63.0
11-Jan-22	16:00:00	11-Jan-2216:00	68.2	33.5	77.0	74.0	74.0	69.0	72.0	63.0	34.3	60.0	63.0
11-Jan-22	16:30:00	11-Jan-2216:00	68.2	33.5	77.0	74.0	74.3	69.0	72.0	63.0	34.5	60.0	63.0

11-Jan-22	17:00:00	11-Jan-22	17:00:00	68.2	33.5	77.0	73.2	72.3	69.0	72.0	63.0	35.0	60.0	63.0
11-Jan-22	17:30:00	11-Jan-22	17:00:00	68.2	33.5	76.1	73.0	72.0	69.0	72.0	63.0	34.6	60.0	63.0
11-Jan-22	18:00:00	11-Jan-22	18:00:00	68.2	33.5	76.8	72.5	70.4	69.0	71.4	63.0	34.0	60.0	63.0
11-Jan-22	18:30:00	11-Jan-22	18:00:00	68.2	33.5	76.0	71.4	69.7	69.0	71.3	63.0	34.0	60.0	63.0
11-Jan-22	19:00:00	11-Jan-22	19:00:00	66.2	33.5	76.0	70.3	67.5	69.0	71.2	62.1	34.0	60.0	62.4
11-Jan-22	19:30:00	11-Jan-22	19:00:00	66.2	34.0	76.0	70.6	67.5	69.0	71.0	62.1	34.0	60.0	62.0
11-Jan-22	20:00:00	11-Jan-22	20:00:00	66.2	34.5	75.4	70.0	66.0	69.0	71.0	62.1	34.0	60.0	62.0
11-Jan-22	20:30:00	11-Jan-22	20:00:00	66.2	34.5	75.1	70.0	66.3	68.4	71.0	62.0	34.0	60.0	62.0
11-Jan-22	21:00:00	11-Jan-22	21:00:00	66.2	34.5	75.0	69.7	65.4	68.4	71.0	62.0	34.0	60.0	62.0
11-Jan-22	21:30:00	11-Jan-22	21:00:00	66.2	34.5	75.0	70.0	66.3	69.0	71.0	62.1	34.0	60.0	62.0
11-Jan-22	22:00:00	11-Jan-22	22:00:00	66.2	32.1	75.2	70.0	66.0	69.0	71.0	62.7	34.0	60.0	62.5
11-Jan-22	22:30:00	11-Jan-22	22:00:00	66.2	30.6	76.0	70.0	66.6	69.0	71.0	63.0	34.0	60.0	62.7
11-Jan-22	23:00:00	11-Jan-22	23:00:00	66.2	31.1	75.3	70.0	65.1	69.0	71.0	63.0	34.0	60.0	62.7
11-Jan-22	23:30:00	11-Jan-22	23:00:00	66.2	31.9	75.5	70.3	66.5	69.0	71.3	63.0	34.3	60.0	63.0
12-Jan-22	0:00:00	12-Jan-22	0:00:00	66.2	32.5	76.0	70.0	65.0	69.0	71.0	63.0	34.0	60.0	63.0
12-Jan-22	0:30:00	12-Jan-22	0:30:00	66.2	32.6	76.0	70.0	65.8	69.0	71.3	63.0	34.3	60.0	63.0
12-Jan-22	1:00:00	12-Jan-22	1:00:00	66.2	33.5	75.3	70.0	66.3	69.0	71.7	63.0	34.0	60.0	63.0
12-Jan-22	1:30:00	12-Jan-22	1:30:00	66.2	34.0	75.0	70.7	66.6	69.0	72.0	63.0	34.8	60.0	63.0
12-Jan-22	2:00:00	12-Jan-22	2:00:00	66.2	34.5	75.8	70.4	66.3	69.0	72.0	63.0	35.0	60.0	63.0
12-Jan-22	2:30:00	12-Jan-22	2:30:00	66.2	34.5	76.0	71.0	66.4	69.7	72.0	63.0	35.0	60.6	63.0
12-Jan-22	3:00:00	12-Jan-22	3:00:00	66.2	34.5	76.0	71.0	67.5	70.0	72.0	63.0	35.0	60.6	63.0
12-Jan-22	3:30:00	12-Jan-22	3:30:00	67.7	34.5	76.6	71.3	68.9	70.0	72.0	63.5	35.0	60.9	63.2
12-Jan-22	4:00:00	12-Jan-22	4:00:00	68.2	33.9	76.5	71.2	67.4	70.0	72.0	63.1	35.0	61.0	63.1
12-Jan-22	4:30:00	12-Jan-22	4:30:00	68.2	31.9	76.0	71.4	68.0	70.0	72.0	63.0	35.0	61.0	63.0
12-Jan-22	5:00:00	12-Jan-22	5:00:00	68.2	32.7	76.3	71.2	68.0	70.0	72.0	63.0	35.0	60.7	63.0
12-Jan-22	5:30:00	12-Jan-22	5:30:00	68.2	35.5	76.0	71.4	68.1	69.1	72.0	63.0	35.0	60.5	63.0
12-Jan-22	6:00:00	12-Jan-22	6:00:00	68.2	35.5	76.0	71.5	69.2	69.3	72.0	63.0	35.0	60.3	63.0
12-Jan-22	6:30:00	12-Jan-22	6:30:00	68.2	34.6	76.3	71.6	69.6	69.6	72.0	63.1	35.1	60.2	63.1
12-Jan-22	7:00:00	12-Jan-22	7:00:00	68.2	34.2	77.0	73.1	71.1	70.0	72.5	64.0	36.0	61.9	64.0
12-Jan-22	7:30:00	12-Jan-22	7:30:00	68.2	33.0	77.0	73.5	72.3	70.0	72.1	64.0	36.0	62.0	64.0
12-Jan-22	8:00:00	12-Jan-22	8:00:00	68.2	33.0	76.9	73.0	72.0	70.0	72.0	63.8	36.0	62.0	64.0
12-Jan-22	8:30:00	12-Jan-22	8:30:00	68.2	32.2	76.8	73.0	72.5	70.0	72.0	63.9	36.0	61.7	64.0
12-Jan-22	9:00:00	12-Jan-22	9:00:00	68.2	30.0	77.0	73.3	73.1	70.0	72.0	64.0	36.0	62.0	64.0
12-Jan-22	9:30:00	12-Jan-22	9:30:00	68.2	29.3	77.0	73.7	74.0	70.6	72.3	64.3	36.0	62.3	64.6
12-Jan-22	10:00:00	12-Jan-22	10:00:00	68.2	29.5	77.0	74.0	72.9	70.0	72.4	64.2	36.0	62.0	64.0
12-Jan-22	10:30:00	12-Jan-22	10:30:00	68.2	29.6	78.0	74.7	74.1	70.7	73.0	64.7	36.0	62.1	64.3
12-Jan-22	11:00:00	12-Jan-22	11:00:00	68.2	29.6	78.0	74.4	73.9	71.0	73.0	64.7	36.0	62.2	64.7
12-Jan-22	11:30:00	12-Jan-22	11:30:00	69.9	29.6	78.3	74.7	74.9	71.0	73.0	65.0	36.5	62.3	65.0

12-Jan-22	12:00:00	12-Jan-2212:00	70.2	29.6	78.0	75.0	74.5	71.0	73.0	65.0	36.7	62.7	65.0
12-Jan-22	12:30:00	12-Jan-2212:30	70.2	29.6	78.4	75.0	74.1	71.0	73.7	65.0	37.0	63.0	65.0
12-Jan-22	13:00:00	12-Jan-2213:00	70.2	29.6	79.2	75.8	75.5	71.9	74.2	65.9	37.3	63.7	65.6
12-Jan-22	13:30:00	12-Jan-2213:30	70.2	29.6	80.0	76.6	76.6	72.5	75.0	67.0	38.0	64.0	66.0
12-Jan-22	14:00:00	12-Jan-2214:00	62.3	28.9	75.5	73.1	72.8	71.6	73.6	65.0	36.6	62.3	64.8
12-Jan-22	14:30:00	12-Jan-2214:30	61.8	28.6	73.0	69.8	70.0	70.3	71.3	64.0	36.0	62.0	64.0
12-Jan-22	15:00:00	12-Jan-2215:00	61.8	27.9	73.0	69.9	70.6	70.0	71.0	64.0	36.0	62.0	64.0
12-Jan-22	15:30:00	12-Jan-2215:30	61.8	28.7	73.0	70.0	70.0	70.0	71.0	64.0	36.0	61.7	64.0
12-Jan-22	16:00:00	12-Jan-2216:00	61.8	29.8	72.8	69.5	69.8	70.0	71.0	64.0	36.0	62.0	64.0
12-Jan-22	16:30:00	12-Jan-2216:30	61.8	30.9	72.9	69.6	69.9	70.0	71.0	63.8	35.9	61.4	63.3
12-Jan-22	17:00:00	12-Jan-2217:00	61.8	31.6	72.0	69.0	69.2	69.7	71.0	63.0	35.0	61.3	63.0
12-Jan-22	17:30:00	12-Jan-2217:30	59.9	31.6	72.0	68.1	68.8	68.2	70.0	62.3	34.6	60.2	62.6
12-Jan-22	18:00:00	12-Jan-2218:00	59.7	31.6	71.3	67.3	67.6	68.0	69.2	61.7	34.0	59.7	62.0
12-Jan-22	18:30:00	12-Jan-2218:30	61.9	31.6	71.0	67.0	67.0	67.2	69.1	61.3	33.7	59.5	61.6
12-Jan-22	19:00:00	12-Jan-2219:00	68.6	31.6	76.9	74.1	73.9	69.9	72.0	63.4	33.9	60.9	63.4
12-Jan-22	19:30:00	12-Jan-2219:30	68.6	31.6	77.2	74.5	74.0	70.0	72.0	63.7	35.0	61.3	64.0
12-Jan-22	20:00:00	12-Jan-2220:00	68.6	31.6	78.0	74.4	74.3	70.0	72.0	64.0	35.4	61.0	64.0
12-Jan-22	20:30:00	12-Jan-2220:30	68.6	32.1	78.0	74.7	75.0	70.0	72.8	64.0	36.0	61.7	64.0
12-Jan-22	21:00:00	12-Jan-2221:00	68.6	32.7	78.0	75.0	75.0	70.3	73.0	64.0	36.0	62.0	64.0
12-Jan-22	21:30:00	12-Jan-2221:30	68.6	33.8	78.2	75.2	75.2	71.0	73.0	64.0	36.0	62.0	64.3
12-Jan-22	22:00:00	12-Jan-2222:00	68.6	33.9	79.0	76.0	75.7	71.0	73.9	65.0	36.1	62.5	65.0
12-Jan-22	22:30:00	12-Jan-2222:30	69.1	33.3	79.0	76.0	76.3	71.4	74.0	65.0	37.0	63.0	65.0
12-Jan-22	23:00:00	12-Jan-2223:00	70.6	26.2	79.0	76.0	76.3	72.0	74.0	65.1	37.0	63.0	65.1
12-Jan-22	23:30:00	12-Jan-2223:30	70.6	19.4	79.7	76.1	77.0	72.0	74.0	66.0	37.0	63.3	66.0
13-Jan-22	0:00:00	13-Jan-2200:00	70.6	17.0	79.4	76.4	77.0	72.0	74.3	66.0	37.1	63.2	66.0
13-Jan-22	0:30:00	13-Jan-2200:30	69.8	17.2	79.4	77.0	77.0	72.1	75.0	66.0	38.0	64.0	66.0
13-Jan-22	1:00:00	13-Jan-2201:00	61.6	24.1	76.1	71.1	71.3	70.5	72.3	64.3	36.2	62.5	64.1
13-Jan-22	1:30:00	13-Jan-2201:30	61.6	33.6	73.0	70.0	70.0	70.0	71.2	64.0	36.0	62.0	64.0
13-Jan-22	2:00:00	13-Jan-2202:00	61.6	33.5	73.0	69.7	70.0	69.8	71.0	63.7	36.0	62.0	64.0
13-Jan-22	2:30:00	13-Jan-2202:30	61.6	35.3	73.0	70.0	70.0	70.0	71.0	63.7	36.0	62.0	64.0
13-Jan-22	3:00:00	13-Jan-2203:00	61.6	35.5	73.0	70.0	70.0	70.0	71.0	63.4	35.7	61.3	63.4
13-Jan-22	3:30:00	13-Jan-2203:30	61.6	35.5	73.0	70.0	70.0	69.6	71.0	63.0	35.3	61.0	63.5
13-Jan-22	4:00:00	13-Jan-2204:00	61.6	35.7	73.0	69.5	70.0	69.0	70.4	63.0	35.0	61.0	63.0
13-Jan-22	4:30:00	13-Jan-2204:30	61.6	36.4	72.0	69.0	69.6	69.0	70.3	63.0	35.0	61.0	63.0
13-Jan-22	5:00:00	13-Jan-2205:00	61.6	35.3	72.0	68.8	69.0	68.2	70.2	62.0	34.7	60.0	62.1
13-Jan-22	5:30:00	13-Jan-2205:30	69.4	34.5	76.6	75.3	75.8	70.8	74.4	63.8	35.5	61.8	63.5
13-Jan-22	6:00:00	13-Jan-2206:00	69.4	33.9	78.5	75.5	75.7	70.7	73.0	64.1	36.0	62.0	64.0
13-Jan-22	6:30:00	13-Jan-2206:30	69.4	35.5	78.7	75.3	75.6	70.7	73.3	64.0	36.0	62.0	64.0

13-Jan-22	7:00:00	13-Jan-22	07:00	69.4	35.5	78.5	74.7	75.0	70.7	73.0	64.1	36.0	62.4	64.6
13-Jan-22	7:30:00	13-Jan-22	07:30	69.4	35.5	78.0	75.4	75.0	70.9	73.6	64.4	36.7	62.7	64.7
13-Jan-22	8:00:00	13-Jan-22	08:00	69.4	34.8	78.5	75.2	75.3	70.8	73.6	64.7	36.7	62.3	64.7
13-Jan-22	8:30:00	13-Jan-22	08:30	69.4	34.5	78.4	75.0	75.0	71.0	73.6	65.0	37.0	62.9	65.0
13-Jan-22	9:00:00	13-Jan-22	09:00	69.4	34.5	79.0	76.0	75.6	71.7	73.8	65.0	37.0	63.0	65.0
13-Jan-22	9:30:00	13-Jan-22	09:30	69.4	34.2	79.3	76.0	76.4	71.5	74.0	65.4	37.0	63.0	65.0
13-Jan-22	10:00:00	13-Jan-22	10:00	65.7	33.5	79.0	75.0	75.6	70.6	74.0	64.6	36.6	61.2	64.5
13-Jan-22	10:30:00	13-Jan-22	10:30	61.3	33.5	73.1	69.0	69.1	68.3	70.3	62.3	35.0	60.7	62.9
13-Jan-22	11:00:00	13-Jan-22	11:00	61.3	33.7	72.0	69.0	69.3	68.4	70.3	62.0	35.0	60.7	62.5
13-Jan-22	11:30:00	13-Jan-22	11:30	59.9	35.4	71.7	68.4	69.0	68.5	70.0	62.3	34.2	60.0	62.4
13-Jan-22	12:00:00	13-Jan-22	12:00	59.2	35.5	72.0	68.0	69.0	68.0	70.0	62.0	34.3	60.0	62.0
13-Jan-22	12:30:00	13-Jan-22	12:30	59.2	35.5	71.5	67.8	68.2	67.5	69.1	61.7	33.7	59.3	62.0
13-Jan-22	13:00:00	13-Jan-22	13:00	59.2	35.5	71.0	67.9	67.7	67.3	69.0	61.0	32.7	59.3	61.0
13-Jan-22	13:30:00	13-Jan-22	13:30	59.2	35.0	71.0	67.4	68.0	67.0	69.0	61.0	33.0	58.7	61.0
13-Jan-22	14:00:00	13-Jan-22	14:00	59.2	34.5	70.4	67.1	67.1	66.2	68.1	60.6	32.7	58.4	60.6
13-Jan-22	14:30:00	13-Jan-22	14:30	63.2	34.5	70.0	68.2	68.5	67.2	68.8	60.8	33.2	58.8	60.7
13-Jan-22	15:00:00	13-Jan-22	15:00	67.9	34.5	76.3	74.2	74.8	69.3	72.0	63.3	34.6	61.0	63.0
13-Jan-22	15:30:00	13-Jan-22	15:30	67.9	34.5	77.3	74.0	74.4	69.9	72.0	63.5	34.7	61.0	63.3
13-Jan-22	16:00:00	13-Jan-22	16:00	67.9	34.4	77.0	74.2	74.8	69.7	72.0	63.7	35.0	61.1	63.6
13-Jan-22	16:30:00	13-Jan-22	16:30	67.9	33.5	77.6	75.0	75.3	70.0	72.7	64.0	35.0	61.4	64.0
13-Jan-22	17:00:00	13-Jan-22	17:00	67.9	33.1	77.7	74.3	74.8	70.0	72.2	64.0	35.0	61.1	64.0
13-Jan-22	17:30:00	13-Jan-22	17:30	67.9	32.5	78.0	74.0	74.3	70.0	72.0	64.0	35.0	61.2	64.0
13-Jan-22	18:00:00	13-Jan-22	18:00	67.9	32.5	77.7	74.0	74.3	70.0	72.0	64.0	35.7	61.7	64.0
13-Jan-22	18:30:00	13-Jan-22	18:30	67.9	34.2	78.0	74.5	74.3	70.0	72.0	64.0	36.0	61.9	64.0
13-Jan-22	19:00:00	13-Jan-22	19:00	67.9	34.5	78.0	74.4	74.0	70.0	72.6	64.0	36.0	61.8	64.0
13-Jan-22	19:30:00	13-Jan-22	19:30	67.9	34.5	77.4	74.1	74.4	70.0	72.5	64.0	36.0	62.0	64.0
13-Jan-22	20:00:00	13-Jan-22	20:00	67.9	34.5	78.0	75.0	75.0	70.8	73.0	64.0	36.0	62.0	64.0
13-Jan-22	20:30:00	13-Jan-22	20:30	69.4	34.2	78.0	75.0	75.4	70.7	73.0	64.2	36.0	62.0	64.5
13-Jan-22	21:00:00	13-Jan-22	21:00	69.9	31.8	78.5	75.2	76.0	71.0	73.6	65.0	36.3	62.5	65.0
13-Jan-22	21:30:00	13-Jan-22	21:30	69.9	31.6	79.0	76.0	76.0	71.1	74.0	65.0	37.0	63.0	65.0
13-Jan-22	22:00:00	13-Jan-22	22:00	69.9	31.6	79.0	76.0	76.0	72.0	74.0	65.0	37.0	63.0	65.3
13-Jan-22	22:30:00	13-Jan-22	22:30	69.9	31.6	79.1	76.0	76.6	72.0	74.0	65.2	37.0	63.0	65.2
13-Jan-22	23:00:00	13-Jan-22	23:00	69.9	33.7	79.8	76.0	76.3	72.0	74.0	66.0	37.0	63.2	66.0
13-Jan-22	23:30:00	13-Jan-22	23:30	66.6	34.5	78.9	76.2	75.9	71.8	74.6	65.5	37.6	62.0	65.6
14-Jan-22	0:00:00	14-Jan-22	00:00	61.0	34.5	73.0	70.0	70.0	69.5	71.3	63.4	36.0	61.5	63.7
14-Jan-22	0:30:00	14-Jan-22	00:30	61.0	34.5	73.0	70.0	70.0	69.9	71.0	63.3	36.0	61.9	64.0
14-Jan-22	1:00:00	14-Jan-22	01:00	61.0	34.5	73.0	69.8	70.0	69.5	71.0	63.0	35.4	61.0	63.7
14-Jan-22	1:30:00	14-Jan-22	01:30	61.0	34.8	73.0	69.6	69.7	69.0	71.0	63.0	35.3	61.0	63.0

14-Jan-22	2:00:00	14-Jan-22	02:00	61.0	35.5	72.7	69.4	70.0	69.0	71.0	63.0	35.0	61.0	63.0
14-Jan-22	2:30:00	14-Jan-22	02:30	61.0	34.6	72.4	69.4	70.0	69.0	71.0	63.0	35.0	61.0	63.0
14-Jan-22	3:00:00	14-Jan-22	03:00	61.0	33.7	72.0	69.0	70.0	69.0	71.0	63.0	35.0	61.0	63.0
14-Jan-22	3:30:00	14-Jan-22	03:30	61.0	33.6	72.0	69.0	69.7	69.0	70.4	63.0	35.0	60.7	63.0
14-Jan-22	4:00:00	14-Jan-22	04:00	64.4	34.5	73.0	70.0	70.1	69.0	70.8	62.7	35.2	60.6	63.5
14-Jan-22	4:30:00	14-Jan-22	04:30	69.7	34.5	79.0	76.0	76.6	71.0	73.9	65.0	36.0	62.5	65.0
14-Jan-22	5:00:00	14-Jan-22	05:00	69.7	34.7	79.0	76.0	76.3	71.0	73.2	65.0	36.2	62.3	65.0
14-Jan-22	5:30:00	14-Jan-22	05:30	69.7	35.5	79.0	76.0	76.3	71.0	74.0	65.0	37.0	63.0	65.0
14-Jan-22	6:00:00	14-Jan-22	06:00	69.7	35.5	79.0	75.9	76.3	71.2	73.5	64.8	37.0	62.7	64.8
14-Jan-22	6:30:00	14-Jan-22	06:30	69.7	35.2	79.0	75.6	75.7	70.2	73.0	64.0	36.1	61.0	64.0
14-Jan-22	7:00:00	14-Jan-22	07:00	69.7	33.8	79.0	75.0	75.7	70.4	73.0	64.0	36.0	61.3	64.0
14-Jan-22	7:30:00	14-Jan-22	07:30	69.7	33.6	79.0	75.8	76.0	71.0	73.0	64.0	36.0	61.0	64.0
14-Jan-22	8:00:00	14-Jan-22	08:00	69.7	34.5	79.0	76.0	75.7	70.7	73.0	64.0	35.9	60.7	64.0
14-Jan-22	8:30:00	14-Jan-22	08:30	69.7	34.5	78.4	75.3	75.2	70.0	73.0	64.0	35.0	60.7	63.4
14-Jan-22	9:00:00	14-Jan-22	09:00	69.7	34.5	78.7	75.3	75.3	70.0	73.0	64.1	35.4	61.2	63.7
14-Jan-22	9:30:00	14-Jan-22	09:30	69.7	34.5	79.0	75.0	75.8	70.4	73.2	64.7	35.7	61.6	63.8
14-Jan-22	10:00:00	14-Jan-22	10:00	69.7	34.5	78.7	75.3	75.6	70.8	73.1	65.0	35.7	60.8	64.0
14-Jan-22	10:30:00	14-Jan-22	10:30	69.7	34.3	78.7	75.4	75.7	70.7	73.0	64.7	35.5	60.9	63.9
14-Jan-22	11:00:00	14-Jan-22	11:00	69.7	33.5	78.2	75.2	75.4	70.5	73.0	64.4	35.4	61.6	64.0
14-Jan-22	11:30:00	14-Jan-22	11:30	69.7	33.9	78.3	75.3	75.6	70.6	73.0	64.2	35.4	61.3	63.8
14-Jan-22	12:00:00	14-Jan-22	12:00	69.7	34.5	79.0	75.5	75.5	71.5	73.8	65.3	36.3	62.1	64.9
14-Jan-22	12:30:00	14-Jan-22	12:30	69.7	33.0	79.0	76.6	76.0	72.0	74.0	66.0	37.3	63.0	66.0
14-Jan-22	13:00:00	14-Jan-22	13:00	61.9	31.9	75.1	74.3	72.0	70.6	71.7	64.1	36.2	61.8	63.8
14-Jan-22	13:30:00	14-Jan-22	13:30	61.3	31.6	73.0	69.5	69.7	69.2	71.0	63.3	35.4	61.0	63.0
14-Jan-22	14:00:00	14-Jan-22	14:00	60.1	31.6	72.1	69.0	69.4	69.0	70.7	63.0	35.0	60.7	63.0
14-Jan-22	14:30:00	14-Jan-22	14:30	60.1	31.6	72.2	68.9	69.0	68.6	70.2	62.4	34.5	60.3	62.4
14-Jan-22	15:00:00	14-Jan-22	15:00	60.1	31.6	71.7	68.7	68.6	68.0	69.7	62.0	34.0	60.0	62.0
14-Jan-22	15:30:00	14-Jan-22	15:30	60.1	31.6	71.0	68.0	68.3	67.7	69.2	61.7	34.2	59.7	62.0
14-Jan-22	16:00:00	14-Jan-22	16:00	60.1	31.6	71.3	68.0	68.5	68.0	70.0	62.0	34.1	60.0	62.0
14-Jan-22	16:30:00	14-Jan-22	16:30	60.1	31.6	71.0	68.0	69.0	68.0	70.0	62.0	34.0	60.0	62.0
14-Jan-22	17:00:00	14-Jan-22	17:00	60.1	31.6	71.0	68.0	68.0	68.0	69.6	62.0	34.0	60.0	62.0
14-Jan-22	17:30:00	14-Jan-22	17:30	60.1	31.6	71.0	68.0	68.0	67.7	69.0	61.1	33.9	60.0	62.0
14-Jan-22	18:00:00	14-Jan-22	18:00	58.4	31.6	70.0	66.4	67.4	67.0	69.0	61.0	33.0	60.0	61.6
14-Jan-22	18:30:00	14-Jan-22	18:30	59.8	32.5	70.0	67.0	67.6	67.0	68.9	61.0	33.0	59.1	61.0
14-Jan-22	19:00:00	14-Jan-22	19:00	58.1	33.5	70.0	67.0	67.3	67.0	68.0	60.8	33.0	58.4	61.0
14-Jan-22	19:30:00	14-Jan-22	19:30	67.0	33.5	72.7	72.2	72.4	68.5	68.4	61.7	33.8	58.0	62.1
14-Jan-22	20:00:00	14-Jan-22	20:00	67.3	34.0	77.0	74.0	74.0	69.0	72.0	63.0	34.8	60.9	63.0
14-Jan-22	20:30:00	14-Jan-22	20:30	67.3	34.5	77.0	74.0	74.0	69.0	72.0	63.0	35.0	61.0	63.0

14-Jan-22	21:00:00	14-Jan-22	21:00:00	67.3	34.5	77.3	74.0	74.3	69.0	72.0	63.2	35.0	61.0	63.1
14-Jan-22	21:30:00	14-Jan-22	21:30:00	67.3	35.0	78.0	74.4	74.7	70.0	72.0	64.0	35.0	61.6	63.7
14-Jan-22	22:00:00	14-Jan-22	22:00:00	68.2	34.8	78.0	74.7	75.0	70.0	72.6	64.0	35.6	61.7	64.0
14-Jan-22	22:30:00	14-Jan-22	22:30:00	69.3	32.9	78.0	75.0	75.1	70.3	73.0	64.0	36.0	61.7	64.0
14-Jan-22	23:00:00	14-Jan-22	23:00:00	69.3	32.5	78.0	75.0	74.9	70.6	73.0	64.0	36.0	62.0	64.0
14-Jan-22	23:30:00	14-Jan-22	23:30:00	69.3	34.2	78.7	75.1	75.2	71.0	73.2	64.6	36.0	62.3	64.8
15-Jan-22	0:00:00	15-Jan-22	0:00:00	69.3	35.5	79.0	75.4	75.4	71.0	73.7	65.0	36.0	62.0	65.0
15-Jan-22	0:30:00	15-Jan-22	0:30:00	69.3	35.5	79.0	76.0	76.0	71.4	74.0	65.0	36.8	62.6	65.0
15-Jan-22	1:00:00	15-Jan-22	1:00:00	69.3	35.0	79.0	76.0	76.0	72.0	74.0	65.1	37.0	63.0	65.1
15-Jan-22	1:30:00	15-Jan-22	1:30:00	69.3	33.5	80.0	76.4	76.1	72.0	74.0	66.0	37.0	63.0	66.0
15-Jan-22	2:00:00	15-Jan-22	2:00:00	69.5	33.5	80.0	77.0	77.0	72.0	74.6	66.0	37.3	63.7	66.0
15-Jan-22	2:30:00	15-Jan-22	2:30:00	71.3	33.8	80.0	77.0	77.1	72.6	75.0	66.0	38.0	64.0	66.0
15-Jan-22	3:00:00	15-Jan-22	3:00:00	66.9	34.5	80.0	76.3	78.0	72.6	75.0	66.0	37.5	61.8	65.5
15-Jan-22	3:30:00	15-Jan-22	3:30:00	61.1	34.5	76.4	70.4	71.7	70.0	72.1	64.0	36.0	62.0	64.0
15-Jan-22	4:00:00	15-Jan-22	4:00:00	61.1	34.5	73.5	70.0	70.0	70.0	71.0	64.0	36.0	62.0	64.0
15-Jan-22	4:30:00	15-Jan-22	4:30:00	61.1	34.8	73.0	70.0	70.0	70.0	71.0	63.9	36.0	61.8	64.0
15-Jan-22	5:00:00	15-Jan-22	5:00:00	61.1	34.9	73.0	69.6	70.0	69.0	71.0	63.0	35.2	61.0	63.2
15-Jan-22	5:30:00	15-Jan-22	5:30:00	61.1	34.5	73.0	69.0	69.7	69.0	71.0	63.0	35.0	61.0	63.0
15-Jan-22	6:00:00	15-Jan-22	6:00:00	61.1	34.0	72.0	69.2	69.6	69.0	70.8	63.0	35.0	61.0	63.0
15-Jan-22	6:30:00	15-Jan-22	6:30:00	61.1	35.0	72.0	69.2	69.3	69.0	70.0	62.9	35.0	61.0	63.0
15-Jan-22	7:00:00	15-Jan-22	7:00:00	61.1	35.5	72.0	68.9	68.9	68.9	70.0	62.0	34.8	60.4	62.8
15-Jan-22	7:30:00	15-Jan-22	7:30:00	61.1	35.5	71.4	68.0	68.6	68.0	70.0	62.0	34.0	60.0	62.0
15-Jan-22	8:00:00	15-Jan-22	8:00:00	59.7	35.5	71.3	68.3	68.6	68.0	69.6	62.0	34.0	59.7	62.0
15-Jan-22	8:30:00	15-Jan-22	8:30:00	59.1	35.5	71.0	68.0	68.0	68.0	69.0	61.7	34.0	59.7	62.0
15-Jan-22	9:00:00	15-Jan-22	9:00:00	63.7	35.5	71.0	70.3	70.5	68.7	70.3	62.2	34.4	60.0	63.6
15-Jan-22	9:30:00	15-Jan-22	9:30:00	68.5	35.5	76.4	74.8	74.8	70.0	72.8	63.6	35.3	61.3	63.6
15-Jan-22	10:00:00	15-Jan-22	10:00:00	68.7	35.5	78.0	75.0	74.7	70.0	72.7	64.0	35.7	61.0	64.0
15-Jan-22	10:30:00	15-Jan-22	10:30:00	68.7	35.5	78.0	74.4	75.0	70.6	73.0	64.0	36.0	62.0	64.0
15-Jan-22	11:00:00	15-Jan-22	11:00:00	68.7	34.6	78.3	75.0	75.6	70.9	73.0	65.0	36.0	62.0	64.6
15-Jan-22	11:30:00	15-Jan-22	11:30:00	68.7	32.5	79.0	75.3	75.7	71.0	73.0	65.0	36.0	62.0	64.8
15-Jan-22	12:00:00	15-Jan-22	12:00:00	68.7	32.3	79.0	75.6	76.0	71.0	73.3	65.0	36.3	62.5	65.0
15-Jan-22	12:30:00	15-Jan-22	12:30:00	69.4	33.5	79.0	76.0	76.0	71.0	74.0	65.0	36.7	62.7	65.0
15-Jan-22	13:00:00	15-Jan-22	13:00:00	70.8	33.5	79.0	76.0	76.0	71.5	74.0	65.0	37.0	63.0	65.0
15-Jan-22	13:30:00	15-Jan-22	13:30:00	70.8	33.5	79.1	76.0	76.0	72.0	74.0	65.5	37.0	63.0	65.0
15-Jan-22	14:00:00	15-Jan-22	14:00:00	70.8	33.5	80.0	76.3	76.2	72.0	74.3	66.0	37.0	63.0	65.9
15-Jan-22	14:30:00	15-Jan-22	14:30:00	70.8	33.5	80.0	76.1	76.1	72.0	74.9	66.0	37.4	63.0	66.0
15-Jan-22	15:00:00	15-Jan-22	15:00:00	63.2	32.7	73.8	69.7	73.6	68.8	72.4	64.7	36.9	62.3	64.8
15-Jan-22	15:30:00	15-Jan-22	15:30:00	61.6	32.5	73.0	70.0	70.3	69.7	71.0	63.3	36.0	61.2	63.9

15-Jan-22	16:00:00	15-Jan-2216:00	61.6	32.5	72.9	69.6	70.0	69.6	71.0	63.0	35.4	61.0	63.0
15-Jan-22	16:30:00	15-Jan-2216:30	61.6	32.5	72.0	69.0	69.7	69.0	71.0	63.0	35.1	61.0	63.0
15-Jan-22	17:00:00	15-Jan-2217:00	61.6	32.5	72.0	69.0	69.3	69.0	70.6	63.0	35.0	61.0	63.0
15-Jan-22	17:30:00	15-Jan-2217:30	59.7	32.5	72.0	68.6	69.0	68.7	70.0	62.1	35.0	59.8	62.7
15-Jan-22	18:00:00	15-Jan-2218:00	59.6	32.2	71.7	68.3	68.5	68.5	70.0	62.0	34.1	60.0	62.3
15-Jan-22	18:30:00	15-Jan-2218:30	59.6	31.6	71.0	68.0	68.3	68.0	70.0	62.0	34.0	60.0	62.0
15-Jan-22	19:00:00	15-Jan-2219:00	62.2	31.6	71.0	68.7	71.8	68.2	69.2	61.5	34.0	60.0	61.8
15-Jan-22	19:30:00	15-Jan-2219:30	68.5	32.5	77.4	74.5	75.9	69.6	72.3	64.0	35.7	61.4	64.0
15-Jan-22	20:00:00	15-Jan-2220:00	68.5	32.5	78.0	75.0	75.3	70.0	73.0	64.0	36.0	61.7	64.0
15-Jan-22	20:30:00	15-Jan-2220:30	68.5	32.7	78.0	75.0	75.0	70.3	73.0	64.0	36.0	62.0	64.0
15-Jan-22	21:00:00	15-Jan-2221:00	68.5	33.5	78.7	75.2	75.8	71.0	73.0	64.3	36.0	62.0	64.3
15-Jan-22	21:30:00	15-Jan-2221:30	68.5	33.5	79.0	76.0	76.0	71.0	73.0	64.7	36.0	62.2	64.4
15-Jan-22	22:00:00	15-Jan-2222:00	68.5	33.5	79.0	76.0	76.3	71.0	73.7	65.0	36.8	63.0	65.0
15-Jan-22	22:30:00	15-Jan-2222:30	69.0	33.5	79.0	76.0	76.2	71.2	74.0	65.0	36.4	63.0	65.0
15-Jan-22	23:00:00	15-Jan-2223:00	70.6	33.5	79.0	76.0	76.1	71.7	74.0	65.0	37.0	63.0	65.0
15-Jan-22	23:30:00	15-Jan-2223:30	70.6	33.5	79.5	76.2	76.8	72.0	74.0	65.6	37.0	63.0	65.6
16-Jan-22	0:00:00	16-Jan-2200:00	70.6	33.5	80.0	76.1	76.7	72.0	74.3	65.7	37.1	63.0	66.0
16-Jan-22	0:30:00	16-Jan-2200:30	70.6	33.5	80.0	76.8	77.0	72.0	74.3	66.0	37.7	63.7	66.0
16-Jan-22	1:00:00	16-Jan-2201:00	67.7	34.1	80.0	76.7	76.7	72.0	74.7	65.7	37.8	63.2	65.7
16-Jan-22	1:30:00	16-Jan-2201:30	62.5	34.4	74.6	70.0	71.0	70.0	72.0	64.0	36.0	62.0	64.0
16-Jan-22	2:00:00	16-Jan-2202:00	62.5	32.6	73.0	70.0	70.2	70.0	71.0	64.0	36.0	62.0	64.0
16-Jan-22	2:30:00	16-Jan-2202:30	62.5	32.5	73.0	70.0	70.5	70.0	71.0	64.0	36.0	62.0	64.0
16-Jan-22	3:00:00	16-Jan-2203:00	62.5	32.6	73.0	70.0	70.3	70.0	71.0	63.3	36.0	61.2	64.0
16-Jan-22	3:30:00	16-Jan-2203:30	61.5	34.8	73.0	70.0	70.0	70.0	71.0	63.0	35.7	61.0	63.7
16-Jan-22	4:00:00	16-Jan-2204:00	60.6	34.8	72.1	69.1	70.0	69.2	71.0	63.0	35.1	61.0	63.0
16-Jan-22	4:30:00	16-Jan-2204:30	60.6	33.6	72.3	70.0	70.0	69.0	70.8	63.0	35.0	61.0	63.0
16-Jan-22	5:00:00	16-Jan-2205:00	60.6	34.2	72.0	69.1	69.7	69.0	70.0	63.0	35.0	61.0	63.0
16-Jan-22	5:30:00	16-Jan-2205:30	60.6	34.5	72.0	69.0	69.7	69.0	70.0	62.7	35.0	61.0	63.0
16-Jan-22	6:00:00	16-Jan-2206:00	60.6	34.8	72.0	69.0	69.7	69.0	70.0	62.7	35.0	60.8	63.0
16-Jan-22	6:30:00	16-Jan-2206:30	68.5	35.5	74.6	73.7	74.6	70.1	73.0	65.2	36.5	61.6	64.3
16-Jan-22	7:00:00	16-Jan-2207:00	69.2	36.2	79.0	76.3	77.0	71.7	74.0	65.0	37.0	62.4	65.0
16-Jan-22	7:30:00	16-Jan-2207:30	69.2	36.4	79.0	76.0	76.4	71.4	74.0	65.0	37.0	62.7	65.0
16-Jan-22	8:00:00	16-Jan-2208:00	69.2	35.3	79.0	76.0	76.0	71.6	74.0	65.2	37.0	63.0	65.0
16-Jan-22	8:30:00	16-Jan-2208:30	69.2	34.5	79.0	76.0	75.7	71.0	73.4	65.1	37.0	63.0	65.0
16-Jan-22	9:00:00	16-Jan-2209:00	69.2	34.5	79.3	76.0	75.7	71.3	74.0	65.0	37.0	63.0	65.0
16-Jan-22	9:30:00	16-Jan-2209:30	69.2	34.5	79.0	76.0	76.0	71.7	74.0	65.9	37.0	63.3	65.2
16-Jan-22	10:00:00	16-Jan-2210:00	69.2	34.5	79.0	76.0	76.0	71.8	74.0	66.0	37.0	63.0	66.0
16-Jan-22	10:30:00	16-Jan-2210:30	62.9	34.5	75.3	72.1	72.3	71.3	72.3	62.6	36.6	61.9	63.8

16-Jan-22	11:00:00	16-Jan-22	11:00:00	61.5	34.5	73.0	69.2	69.8	69.6	71.0	63.0	35.2	61.0	63.6
16-Jan-22	11:30:00	16-Jan-22	11:30:00	61.5	34.5	73.0	69.3	69.6	69.0	71.0	63.0	35.0	61.0	63.0
16-Jan-22	12:00:00	16-Jan-22	12:00:00	61.5	33.6	72.3	69.0	69.6	69.0	70.7	63.0	35.0	61.0	63.0
16-Jan-22	12:30:00	16-Jan-22	12:30:00	61.5	33.5	72.0	69.0	69.0	69.0	70.7	63.0	35.0	60.6	63.0
16-Jan-22	13:00:00	16-Jan-22	13:00:00	61.5	33.5	72.0	69.0	69.3	69.0	70.0	63.0	35.0	60.0	63.0
16-Jan-22	13:30:00	16-Jan-22	13:30:00	67.0	32.7	73.3	71.9	72.5	69.7	70.8	64.2	35.6	62.6	63.9
16-Jan-22	14:00:00	16-Jan-22	14:00:00	68.9	32.5	79.0	75.6	76.0	71.0	73.3	65.0	36.0	62.0	65.0
16-Jan-22	14:30:00	16-Jan-22	14:30:00	68.9	32.5	79.0	75.7	76.0	71.0	73.8	65.0	36.2	62.4	65.0
16-Jan-22	15:00:00	16-Jan-22	15:00:00	68.9	32.7	79.0	76.0	76.0	71.0	73.4	65.0	36.4	63.0	65.0
16-Jan-22	15:30:00	16-Jan-22	15:30:00	68.9	33.5	79.0	76.0	76.3	71.3	74.0	65.0	37.0	63.0	65.0
16-Jan-22	16:00:00	16-Jan-22	16:00:00	70.1	33.5	79.0	76.0	76.3	71.8	74.0	65.4	37.0	63.0	65.4
16-Jan-22	16:30:00	16-Jan-22	16:30:00	71.0	33.5	79.0	76.3	76.3	72.0	74.0	66.0	37.0	63.0	65.7
16-Jan-22	17:00:00	16-Jan-22	17:00:00	68.4	33.5	79.5	76.5	76.8	72.0	74.2	65.8	37.2	62.6	65.9
16-Jan-22	17:30:00	16-Jan-22	17:30:00	60.8	33.5	75.3	70.0	69.8	69.8	71.0	63.5	35.9	61.9	63.5
16-Jan-22	18:00:00	16-Jan-22	18:00:00	60.8	33.5	73.0	68.2	69.0	69.3	71.0	63.0	35.0	61.0	63.0
16-Jan-22	18:30:00	16-Jan-22	18:30:00	60.8	33.5	72.1	68.6	68.7	69.0	70.3	62.9	35.0	60.5	63.0
16-Jan-22	19:00:00	16-Jan-22	19:00:00	60.8	33.5	72.0	68.3	68.6	68.6	70.0	62.0	34.5	60.0	62.8
16-Jan-22	19:30:00	16-Jan-22	19:30:00	60.8	33.5	72.0	68.0	68.2	68.0	70.0	62.0	34.0	60.0	62.0
16-Jan-22	20:00:00	16-Jan-22	20:00:00	60.8	33.5	71.6	68.0	68.0	68.0	69.9	62.0	34.0	59.7	62.0
16-Jan-22	20:30:00	16-Jan-22	20:30:00	60.8	33.5	71.0	67.7	68.3	68.0	69.0	61.1	34.0	59.6	62.0
16-Jan-22	21:00:00	16-Jan-22	21:00:00	69.5	33.5	71.1	74.2	74.3	69.7	73.9	63.5	35.9	60.8	61.4
16-Jan-22	21:30:00	16-Jan-22	21:30:00	69.2	33.5	78.0	75.0	76.0	70.4	73.0	64.0	36.0	62.0	64.0
16-Jan-22	22:00:00	16-Jan-22	22:00:00	69.2	32.8	78.3	75.0	75.7	71.0	73.0	64.7	36.0	62.0	64.1
16-Jan-22	22:30:00	16-Jan-22	22:30:00	69.2	32.5	79.0	76.0	76.0	71.0	73.0	65.0	36.0	62.3	65.0
16-Jan-22	23:00:00	16-Jan-22	23:00:00	69.2	32.5	79.0	76.0	75.7	71.0	73.3	65.0	36.3	62.6	65.0
16-Jan-22	23:30:00	16-Jan-22	23:30:00	69.2	32.5	79.0	76.0	76.0	71.6	74.0	65.0	37.0	62.2	65.0
17-Jan-22	0:00:00	17-Jan-22	0:00:00	69.2	32.5	79.0	76.0	76.0	71.3	74.0	65.0	37.0	63.0	65.0
17-Jan-22	0:30:00	17-Jan-22	0:30:00	69.2	33.3	79.3	76.3	76.3	71.9	74.4	65.5	37.0	63.0	65.4
17-Jan-22	1:00:00	17-Jan-22	1:00:00	69.2	33.1	79.3	76.0	76.3	72.0	74.5	66.0	37.2	63.4	65.7
17-Jan-22	1:30:00	17-Jan-22	1:30:00	68.3	32.6	79.3	76.2	76.6	72.2	74.2	65.7	37.6	64.0	65.9
17-Jan-22	2:00:00	17-Jan-22	2:00:00	61.1	32.2	75.3	70.3	70.2	71.0	71.6	63.8	36.0	62.2	64.2
17-Jan-22	2:30:00	17-Jan-22	2:30:00	61.1	31.6	73.0	70.0	70.0	70.0	71.0	64.0	36.0	62.0	64.0
17-Jan-22	3:00:00	17-Jan-22	3:00:00	61.1	31.8	73.0	70.0	71.0	70.0	71.0	63.7	36.0	61.4	64.0
17-Jan-22	3:30:00	17-Jan-22	3:30:00	61.1	33.5	73.0	69.8	70.2	69.8	70.8	63.1	36.0	60.9	64.0
17-Jan-22	4:00:00	17-Jan-22	4:00:00	61.1	33.5	72.1	69.0	69.4	68.4	70.0	62.3	34.7	59.8	62.0
17-Jan-22	4:30:00	17-Jan-22	4:30:00	61.1	33.5	72.0	68.9	69.0	68.0	70.0	62.0	34.0	59.6	62.0
17-Jan-22	5:00:00	17-Jan-22	5:00:00	61.1	35.0	71.4	68.0	68.7	68.0	69.7	61.6	34.0	59.0	62.0
17-Jan-22	5:30:00	17-Jan-22	5:30:00	61.1	35.5	71.0	68.0	69.0	68.0	69.0	61.0	33.8	59.0	61.4

17-Jan-22	6:00:00	17-Jan-22	6:00:00	63.4	35.5	71.0	69.5	70.1	68.4	69.0	61.5	33.3	59.3	62.7
17-Jan-22	6:30:00	17-Jan-22	6:30:00	68.5	35.1	77.8	75.0	75.9	70.0	73.0	64.0	35.0	61.0	64.0
17-Jan-22	7:00:00	17-Jan-22	7:00:00	68.9	34.5	78.2	75.0	75.4	70.2	73.0	64.0	35.0	61.1	64.0
17-Jan-22	7:30:00	17-Jan-22	7:30:00	70.5	34.5	79.0	75.9	76.7	71.0	73.3	65.0	36.1	62.2	65.0
17-Jan-22	8:00:00	17-Jan-22	8:00:00	70.5	33.8	79.0	76.0	75.5	71.0	73.0	65.0	36.5	63.0	65.0
17-Jan-22	8:30:00	17-Jan-22	8:30:00	70.5	33.5	79.0	76.0	75.6	71.3	73.6	65.0	36.6	63.0	65.0
17-Jan-22	9:00:00	17-Jan-22	9:00:00	70.5	33.6	79.0	76.0	76.0	71.4	74.0	65.0	37.0	63.0	65.0
17-Jan-22	9:30:00	17-Jan-22	9:30:00	70.5	34.8	79.0	76.0	76.0	72.0	74.0	65.1	37.0	63.0	65.0
17-Jan-22	10:00:00	17-Jan-22	10:00:00	70.5	35.4	79.1	76.0	76.1	72.0	74.0	65.7	37.0	63.0	65.0
17-Jan-22	10:30:00	17-Jan-22	10:30:00	70.5	33.9	80.0	76.0	76.2	72.0	74.0	65.7	37.0	63.0	65.3
17-Jan-22	11:00:00	17-Jan-22	11:00:00	64.9	33.6	77.8	74.1	74.4	71.4	72.9	65.0	36.9	61.9	65.0
17-Jan-22	11:30:00	17-Jan-22	11:30:00	61.3	34.5	72.9	69.3	69.6	69.6	71.0	63.0	35.5	61.1	63.0
17-Jan-22	12:00:00	17-Jan-22	12:00:00	61.3	34.5	72.9	69.0	69.0	69.0	71.0	63.0	35.0	61.0	63.0
17-Jan-22	12:30:00	17-Jan-22	12:30:00	61.3	34.5	72.0	69.0	69.0	69.0	70.8	63.0	35.0	61.0	63.0
17-Jan-22	13:00:00	17-Jan-22	13:00:00	61.3	32.2	72.0	69.0	69.0	69.0	70.3	63.0	35.0	60.8	63.0
17-Jan-22	13:30:00	17-Jan-22	13:30:00	61.3	31.6	72.0	69.0	69.0	69.0	70.0	62.5	35.0	60.6	63.0
17-Jan-22	14:00:00	17-Jan-22	14:00:00	62.7	31.6	72.0	69.0	68.5	68.8	70.0	62.1	34.1	60.0	62.8
17-Jan-22	14:30:00	17-Jan-22	14:30:00	69.7	31.6	78.4	74.8	75.1	69.8	73.3	65.0	36.0	61.7	65.0
17-Jan-22	15:00:00	17-Jan-22	15:00:00	69.7	32.3	79.0	75.8	76.0	71.0	74.0	65.0	36.2	62.3	65.0
17-Jan-22	15:30:00	17-Jan-22	15:30:00	69.7	32.5	79.0	75.9	76.0	71.0	74.0	65.0	37.0	62.8	65.0
17-Jan-22	16:00:00	17-Jan-22	16:00:00	69.7	32.5	79.0	76.0	76.0	71.4	74.0	65.0	37.0	63.0	65.0
17-Jan-22	16:30:00	17-Jan-22	16:30:00	69.7	32.5	79.3	76.0	76.3	72.0	74.0	65.1	37.0	63.0	65.0
17-Jan-22	17:00:00	17-Jan-22	17:00:00	69.7	32.5	79.0	76.0	76.4	72.0	74.0	66.0	37.0	63.0	65.0
17-Jan-22	17:30:00	17-Jan-22	17:30:00	69.7	32.5	79.0	76.0	76.2	71.7	74.0	66.0	37.0	63.0	65.3
17-Jan-22	18:00:00	17-Jan-22	18:00:00	68.7	32.5	79.0	75.3	75.3	71.6	74.0	65.2	37.0	62.9	65.0
17-Jan-22	18:30:00	17-Jan-22	18:30:00	60.6	32.1	74.0	70.5	70.4	69.4	72.0	63.7	35.2	59.7	63.2
17-Jan-22	19:00:00	17-Jan-22	19:00:00	60.6	31.6	71.9	68.7	68.6	68.1	70.0	62.0	34.6	60.0	62.3
17-Jan-22	19:30:00	17-Jan-22	19:30:00	60.4	31.6	71.0	68.0	68.0	68.0	70.0	62.0	34.0	59.9	62.0
17-Jan-22	20:00:00	17-Jan-22	20:00:00	58.6	31.7	71.0	68.0	68.0	67.7	69.0	61.0	34.0	59.3	61.6
17-Jan-22	20:30:00	17-Jan-22	20:30:00	58.6	32.5	70.4	67.0	67.7	67.0	69.0	61.0	33.2	59.0	61.0
17-Jan-22	21:00:00	17-Jan-22	21:00:00	58.6	32.5	71.0	67.3	67.4	67.0	69.0	61.0	33.0	59.0	61.0
17-Jan-22	21:30:00	17-Jan-22	21:30:00	68.7	32.5	75.5	71.9	72.3	70.4	71.7	62.9	34.5	60.8	63.1
17-Jan-22	22:00:00	17-Jan-22	22:00:00	68.6	32.5	78.0	75.0	74.9	70.0	73.0	64.0	35.6	61.7	64.0
17-Jan-22	22:30:00	17-Jan-22	22:30:00	68.6	32.5	78.1	75.1	75.4	70.6	73.0	64.0	36.0	62.0	64.0
17-Jan-22	23:00:00	17-Jan-22	23:00:00	68.6	32.6	79.0	75.7	75.5	71.0	73.0	64.3	36.0	62.0	64.3
17-Jan-22	23:30:00	17-Jan-22	23:30:00	68.6	33.5	79.0	75.4	75.9	71.0	74.0	65.0	36.3	62.6	65.0
18-Jan-22	0:00:00	18-Jan-22	0:00:00	68.6	33.5	79.0	76.0	76.0	71.0	73.7	65.0	36.8	63.0	65.0
18-Jan-22	0:30:00	18-Jan-22	0:30:00	69.5	34.4	79.4	76.3	76.4	71.6	74.0	65.2	37.0	63.0	65.2

18-Jan-22	1:00:00	18-Jan-22	01:00	70.6	34.5	79.4	76.2	76.7	72.0	74.0	66.0	37.0	63.1	66.0
18-Jan-22	1:30:00	18-Jan-22	01:30	70.6	34.5	80.0	76.9	76.7	72.3	74.7	66.0	38.0	63.7	66.0
18-Jan-22	2:00:00	18-Jan-22	02:00	69.3	34.5	80.0	77.0	77.8	72.7	75.0	66.0	38.0	64.0	66.0
18-Jan-22	2:30:00	18-Jan-22	02:30	62.3	34.5	73.7	70.8	71.4	70.4	72.1	64.0	36.6	62.4	64.0
18-Jan-22	3:00:00	18-Jan-22	03:00	62.3	34.5	73.0	70.0	71.0	70.0	71.2	64.0	36.0	62.0	64.0
18-Jan-22	3:30:00	18-Jan-22	03:30	62.3	34.5	73.0	70.0	70.7	70.0	71.0	64.0	36.0	62.0	64.0
18-Jan-22	4:00:00	18-Jan-22	04:00	62.3	34.5	73.0	69.8	70.0	70.0	71.0	63.2	35.5	61.7	63.2
18-Jan-22	4:30:00	18-Jan-22	04:30	61.3	34.5	73.0	69.9	70.0	69.8	71.0	63.0	35.0	61.0	63.0
18-Jan-22	5:00:00	18-Jan-22	05:00	60.3	34.5	72.3	69.0	70.0	69.0	70.5	63.0	35.0	60.7	63.0
18-Jan-22	5:30:00	18-Jan-22	05:30	60.3	34.2	72.0	69.0	69.2	69.0	70.0	62.1	35.0	61.0	62.4
18-Jan-22	6:00:00	18-Jan-22	06:00	60.3	33.0	72.0	69.0	69.0	69.0	70.0	62.0	35.0	61.0	62.0
18-Jan-22	6:30:00	18-Jan-22	06:30	60.3	33.3	72.0	69.0	69.0	69.0	70.0	62.0	35.0	61.0	62.0
18-Jan-22	7:00:00	18-Jan-22	07:00	66.7	34.7	75.4	69.0	69.0	69.0	70.0	62.0	35.0	61.0	62.0
18-Jan-22	7:30:00	18-Jan-22	07:30	68.8	35.5	78.0	69.0	69.0	69.0	70.0	62.0	35.0	61.0	62.0
18-Jan-22	8:00:00	18-Jan-22	08:00	68.8	35.5	78.0	69.0	69.0	69.0	70.0	62.0	35.0	61.0	62.0
18-Jan-22	8:30:00	18-Jan-22	08:30	68.2	35.5	78.0	70.9	71.0	69.3	71.2	62.2	35.4	61.2	62.9
18-Jan-22	9:00:00	18-Jan-22	09:00	68.7	35.5	78.0	75.0	74.7	69.6	72.4	63.3	34.9	60.7	62.9
18-Jan-22	9:30:00	18-Jan-22	09:30	68.7	35.5	77.7	74.4	74.4	69.6	72.7	63.4	35.0	60.4	63.4
18-Jan-22	10:00:00	18-Jan-22	10:00	68.7	35.8	78.0	74.7	75.0	70.0	73.0	64.0	35.0	61.0	63.5
18-Jan-22	10:30:00	18-Jan-22	10:30	68.7	35.5	78.0	75.0	75.6	70.0	73.0	64.0	35.0	60.7	63.1
18-Jan-22	11:00:00	18-Jan-22	11:00	68.7	35.5	78.0	75.0	75.2	70.0	73.0	63.7	35.0	61.0	64.3
18-Jan-22	11:30:00	18-Jan-22	11:30	68.7	35.5	78.5	75.3	75.4	70.0	73.0	64.0	35.3	61.0	64.0
18-Jan-22	12:00:00	18-Jan-22	12:00	68.7	35.9	78.0	75.0	75.6	70.0	73.0	64.0	35.7	61.3	64.0
18-Jan-22	12:30:00	18-Jan-22	12:30	68.7	36.4	78.2	75.0	75.2	70.3	73.0	64.9	36.0	61.6	64.0
18-Jan-22	13:00:00	18-Jan-22	13:00	68.7	35.2	78.7	75.0	75.4	70.6	73.0	64.7	36.0	61.3	64.0
18-Jan-22	13:30:00	18-Jan-22	13:30	69.9	32.3	79.0	76.0	75.7	71.2	73.5	65.3	36.2	62.4	64.5
18-Jan-22	14:00:00	18-Jan-22	14:00	70.4	32.7	79.3	76.0	76.0	72.0	74.0	65.3	37.0	63.0	65.4
18-Jan-22	14:30:00	18-Jan-22	14:30	70.4	34.5	80.0	76.1	76.1	72.0	74.0	65.5	37.0	63.0	65.8
18-Jan-22	15:00:00	18-Jan-22	15:00	67.6	34.5	78.7	75.2	76.5	72.0	74.3	65.9	37.3	63.0	65.9
18-Jan-22	15:30:00	18-Jan-22	15:30	61.3	34.2	72.8	68.8	72.3	70.2	70.3	63.2	35.0	61.3	63.8
18-Jan-22	16:00:00	18-Jan-22	16:00	61.1	33.5	72.0	68.7	69.3	69.0	70.5	63.0	35.0	61.0	63.0
18-Jan-22	16:30:00	18-Jan-22	16:30	61.4	33.2	72.0	68.7	68.9	69.0	70.6	63.0	35.0	61.0	63.0
18-Jan-22	17:00:00	18-Jan-22	17:00	61.4	32.5	72.0	68.9	68.6	68.6	70.0	63.0	35.0	60.6	63.0
18-Jan-22	17:30:00	18-Jan-22	17:30	60.4	33.3	71.7	68.0	68.8	68.0	70.0	62.0	34.1	60.0	62.1
18-Jan-22	18:00:00	18-Jan-22	18:00	59.4	33.5	71.0	68.0	67.7	68.0	69.3	61.7	34.0	59.7	62.0
18-Jan-22	18:30:00	18-Jan-22	18:30	59.4	33.5	70.5	67.5	67.5	67.2	69.0	61.1	34.0	59.3	61.4
18-Jan-22	19:00:00	18-Jan-22	19:00	66.8	33.5	74.9	71.4	71.5	68.9	71.1	64.3	34.4	60.1	63.0
18-Jan-22	19:30:00	18-Jan-22	19:30	68.0	14.6	78.0	74.0	74.5	70.0	72.2	63.6	35.3	61.4	63.7

18-Jan-22	20:00:00	18-Jan-2220:00	68.0	30.6	78.0	74.6	74.1	70.0	72.7	64.0	36.0	61.5	63.7
18-Jan-22	20:30:00	18-Jan-2220:30	68.0	33.9	78.0	75.0	75.0	70.0	73.0	64.0	36.0	61.6	64.0
18-Jan-22	21:00:00	18-Jan-2221:00	68.0	33.9	78.0	75.0	75.0	70.3	73.0	64.0	36.0	62.0	64.4
18-Jan-22	21:30:00	18-Jan-2221:30	69.0	33.9	78.7	75.1	75.1	71.0	73.2	64.5	36.0	62.3	65.0
18-Jan-22	22:00:00	18-Jan-2222:00	70.0	33.1	79.0	76.0	75.7	71.0	73.4	65.0	36.6	62.5	64.7
18-Jan-22	22:30:00	18-Jan-2222:30	70.0	32.9	79.0	76.0	76.3	71.4	74.0	65.0	37.0	62.7	65.0
18-Jan-22	23:00:00	18-Jan-2223:00	70.0	33.9	79.0	76.0	76.0	72.0	74.0	65.3	37.0	63.0	65.0
18-Jan-22	23:30:00	18-Jan-2223:30	70.0	33.9	79.7	76.4	76.7	72.0	74.2	65.8	37.0	63.0	65.8
19-Jan-22	0:00:00	19-Jan-2200:00	70.0	33.9	79.7	76.2	76.7	72.0	74.1	66.0	37.0	63.2	66.0
19-Jan-22	0:30:00	19-Jan-2200:30	69.0	33.9	80.0	77.0	77.3	72.1	75.0	66.0	37.5	64.0	66.0
19-Jan-22	1:00:00	19-Jan-2201:00	61.9	33.9	76.4	71.4	71.3	70.6	71.8	64.1	36.2	62.0	64.2
19-Jan-22	1:30:00	19-Jan-2201:30	61.9	34.9	73.0	70.0	70.0	70.0	71.0	64.0	36.0	61.7	64.0
19-Jan-22	2:00:00	19-Jan-2202:00	61.9	34.9	73.0	70.0	70.0	70.0	71.0	63.1	36.0	61.4	64.0
19-Jan-22	2:30:00	19-Jan-2202:30	61.9	35.3	73.0	70.0	70.0	70.0	71.0	63.0	36.0	61.5	64.0
19-Jan-22	3:00:00	19-Jan-2203:00	61.9	35.1	73.0	70.0	70.0	69.9	71.0	63.0	35.8	61.0	63.1
19-Jan-22	3:30:00	19-Jan-2203:30	61.9	32.9	73.0	69.5	69.7	69.3	71.0	63.0	35.0	61.0	63.0
19-Jan-22	4:00:00	19-Jan-2204:00	61.9	33.7	72.0	69.0	70.0	69.0	70.8	63.0	35.0	61.0	63.0
19-Jan-22	4:30:00	19-Jan-2204:30	61.3	36.8	72.0	69.0	69.7	69.0	70.0	62.9	35.0	60.8	63.0
19-Jan-22	5:00:00	19-Jan-2205:00	59.8	36.8	72.0	68.6	69.0	68.3	70.0	62.0	34.2	60.0	62.2
19-Jan-22	5:30:00	19-Jan-2205:30	64.9	36.8	73.5	71.7	70.7	70.0	70.9	62.7	34.6	60.9	62.7
19-Jan-22	6:00:00	19-Jan-2206:00	68.9	35.9	78.2	75.4	76.0	70.7	73.0	64.0	36.0	62.0	64.0
19-Jan-22	6:30:00	19-Jan-2206:30	68.9	35.4	78.2	75.0	75.2	70.7	73.0	64.0	36.0	62.1	64.0
19-Jan-22	7:00:00	19-Jan-2207:00	68.9	34.9	78.0	75.0	75.0	70.6	72.7	63.5	35.6	61.8	64.1
19-Jan-22	7:30:00	19-Jan-2207:30	68.9	34.9	78.0	75.0	75.0	69.8	72.7	63.9	34.7	61.0	63.6
19-Jan-22	8:00:00	19-Jan-2208:00	68.9	34.1	78.0	75.0	74.4	69.6	72.9	63.0	35.0	61.0	63.6
19-Jan-22	8:30:00	19-Jan-2208:30	68.9	32.8	78.0	74.7	74.5	69.2	72.0	63.0	34.7	60.6	63.3
19-Jan-22	9:00:00	19-Jan-2209:00	68.9	32.8	77.7	74.7	74.6	69.7	72.0	63.4	34.9	60.5	63.0
19-Jan-22	9:30:00	19-Jan-2209:30	68.9	33.8	78.0	74.8	75.0	69.0	72.3	63.1	34.5	60.3	62.5
19-Jan-22	10:00:00	19-Jan-2210:00	68.9	35.1	78.0	74.6	74.2	69.3	72.4	63.2	35.0	60.8	63.0
19-Jan-22	10:30:00	19-Jan-2210:30	68.9	35.7	78.0	75.0	75.0	70.0	73.0	63.7	35.0	61.0	63.6
19-Jan-22	11:00:00	19-Jan-2211:00	68.9	33.4	78.4	74.9	75.4	70.0	73.0	64.0	35.0	61.0	63.5
19-Jan-22	11:30:00	19-Jan-2211:30	68.9	32.8	78.2	74.8	75.2	70.0	73.0	64.0	35.3	61.0	63.9
19-Jan-22	12:00:00	19-Jan-2212:00	68.9	33.3	78.3	75.0	75.3	70.0	73.0	64.0	35.0	61.0	64.0
19-Jan-22	12:30:00	19-Jan-2212:30	68.9	36.5	78.3	75.0	75.3	70.0	73.0	64.0	35.0	61.0	63.7
19-Jan-22	13:00:00	19-Jan-2213:00	68.9	36.7	78.0	75.0	75.0	70.0	73.0	63.4	35.4	60.7	63.3
19-Jan-22	13:30:00	19-Jan-2213:30	68.9	36.4	78.2	75.4	75.2	70.0	73.0	64.0	35.4	61.0	63.6
19-Jan-22	14:00:00	19-Jan-2214:00	68.9	36.5	79.0	75.7	76.0	70.3	73.0	64.0	35.9	61.0	64.0
19-Jan-22	14:30:00	19-Jan-2214:30	68.9	35.6	78.4	75.0	75.4	70.0	73.0	64.0	35.8	61.0	64.0

19-Jan-22	15:00:00	19-Jan-22	15:00:00	68.9	32.2	79.0	75.3	75.7	70.5	73.0	64.1	36.0	61.6	64.0
19-Jan-22	15:30:00	19-Jan-22	15:30:00	71.0	32.7	79.0	76.2	76.3	71.9	73.7	65.0	36.7	62.8	64.8
19-Jan-22	16:00:00	19-Jan-22	16:00:00	71.0	34.3	79.3	76.0	76.5	72.0	74.0	65.6	37.0	63.0	65.3
19-Jan-22	16:30:00	19-Jan-22	16:30:00	64.7	34.8	77.1	74.3	74.4	71.0	72.7	64.6	36.7	62.4	64.4
19-Jan-22	17:00:00	19-Jan-22	17:00:00	60.6	34.8	72.2	69.0	70.0	69.0	71.0	63.0	35.0	60.9	63.0
19-Jan-22	17:30:00	19-Jan-22	17:30:00	60.6	34.8	72.0	69.0	69.1	69.0	70.0	63.0	35.0	60.9	63.0
19-Jan-22	18:00:00	19-Jan-22	18:00:00	60.6	34.0	71.2	68.2	67.9	68.4	70.0	62.1	35.0	60.0	62.4
19-Jan-22	18:30:00	19-Jan-22	18:30:00	60.6	33.8	71.3	68.0	68.3	68.1	70.0	62.0	34.0	60.0	62.0
19-Jan-22	19:00:00	19-Jan-22	19:00:00	60.6	33.8	71.0	68.0	68.0	68.0	69.2	62.0	34.0	59.6	62.0
19-Jan-22	19:30:00	19-Jan-22	19:30:00	61.5	33.8	71.2	67.6	68.0	67.5	69.3	61.3	34.2	59.0	62.0
19-Jan-22	20:00:00	19-Jan-22	20:00:00	68.5	33.8	78.0	74.0	74.6	70.0	72.0	63.4	35.2	61.2	64.0
19-Jan-22	20:30:00	19-Jan-22	20:30:00	68.5	33.8	78.0	74.6	74.9	70.0	73.0	64.0	36.0	61.8	64.0
19-Jan-22	21:00:00	19-Jan-22	21:00:00	68.5	33.8	78.5	75.0	75.2	70.7	73.0	64.0	36.0	62.0	64.3
19-Jan-22	21:30:00	19-Jan-22	21:30:00	68.5	33.8	79.0	75.4	76.0	70.7	73.4	65.0	36.0	62.3	64.5
19-Jan-22	22:00:00	19-Jan-22	22:00:00	68.5	33.8	79.0	76.0	76.0	71.0	74.0	65.0	36.3	62.7	65.0
19-Jan-22	22:30:00	19-Jan-22	22:30:00	70.3	33.8	79.0	76.0	76.3	71.4	74.0	65.2	37.0	63.0	65.0
19-Jan-22	23:00:00	19-Jan-22	23:00:00	70.5	33.8	79.6	76.0	76.8	72.0	74.0	66.0	37.0	63.0	65.0
19-Jan-22	23:30:00	19-Jan-22	23:30:00	70.5	33.8	79.9	76.9	77.0	72.0	74.4	66.0	37.4	63.5	66.0
20-Jan-22	0:00:00	20-Jan-22	0:00:00	70.5	33.8	80.0	77.0	77.0	72.0	74.7	66.0	37.7	63.3	66.0
20-Jan-22	0:30:00	20-Jan-22	0:30:00	67.8	33.8	79.8	77.0	77.6	72.6	75.0	65.7	37.8	63.1	65.7
20-Jan-22	1:00:00	20-Jan-22	1:00:00	62.4	34.2	73.0	71.9	74.2	70.0	72.6	64.0	36.0	61.9	64.0
20-Jan-22	1:30:00	20-Jan-22	1:30:00	62.4	33.6	73.0	70.0	70.6	70.0	71.9	64.0	36.0	62.0	64.0
20-Jan-22	2:00:00	20-Jan-22	2:00:00	62.4	31.9	73.0	70.0	70.0	70.0	71.0	64.0	36.0	61.6	64.0
20-Jan-22	2:30:00	20-Jan-22	2:30:00	62.4	31.9	73.0	70.0	70.0	70.0	71.0	63.4	36.0	61.8	64.0
20-Jan-22	3:00:00	20-Jan-22	3:00:00	62.4	33.7	73.0	70.0	70.0	70.0	71.0	63.3	36.0	61.3	63.7
20-Jan-22	3:30:00	20-Jan-22	3:30:00	60.6	33.9	73.0	69.7	70.1	69.7	71.0	63.5	35.7	61.0	63.6
20-Jan-22	4:00:00	20-Jan-22	4:00:00	60.4	34.8	72.8	70.0	70.2	69.2	71.0	63.0	35.1	61.0	63.0
20-Jan-22	4:30:00	20-Jan-22	4:30:00	60.4	34.8	72.3	69.3	69.9	69.0	70.5	63.0	35.0	61.0	63.0
20-Jan-22	5:00:00	20-Jan-22	5:00:00	60.4	34.8	72.0	69.0	69.3	68.4	70.0	62.1	34.7	60.3	62.7
20-Jan-22	5:30:00	20-Jan-22	5:30:00	60.4	35.7	72.0	69.0	69.0	68.3	70.0	62.0	34.5	60.0	62.5
20-Jan-22	6:00:00	20-Jan-22	6:00:00	69.1	34.9	77.6	74.6	74.3	70.2	71.8	63.4	35.3	61.5	63.3
20-Jan-22	6:30:00	20-Jan-22	6:30:00	69.7	34.8	78.0	75.0	75.4	70.3	73.0	64.0	36.0	62.0	64.0
20-Jan-22	7:00:00	20-Jan-22	7:00:00	69.7	35.4	78.3	75.3	75.5	70.6	73.0	64.3	36.0	62.0	64.0
20-Jan-22	7:30:00	20-Jan-22	7:30:00	69.7	36.1	78.8	75.3	76.3	70.7	73.0	64.0	36.0	62.0	64.0
20-Jan-22	8:00:00	20-Jan-22	8:00:00	69.6	36.0	79.0	75.3	75.7	71.0	73.3	64.0	36.0	62.0	64.0
20-Jan-22	8:30:00	20-Jan-22	8:30:00	69.5	35.7	78.5	75.4	75.3	70.9	73.2	64.0	36.0	61.2	64.3
20-Jan-22	9:00:00	20-Jan-22	9:00:00	69.6	34.8	79.3	75.7	75.6	70.5	73.1	64.4	36.3	63.4	63.5
20-Jan-22	9:30:00	20-Jan-22	9:30:00	70.0	34.8	79.3	75.4	75.7	70.7	73.3	64.7	36.0	62.0	65.0

20-Jan-22	10:00:00	20-Jan-22	10:00:00	70.0	34.1	79.0	75.4	75.7	71.0	73.3	65.0	36.9	62.7	65.0
20-Jan-22	10:30:00	20-Jan-22	10:30:00	70.0	34.2	79.0	76.0	75.7	71.1	73.7	65.0	37.0	63.0	65.0
20-Jan-22	11:00:00	20-Jan-22	11:00:00	70.0	35.4	79.6	76.3	76.3	72.0	74.0	65.0	37.0	63.0	65.1
20-Jan-22	11:30:00	20-Jan-22	11:30:00	60.8	35.3	75.0	71.4	72.0	70.1	71.8	63.4	35.8	61.8	63.7
20-Jan-22	12:00:00	20-Jan-22	12:00:00	60.5	35.7	73.0	69.5	70.0	69.0	71.0	63.0	35.3	61.0	63.3
20-Jan-22	12:30:00	20-Jan-22	12:30:00	60.5	35.7	72.4	69.1	69.6	69.0	71.0	63.0	35.0	61.0	63.0
20-Jan-22	13:00:00	20-Jan-22	13:00:00	60.5	35.7	72.5	69.6	69.8	69.0	70.4	63.0	34.7	61.0	63.0
20-Jan-22	13:30:00	20-Jan-22	13:30:00	68.8	35.7	74.4	73.3	73.2	69.8	72.7	64.2	35.7	62.1	64.4
20-Jan-22	14:00:00	20-Jan-22	14:00:00	70.2	35.7	79.0	76.0	76.0	70.5	74.0	65.0	36.6	62.7	65.0
20-Jan-22	14:30:00	20-Jan-22	14:30:00	70.1	35.6	79.0	76.0	75.7	71.0	73.7	65.1	37.0	63.2	65.0
20-Jan-22	15:00:00	20-Jan-22	15:00:00	70.3	33.4	79.0	76.0	76.0	71.0	74.0	65.2	37.0	62.9	65.0
20-Jan-22	15:30:00	20-Jan-22	15:30:00	70.3	32.8	79.3	76.3	76.3	71.8	74.0	65.7	37.0	63.0	65.1
20-Jan-22	16:00:00	20-Jan-22	16:00:00	70.3	32.8	79.7	76.0	76.3	72.0	74.0	66.0	37.0	63.0	65.7
20-Jan-22	16:30:00	20-Jan-22	16:30:00	65.4	33.5	77.2	73.9	74.2	71.2	73.2	65.5	36.5	62.4	63.6
20-Jan-22	17:00:00	20-Jan-22	17:00:00	61.7	33.8	73.0	69.7	70.0	69.5	71.0	63.4	36.0	61.3	63.4
20-Jan-22	17:30:00	20-Jan-22	17:30:00	61.7	33.8	72.7	69.4	69.7	69.3	71.0	63.0	35.0	61.0	63.0
20-Jan-22	18:00:00	20-Jan-22	18:00:00	61.7	33.8	72.0	68.9	69.1	69.0	70.5	63.0	35.0	61.0	63.0
20-Jan-22	18:30:00	20-Jan-22	18:30:00	61.7	33.8	72.0	68.8	68.5	68.7	70.0	62.7	35.0	60.6	63.0
20-Jan-22	19:00:00	20-Jan-22	19:00:00	60.1	33.8	71.9	68.4	68.3	68.1	70.0	62.0	34.0	60.0	62.3
20-Jan-22	19:30:00	20-Jan-22	19:30:00	59.7	33.8	71.0	68.0	68.2	68.0	69.2	61.7	34.0	59.7	62.0
20-Jan-22	20:00:00	20-Jan-22	20:00:00	59.7	33.8	71.0	68.0	68.1	68.0	69.3	61.6	34.0	60.0	62.0
20-Jan-22	20:30:00	20-Jan-22	20:30:00	61.8	34.5	71.8	68.8	68.7	68.2	69.0	61.3	34.0	59.5	62.0
20-Jan-22	21:00:00	20-Jan-22	21:00:00	68.4	31.9	77.8	74.5	75.0	70.0	72.6	63.0	35.8	62.0	63.9
20-Jan-22	21:30:00	20-Jan-22	21:30:00	68.4	31.8	78.6	75.6	75.7	70.6	73.0	64.0	36.0	62.0	64.0
20-Jan-22	22:00:00	20-Jan-22	22:00:00	68.4	32.3	78.7	75.3	76.0	71.0	73.0	64.9	36.0	62.0	64.6
20-Jan-22	22:30:00	20-Jan-22	22:30:00	68.8	33.4	79.0	75.7	76.4	71.0	73.7	65.0	36.4	62.6	65.0
20-Jan-22	23:00:00	20-Jan-22	23:00:00	70.4	33.8	79.0	76.0	76.2	71.2	73.7	65.0	37.0	63.0	65.0
20-Jan-22	23:30:00	20-Jan-22	23:30:00	70.4	34.7	79.0	76.0	76.3	71.7	74.0	65.0	37.0	63.0	65.0
21-Jan-22	0:00:00	21-Jan-22	0:00:00	70.4	33.8	79.0	76.0	76.0	71.4	74.0	65.0	37.0	63.0	65.0
21-Jan-22	0:30:00	21-Jan-22	0:30:00	70.4	33.8	79.9	76.9	76.9	72.0	74.4	65.7	37.4	63.2	65.4
21-Jan-22	1:00:00	21-Jan-22	1:00:00	70.4	34.7	80.0	77.0	77.0	72.3	74.4	66.0	37.7	63.1	66.0
21-Jan-22	1:30:00	21-Jan-22	1:30:00	68.5	35.7	80.3	77.0	77.3	72.5	75.0	66.4	37.9	63.0	65.9
21-Jan-22	2:00:00	21-Jan-22	2:00:00	62.4	34.7	76.3	70.7	70.9	70.2	72.0	64.0	36.0	61.5	64.0
21-Jan-22	2:30:00	21-Jan-22	2:30:00	62.4	33.8	73.2	70.0	70.8	70.0	72.0	64.0	36.0	62.0	64.0
21-Jan-22	3:00:00	21-Jan-22	3:00:00	62.4	34.8	73.0	70.0	70.4	70.0	71.3	64.0	36.0	62.0	64.0
21-Jan-22	3:30:00	21-Jan-22	3:30:00	62.4	35.7	73.0	70.0	70.5	70.0	71.0	64.0	36.0	62.0	64.0
21-Jan-22	4:00:00	21-Jan-22	4:00:00	62.0	35.7	73.0	69.7	70.0	69.7	71.0	63.3	35.9	61.2	63.6
21-Jan-22	4:30:00	21-Jan-22	4:30:00	60.4	35.7	73.0	70.0	70.3	69.0	71.0	63.0	35.0	61.0	63.0

21-Jan-22	5:00:00	21-Jan-22	5:05:00	60.4	35.7	72.2	68.9	69.7	68.2	70.4	62.3	34.7	60.1	62.3
21-Jan-22	5:30:00	21-Jan-22	5:05:30	60.4	35.7	71.0	68.0	68.3	67.7	69.3	61.0	33.3	58.4	61.0
21-Jan-22	6:00:00	21-Jan-22	6:06:00	64.7	34.8	72.4	74.5	70.9	69.3	70.1	61.1	33.6	59.1	61.6
21-Jan-22	6:30:00	21-Jan-22	6:06:30	68.2	34.7	77.7	74.1	74.4	69.3	72.0	63.0	35.0	60.0	63.0
21-Jan-22	7:00:00	21-Jan-22	7:07:00	68.2	34.7	77.0	74.0	74.6	69.3	72.0	63.0	35.0	60.0	63.0
21-Jan-22	7:30:00	21-Jan-22	7:07:30	68.2	34.7	77.1	74.4	74.1	69.8	72.5	63.0	35.0	60.0	63.0
21-Jan-22	8:00:00	21-Jan-22	8:08:00	68.2	34.3	77.4	74.2	74.5	69.8	72.0	63.0	34.7	60.0	63.0
21-Jan-22	8:30:00	21-Jan-22	8:08:30	68.2	34.7	77.7	74.4	74.1	69.6	72.0	63.0	34.7	60.0	63.0
21-Jan-22	9:00:00	21-Jan-22	9:09:00	68.2	34.7	78.0	74.3	74.8	69.3	72.0	63.0	34.7	60.0	63.0
21-Jan-22	9:30:00	21-Jan-22	9:09:30	68.1	34.6	77.9	74.6	74.6	69.9	72.0	63.5	35.0	60.0	63.0
21-Jan-22	10:00:00	21-Jan-22	10:10:00	67.9	33.8	77.8	74.5	74.5	70.0	72.3	63.3	34.4	60.0	63.0
21-Jan-22	10:30:00	21-Jan-22	10:10:30	67.9	33.8	78.0	74.1	74.7	69.7	72.0	63.4	34.6	60.0	63.0
21-Jan-22	11:00:00	21-Jan-22	11:11:00	68.7	34.2	77.4	74.7	73.8	69.4	72.8	64.0	34.8	60.0	63.0
21-Jan-22	11:30:00	21-Jan-22	11:11:30	70.1	35.7	78.0	75.0	75.0	69.7	73.0	64.0	35.0	60.0	63.0
21-Jan-22	12:00:00	21-Jan-22	12:12:00	70.1	35.7	78.0	74.7	74.6	70.0	73.0	64.0	35.0	60.0	63.5
21-Jan-22	12:30:00	21-Jan-22	12:12:30	70.1	35.7	78.5	75.8	75.6	70.8	73.0	64.7	35.6	61.5	64.3
21-Jan-22	13:00:00	21-Jan-22	13:13:00	70.1	35.7	79.0	76.0	75.7	71.0	73.7	65.0	36.0	62.0	65.0
21-Jan-22	13:30:00	21-Jan-22	13:13:30	70.1	35.7	79.0	76.0	76.2	71.0	74.0	65.0	36.6	62.4	65.0
21-Jan-22	14:00:00	21-Jan-22	14:14:00	70.1	35.7	78.9	75.9	76.4	71.0	74.0	65.0	37.0	63.0	65.0
21-Jan-22	14:30:00	21-Jan-22	14:14:30	70.1	35.7	78.8	75.3	75.7	71.3	73.4	65.0	37.0	62.4	65.0
21-Jan-22	15:00:00	21-Jan-22	15:15:00	70.1	35.7	79.0	75.8	76.0	71.8	73.9	66.0	37.0	63.0	65.0
21-Jan-22	15:30:00	21-Jan-22	15:15:30	65.3	36.5	77.5	74.5	74.8	71.4	73.2	65.3	36.3	62.6	64.8
21-Jan-22	16:00:00	21-Jan-22	16:16:00	61.1	36.5	73.0	69.3	69.6	69.3	71.0	63.0	35.0	61.0	63.0
21-Jan-22	16:30:00	21-Jan-22	16:16:30	61.1	33.8	72.4	69.6	69.6	69.0	71.0	63.0	35.0	61.0	63.0
21-Jan-22	17:00:00	21-Jan-22	17:17:00	61.1	33.8	72.0	69.0	69.1	69.0	70.7	63.0	35.0	60.7	63.0
21-Jan-22	17:30:00	21-Jan-22	17:17:30	61.1	32.8	72.0	69.0	69.2	69.0	70.1	63.0	35.0	60.6	62.9
21-Jan-22	18:00:00	21-Jan-22	18:18:00	59.5	32.8	71.9	68.3	68.3	68.1	70.0	62.2	34.6	60.0	62.0
21-Jan-22	18:30:00	21-Jan-22	18:18:30	59.2	33.4	71.0	67.7	67.8	68.0	69.5	62.0	34.0	60.0	62.0
21-Jan-22	19:00:00	21-Jan-22	19:19:00	59.2	35.0	71.0	67.7	68.0	67.4	69.0	61.3	33.6	59.5	61.3
21-Jan-22	19:30:00	21-Jan-22	19:19:30	68.0	35.7	74.2	72.1	72.8	69.2	71.4	64.7	34.6	60.3	63.5
21-Jan-22	20:00:00	21-Jan-22	20:20:00	68.6	35.7	78.0	74.9	74.9	70.0	72.9	64.0	35.7	61.2	64.0
21-Jan-22	20:30:00	21-Jan-22	20:20:30	68.6	35.9	78.0	75.0	75.0	70.0	73.0	64.0	36.0	61.7	64.0
21-Jan-22	21:00:00	21-Jan-22	21:21:00	68.6	35.8	78.0	75.0	75.3	70.3	73.0	64.0	36.0	62.0	64.1
21-Jan-22	21:30:00	21-Jan-22	21:21:30	68.6	35.7	78.7	75.4	75.7	71.0	73.0	64.5	36.2	62.1	64.7
21-Jan-22	22:00:00	21-Jan-22	22:22:00	68.7	34.9	79.0	76.0	76.0	71.0	73.9	65.0	36.7	62.7	65.0
21-Jan-22	22:30:00	21-Jan-22	22:22:30	70.5	34.7	79.3	76.0	76.4	71.9	74.0	65.0	37.0	63.0	65.0
21-Jan-22	23:00:00	21-Jan-22	23:23:00	70.5	34.7	79.2	76.0	76.8	71.4	74.0	65.6	37.0	63.0	65.3
21-Jan-22	23:30:00	21-Jan-22	23:23:30	70.5	34.7	80.0	76.6	76.7	72.0	74.1	66.0	37.1	63.0	66.0

22-Jan-22	0:00:00	22-Jan-22	00:00	70.5	34.7	80.0	77.0	76.8	72.0	74.1	66.0	37.4	63.3	66.0
22-Jan-22	0:30:00	22-Jan-22	00:30	69.6	34.6	80.0	77.0	76.9	72.6	75.0	66.0	38.0	63.5	66.0
22-Jan-22	1:00:00	22-Jan-22	01:00	61.1	33.7	74.7	71.4	71.6	70.7	72.1	64.2	36.3	61.7	64.2
22-Jan-22	1:30:00	22-Jan-22	01:30	61.0	35.7	73.0	70.0	70.3	70.0	72.0	64.0	36.0	62.0	64.0
22-Jan-22	2:00:00	22-Jan-22	02:00	61.0	35.7	73.0	70.0	70.0	70.0	71.8	64.0	36.0	62.0	64.0
22-Jan-22	2:30:00	22-Jan-22	02:30	61.0	35.7	73.0	70.0	70.0	70.0	71.0	64.0	36.0	62.0	64.0
22-Jan-22	3:00:00	22-Jan-22	03:00	61.0	35.7	73.0	70.0	70.0	70.0	71.0	64.0	36.0	61.9	64.0
22-Jan-22	3:30:00	22-Jan-22	03:30	61.0	35.7	72.1	69.1	69.7	69.4	70.6	62.8	35.6	60.5	63.4
22-Jan-22	4:00:00	22-Jan-22	04:00	61.0	35.7	72.0	69.0	69.0	68.3	70.0	62.0	34.2	60.0	62.0
22-Jan-22	4:30:00	22-Jan-22	04:30	61.0	35.7	72.0	69.0	69.0	68.0	70.0	62.0	34.0	59.5	62.0
22-Jan-22	5:00:00	22-Jan-22	05:00	62.6	36.5	72.7	69.6	69.8	68.2	69.5	61.5	34.0	59.1	61.7
22-Jan-22	5:30:00	22-Jan-22	05:30	69.1	36.7	78.5	75.4	75.8	70.2	72.6	63.0	35.2	61.0	63.9
22-Jan-22	6:00:00	22-Jan-22	06:00	69.1	36.7	78.7	75.7	76.0	71.0	73.0	64.0	36.0	61.0	64.0
22-Jan-22	6:30:00	22-Jan-22	06:30	69.1	36.7	78.2	75.4	76.0	70.4	73.3	64.4	36.0	61.9	64.4
22-Jan-22	7:00:00	22-Jan-22	07:00	69.1	35.8	78.7	76.0	76.0	71.3	74.0	65.0	37.0	62.7	65.0
22-Jan-22	7:30:00	22-Jan-22	07:30	69.1	35.7	79.0	76.0	76.0	71.0	73.4	65.0	36.7	62.6	65.0
22-Jan-22	8:00:00	22-Jan-22	08:00	69.1	35.3	79.0	75.4	75.4	71.0	74.0	65.0	36.0	62.0	65.0
22-Jan-22	8:30:00	22-Jan-22	08:30	69.1	34.7	79.0	75.7	75.7	71.0	74.0	65.0	36.3	62.6	65.0
22-Jan-22	9:00:00	22-Jan-22	09:00	69.1	26.6	79.0	76.0	75.7	71.0	74.0	65.0	36.4	62.6	65.0
22-Jan-22	9:30:00	22-Jan-22	09:30	69.1	29.9	79.0	76.0	76.0	71.0	74.0	65.3	37.0	63.0	65.0
22-Jan-22	10:00:00	22-Jan-22	10:00	69.1	27.0	79.3	76.0	76.0	71.6	74.0	65.0	37.0	63.0	65.0
22-Jan-22	10:30:00	22-Jan-22	10:30	60.8	25.6	74.2	70.9	70.9	69.9	71.4	63.0	34.9	60.5	62.8
22-Jan-22	11:00:00	22-Jan-22	11:00	60.1	30.4	71.7	68.4	69.0	68.2	70.0	62.4	33.9	60.0	62.5
22-Jan-22	11:30:00	22-Jan-22	11:30	59.9	32.7	72.0	68.7	69.0	68.6	70.0	62.5	34.0	60.0	62.0
22-Jan-22	12:00:00	22-Jan-22	12:00	63.2	34.4	73.5	70.2	68.2	68.5	70.1	62.2	34.1	60.4	62.2
22-Jan-22	12:30:00	22-Jan-22	12:30	69.0	34.9	79.0	75.4	75.9	70.1	73.0	64.6	36.0	62.0	64.3
22-Jan-22	13:00:00	22-Jan-22	13:00	69.0	29.0	79.0	75.4	75.8	71.0	73.0	64.6	36.0	61.7	64.0
22-Jan-22	13:30:00	22-Jan-22	13:30	69.0	32.7	78.7	75.1	75.9	71.0	73.0	65.0	36.0	62.0	64.1
22-Jan-22	14:00:00	22-Jan-22	14:00	69.0	35.8	79.0	75.7	76.0	71.0	73.2	65.0	36.0	62.1	65.0
22-Jan-22	14:30:00	22-Jan-22	14:30	69.0	36.1	79.0	76.0	76.0	71.9	74.0	65.7	37.0	63.0	65.0
22-Jan-22	15:00:00	22-Jan-22	15:00	69.0	35.3	79.0	76.4	76.0	71.7	74.0	66.0	37.0	63.0	65.0
22-Jan-22	15:30:00	22-Jan-22	15:30	69.3	35.1	79.6	76.2	76.3	72.0	74.0	66.0	37.0	63.0	66.0
22-Jan-22	16:00:00	22-Jan-22	16:00	67.7	35.1	79.2	75.6	75.8	71.8	74.0	66.0	36.8	63.3	65.3
22-Jan-22	16:30:00	22-Jan-22	16:30	61.4	35.1	73.0	70.0	69.5	69.5	71.0	63.4	36.0	62.1	63.4
22-Jan-22	17:00:00	22-Jan-22	17:00	61.4	35.1	72.1	69.7	69.1	69.3	71.0	63.0	35.0	61.0	63.3
22-Jan-22	17:30:00	22-Jan-22	17:30	61.4	35.1	72.5	69.0	69.7	69.0	71.0	63.0	35.0	61.0	63.0
22-Jan-22	18:00:00	22-Jan-22	18:00	61.4	35.1	72.0	68.9	69.4	69.0	70.0	62.8	35.0	60.4	63.0
22-Jan-22	18:30:00	22-Jan-22	18:30	61.4	35.1	72.0	68.3	68.7	68.8	70.0	62.0	34.7	60.0	63.0

22-Jan-22	19:00:00	22-Jan-2219:00	62.2	35.1	71.7	68.3	68.5	68.0	70.4	62.0	34.0	60.0	62.0
22-Jan-22	19:30:00	22-Jan-2219:30	68.8	35.1	78.0	75.0	75.1	70.7	73.6	63.7	35.6	61.9	63.9
22-Jan-22	20:00:00	22-Jan-2220:00	68.8	35.1	78.0	75.0	75.7	70.4	73.0	64.0	36.0	62.0	64.0
22-Jan-22	20:30:00	22-Jan-2220:30	68.8	35.1	78.3	75.1	75.1	71.0	73.0	64.2	36.0	62.0	64.5
22-Jan-22	21:00:00	22-Jan-2221:00	68.8	35.1	78.8	75.2	76.0	71.0	73.0	65.0	36.0	62.0	65.0
22-Jan-22	21:30:00	22-Jan-2221:30	68.8	35.1	79.0	76.0	76.6	71.0	73.4	65.0	36.4	62.6	65.0
22-Jan-22	22:00:00	22-Jan-2222:00	70.7	35.1	79.0	76.0	76.3	71.8	74.0	65.0	37.0	63.0	65.3
22-Jan-22	22:30:00	22-Jan-2222:30	70.8	35.1	80.0	76.3	77.0	72.0	74.0	65.8	37.0	63.0	65.0
22-Jan-22	23:00:00	22-Jan-2223:00	70.8	35.1	80.0	76.3	77.0	72.0	74.0	66.0	37.0	63.1	65.9
22-Jan-22	23:30:00	22-Jan-2223:30	70.8	35.1	80.0	76.9	77.0	72.6	74.7	66.0	38.0	64.0	66.0
23-Jan-22	0:00:00	23-Jan-2200:00	64.6	33.6	76.6	73.7	73.3	71.9	73.1	64.8	36.9	63.2	64.8
23-Jan-22	0:30:00	23-Jan-2200:30	62.4	32.2	73.0	70.0	70.0	70.0	71.3	64.0	36.0	62.0	64.0
23-Jan-22	1:00:00	23-Jan-2201:00	62.4	32.2	73.0	70.0	70.0	70.0	71.0	63.7	36.0	61.9	64.0
23-Jan-22	1:30:00	23-Jan-2201:30	62.4	33.7	73.0	70.0	70.0	70.0	71.0	63.0	36.0	61.5	64.0
23-Jan-22	2:00:00	23-Jan-2202:00	62.4	34.2	73.0	69.4	70.0	69.7	71.0	63.0	35.7	61.6	63.4
23-Jan-22	2:30:00	23-Jan-2202:30	62.4	34.2	73.0	70.0	70.0	69.7	71.0	63.0	35.6	61.0	63.0
23-Jan-22	3:00:00	23-Jan-2203:00	60.3	34.2	73.0	69.7	70.0	69.3	71.0	63.0	35.0	61.0	63.0
23-Jan-22	3:30:00	23-Jan-2203:30	60.3	34.6	72.2	69.2	69.7	69.0	70.7	63.0	35.0	61.0	63.0
23-Jan-22	4:00:00	23-Jan-2204:00	60.3	35.1	72.0	69.0	69.1	69.0	70.0	62.8	34.8	60.9	62.8
23-Jan-22	4:30:00	23-Jan-2204:30	60.3	36.0	71.7	68.5	69.2	68.2	70.0	62.0	34.0	59.0	62.0
23-Jan-22	5:00:00	23-Jan-2205:00	61.2	37.1	71.0	68.3	68.6	67.6	69.2	61.2	33.2	59.0	61.2
23-Jan-22	5:30:00	23-Jan-2205:30	68.8	37.1	77.2	74.1	74.2	69.5	72.6	63.9	34.8	60.8	63.8
23-Jan-22	6:00:00	23-Jan-2206:00	68.8	36.5	79.0	75.7	76.0	70.7	73.0	64.0	35.0	61.0	64.0
23-Jan-22	6:30:00	23-Jan-2206:30	68.8	35.0	79.0	76.0	76.0	70.7	73.3	64.3	35.6	61.0	64.0
23-Jan-22	7:00:00	23-Jan-2207:00	69.8	34.2	79.0	75.7	75.7	71.1	74.0	64.2	36.2	61.6	64.2
23-Jan-22	7:30:00	23-Jan-2207:30	70.8	34.2	79.0	76.0	76.0	71.4	74.0	65.0	36.7	63.0	65.0
23-Jan-22	8:00:00	23-Jan-2208:00	70.8	32.5	79.0	76.0	76.0	72.0	74.0	65.0	37.0	62.7	65.0
23-Jan-22	8:30:00	23-Jan-2208:30	70.8	33.7	79.0	75.7	75.8	71.2	74.0	65.0	37.0	63.0	65.0
23-Jan-22	9:00:00	23-Jan-2209:00	70.8	34.2	79.0	75.9	75.7	71.3	74.0	65.0	37.0	63.0	65.0
23-Jan-22	9:30:00	23-Jan-2209:30	70.8	35.1	79.0	75.8	76.0	71.0	74.0	65.0	37.0	62.8	65.0
23-Jan-22	10:00:00	23-Jan-2210:00	70.8	35.5	79.0	75.7	76.0	71.0	74.0	65.0	36.2	62.0	65.0
23-Jan-22	10:30:00	23-Jan-2210:30	68.6	36.1	79.0	76.0	76.0	71.6	74.0	64.9	37.0	62.6	64.9
23-Jan-22	11:00:00	23-Jan-2211:00	61.5	36.1	72.5	69.5	69.4	69.2	71.0	62.8	35.0	60.3	62.8
23-Jan-22	11:30:00	23-Jan-2211:30	60.2	36.1	71.8	68.2	68.5	68.1	69.6	61.7	33.6	59.2	61.4
23-Jan-22	12:00:00	23-Jan-2212:00	59.5	36.1	71.0	68.0	68.0	67.0	69.0	61.0	33.0	58.0	61.0
23-Jan-22	12:30:00	23-Jan-2212:30	62.9	36.4	71.0	69.3	68.9	67.5	70.0	61.4	33.3	58.2	61.0
23-Jan-22	13:00:00	23-Jan-2213:00	68.3	37.1	77.3	75.0	75.2	70.0	73.0	64.0	35.0	60.5	63.7
23-Jan-22	13:30:00	23-Jan-2213:30	68.3	37.1	78.0	75.0	74.7	70.0	73.0	64.0	35.0	61.0	64.0

23-Jan-22	14:00:00	23-Jan-22	14:00:00	69.7	34.6	78.6	75.3	75.6	70.5	73.3	65.0	35.7	61.5	64.7
23-Jan-22	14:30:00	23-Jan-22	14:30:00	70.3	34.2	79.0	76.0	76.0	71.0	74.0	65.0	37.0	62.9	65.0
23-Jan-22	15:00:00	23-Jan-22	15:00:00	70.3	33.3	79.0	76.0	76.0	71.2	74.0	65.0	37.0	63.0	65.0
23-Jan-22	15:30:00	23-Jan-22	15:30:00	70.3	33.0	79.0	76.0	76.0	71.7	74.0	65.8	37.0	63.0	65.0
23-Jan-22	16:00:00	23-Jan-22	16:00:00	70.3	33.2	79.2	76.0	76.3	72.0	74.0	66.0	37.0	63.0	65.0
23-Jan-22	16:30:00	23-Jan-22	16:30:00	70.3	33.2	79.7	76.3	76.0	72.0	74.0	66.0	37.1	63.3	66.0
23-Jan-22	17:00:00	23-Jan-22	17:00:00	65.2	33.2	76.8	73.5	73.8	71.0	72.7	65.1	36.7	63.0	65.4
23-Jan-22	17:30:00	23-Jan-22	17:30:00	61.5	33.2	73.0	69.1	69.4	69.0	71.0	63.0	35.0	61.4	63.3
23-Jan-22	18:00:00	23-Jan-22	18:00:00	61.5	33.2	72.0	68.6	68.5	69.0	70.5	62.7	35.0	60.6	63.0
23-Jan-22	18:30:00	23-Jan-22	18:30:00	61.5	33.2	72.0	68.3	68.6	68.5	70.0	62.6	34.9	60.3	62.6
23-Jan-22	19:00:00	23-Jan-22	19:00:00	60.1	33.2	71.6	68.0	69.0	68.0	70.0	62.0	34.0	60.0	62.0
23-Jan-22	19:30:00	23-Jan-22	19:30:00	59.5	33.2	71.0	68.0	68.2	68.0	69.4	61.9	34.0	59.5	62.0
23-Jan-22	20:00:00	23-Jan-22	20:00:00	59.5	33.2	71.0	68.0	68.0	67.7	69.2	61.0	34.0	59.6	62.0
23-Jan-22	20:30:00	23-Jan-22	20:30:00	65.6	33.2	74.8	71.7	71.8	69.1	72.0	62.2	34.4	60.3	62.4
23-Jan-22	21:00:00	23-Jan-22	21:00:00	68.6	33.2	78.0	74.7	75.0	70.0	72.5	64.0	35.7	61.1	64.0
23-Jan-22	21:30:00	23-Jan-22	21:30:00	68.6	33.2	78.2	75.2	75.3	70.2	73.0	64.0	36.0	62.0	64.0
23-Jan-22	22:00:00	23-Jan-22	22:00:00	68.6	33.2	79.0	75.1	75.7	71.0	73.0	64.0	36.0	62.0	64.0
23-Jan-22	22:30:00	23-Jan-22	22:30:00	68.6	33.2	79.0	75.7	76.0	71.0	73.3	64.1	36.0	62.0	64.6
23-Jan-22	23:00:00	23-Jan-22	23:00:00	69.1	33.2	79.0	76.0	76.0	71.0	73.7	65.0	36.2	62.0	65.0
23-Jan-22	23:30:00	23-Jan-22	23:30:00	70.6	33.2	79.2	76.0	76.2	71.8	74.0	65.0	37.0	63.0	65.3
24-Jan-22	0:00:00	24-Jan-22	0:00:00	70.6	33.2	79.1	76.0	76.1	71.4	74.0	65.0	37.0	63.0	65.2
24-Jan-22	0:30:00	24-Jan-22	0:30:00	70.6	33.7	79.8	76.5	77.0	72.0	74.0	65.9	37.0	63.4	65.9
24-Jan-22	1:00:00	24-Jan-22	1:00:00	70.6	34.0	79.4	76.7	77.0	72.0	74.7	66.0	37.6	63.1	66.0
24-Jan-22	1:30:00	24-Jan-22	1:30:00	65.0	31.4	78.5	73.6	73.7	71.1	72.5	65.3	35.6	62.9	65.4
24-Jan-22	2:00:00	24-Jan-22	2:00:00	62.0	31.2	73.0	69.7	70.1	69.4	71.3	63.4	36.0	61.2	63.4
24-Jan-22	2:30:00	24-Jan-22	2:30:00	62.0	33.4	73.0	70.0	70.0	70.0	71.0	64.0	36.0	61.9	64.0
24-Jan-22	3:00:00	24-Jan-22	3:00:00	62.0	34.2	73.0	70.0	70.6	70.0	71.0	63.3	36.0	61.2	64.0
24-Jan-22	3:30:00	24-Jan-22	3:30:00	62.0	34.2	73.0	70.0	70.0	69.7	71.0	63.0	35.4	61.3	63.4
24-Jan-22	4:00:00	24-Jan-22	4:00:00	61.0	35.1	72.7	69.4	70.0	69.4	71.0	63.0	35.0	61.0	63.0
24-Jan-22	4:30:00	24-Jan-22	4:30:00	60.0	34.4	72.2	69.3	69.5	68.8	70.2	62.7	35.0	60.9	63.0
24-Jan-22	5:00:00	24-Jan-22	5:00:00	60.0	34.6	71.9	68.7	69.0	68.0	70.0	62.0	34.0	60.0	62.0
24-Jan-22	5:30:00	24-Jan-22	5:30:00	62.6	35.1	72.2	69.2	69.7	67.9	70.3	61.2	33.7	59.4	62.9
24-Jan-22	6:00:00	24-Jan-22	6:00:00	67.9	34.4	78.0	74.9	74.7	69.0	72.0	63.0	34.7	60.0	63.0
24-Jan-22	6:30:00	24-Jan-22	6:30:00	67.9	34.0	78.0	74.8	74.5	69.3	72.0	63.0	35.0	60.0	63.0
24-Jan-22	7:00:00	24-Jan-22	7:00:00	67.9	33.2	78.0	74.7	74.3	69.3	72.0	63.5	35.0	60.8	63.0
24-Jan-22	7:30:00	24-Jan-22	7:30:00	67.9	33.2	78.0	74.7	75.3	70.0	72.8	64.0	35.0	60.4	63.6
24-Jan-22	8:00:00	24-Jan-22	8:00:00	67.9	33.4	78.0	74.7	75.0	70.0	72.6	63.7	35.0	61.0	63.6
24-Jan-22	8:30:00	24-Jan-22	8:30:00	67.9	34.8	78.0	74.5	75.0	70.0	72.8	64.0	35.0	61.0	63.3

24-Jan-22	9:00:00	24-Jan-2209:00	67.9	36.8	78.0	75.0	74.7	70.0	72.7	64.0	35.0	61.0	64.0
24-Jan-22	9:30:00	24-Jan-2209:30	69.8	37.1	78.0	74.7	75.0	70.6	73.0	64.0	35.2	61.0	64.0
24-Jan-22	10:00:00	24-Jan-2210:00	70.1	35.8	78.0	75.0	75.5	70.0	73.0	64.0	35.1	61.0	64.0
24-Jan-22	10:30:00	24-Jan-2210:30	70.2	35.1	78.3	75.0	75.0	70.0	73.0	64.0	35.0	61.0	64.0
24-Jan-22	11:00:00	24-Jan-2211:00	70.2	34.1	78.0	75.0	74.7	70.0	73.0	64.0	35.0	61.0	64.0
24-Jan-22	11:30:00	24-Jan-2211:30	70.2	32.2	78.3	75.0	75.3	70.0	73.0	64.0	35.3	61.0	64.0
24-Jan-22	12:00:00	24-Jan-2212:00	69.6	31.9	78.0	74.8	74.2	70.0	73.0	64.0	35.0	61.0	64.0
24-Jan-22	12:30:00	24-Jan-2212:30	68.7	32.6	78.1	74.6	74.9	70.0	73.0	64.0	35.7	61.0	64.0
24-Jan-22	13:00:00	24-Jan-2213:00	68.8	33.3	78.5	75.5	74.7	70.3	73.0	64.6	36.0	61.0	64.0
24-Jan-22	13:30:00	24-Jan-2213:30	68.8	33.8	78.0	74.9	74.7	70.6	73.0	64.5	36.0	61.0	64.0
24-Jan-22	14:00:00	24-Jan-2214:00	68.7	35.0	78.5	75.6	74.9	71.0	73.0	64.6	36.0	61.4	64.0
24-Jan-22	14:30:00	24-Jan-2214:30	68.5	35.1	79.0	76.0	75.7	71.0	73.0	65.0	36.0	62.0	64.5
24-Jan-22	15:00:00	24-Jan-2215:00	68.5	34.6	79.0	75.2	75.7	71.0	73.0	65.0	36.0	62.0	64.7
24-Jan-22	15:30:00	24-Jan-2215:30	68.5	34.2	79.0	75.3	75.4	71.0	73.0	65.0	36.0	61.7	64.7
24-Jan-22	16:00:00	24-Jan-2216:00	68.5	34.2	78.7	75.0	75.0	71.0	73.2	65.0	36.0	62.0	64.7
24-Jan-22	16:30:00	24-Jan-2216:30	68.5	34.2	78.4	75.0	75.6	71.0	74.0	65.0	36.0	62.0	65.0
24-Jan-22	17:00:00	24-Jan-2217:00	68.5	34.2	78.6	75.3	75.0	71.0	73.7	65.0	36.0	62.0	64.7
24-Jan-22	17:30:00	24-Jan-2217:30	68.5	34.2	78.9	75.0	75.0	71.0	73.4	65.0	36.0	62.0	64.7
24-Jan-22	18:00:00	24-Jan-2218:00	68.5	34.2	78.3	74.9	74.6	71.0	73.0	65.0	36.0	62.0	64.5
24-Jan-22	18:30:00	24-Jan-2218:30	63.2	34.2	76.3	71.2	71.1	69.5	70.3	63.2	33.6	60.4	63.2
24-Jan-22	19:00:00	24-Jan-2219:00	60.1	34.2	71.0	67.7	67.6	67.1	69.0	61.0	33.0	58.4	60.7
24-Jan-22	19:30:00	24-Jan-2219:30	60.4	34.2	71.0	67.0	67.5	67.0	69.0	61.0	33.0	58.0	61.0
24-Jan-22	20:00:00	24-Jan-2220:00	59.1	33.9	70.9	67.0	67.3	67.0	69.0	60.5	33.0	58.0	60.3
24-Jan-22	20:30:00	24-Jan-2220:30	58.4	33.2	70.0	66.7	67.0	66.5	68.4	60.0	32.2	58.0	60.3
24-Jan-22	21:00:00	24-Jan-2221:00	63.7	33.2	72.5	69.5	69.6	67.3	70.3	63.4	33.2	58.6	61.6
24-Jan-22	21:30:00	24-Jan-2221:30	67.8	33.6	77.8	74.5	74.0	69.8	72.0	63.4	34.9	60.0	63.0
24-Jan-22	22:00:00	24-Jan-2222:00	67.8	34.2	78.0	75.0	74.9	70.0	72.1	63.8	35.0	60.0	63.0
24-Jan-22	22:30:00	24-Jan-2222:30	67.8	34.1	78.0	75.0	75.0	70.0	73.0	63.9	35.0	61.0	63.6
24-Jan-22	23:00:00	24-Jan-2223:00	67.8	32.3	78.0	75.0	75.0	70.0	72.4	64.0	35.0	61.0	64.0
24-Jan-22	23:30:00	24-Jan-2223:30	67.8	32.2	78.0	75.0	75.0	70.5	73.0	64.0	35.6	61.0	64.0
25-Jan-22	0:00:00	25-Jan-2200:00	67.8	32.4	78.0	75.0	75.4	70.1	73.0	64.0	35.1	61.0	64.0
25-Jan-22	0:30:00	25-Jan-2200:30	69.4	34.1	78.5	75.5	76.0	71.0	73.0	64.3	36.0	61.1	64.0
25-Jan-22	1:00:00	25-Jan-2201:00	69.9	34.2	78.7	75.7	76.0	71.0	73.0	65.0	36.0	61.7	64.0
25-Jan-22	1:30:00	25-Jan-2201:30	69.9	34.7	79.0	76.0	76.0	71.0	73.3	65.0	36.0	62.0	64.9
25-Jan-22	2:00:00	25-Jan-2202:00	69.9	34.3	79.0	76.0	76.0	71.0	74.0	65.0	36.0	62.0	65.0
25-Jan-22	2:30:00	25-Jan-2202:30	69.9	34.2	79.0	76.0	76.0	71.0	74.0	65.0	36.0	62.0	65.0
25-Jan-22	3:00:00	25-Jan-2203:00	69.9	34.2	79.0	76.0	76.6	71.9	73.7	65.0	36.0	62.0	65.0
25-Jan-22	3:30:00	25-Jan-2203:30	69.9	34.2	80.0	76.6	77.0	72.0	74.0	65.0	36.8	62.0	65.0

25-Jan-22	4:00:00	25-Jan-22	04:00	69.9	34.2	79.4	76.0	76.1	71.2	74.0	65.0	36.7	62.0	65.0
25-Jan-22	4:30:00	25-Jan-22	04:30	64.1	34.2	76.5	73.3	73.7	70.2	72.3	63.6	35.8	59.6	63.7
25-Jan-22	5:00:00	25-Jan-22	05:00	60.3	34.2	72.0	69.0	69.0	68.2	70.1	62.1	34.1	60.0	62.1
25-Jan-22	5:30:00	25-Jan-22	05:30	60.9	34.2	72.0	69.0	69.4	69.0	70.2	62.1	35.0	61.0	63.0
25-Jan-22	6:00:00	25-Jan-22	06:00	59.9	33.4	72.0	68.7	68.5	68.1	70.0	62.3	34.3	60.2	62.3
25-Jan-22	6:30:00	25-Jan-22	06:30	59.9	34.2	71.5	68.3	68.8	68.0	70.0	61.7	34.0	60.0	62.0
25-Jan-22	7:00:00	25-Jan-22	07:00	59.9	34.2	71.0	68.0	68.3	68.0	70.0	62.0	34.0	60.0	62.0
25-Jan-22	7:30:00	25-Jan-22	07:30	59.9	34.2	71.0	68.0	68.3	67.9	69.8	62.0	34.0	60.0	62.0
25-Jan-22	8:00:00	25-Jan-22	08:00	59.9	34.2	71.0	67.7	68.0	67.6	69.0	61.6	33.9	59.5	61.9
25-Jan-22	8:30:00	25-Jan-22	08:30	59.9	33.3	70.3	67.0	67.0	67.0	69.0	61.0	33.3	59.0	61.0
25-Jan-22	9:00:00	25-Jan-22	09:00	63.6	33.5	70.9	69.4	69.5	67.6	70.4	61.3	34.7	59.5	61.2
25-Jan-22	9:30:00	25-Jan-22	09:30	67.5	34.2	77.0	74.0	73.3	69.4	72.0	63.3	35.0	61.0	63.0
25-Jan-22	10:00:00	25-Jan-22	10:00	68.4	34.2	77.0	73.2	74.7	69.7	72.3	63.0	35.0	61.0	63.3
25-Jan-22	10:30:00	25-Jan-22	10:30	69.4	34.2	77.3	74.2	74.3	70.0	72.0	64.0	35.0	61.0	63.7
25-Jan-22	11:00:00	25-Jan-22	11:00	69.3	34.5	78.0	74.6	74.1	70.0	72.6	64.0	35.8	61.7	63.4
25-Jan-22	11:30:00	25-Jan-22	11:30	69.3	33.9	77.9	74.8	74.7	70.2	72.6	64.0	35.7	62.0	64.3
25-Jan-22	12:00:00	25-Jan-22	12:00	69.3	31.5	78.1	74.8	74.8	70.7	73.0	64.6	36.0	62.0	64.0
25-Jan-22	12:30:00	25-Jan-22	12:30	69.3	31.4	78.8	75.3	75.0	71.0	73.0	64.9	36.0	62.0	64.9
25-Jan-22	13:00:00	25-Jan-22	13:00	69.3	33.2	78.9	75.9	75.5	71.0	73.9	65.0	37.0	62.3	65.0
25-Jan-22	13:30:00	25-Jan-22	13:30	69.3	33.2	79.0	76.0	76.0	71.3	73.3	65.0	36.4	62.7	65.0
25-Jan-22	14:00:00	25-Jan-22	14:00	69.3	33.2	79.0	76.0	76.0	71.6	74.0	65.3	37.0	63.0	65.0
25-Jan-22	14:30:00	25-Jan-22	14:30	69.3	32.3	79.2	76.0	76.2	72.0	74.0	65.9	37.0	63.1	65.0
25-Jan-22	15:00:00	25-Jan-22	15:00	69.3	32.4	80.0	76.0	76.1	72.0	74.3	66.0	37.0	63.2	66.0
25-Jan-22	15:30:00	25-Jan-22	15:30	69.3	32.2	79.3	76.0	76.0	72.0	74.0	65.7	37.0	63.0	65.5
25-Jan-22	16:00:00	25-Jan-22	16:00	63.6	32.8	75.8	72.3	72.2	70.6	72.3	65.6	36.6	62.0	62.9
25-Jan-22	16:30:00	25-Jan-22	16:30	61.9	33.2	72.8	69.0	69.6	69.6	71.0	63.3	35.5	61.0	63.7
25-Jan-22	17:00:00	25-Jan-22	17:00	61.9	33.2	72.0	69.0	69.0	69.0	71.0	63.0	35.0	61.0	63.0
25-Jan-22	17:30:00	25-Jan-22	17:30	61.0	33.2	72.0	68.6	69.0	68.9	70.2	63.0	35.0	60.7	63.0
25-Jan-22	18:00:00	25-Jan-22	18:00	59.9	33.2	72.0	68.0	68.2	68.0	70.0	62.0	34.4	60.0	62.4
25-Jan-22	18:30:00	25-Jan-22	18:30	59.9	33.2	71.1	68.0	68.0	68.0	69.3	62.0	34.0	60.0	62.0
25-Jan-22	19:00:00	25-Jan-22	19:00	59.9	33.2	71.0	67.5	67.2	68.0	69.0	61.1	33.7	59.6	61.7
25-Jan-22	19:30:00	25-Jan-22	19:30	64.9	33.2	73.0	69.3	69.3	68.0	70.2	62.4	33.8	59.8	62.0
25-Jan-22	20:00:00	25-Jan-22	20:00	68.3	33.6	78.0	74.0	74.3	70.0	72.0	64.0	35.3	61.0	64.0
25-Jan-22	20:30:00	25-Jan-22	20:30	68.3	34.2	78.0	74.6	74.9	70.0	72.6	64.0	36.0	61.8	64.0
25-Jan-22	21:00:00	25-Jan-22	21:00	68.3	33.3	78.0	75.0	75.0	70.9	73.0	64.0	36.0	62.0	64.0
25-Jan-22	21:30:00	25-Jan-22	21:30	68.3	33.2	78.4	75.1	75.1	71.0	73.2	64.6	36.0	62.0	64.8
25-Jan-22	22:00:00	25-Jan-22	22:00	68.5	33.5	79.0	75.4	76.0	71.0	73.7	65.0	36.6	63.0	65.0
25-Jan-22	22:30:00	25-Jan-22	22:30	70.3	33.2	79.0	76.0	76.1	71.4	74.0	65.0	37.0	63.0	65.0

25-Jan-22	23:00:00	25-Jan-2223:00	70.3	33.2	79.0	76.0	76.7	72.0	74.0	65.3	37.0	63.0	65.0
25-Jan-22	23:30:00	25-Jan-2223:30	70.3	33.6	79.9	76.3	77.0	72.0	74.1	65.8	37.0	63.0	66.0
26-Jan-22	0:00:00	26-Jan-2200:00	70.3	34.2	80.0	76.3	76.4	72.0	74.2	66.0	37.0	63.0	66.0
26-Jan-22	0:30:00	26-Jan-2200:30	70.3	34.2	80.0	76.9	77.0	72.3	74.9	66.0	37.7	63.5	66.0
26-Jan-22	1:00:00	26-Jan-2201:00	66.7	33.3	79.0	76.0	76.0	72.0	74.4	65.4	37.6	61.8	65.5
26-Jan-22	1:30:00	26-Jan-2201:30	62.2	33.4	73.3	70.3	70.6	70.0	71.7	64.0	36.0	62.0	64.0
26-Jan-22	2:00:00	26-Jan-2202:00	62.2	34.7	73.0	70.0	70.6	70.0	71.2	64.0	36.0	62.0	64.0
26-Jan-22	2:30:00	26-Jan-2202:30	62.2	36.1	73.0	70.0	70.0	70.0	71.0	64.0	36.0	62.0	64.0
26-Jan-22	3:00:00	26-Jan-2203:00	62.2	36.1	73.0	70.0	70.3	70.0	71.0	64.0	36.0	61.7	64.0
26-Jan-22	3:30:00	26-Jan-2203:30	61.5	36.0	73.0	70.0	70.0	70.0	71.0	63.7	35.7	61.2	64.0
26-Jan-22	4:00:00	26-Jan-2204:00	60.2	33.3	72.7	69.7	70.0	69.3	71.0	63.2	35.2	61.1	63.2
26-Jan-22	4:30:00	26-Jan-2204:30	60.2	33.2	72.5	69.5	70.0	69.0	70.7	63.0	35.0	60.8	63.0
26-Jan-22	5:00:00	26-Jan-2205:00	60.2	33.6	71.6	68.6	68.6	68.3	69.5	61.6	34.3	59.9	61.7
26-Jan-22	5:30:00	26-Jan-2205:30	60.2	36.1	71.0	67.4	67.7	67.2	69.0	61.0	33.0	58.3	61.0
26-Jan-22	6:00:00	26-Jan-2206:00	66.6	35.1	74.5	69.1	65.9	68.4	70.8	62.1	33.8	59.2	62.6
26-Jan-22	6:30:00	26-Jan-2206:30	67.2	34.1	75.5	69.5	64.7	69.0	71.0	63.0	34.3	60.3	62.7
26-Jan-22	7:00:00	26-Jan-2207:00	67.2	33.5	75.4	69.1	64.4	69.0	71.5	63.0	34.0	60.0	63.0
26-Jan-22	7:30:00	26-Jan-2207:30	67.2	34.2	76.0	70.0	65.0	69.0	71.1	63.0	34.3	60.0	63.0
26-Jan-22	8:00:00	26-Jan-2208:00	67.2	33.3	75.6	69.6	65.0	69.0	71.3	63.0	34.6	60.0	63.0
26-Jan-22	8:30:00	26-Jan-2208:30	68.5	33.2	76.5	70.8	70.3	69.5	72.1	63.3	34.9	60.3	63.0
26-Jan-22	9:00:00	26-Jan-2209:00	69.4	32.6	78.0	75.0	75.1	70.0	72.9	64.0	35.0	60.9	63.3
26-Jan-22	9:30:00	26-Jan-2209:30	69.4	33.2	78.0	74.4	74.7	69.4	72.5	63.7	35.0	61.0	63.0
26-Jan-22	10:00:00	26-Jan-2210:00	69.4	33.8	78.0	74.4	75.0	70.0	73.0	64.0	35.0	61.0	63.7
26-Jan-22	10:30:00	26-Jan-2210:30	69.4	34.2	78.1	75.1	75.0	70.0	73.0	64.0	35.0	61.0	64.0
26-Jan-22	11:00:00	26-Jan-2211:00	69.4	34.8	77.9	74.7	74.0	69.8	73.0	64.0	35.4	61.0	64.0
26-Jan-22	11:30:00	26-Jan-2211:30	69.4	35.1	78.4	74.7	72.6	70.3	73.0	64.0	35.7	61.6	64.0
26-Jan-22	12:00:00	26-Jan-2212:00	69.4	32.7	79.0	76.2	75.6	71.2	73.9	64.0	36.9	62.4	64.9
26-Jan-22	12:30:00	26-Jan-2212:30	69.5	32.2	79.0	76.4	76.3	71.4	74.0	64.0	37.0	63.0	65.0
26-Jan-22	13:00:00	26-Jan-2213:00	71.5	33.1	79.7	76.4	77.0	72.0	74.0	64.0	37.0	63.0	65.4
26-Jan-22	13:30:00	26-Jan-2213:30	71.5	34.2	80.0	76.9	77.0	71.7	74.1	64.0	37.0	63.0	65.5
26-Jan-22	14:00:00	26-Jan-2214:00	70.1	34.2	80.0	77.0	77.0	72.0	74.8	64.0	37.2	63.9	66.0
26-Jan-22	14:30:00	26-Jan-2214:30	60.5	34.2	74.2	71.3	71.2	70.4	71.3	64.0	35.9	62.3	64.1
26-Jan-22	15:00:00	26-Jan-2215:00	60.5	34.2	72.7	69.7	69.7	69.4	71.0	64.0	35.0	61.2	63.2
26-Jan-22	15:30:00	26-Jan-2215:30	60.5	34.2	72.0	69.0	69.7	69.0	71.0	64.0	35.0	61.0	63.2
26-Jan-22	16:00:00	26-Jan-2216:00	60.5	34.2	72.0	69.0	69.2	69.0	70.1	64.0	35.0	61.0	63.0
26-Jan-22	16:30:00	26-Jan-2216:30	60.5	34.2	72.0	68.7	69.0	69.0	70.0	64.0	35.0	60.4	63.0
26-Jan-22	17:00:00	26-Jan-2217:00	60.5	34.2	71.2	68.2	68.7	68.5	70.0	64.0	34.4	60.0	62.4
26-Jan-22	17:30:00	26-Jan-2217:30	60.5	34.2	71.6	68.0	68.6	68.0	69.9	64.0	34.0	60.0	62.0

26-Jan-22	18:00:00	26-Jan-2218:00	68.1	34.2	76.1	72.5	72.6	69.6	72.4	64.0	35.8	61.5	63.8
26-Jan-22	18:30:00	26-Jan-2218:30	69.4	34.2	77.6	74.6	74.6	70.0	72.6	64.0	36.0	62.0	64.0
26-Jan-22	19:00:00	26-Jan-2219:00	69.8	34.2	78.0	74.4	74.7	70.0	72.3	64.0	36.0	61.7	63.7
26-Jan-22	19:30:00	26-Jan-2219:30	69.8	34.2	78.0	75.3	75.1	70.6	72.7	64.0	36.0	62.0	64.0
26-Jan-22	20:00:00	26-Jan-2220:00	69.8	34.2	78.0	75.0	75.5	70.3	73.0	64.0	36.0	62.0	64.0
26-Jan-22	20:30:00	26-Jan-2220:30	69.8	34.2	78.3	75.0	75.6	70.6	73.0	64.0	36.0	62.0	64.2
26-Jan-22	21:00:00	26-Jan-2221:00	69.8	33.4	79.0	75.7	76.0	71.0	73.0	64.0	36.3	62.0	65.0
26-Jan-22	21:30:00	26-Jan-2221:30	69.8	33.2	79.0	76.0	76.0	71.3	74.0	64.0	36.1	62.5	65.0
26-Jan-22	22:00:00	26-Jan-2222:00	69.8	32.0	80.0	76.5	77.0	72.0	74.0	64.0	37.0	63.0	65.3
26-Jan-22	22:30:00	26-Jan-2222:30	69.8	31.9	80.0	76.7	77.0	72.0	74.1	64.0	37.1	63.5	66.0
26-Jan-22	23:00:00	26-Jan-2223:00	69.8	32.9	80.0	77.3	77.2	72.4	75.0	64.0	38.0	64.0	66.0
26-Jan-22	23:30:00	26-Jan-2223:30	69.8	33.7	80.0	77.0	77.3	73.0	75.0	64.0	38.0	64.0	66.0
27-Jan-22	0:00:00	27-Jan-2200:00	61.1	34.2	74.9	71.9	72.4	70.9	72.6	64.0	36.4	60.7	64.3
27-Jan-22	0:30:00	27-Jan-2200:30	61.1	34.6	73.0	70.0	70.9	70.0	71.4	64.0	36.0	62.0	64.0
27-Jan-22	1:00:00	27-Jan-2201:00	61.1	35.1	73.0	70.0	70.5	70.0	71.0	64.0	36.0	62.0	64.0
27-Jan-22	1:30:00	27-Jan-2201:30	61.1	34.7	73.0	70.0	70.6	70.0	71.0	64.0	36.0	61.7	64.0
27-Jan-22	2:00:00	27-Jan-2202:00	61.1	33.2	73.0	70.0	70.0	70.0	71.0	64.0	36.0	61.1	63.8
27-Jan-22	2:30:00	27-Jan-2202:30	61.1	33.2	73.0	69.7	70.0	70.0	71.0	64.0	36.0	61.0	63.9
27-Jan-22	3:00:00	27-Jan-2203:00	61.1	33.9	73.0	70.0	70.6	69.7	71.0	64.0	35.0	61.0	63.0
27-Jan-22	3:30:00	27-Jan-2203:30	61.1	35.6	73.0	70.0	70.0	69.6	71.0	64.0	35.0	61.0	63.0
27-Jan-22	4:00:00	27-Jan-2204:00	61.1	35.1	72.4	69.4	70.0	69.0	70.6	64.0	35.0	60.8	63.0
27-Jan-22	4:30:00	27-Jan-2204:30	61.1	35.1	72.0	69.3	69.7	69.0	70.0	64.0	35.0	60.6	62.7
27-Jan-22	5:00:00	27-Jan-2205:00	60.0	35.1	72.0	68.7	68.8	67.8	69.6	64.0	33.9	58.9	61.6
27-Jan-22	5:30:00	27-Jan-2205:30	62.4	35.1	72.1	68.8	69.2	67.4	69.7	64.0	33.2	58.2	62.3
27-Jan-22	6:00:00	27-Jan-2206:00	69.1	34.2	77.7	75.0	74.7	69.7	72.0	64.0	35.0	60.0	63.1
27-Jan-22	6:30:00	27-Jan-2206:30	69.1	34.2	77.6	74.8	74.8	69.7	72.0	64.0	35.0	60.0	63.0
27-Jan-22	7:00:00	27-Jan-2207:00	69.1	34.3	77.0	74.6	74.6	70.0	72.0	64.0	35.0	60.5	63.1
27-Jan-22	7:30:00	27-Jan-2207:30	69.1	35.1	78.0	75.0	75.0	70.0	72.3	64.0	35.0	60.7	63.5
27-Jan-22	8:00:00	27-Jan-2208:00	69.1	35.1	78.0	75.0	75.0	70.0	72.6	64.0	35.0	61.0	64.0
27-Jan-22	8:30:00	27-Jan-2208:30	69.1	34.5	78.0	75.0	75.6	70.0	73.0	64.0	35.0	61.0	64.0
27-Jan-22	9:00:00	27-Jan-2209:00	69.1	34.2	78.0	75.0	75.0	70.3	73.0	64.0	35.0	61.0	64.0
27-Jan-22	9:30:00	27-Jan-2209:30	69.1	34.2	78.0	74.4	73.6	70.0	72.6	64.0	35.2	61.0	63.8
27-Jan-22	10:00:00	27-Jan-2210:00	69.2	34.4	79.0	75.4	76.2	70.9	73.6	64.0	35.9	62.0	64.4
27-Jan-22	10:30:00	27-Jan-2210:30	69.2	35.1	79.0	76.0	76.0	70.3	73.7	64.0	36.9	63.0	65.0
27-Jan-22	11:00:00	27-Jan-2211:00	70.1	35.1	79.6	76.0	76.3	71.3	73.4	64.0	36.4	62.7	65.0
27-Jan-22	11:30:00	27-Jan-2211:30	71.3	35.1	79.3	76.0	76.0	71.5	74.0	64.0	37.0	63.0	65.0
27-Jan-22	12:00:00	27-Jan-2212:00	71.3	34.6	79.9	76.3	76.9	71.6	74.0	64.0	37.0	63.0	65.8
27-Jan-22	12:30:00	27-Jan-2212:30	71.3	32.3	79.8	76.8	76.8	71.8	74.0	64.0	37.0	63.3	66.0

27-Jan-22	13:00:00	27-Jan-2213:00	68.9	33.2	79.6	76.6	77.0	71.9	74.3	64.0	37.3	63.5	65.0
27-Jan-22	13:30:00	27-Jan-2213:30	61.7	35.1	73.0	70.0	71.6	69.7	71.6	64.0	36.2	61.1	63.4
27-Jan-22	14:00:00	27-Jan-2214:00	61.7	35.1	72.7	69.4	70.0	69.4	70.9	64.0	35.6	61.0	63.8
27-Jan-22	14:30:00	27-Jan-2214:30	61.6	35.1	72.6	69.9	70.0	68.7	70.6	64.0	35.0	60.7	62.8
27-Jan-22	15:00:00	27-Jan-2215:00	61.7	34.4	72.0	69.0	69.4	69.0	70.0	64.0	35.0	60.7	63.0
27-Jan-22	15:30:00	27-Jan-2215:30	63.4	34.2	72.8	69.4	70.3	69.2	70.7	64.0	35.4	62.5	63.5
27-Jan-22	16:00:00	27-Jan-2216:00	68.7	34.2	78.7	75.6	75.6	71.0	73.1	64.0	36.1	62.5	65.0
27-Jan-22	16:30:00	27-Jan-2216:30	68.7	34.2	78.4	75.3	75.3	71.0	73.0	64.0	36.2	62.0	65.0
27-Jan-22	17:00:00	27-Jan-2217:00	68.7	34.2	78.2	75.0	75.5	71.0	73.0	64.0	36.1	62.2	65.0
27-Jan-22	17:30:00	27-Jan-2217:30	68.7	34.2	79.0	75.6	76.0	71.0	73.0	64.0	37.0	62.9	65.0
27-Jan-22	18:00:00	27-Jan-2218:00	68.7	34.2	78.7	75.2	75.4	71.0	73.3	64.0	37.0	62.0	65.0
27-Jan-22	18:30:00	27-Jan-2218:30	68.7	34.2	78.7	75.6	75.4	71.0	73.9	64.0	37.0	62.8	65.0
27-Jan-22	19:00:00	27-Jan-2219:00	68.7	34.2	79.0	75.4	75.3	71.0	74.0	64.0	37.0	63.0	65.0
27-Jan-22	19:30:00	27-Jan-2219:30	68.7	34.2	79.0	76.0	75.8	71.2	74.0	64.0	37.0	63.0	65.0
27-Jan-22	20:00:00	27-Jan-2220:00	64.0	34.2	76.8	73.5	74.1	70.7	72.7	64.0	36.7	61.5	64.4
27-Jan-22	20:30:00	27-Jan-2220:30	61.0	34.2	73.0	69.0	69.7	69.0	71.0	64.0	35.0	61.0	63.0
27-Jan-22	21:00:00	27-Jan-2221:00	61.0	34.2	72.7	69.0	69.7	69.0	71.0	64.0	35.0	61.0	63.0
27-Jan-22	21:30:00	27-Jan-2221:30	61.0	34.2	72.4	69.0	69.4	69.0	71.0	64.0	35.0	61.0	63.0
27-Jan-22	22:00:00	27-Jan-2222:00	61.0	31.9	72.4	69.0	70.0	69.0	70.4	64.0	35.0	61.0	63.0
27-Jan-22	22:30:00	27-Jan-2222:30	61.0	32.2	72.0	69.0	69.8	69.0	70.0	64.0	35.0	61.0	63.0
27-Jan-22	23:00:00	27-Jan-2223:00	61.0	32.6	72.0	68.7	69.3	69.0	70.0	64.0	35.0	61.0	63.0
27-Jan-22	23:30:00	27-Jan-2223:30	61.0	33.7	72.0	69.0	69.2	69.0	70.0	64.0	35.0	60.6	62.7
28-Jan-22	0:00:00	28-Jan-2200:00	62.8	34.0	72.0	68.4	69.2	68.2	70.2	64.0	34.5	60.0	62.3
28-Jan-22	0:30:00	28-Jan-2200:30	69.4	32.2	77.0	75.9	76.0	71.0	73.5	64.0	36.0	61.9	64.8
28-Jan-22	1:00:00	28-Jan-2201:00	69.4	32.2	79.0	76.0	76.0	71.2	74.0	64.0	36.9	62.7	65.0
28-Jan-22	1:30:00	28-Jan-2201:30	69.4	32.9	79.4	76.1	76.4	72.0	74.2	64.0	37.0	63.0	65.0
28-Jan-22	2:00:00	28-Jan-2202:00	69.4	35.1	80.0	77.0	77.0	72.0	74.4	64.0	37.0	63.0	65.9
28-Jan-22	2:30:00	28-Jan-2202:30	70.0	35.2	80.0	77.0	77.1	72.7	75.0	64.0	37.5	63.9	66.0
28-Jan-22	3:00:00	28-Jan-2203:00	71.4	36.1	80.3	77.5	78.0	73.0	75.0	64.0	38.0	64.0	66.4
28-Jan-22	3:30:00	28-Jan-2203:30	68.0	36.1	81.0	77.3	77.1	72.8	74.5	64.0	37.8	63.9	66.4
28-Jan-22	4:00:00	28-Jan-2204:00	62.2	35.5	74.6	70.2	71.0	70.2	71.7	64.0	36.1	62.0	64.0
28-Jan-22	4:30:00	28-Jan-2204:30	62.2	35.1	73.0	70.0	70.7	69.7	71.2	64.0	36.0	61.7	63.8
28-Jan-22	5:00:00	28-Jan-2205:00	61.0	36.1	72.7	69.7	70.2	68.7	70.7	64.0	34.8	60.5	62.6
28-Jan-22	5:30:00	28-Jan-2205:30	60.0	36.1	72.0	69.0	69.0	68.0	70.0	64.0	34.0	59.1	62.0
28-Jan-22	6:00:00	28-Jan-2206:00	60.0	36.1	71.2	68.2	69.0	67.8	69.4	64.0	33.7	59.0	61.4
28-Jan-22	6:30:00	28-Jan-2206:30	60.0	36.1	71.7	68.4	68.7	68.0	69.8	64.0	34.0	60.8	61.8
28-Jan-22	7:00:00	28-Jan-2207:00	65.3	35.8	73.5	70.8	70.8	68.8	70.2	64.0	34.8	60.5	62.9
28-Jan-22	7:30:00	28-Jan-2207:30	69.8	36.1	79.0	75.4	76.3	71.0	73.5	64.0	36.0	62.0	64.7

28-Jan-22	8:00:00	28-Jan-22	08:00	69.8	35.7	79.0	76.0	76.0	71.0	74.0	64.0	36.6	62.8	65.0
28-Jan-22	8:30:00	28-Jan-22	08:30	69.8	34.2	79.3	76.0	76.6	71.1	73.7	64.0	36.7	62.7	65.0
28-Jan-22	9:00:00	28-Jan-22	09:00	69.8	33.6	79.0	76.0	76.3	71.2	74.0	64.0	37.0	63.0	65.0
28-Jan-22	9:30:00	28-Jan-22	09:30	69.8	33.2	79.3	76.0	76.0	72.0	74.0	64.0	37.0	63.0	65.2
28-Jan-22	10:00:00	28-Jan-22	10:00	69.9	33.3	79.3	76.0	76.6	71.7	74.0	64.0	37.0	63.0	66.0
28-Jan-22	10:30:00	28-Jan-22	10:30	63.4	30.8	77.2	73.9	74.1	71.2	73.2	64.0	36.5	62.1	65.0
28-Jan-22	11:00:00	28-Jan-22	11:00	60.4	30.3	73.0	70.0	69.4	69.7	71.0	64.0	36.0	61.0	63.4
28-Jan-22	11:30:00	28-Jan-22	11:30	60.3	29.3	72.0	69.1	69.0	69.1	70.6	64.0	35.0	61.0	63.3
28-Jan-22	12:00:00	28-Jan-22	12:00	60.1	29.3	72.2	69.2	69.2	69.0	70.6	64.0	35.0	61.0	63.0
28-Jan-22	12:30:00	28-Jan-22	12:30	60.1	29.3	72.1	69.1	69.4	69.0	70.6	64.0	35.0	61.0	63.0
28-Jan-22	13:00:00	28-Jan-22	13:00	60.1	29.3	72.0	69.0	69.0	69.0	70.0	64.0	35.0	61.0	63.0
28-Jan-22	13:30:00	28-Jan-22	13:30	60.1	29.3	72.0	68.4	69.0	68.1	70.0	64.0	34.9	60.2	62.6
28-Jan-22	14:00:00	28-Jan-22	14:00	60.1	29.3	72.0	68.3	69.0	68.3	70.0	64.0	34.0	60.0	62.0
28-Jan-22	14:30:00	28-Jan-22	14:30	67.0	30.5	75.3	72.1	72.0	69.6	71.8	64.0	35.2	60.0	63.0
28-Jan-22	15:00:00	28-Jan-22	15:00	68.4	32.2	78.7	75.0	75.1	71.0	73.0	64.0	36.0	61.8	64.5
28-Jan-22	15:30:00	28-Jan-22	15:30	68.4	32.2	79.0	75.5	75.5	71.0	73.3	64.0	36.3	62.7	65.0
28-Jan-22	16:00:00	28-Jan-22	16:00	68.4	32.5	79.0	75.1	76.0	71.0	73.7	64.0	36.7	62.7	65.0
28-Jan-22	16:30:00	28-Jan-22	16:30	68.4	33.2	79.0	76.0	76.0	71.0	74.0	64.0	37.0	63.0	65.0
28-Jan-22	17:00:00	28-Jan-22	17:00	69.6	33.2	79.0	76.0	76.0	71.9	74.0	64.0	37.0	63.0	65.0
28-Jan-22	17:30:00	28-Jan-22	17:30	70.5	33.2	79.0	76.0	76.3	72.0	74.0	64.0	37.0	63.0	65.0
28-Jan-22	18:00:00	28-Jan-22	18:00	70.5	33.2	79.0	75.7	75.4	72.0	74.0	64.0	37.0	63.0	65.6
28-Jan-22	18:30:00	28-Jan-22	18:30	66.1	33.2	78.1	75.1	75.2	72.0	73.6	64.0	36.8	62.3	65.0
28-Jan-22	19:00:00	28-Jan-22	19:00	60.6	33.2	73.0	69.4	69.6	70.1	71.0	64.0	35.4	61.0	63.7
28-Jan-22	19:30:00	28-Jan-22	19:30	60.6	33.2	72.6	69.3	69.7	69.0	71.0	64.0	35.0	61.0	63.2
28-Jan-22	20:00:00	28-Jan-22	20:00	60.6	33.2	72.0	69.0	69.7	69.0	70.1	64.0	35.0	60.5	63.0
28-Jan-22	20:30:00	28-Jan-22	20:30	60.6	33.2	72.0	68.7	69.0	68.4	70.0	64.0	34.8	60.0	62.2
28-Jan-22	21:00:00	28-Jan-22	21:00	60.6	33.2	72.0	68.5	69.0	68.2	70.0	64.0	34.6	60.3	62.0
28-Jan-22	21:30:00	28-Jan-22	21:30	62.9	33.2	72.4	68.9	69.0	68.1	70.3	64.0	34.3	60.0	62.3
28-Jan-22	22:00:00	28-Jan-22	22:00	69.0	33.2	79.0	75.5	74.4	71.0	73.0	64.0	36.0	62.0	64.0
28-Jan-22	22:30:00	28-Jan-22	22:30	69.0	33.2	79.0	75.7	76.3	71.0	73.7	64.0	36.3	62.0	64.7
28-Jan-22	23:00:00	28-Jan-22	23:00	69.0	33.2	79.0	76.0	76.0	71.0	73.7	64.0	36.5	62.9	65.0
28-Jan-22	23:30:00	28-Jan-22	23:30	69.3	33.2	79.6	76.3	76.3	71.9	74.0	64.0	37.0	63.0	65.1
29-Jan-22	0:00:00	29-Jan-22	00:00	71.0	33.2	79.7	76.4	76.7	72.0	74.0	64.0	37.0	63.0	65.4
29-Jan-22	0:30:00	29-Jan-22	00:30	71.0	33.2	80.0	77.0	77.0	72.3	74.3	64.0	37.3	63.2	66.0
29-Jan-22	1:00:00	29-Jan-22	01:00	71.0	33.2	80.0	77.0	77.0	72.4	75.0	64.0	38.0	64.0	66.0
29-Jan-22	1:30:00	29-Jan-22	01:30	66.6	32.4	80.5	75.6	75.5	72.5	74.0	64.0	37.9	63.6	65.1
29-Jan-22	2:00:00	29-Jan-22	02:00	61.4	31.2	73.8	70.6	71.0	70.6	72.0	64.0	37.0	62.0	64.2
29-Jan-22	2:30:00	29-Jan-22	02:30	61.4	31.2	73.6	70.3	70.7	70.0	72.0	64.0	36.1	62.0	64.0

Section 2b.1 Flushing Records and Distribution System Pressure Logs During Residential Flushing

29-Jan-22	3:00:00	29-Jan-22	03:00	61.4	32.1	74.0	70.6	71.0	70.3	71.8	64.0	36.0	62.0	64.0
29-Jan-22	3:30:00	29-Jan-22	03:30	61.4	35.1	73.4	70.0	71.0	70.0	71.6	64.0	35.9	61.6	63.9
29-Jan-22	4:00:00	29-Jan-22	04:00	61.4	34.6	72.6	69.0	70.0	69.0	71.0	64.0	35.0	60.0	63.0
29-Jan-22	4:30:00	29-Jan-22	04:30	61.4	34.2	72.3	69.3	70.0	69.0	70.4	64.0	35.0	60.0	62.3
29-Jan-22	5:00:00	29-Jan-22	05:00	61.4	34.9	72.0	69.0	69.0	68.3	70.0	64.0	34.2	60.0	62.0
29-Jan-22	5:30:00	29-Jan-22	05:30	61.4	35.6	72.0	69.0	69.0	68.0	70.0	64.0	34.0	59.8	62.0
29-Jan-22	6:00:00	29-Jan-22	06:00	60.6	36.1	72.0	68.9	69.0	68.0	69.8	64.0	34.0	59.0	62.0
29-Jan-22	6:30:00	29-Jan-22	06:30	68.9	35.7	77.0	73.0	72.4	70.5	72.3	64.0	35.5	60.4	64.5
29-Jan-22	7:00:00	29-Jan-22	07:00	68.8	35.1	78.0	74.3	73.0	71.0	73.0	64.0	36.0	62.0	65.0
29-Jan-22	7:30:00	29-Jan-22	07:30	68.8	28.3	78.0	74.0	73.0	71.0	73.0	64.0	36.3	62.0	65.0
29-Jan-22	8:00:00	29-Jan-22	08:00	68.8	29.1	78.0	74.0	73.0	71.0	73.0	64.0	36.8	62.6	65.0
29-Jan-22	8:30:00	29-Jan-22	08:30	68.8	29.1	78.0	74.0	72.5	71.0	73.9	64.0	37.0	63.0	65.0
29-Jan-22	9:00:00	29-Jan-22	09:00	68.8	29.1	78.0	74.0	72.9	71.0	74.0	64.0	37.0	63.0	65.0
29-Jan-22	9:30:00	29-Jan-22	09:30	68.8	29.6	78.0	74.0	73.0	71.5	74.0	64.0	37.0	63.0	65.0
29-Jan-22	10:00:00	29-Jan-22	10:00	68.8	30.1	78.0	74.0	73.0	72.0	74.0	64.0	37.0	63.0	65.1
29-Jan-22	10:30:00	29-Jan-22	10:30	60.6	29.0	74.2	70.0	70.4	70.2	71.7	64.0	35.4	62.3	63.5
29-Jan-22	11:00:00	29-Jan-22	11:00	60.9	29.0	72.0	68.0	66.4	69.0	70.7	64.0	35.0	61.0	63.0
29-Jan-22	11:30:00	29-Jan-22	11:30	60.9	29.0	72.0	67.7	66.9	69.0	70.3	64.0	35.0	61.0	63.0
29-Jan-22	12:00:00	29-Jan-22	12:00	60.9	28.5	72.0	67.5	66.2	69.0	70.0	64.0	35.0	61.0	62.7
29-Jan-22	12:30:00	29-Jan-22	12:30	60.9	28.0	71.4	67.3	66.4	68.7	70.0	64.0	34.6	60.5	62.3
29-Jan-22	13:00:00	29-Jan-22	13:00	60.9	28.0	71.0	67.0	66.0	68.0	70.0	64.0	34.0	60.0	62.0
29-Jan-22	13:30:00	29-Jan-22	13:30	61.2	28.0	71.0	67.0	66.0	68.0	70.1	64.0	34.1	60.0	62.2
29-Jan-22	14:00:00	29-Jan-22	14:00	68.1	28.3	77.8	73.2	71.9	70.3	73.0	64.0	36.0	61.8	64.0
29-Jan-22	14:30:00	29-Jan-22	14:30	68.1	29.0	77.5	73.2	72.0	70.2	72.4	64.0	36.0	62.0	64.0
29-Jan-22	15:00:00	29-Jan-22	15:00	68.1	29.0	77.7	73.6	71.8	70.6	72.7	64.0	36.0	62.0	64.8
29-Jan-22	15:30:00	29-Jan-22	15:30	68.1	29.0	78.0	74.0	72.8	71.0	73.0	64.0	36.3	62.0	65.0
29-Jan-22	16:00:00	29-Jan-22	16:00	68.1	29.0	78.0	74.0	72.3	71.0	73.3	64.0	37.0	62.5	65.0
29-Jan-22	16:30:00	29-Jan-22	16:30	68.1	29.0	78.0	74.0	73.0	71.0	73.8	64.0	37.0	63.0	65.0
29-Jan-22	17:00:00	29-Jan-22	17:00	68.1	29.7	78.3	74.6	73.0	71.6	74.0	64.0	37.0	63.0	65.0
29-Jan-22	17:30:00	29-Jan-22	17:30	68.1	29.9	78.9	74.3	73.0	71.7	74.0	64.0	37.0	63.0	65.0
29-Jan-22	18:00:00	29-Jan-22	18:00	69.9	29.9	78.0	74.0	73.0	72.0	74.0	64.0	37.0	63.0	65.0
29-Jan-22	18:30:00	29-Jan-22	18:30	70.1	29.9	78.3	74.3	73.0	72.0	73.8	64.0	37.0	63.0	65.0
29-Jan-22	19:00:00	29-Jan-22	19:00	64.0	29.3	74.6	70.3	69.3	70.2	71.0	64.0	36.4	61.8	64.3
29-Jan-22	19:30:00	29-Jan-22	19:30	61.2	28.9	71.3	67.3	66.0	68.4	70.0	64.0	34.7	60.1	62.2
29-Jan-22	20:00:00	29-Jan-22	20:00	59.8	28.1	71.0	67.0	66.0	68.2	70.0	64.0	34.1	60.0	62.0
29-Jan-22	20:30:00	29-Jan-22	20:30	59.1	27.9	71.0	67.0	66.0	68.0	70.0	64.0	34.0	60.0	62.0
29-Jan-22	21:00:00	29-Jan-22	21:00	59.1	27.9	71.0	67.0	65.7	68.0	69.1	64.0	34.0	60.0	62.0
29-Jan-22	21:30:00	29-Jan-22	21:30	64.0	27.3	73.1	69.1	68.1	68.7	70.2	64.0	34.4	60.0	62.5

29-Jan-22	22:00:00	29-Jan-2222:00	67.8	26.8	77.0	73.0	72.0	70.0	72.5	64.0	35.5	62.0	63.9
29-Jan-22	22:30:00	29-Jan-2222:30	67.8	26.8	77.9	73.6	72.3	70.6	73.0	64.0	36.0	62.0	64.0
29-Jan-22	23:00:00	29-Jan-2223:00	67.8	26.8	78.0	73.5	72.2	70.7	73.0	64.0	36.0	62.0	64.0
29-Jan-22	23:30:00	29-Jan-2223:30	68.3	28.5	78.0	73.9	72.0	71.0	73.0	64.0	36.0	62.0	64.7
30-Jan-22	0:00:00	30-Jan-2200:00	69.7	28.9	78.0	74.0	73.0	71.0	73.0	64.0	36.2	62.4	65.0
30-Jan-22	0:30:00	30-Jan-2200:30	69.7	29.0	78.3	74.0	73.0	71.0	73.1	64.0	37.0	63.0	65.0
30-Jan-22	1:00:00	30-Jan-2201:00	69.7	29.9	79.0	75.0	73.0	71.7	74.0	64.0	37.0	63.0	65.0
30-Jan-22	1:30:00	30-Jan-2201:30	69.7	29.9	79.0	75.0	73.3	72.0	74.0	64.0	37.0	63.0	65.7
30-Jan-22	2:00:00	30-Jan-2202:00	69.7	29.9	79.0	75.0	74.0	72.0	74.0	64.0	37.3	63.0	66.0
30-Jan-22	2:30:00	30-Jan-2202:30	69.7	29.9	79.2	75.2	74.2	72.3	74.9	64.0	37.9	64.0	66.0
30-Jan-22	3:00:00	30-Jan-2203:00	67.4	30.1	79.7	75.8	74.7	72.5	74.7	64.0	37.8	64.0	65.7
30-Jan-22	3:30:00	30-Jan-2203:30	60.8	29.2	72.5	68.5	67.8	69.6	71.5	64.0	35.5	62.0	63.4
30-Jan-22	4:00:00	30-Jan-2204:00	60.1	28.8	72.0	68.0	67.0	69.3	70.7	64.0	35.1	60.7	63.1
30-Jan-22	4:30:00	30-Jan-2204:30	60.1	28.8	72.0	68.5	67.5	69.4	71.0	64.0	35.2	61.1	63.2
30-Jan-22	5:00:00	30-Jan-2205:00	60.1	28.8	72.0	68.1	67.0	69.4	70.1	64.0	35.0	61.0	63.0
30-Jan-22	5:30:00	30-Jan-2205:30	60.1	27.9	71.6	67.3	66.6	68.3	69.4	64.0	34.2	59.1	61.9
30-Jan-22	6:00:00	30-Jan-2206:00	60.1	27.8	71.0	67.0	66.0	68.0	69.7	64.0	33.4	59.3	61.4
30-Jan-22	6:30:00	30-Jan-2206:30	65.6	28.3	73.7	69.7	68.9	69.1	71.3	64.0	34.9	60.7	62.7
30-Jan-22	7:00:00	30-Jan-2207:00	69.3	28.8	78.0	74.0	72.0	71.0	73.0	64.0	36.0	62.0	64.0
30-Jan-22	7:30:00	30-Jan-2207:30	69.3	28.8	78.0	73.9	71.9	71.0	73.0	64.0	36.0	62.0	64.0
30-Jan-22	8:00:00	30-Jan-2208:00	69.3	28.8	77.8	73.0	71.3	71.0	73.0	64.0	36.0	62.0	64.3
30-Jan-22	8:30:00	30-Jan-2208:30	69.3	28.8	77.9	73.0	71.9	71.0	73.0	64.0	36.0	62.0	64.5
30-Jan-22	9:00:00	30-Jan-2209:00	69.3	28.8	78.0	73.6	71.3	71.0	73.0	64.0	36.0	62.0	65.0
30-Jan-22	9:30:00	30-Jan-2209:30	69.3	28.8	78.0	73.6	71.6	71.0	73.0	64.0	36.6	62.0	64.7
30-Jan-22	10:00:00	30-Jan-2210:00	69.3	28.8	78.0	73.4	71.7	71.0	73.0	64.0	36.0	62.6	64.7
30-Jan-22	10:30:00	30-Jan-2210:30	69.3	28.8	78.0	73.7	72.0	71.0	73.0	64.0	36.3	62.0	65.0
30-Jan-22	11:00:00	30-Jan-2211:00	69.3	28.8	78.0	73.7	71.8	71.0	73.3	64.0	36.8	62.3	64.8
30-Jan-22	11:30:00	30-Jan-2211:30	69.3	29.0	78.0	74.0	71.6	71.0	73.0	64.0	36.9	63.0	64.9
30-Jan-22	12:00:00	30-Jan-2212:00	69.3	29.8	78.0	74.0	72.0	71.0	73.1	64.0	37.0	63.0	65.0
30-Jan-22	12:30:00	30-Jan-2212:30	69.3	29.8	78.0	74.0	72.0	71.0	74.0	64.0	37.0	63.0	65.0
30-Jan-22	13:00:00	30-Jan-2213:00	69.3	29.8	78.0	74.0	72.3	71.6	74.0	64.0	37.0	63.0	65.0
30-Jan-22	13:30:00	30-Jan-2213:30	65.7	29.4	77.9	73.3	71.3	71.4	74.0	64.0	36.6	62.3	64.6
30-Jan-22	14:00:00	30-Jan-2214:00	60.0	28.8	72.0	68.0	66.3	69.0	71.3	64.0	35.0	61.0	63.0
30-Jan-22	14:30:00	30-Jan-2214:30	60.0	28.8	72.0	67.7	66.3	69.0	70.0	64.0	35.0	61.0	63.0
30-Jan-22	15:00:00	30-Jan-2215:00	60.0	28.6	71.8	67.2	66.0	69.0	70.0	64.0	34.7	60.0	62.4
30-Jan-22	15:30:00	30-Jan-2215:30	60.0	27.8	71.0	67.0	66.0	68.1	70.0	64.0	34.3	60.0	62.2
30-Jan-22	16:00:00	30-Jan-2216:00	60.0	27.8	71.0	67.0	65.8	68.0	69.7	64.0	34.0	60.0	62.0
30-Jan-22	16:30:00	30-Jan-2216:30	65.2	27.8	72.7	68.6	67.0	68.6	70.1	64.0	34.5	60.5	62.3

30-Jan-22	17:00:00	30-Jan-22	17:00:00	68.2	27.8	77.3	73.3	72.6	70.0	72.2	64.0	35.7	61.7	64.0
30-Jan-22	17:30:00	30-Jan-22	17:30:00	69.0	28.8	77.9	73.9	74.1	70.0	73.0	64.0	36.0	62.0	64.0
30-Jan-22	18:00:00	30-Jan-22	18:00:00	70.2	28.8	78.0	74.3	75.3	70.6	73.0	64.0	36.0	62.0	64.0
30-Jan-22	18:30:00	30-Jan-22	18:30:00	70.2	28.8	78.3	74.6	75.5	70.6	73.0	64.0	36.0	62.0	64.0
30-Jan-22	19:00:00	30-Jan-22	19:00:00	70.2	28.8	78.0	75.0	75.1	70.4	73.0	64.0	36.0	62.0	64.0
30-Jan-22	19:30:00	30-Jan-22	19:30:00	70.2	28.8	78.3	75.0	75.1	70.7	73.0	64.0	36.0	62.0	64.3
30-Jan-22	20:00:00	30-Jan-22	20:00:00	70.2	28.8	78.6	75.0	75.4	71.0	73.0	64.0	36.0	62.0	64.5
30-Jan-22	20:30:00	30-Jan-22	20:30:00	70.2	28.8	78.3	75.0	76.0	71.0	73.0	64.0	36.0	62.2	64.7
30-Jan-22	21:00:00	30-Jan-22	21:00:00	70.2	28.8	79.0	75.7	75.9	71.0	73.0	64.0	37.0	62.1	65.0
30-Jan-22	21:30:00	30-Jan-22	21:30:00	70.2	29.8	79.0	75.8	75.8	71.0	73.9	64.0	37.0	63.0	65.0
30-Jan-22	22:00:00	30-Jan-22	22:00:00	70.2	29.8	79.0	76.0	76.4	71.7	74.0	64.0	37.0	63.0	65.2
30-Jan-22	22:30:00	30-Jan-22	22:30:00	70.2	29.8	79.8	76.5	77.0	72.0	74.0	64.0	37.0	63.0	65.7
30-Jan-22	23:00:00	30-Jan-22	23:00:00	70.2	29.2	79.6	76.3	77.0	72.0	74.0	64.0	37.0	63.0	66.0
30-Jan-22	23:30:00	30-Jan-22	23:30:00	65.8	28.4	78.2	75.2	75.1	71.6	73.1	64.0	36.7	60.9	65.4
31-Jan-22	0:00:00	31-Jan-22	0:00:00	61.5	27.8	73.0	69.6	69.7	69.4	71.0	64.0	35.3	61.1	63.2
31-Jan-22	0:30:00	31-Jan-22	0:30:00	61.5	27.8	73.0	69.4	70.0	69.4	71.0	64.0	35.0	61.0	63.0
31-Jan-22	1:00:00	31-Jan-22	1:00:00	61.5	27.7	72.2	69.7	70.0	69.2	71.0	64.0	35.0	61.0	63.0
31-Jan-22	1:30:00	31-Jan-22	1:30:00	61.5	27.8	72.0	69.0	70.0	69.1	71.0	64.0	35.0	61.0	63.0
31-Jan-22	2:00:00	31-Jan-22	2:00:00	61.5	27.8	72.0	69.3	70.0	69.2	70.7	64.0	35.0	61.0	63.0
31-Jan-22	2:30:00	31-Jan-22	2:30:00	61.5	27.8	72.0	69.0	70.0	69.0	70.0	64.0	35.0	61.0	63.0
31-Jan-22	3:00:00	31-Jan-22	3:00:00	67.9	28.8	76.1	73.1	73.9	70.5	72.6	64.0	36.8	61.9	63.1
31-Jan-22	3:30:00	31-Jan-22	3:30:00	71.1	29.8	80.0	76.7	77.9	72.0	74.3	64.0	37.0	63.0	65.6
31-Jan-22	4:00:00	31-Jan-22	4:00:00	71.1	29.8	79.7	77.0	76.7	72.0	74.0	64.0	37.0	63.0	65.0
31-Jan-22	4:30:00	31-Jan-22	4:30:00	71.1	29.8	80.0	77.0	77.3	72.0	74.0	64.0	37.0	63.0	65.0
31-Jan-22	5:00:00	31-Jan-22	5:00:00	71.1	29.8	79.2	76.5	77.0	71.6	74.0	64.0	36.8	62.6	64.7
31-Jan-22	5:30:00	31-Jan-22	5:30:00	71.1	29.8	79.0	76.0	76.4	71.0	73.6	64.0	36.0	62.0	64.0
31-Jan-22	6:00:00	31-Jan-22	6:00:00	71.1	29.8	79.0	76.0	76.3	71.0	73.2	64.0	36.0	61.7	64.0
31-Jan-22	6:30:00	31-Jan-22	6:30:00	71.1	29.8	79.0	76.0	76.0	70.8	73.2	64.0	36.0	61.3	64.1
31-Jan-22	7:00:00	31-Jan-22	7:00:00	71.1	29.8	79.0	75.9	76.4	71.0	73.8	64.0	36.0	61.9	64.5
31-Jan-22	7:30:00	31-Jan-22	7:30:00	71.1	29.8	79.0	75.8	76.5	71.0	73.9	64.0	36.0	62.0	64.3
31-Jan-22	8:00:00	31-Jan-22	8:00:00	71.1	29.8	79.0	76.0	77.0	71.0	74.0	64.0	36.3	62.0	65.0
31-Jan-22	8:30:00	31-Jan-22	8:30:00	62.7	29.0	75.2	72.2	72.6	70.0	71.6	64.0	34.8	60.3	63.0
31-Jan-22	9:00:00	31-Jan-22	9:00:00	59.5	27.9	71.7	68.3	68.6	66.3	70.0	64.0	34.0	59.3	61.5
31-Jan-22	9:30:00	31-Jan-22	9:30:00	59.5	27.8	72.0	68.5	68.5	68.0	70.0	64.0	34.0	59.3	61.6
31-Jan-22	10:00:00	31-Jan-22	10:00:00	59.0	27.5	71.0	68.1	68.0	66.8	69.7	64.0	32.9	58.2	60.7
31-Jan-22	10:30:00	31-Jan-22	10:30:00	59.0	26.8	70.2	67.2	67.2	67.0	68.8	64.0	32.9	58.0	60.7
31-Jan-22	11:00:00	31-Jan-22	11:00:00	60.2	26.8	70.2	67.4	67.4	67.0	68.9	64.0	32.9	58.3	60.6
31-Jan-22	11:30:00	31-Jan-22	11:30:00	68.0	27.9	79.3	76.9	73.0	68.5	71.1	64.0	34.0	59.8	62.4

31-Jan-22	12:00:00	31-Jan-2212:00	68.3	27.9	77.6	74.0	75.3	69.2	72.0	64.0	34.7	60.0	63.0
31-Jan-22	12:30:00	31-Jan-2212:30	69.1	27.9	77.7	74.4	74.7	69.4	72.0	64.0	34.4	60.6	63.0
31-Jan-22	13:00:00	31-Jan-2213:00	67.9	27.9	78.0	75.0	75.0	70.0	72.6	64.0	35.0	60.3	63.3
31-Jan-22	13:30:00	31-Jan-2213:30	67.9	27.9	78.0	74.9	75.0	70.0	72.7	64.0	35.0	60.9	63.5
31-Jan-22	14:00:00	31-Jan-2214:00	67.9	27.9	78.0	74.8	74.7	69.7	72.4	64.0	35.0	61.0	64.0
31-Jan-22	14:30:00	31-Jan-2214:30	69.6	28.0	78.0	75.0	75.0	68.8	72.4	64.0	35.0	61.8	63.4
31-Jan-22	15:00:00	31-Jan-2215:00	70.0	28.8	78.4	75.0	75.5	70.1	73.0	64.0	35.0	61.1	64.0
31-Jan-22	15:30:00	31-Jan-2215:30	70.0	28.8	78.1	75.0	75.4	70.4	73.0	64.0	35.0	61.0	64.0
31-Jan-22	16:00:00	31-Jan-2216:00	70.0	28.8	78.0	75.0	75.1	70.3	73.0	64.0	35.0	61.0	64.0
31-Jan-22	16:30:00	31-Jan-2216:30	70.0	28.8	78.0	75.0	75.5	70.0	73.0	64.0	35.0	61.0	64.0
31-Jan-22	17:00:00	31-Jan-2217:00	70.0	28.8	78.0	75.0	75.3	70.0	73.0	64.0	35.0	61.0	64.0
31-Jan-22	17:30:00	31-Jan-2217:30	70.0	28.8	78.0	75.0	75.0	70.3	73.0	64.0	35.3	61.0	64.0
31-Jan-22	18:00:00	31-Jan-2218:00	70.0	28.8	78.0	74.4	74.3	70.0	73.0	64.0	35.0	61.0	64.0
31-Jan-22	18:30:00	31-Jan-2218:30	70.0	28.8	78.0	74.5	74.5	70.0	72.4	64.0	35.0	61.0	64.0
31-Jan-22	19:00:00	31-Jan-2219:00	70.0	28.8	78.0	74.7	74.4	70.0	72.3	64.0	35.0	61.0	64.0
31-Jan-22	19:30:00	31-Jan-2219:30	70.0	28.8	78.0	74.5	74.7	70.0	72.0	64.0	35.0	61.0	63.7
31-Jan-22	20:00:00	31-Jan-2220:00	70.0	28.8	78.0	74.7	75.0	70.0	72.7	64.0	35.0	61.0	64.0
31-Jan-22	20:30:00	31-Jan-2220:30	70.0	28.8	78.0	75.0	75.0	70.3	73.0	64.0	35.6	61.0	64.0
31-Jan-22	21:00:00	31-Jan-2221:00	70.0	28.8	78.6	75.0	75.6	70.3	73.0	64.0	36.0	61.0	64.0
31-Jan-22	21:30:00	31-Jan-2221:30	70.0	28.8	79.0	75.5	75.8	71.0	73.0	64.0	36.0	61.4	64.0
31-Jan-22	22:00:00	31-Jan-2222:00	70.0	28.8	79.0	76.0	76.2	71.0	73.4	64.0	36.0	62.0	64.1
31-Jan-22	22:30:00	31-Jan-2222:30	70.0	29.1	79.0	76.0	76.7	71.0	74.0	64.0	36.0	62.0	65.0
31-Jan-22	23:00:00	31-Jan-2223:00	70.0	29.7	79.0	76.0	76.4	71.0	74.0	64.0	36.0	62.0	65.0
31-Jan-22	23:30:00	31-Jan-2223:30	70.0	28.8	79.0	76.0	76.0	71.0	74.0	64.0	36.0	62.0	65.0
1-Feb-22	0:00:00	01-Feb-2200:00	70.0	28.8	79.0	76.0	76.0	71.0	74.0	64.0	36.0	62.0	65.0
1-Feb-22	0:30:00	01-Feb-2200:30	70.0	28.8	79.0	76.0	76.4	71.4	74.0	64.0	36.2	62.0	65.0
1-Feb-22	1:00:00	01-Feb-2201:00	70.0	29.1	79.2	76.0	76.4	72.0	74.0	64.0	37.0	62.0	65.0
1-Feb-22	1:30:00	01-Feb-2201:30	67.4	29.6	79.3	76.3	76.3	71.9	73.5	64.0	36.7	62.8	64.8
1-Feb-22	2:00:00	01-Feb-2202:00	61.5	28.8	73.0	70.0	70.0	69.5	71.0	64.0	35.0	60.9	63.1
1-Feb-22	2:30:00	01-Feb-2202:30	61.5	28.8	72.9	69.6	70.0	69.0	71.0	64.0	35.0	60.6	63.0
1-Feb-22	3:00:00	01-Feb-2203:00	61.5	28.8	72.3	69.6	70.0	69.0	70.8	64.0	34.8	60.0	62.7
1-Feb-22	3:30:00	01-Feb-2203:30	61.5	28.8	72.0	69.0	70.0	69.0	70.0	64.0	34.0	60.0	62.3
1-Feb-22	4:00:00	01-Feb-2204:00	61.0	28.0	72.0	69.0	69.6	68.3	70.0	64.0	34.0	59.4	62.0
1-Feb-22	4:30:00	01-Feb-2204:30	67.6	28.6	72.8	72.4	72.8	69.0	70.9	64.0	34.9	60.2	63.3
1-Feb-22	5:00:00	01-Feb-2205:00	69.0	28.8	78.4	75.1	76.0	70.0	73.0	64.0	35.4	61.3	64.3
1-Feb-22	5:30:00	01-Feb-2205:30	69.0	28.8	79.0	75.7	76.0	71.0	73.0	64.0	36.0	62.0	64.6
1-Feb-22	6:00:00	01-Feb-2206:00	69.0	28.8	79.0	76.0	76.0	71.0	73.1	64.0	36.7	62.6	65.0
1-Feb-22	6:30:00	01-Feb-2206:30	69.0	29.0	79.0	76.0	75.7	71.0	73.4	64.0	36.7	62.0	65.0

1-Feb-22	7:00:00	01-Feb-22	07:00	69.0	29.8	79.0	75.7	76.0	71.0	74.0	64.0	37.0	62.5	65.0
1-Feb-22	7:30:00	01-Feb-22	07:30	69.0	29.8	79.0	76.0	76.3	71.0	74.0	64.0	37.0	63.3	65.0
1-Feb-22	8:00:00	01-Feb-22	08:00	70.8	29.8	79.3	75.7	76.0	71.3	74.0	64.0	37.0	63.0	65.0
1-Feb-22	8:30:00	01-Feb-22	08:30	68.4	29.8	78.8	75.4	76.4	72.3	74.0	64.0	37.0	62.2	65.0
1-Feb-22	9:00:00	01-Feb-22	09:00	61.2	28.8	73.8	70.7	70.5	70.5	71.3	64.0	35.8	60.6	63.3
1-Feb-22	9:30:00	01-Feb-22	09:30	61.0	28.8	71.8	68.7	69.7	68.4	71.0	64.0	35.0	61.6	62.8
1-Feb-22	10:00:00	01-Feb-22	10:00	61.1	28.8	72.5	69.0	69.2	69.2	70.5	64.0	35.0	61.0	63.0
1-Feb-22	10:30:00	01-Feb-22	10:30	61.1	28.8	72.0	69.0	69.3	68.7	70.6	64.0	35.0	60.5	62.6
1-Feb-22	11:00:00	01-Feb-22	11:00	60.1	28.0	71.7	68.6	69.0	68.4	69.7	64.0	34.1	60.3	62.0
1-Feb-22	11:30:00	01-Feb-22	11:30	59.8	27.9	72.0	67.4	68.1	68.2	69.7	64.0	34.1	60.0	62.0
1-Feb-22	12:00:00	01-Feb-22	12:00	60.3	27.9	71.1	67.6	68.3	68.0	69.3	64.0	34.0	60.0	62.0
1-Feb-22	12:30:00	01-Feb-22	12:30	60.0	27.9	71.0	68.3	68.3	67.7	69.0	64.0	33.7	59.7	62.0
1-Feb-22	13:00:00	01-Feb-22	13:00	60.0	27.2	71.0	68.0	68.0	68.0	69.3	64.0	34.0	59.0	62.0
1-Feb-22	13:30:00	01-Feb-22	13:30	59.8	26.9	71.0	68.0	67.7	67.4	68.6	64.0	33.7	59.3	62.0
1-Feb-22	14:00:00	01-Feb-22	14:00	58.4	26.9	71.0	67.3	67.9	67.6	68.8	64.0	33.5	59.0	62.0
1-Feb-22	14:30:00	01-Feb-22	14:30	67.6	27.8	76.4	70.7	73.2	69.2	71.5	64.0	34.7	60.4	62.0
1-Feb-22	15:00:00	01-Feb-22	15:00	67.6	27.9	78.0	75.0	75.0	70.0	72.3	64.0	35.0	61.0	62.0
1-Feb-22	15:30:00	01-Feb-22	15:30	67.6	27.9	78.0	75.0	75.0	70.3	72.3	64.0	35.4	61.0	62.0
1-Feb-22	16:00:00	01-Feb-22	16:00	68.2	27.9	78.0	75.0	75.0	70.5	72.5	64.0	35.4	61.1	62.0
1-Feb-22	16:30:00	01-Feb-22	16:30	69.6	27.9	78.0	75.0	75.3	70.2	73.0	64.0	36.0	62.0	62.0
1-Feb-22	17:00:00	01-Feb-22	17:00	69.6	28.3	78.0	75.0	75.0	70.1	73.0	64.0	35.6	62.0	62.0
1-Feb-22	17:30:00	01-Feb-22	17:30	69.6	28.9	78.0	75.0	75.0	70.5	73.0	64.0	35.8	62.0	62.0
1-Feb-22	18:00:00	01-Feb-22	18:00	69.6	28.9	78.0	75.0	75.0	70.9	73.0	64.0	36.0	62.0	62.0
1-Feb-22	18:30:00	01-Feb-22	18:30	69.6	28.9	78.0	74.3	74.9	70.6	73.0	64.0	36.0	62.0	62.0
1-Feb-22	19:00:00	01-Feb-22	19:00	69.6	28.9	78.0	74.5	74.3	70.0	73.0	64.0	36.0	61.7	62.0
1-Feb-22	19:30:00	01-Feb-22	19:30	69.6	28.9	78.0	75.0	74.9	70.3	73.0	64.0	36.0	61.7	62.0
1-Feb-22	20:00:00	01-Feb-22	20:00	69.6	28.9	78.0	75.0	75.0	70.0	73.0	64.0	36.0	62.0	62.0
1-Feb-22	20:30:00	01-Feb-22	20:30	69.6	28.9	78.0	75.0	75.6	70.3	73.0	64.0	36.0	62.0	62.0
1-Feb-22	21:00:00	01-Feb-22	21:00	69.6	28.9	78.7	75.3	76.0	71.0	73.3	64.0	36.0	62.0	62.0
1-Feb-22	21:30:00	01-Feb-22	21:30	69.6	29.3	79.0	75.8	76.0	71.0	73.9	64.0	36.9	63.0	62.0
1-Feb-22	22:00:00	01-Feb-22	22:00	69.6	29.9	79.1	76.1	76.6	71.3	74.0	64.0	37.0	63.0	62.0
1-Feb-22	22:30:00	01-Feb-22	22:30	69.6	29.9	79.7	76.2	77.0	71.5	74.0	64.0	37.0	63.0	62.0
1-Feb-22	23:00:00	01-Feb-22	23:00	69.6	29.9	79.4	76.6	77.0	72.0	74.3	64.0	37.3	63.0	62.0
1-Feb-22	23:30:00	01-Feb-22	23:30	69.6	29.9	80.0	76.7	77.0	71.7	74.2	64.0	37.5	63.4	62.0
2-Feb-22	0:00:00	02-Feb-22	00:00	60.6	29.0	76.1	71.1	72.1	69.7	72.2	64.0	36.7	62.4	62.0
2-Feb-22	0:30:00	02-Feb-22	00:30	60.3	28.9	73.0	70.0	70.0	70.0	71.0	64.0	36.0	61.1	62.0
2-Feb-22	1:00:00	02-Feb-22	01:00	60.3	28.9	72.8	69.8	70.0	69.5	71.0	64.0	35.1	61.4	62.0
2-Feb-22	1:30:00	02-Feb-22	01:30	60.3	28.9	72.9	69.6	70.0	69.0	71.0	64.0	35.0	61.2	62.0

2-Feb-22	2:00:00 02-Feb-2202:00	60.3	28.9	72.0	69.0	70.0	69.0	71.0	64.0	35.0	61.0	62.0
2-Feb-22	2:30:00 02-Feb-2202:30	60.3	28.9	72.0	69.0	70.0	69.0	70.7	64.0	35.0	61.0	62.0
2-Feb-22	3:00:00 02-Feb-2203:00	60.3	28.9	72.3	69.0	70.0	69.0	70.3	64.0	35.3	61.0	62.0
2-Feb-22	3:30:00 02-Feb-2203:30	60.3	28.9	72.0	69.2	70.2	69.0	70.0	64.0	35.0	61.0	62.0
2-Feb-22	4:00:00 02-Feb-2204:00	60.3	28.1	72.0	69.1	69.5	68.7	70.0	64.0	34.6	60.2	62.0
2-Feb-22	4:30:00 02-Feb-2204:30	67.9	28.6	75.0	72.0	72.5	69.8	70.6	64.0	35.3	61.3	62.0
2-Feb-22	5:00:00 02-Feb-2205:00	69.3	28.9	78.4	75.7	76.1	70.5	73.0	64.0	35.7	61.5	62.0
2-Feb-22	5:30:00 02-Feb-2205:30	68.5	28.9	78.0	75.0	75.3	70.0	73.0	64.0	35.0	61.0	62.0
2-Feb-22	6:00:00 02-Feb-2206:00	68.5	28.9	78.0	75.0	75.3	70.0	73.0	64.0	35.0	61.0	62.0
2-Feb-22	6:30:00 02-Feb-2206:30	68.5	28.9	78.0	75.0	75.3	69.7	72.7	64.0	35.0	61.0	62.0
2-Feb-22	7:00:00 02-Feb-2207:00	68.5	28.9	78.0	75.0	75.3	69.1	72.5	64.0	35.0	60.7	62.0
2-Feb-22	7:30:00 02-Feb-2207:30	68.5	28.9	78.0	75.0	75.0	70.0	72.9	64.0	35.3	61.0	62.0
2-Feb-22	8:00:00 02-Feb-2208:00	68.9	28.9	78.0	75.0	75.3	70.0	73.0	64.0	36.0	61.3	62.0
2-Feb-22	8:30:00 02-Feb-2208:30	69.2	28.9	78.0	75.0	74.6	69.1	73.0	64.0	35.7	61.0	62.0
2-Feb-22	9:00:00 02-Feb-2209:00	68.4	28.9	78.0	73.4	71.7	69.7	73.0	64.0	35.2	61.0	62.0
2-Feb-22	9:30:00 02-Feb-2209:30	68.2	28.9	77.7	73.6	72.3	70.1	73.0	64.0	35.6	61.0	62.0
2-Feb-22	10:00:00 02-Feb-2210:00	68.3	28.9	78.0	73.8	71.8	71.3	73.0	64.0	36.6	61.8	62.0
2-Feb-22	10:30:00 02-Feb-2210:30	68.3	29.3	78.3	74.6	73.5	71.0	73.7	64.0	37.0	63.0	62.0
2-Feb-22	11:00:00 02-Feb-2211:00	69.3	29.9	78.3	74.4	73.7	71.0	73.5	64.0	36.8	63.0	62.0
2-Feb-22	11:30:00 02-Feb-2211:30	70.5	29.9	78.8	75.0	74.5	71.5	73.9	64.0	36.9	63.0	62.0
2-Feb-22	12:00:00 02-Feb-2212:00	70.5	29.9	79.0	75.9	75.0	72.0	74.0	64.0	37.0	63.0	62.0
2-Feb-22	12:30:00 02-Feb-2212:30	63.1	29.1	76.1	72.5	72.8	70.7	72.3	64.0	36.1	60.7	62.0
2-Feb-22	13:00:00 02-Feb-2213:00	61.2	28.8	72.9	69.3	69.1	69.7	70.7	64.0	35.0	61.0	62.0
2-Feb-22	13:30:00 02-Feb-2213:30	61.4	28.8	72.0	69.0	68.9	69.0	71.0	64.0	35.0	60.4	62.0
2-Feb-22	14:00:00 02-Feb-2214:00	59.7	28.5	72.0	68.4	67.7	68.8	70.1	64.0	35.0	60.4	62.0
2-Feb-22	14:30:00 02-Feb-2214:30	61.0	28.0	71.4	67.5	68.0	68.6	70.1	64.0	34.4	60.8	62.0
2-Feb-22	15:00:00 02-Feb-2215:00	69.4	28.9	77.9	74.3	74.4	71.0	72.5	64.0	35.7	61.5	62.0
2-Feb-22	15:30:00 02-Feb-2215:30	69.4	28.9	77.7	74.8	74.2	70.5	73.3	64.0	36.0	62.2	62.0
2-Feb-22	16:00:00 02-Feb-2216:00	69.4	28.9	78.3	75.0	74.9	70.9	73.3	64.0	36.4	62.7	62.0
2-Feb-22	16:30:00 02-Feb-2216:30	69.4	28.9	79.0	75.7	75.8	71.0	73.5	64.0	37.0	63.0	62.0
2-Feb-22	17:00:00 02-Feb-2217:00	69.4	29.4	79.0	75.7	76.0	71.0	74.0	64.0	37.0	63.0	62.0
2-Feb-22	17:30:00 02-Feb-2217:30	69.4	29.9	79.0	76.0	75.7	71.3	74.0	64.0	36.7	63.0	62.0
2-Feb-22	18:00:00 02-Feb-2218:00	69.4	29.9	78.7	74.9	75.8	71.2	73.7	64.0	37.3	62.9	62.0
2-Feb-22	18:30:00 02-Feb-2218:30	69.4	29.9	78.7	75.0	75.6	71.4	73.7	64.0	36.7	62.8	62.0
2-Feb-22	19:00:00 02-Feb-2219:00	69.4	29.1	79.3	76.2	75.5	71.6	73.7	64.0	36.7	63.0	62.0
2-Feb-22	19:30:00 02-Feb-2219:30	69.4	28.8	79.0	75.3	76.0	71.0	74.0	64.0	37.0	63.0	62.0
2-Feb-22	20:00:00 02-Feb-2220:00	66.1	28.3	78.3	75.3	75.3	70.8	73.4	64.0	36.7	62.9	62.0
2-Feb-22	20:30:00 02-Feb-2220:30	59.3	26.8	72.0	69.0	69.0	68.2	70.0	64.0	35.0	60.1	62.0

2-Feb-22	21:00:00	02-Feb-2221:00	59.3	26.8	72.0	68.7	69.0	68.0	70.0	64.0	35.0	60.7	62.0
2-Feb-22	21:30:00	02-Feb-2221:30	59.3	26.8	72.0	69.0	69.3	69.0	70.0	64.0	35.0	60.9	62.0
2-Feb-22	22:00:00	02-Feb-2222:00	59.3	27.3	72.0	69.0	69.0	68.7	70.0	64.0	34.7	60.2	62.0
2-Feb-22	22:30:00	02-Feb-2222:30	59.3	27.7	72.0	68.6	69.0	68.0	70.0	64.0	34.5	60.1	62.0
2-Feb-22	23:00:00	02-Feb-2223:00	59.3	27.7	71.7	68.3	69.0	68.0	70.0	64.0	34.0	60.0	62.0
2-Feb-22	23:30:00	02-Feb-2223:30	62.0	28.0	71.7	68.7	69.4	68.1	70.3	64.0	34.0	60.0	62.0
3-Feb-22	0:00:00	03-Feb-2200:00	68.8	28.8	78.5	75.2	76.0	70.4	73.0	64.0	35.7	61.9	62.0
3-Feb-22	0:30:00	03-Feb-2200:30	68.8	28.8	79.0	76.0	76.0	71.0	73.3	64.0	36.0	62.0	62.0
3-Feb-22	1:00:00	03-Feb-2201:00	68.8	28.8	79.0	76.0	76.6	71.0	74.0	64.0	36.6	62.6	62.0
3-Feb-22	1:30:00	03-Feb-2201:30	68.8	29.2	79.0	76.0	76.5	71.2	74.0	64.0	36.9	63.0	62.0
3-Feb-22	2:00:00	03-Feb-2202:00	70.4	29.7	79.9	76.9	77.0	72.0	74.1	64.0	37.0	63.0	62.0
3-Feb-22	2:30:00	03-Feb-2202:30	70.8	29.7	80.0	77.0	77.2	72.0	75.0	64.0	37.0	63.4	62.0
3-Feb-22	3:00:00	03-Feb-2203:00	70.8	29.7	80.0	77.3	78.0	72.0	75.0	64.0	37.9	64.0	62.0
3-Feb-22	3:30:00	03-Feb-2203:30	70.8	30.5	80.7	77.7	77.8	72.7	75.0	64.0	38.0	64.0	62.0
3-Feb-22	4:00:00	03-Feb-2204:00	66.0	30.3	79.4	78.0	76.5	72.4	74.1	64.0	37.4	62.8	62.0
3-Feb-22	4:30:00	03-Feb-2204:30	61.0	29.7	73.7	71.5	71.0	70.0	71.6	64.0	36.0	62.0	62.0
3-Feb-22	5:00:00	03-Feb-2205:00	61.0	29.7	73.0	70.0	70.4	70.0	71.0	64.0	35.8	61.6	62.0
3-Feb-22	5:30:00	03-Feb-2205:30	61.0	29.0	72.5	69.5	70.2	69.2	71.0	64.0	35.0	61.0	62.0
3-Feb-22	6:00:00	03-Feb-2206:00	61.0	28.7	72.0	69.0	69.3	68.9	70.6	64.0	34.7	60.7	62.0
3-Feb-22	6:30:00	03-Feb-2206:30	60.0	28.7	72.0	69.0	68.8	68.2	70.0	64.0	34.1	60.0	62.0
3-Feb-22	7:00:00	03-Feb-2207:00	59.0	27.9	71.4	68.1	68.3	67.8	69.3	64.0	33.3	58.9	62.0
3-Feb-22	7:30:00	03-Feb-2207:30	59.0	27.7	70.7	67.7	67.7	67.0	69.0	64.0	33.0	58.0	62.0
3-Feb-22	8:00:00	03-Feb-2208:00	60.7	27.0	70.3	67.0	66.7	66.2	68.4	64.0	32.7	58.2	62.0
3-Feb-22	8:30:00	03-Feb-2208:30	66.8	27.8	75.5	71.5	70.4	68.0	71.5	64.0	33.9	60.0	62.0
3-Feb-22	9:00:00	03-Feb-2209:00	68.1	27.8	77.0	73.6	73.0	68.9	72.0	64.0	34.7	60.0	63.0
3-Feb-22	9:30:00	03-Feb-2209:30	68.8	27.8	77.0	73.3	73.0	69.6	72.2	64.0	34.2	60.1	62.5
3-Feb-22	10:00:00	03-Feb-2210:00	68.8	27.8	77.0	73.3	72.4	69.2	72.1	64.0	34.9	60.7	62.4
3-Feb-22	10:30:00	03-Feb-2210:30	68.2	27.8	77.0	73.7	73.0	70.0	72.0	64.0	35.0	60.4	63.0
3-Feb-22	11:00:00	03-Feb-2211:00	68.7	27.8	77.3	74.4	73.5	69.7	72.0	64.0	35.0	61.0	63.0
3-Feb-22	11:30:00	03-Feb-2211:30	67.8	27.8	77.9	74.2	74.0	70.0	72.3	64.0	35.0	60.7	63.2
3-Feb-22	12:00:00	03-Feb-2212:00	67.4	27.8	77.3	73.8	73.5	69.9	72.0	64.0	35.0	60.7	62.9
3-Feb-22	12:30:00	03-Feb-2212:30	67.4	28.0	77.0	73.6	72.7	69.6	72.0	64.0	34.7	61.0	63.1
3-Feb-22	13:00:00	03-Feb-2213:00	67.6	28.8	77.7	74.0	73.7	70.0	72.8	64.0	35.0	61.0	64.0
3-Feb-22	13:30:00	03-Feb-2213:30	69.4	28.8	78.0	74.3	74.0	70.8	73.0	64.0	35.9	62.0	64.9
3-Feb-22	14:00:00	03-Feb-2214:00	69.4	28.8	78.0	74.3	74.0	71.0	73.0	64.0	36.3	62.0	65.0
3-Feb-22	14:30:00	03-Feb-2214:30	69.4	28.8	78.0	74.3	73.5	70.7	73.0	64.0	36.3	62.7	64.7
3-Feb-22	15:00:00	03-Feb-2215:00	69.4	28.8	78.0	74.9	73.6	71.0	73.1	64.0	36.7	63.2	65.0
3-Feb-22	15:30:00	03-Feb-2215:30	69.4	29.7	78.3	74.9	74.4	71.0	74.0	64.0	37.0	62.8	65.0

3-Feb-22	16:00:00	03-Feb-22	16:00:00	69.4	29.7	78.2	74.8	74.4	71.2	74.0	64.0	37.0	63.2	65.0
3-Feb-22	16:30:00	03-Feb-22	16:30:00	69.4	29.7	79.0	75.6	75.9	72.0	74.0	64.0	37.0	63.0	66.0
3-Feb-22	17:00:00	03-Feb-22	17:00:00	67.5	29.5	79.2	76.0	76.0	72.0	74.0	64.0	37.0	62.7	65.9
3-Feb-22	17:30:00	03-Feb-22	17:30:00	61.0	27.3	73.2	71.6	69.7	69.3	70.9	64.0	35.0	60.7	63.0
3-Feb-22	18:00:00	03-Feb-22	18:00:00	61.0	26.8	72.8	69.0	69.0	69.0	70.0	64.0	35.0	60.6	63.0
3-Feb-22	18:30:00	03-Feb-22	18:30:00	61.0	26.8	71.4	68.4	68.7	68.1	70.0	64.0	34.3	60.0	62.3
3-Feb-22	19:00:00	03-Feb-22	19:00:00	59.0	25.8	71.0	67.7	68.0	67.6	69.2	64.0	33.7	59.6	61.7
3-Feb-22	19:30:00	03-Feb-22	19:30:00	62.7	27.4	72.8	69.5	69.8	68.0	71.4	64.0	34.7	59.5	62.1
3-Feb-22	20:00:00	03-Feb-22	20:00:00	68.4	28.8	78.0	74.7	75.0	70.0	72.5	64.0	35.7	61.7	64.0
3-Feb-22	20:30:00	03-Feb-22	20:30:00	68.4	28.8	78.0	75.0	75.5	70.0	72.9	64.0	36.0	62.0	64.0
3-Feb-22	21:00:00	03-Feb-22	21:00:00	68.4	28.8	78.0	75.3	75.0	70.7	73.0	64.0	36.0	62.0	64.2
3-Feb-22	21:30:00	03-Feb-22	21:30:00	68.4	28.8	78.8	75.8	75.5	71.0	73.3	64.0	36.0	62.4	65.0
3-Feb-22	22:00:00	03-Feb-22	22:00:00	68.9	29.1	79.0	76.0	76.4	71.0	74.0	64.0	36.7	62.4	65.0
3-Feb-22	22:30:00	03-Feb-22	22:30:00	70.4	29.8	79.0	76.0	76.7	71.3	74.0	64.0	37.0	63.0	65.0
3-Feb-22	23:00:00	03-Feb-22	23:00:00	70.4	29.8	79.9	76.0	76.4	71.6	74.0	64.0	37.0	63.0	65.0
3-Feb-22	23:30:00	03-Feb-22	23:30:00	70.4	29.8	80.0	76.3	77.0	72.0	74.0	64.0	37.0	63.3	65.5
4-Feb-22	0:00:00	04-Feb-22	0:00:00	70.4	29.8	79.8	76.0	76.7	71.7	74.0	64.0	37.0	63.0	65.7
4-Feb-22	0:30:00	04-Feb-22	0:30:00	69.5	30.0	80.0	77.0	77.0	72.0	74.7	64.0	38.0	63.9	66.0
4-Feb-22	1:00:00	04-Feb-22	1:00:00	61.4	29.7	74.4	71.5	71.4	70.5	72.7	64.0	36.3	62.0	64.2
4-Feb-22	1:30:00	04-Feb-22	1:30:00	61.4	29.7	73.0	70.0	70.3	70.0	71.0	64.0	36.0	61.7	64.0
4-Feb-22	2:00:00	04-Feb-22	2:00:00	61.4	29.5	73.0	70.0	70.0	70.0	71.0	64.0	36.0	61.6	63.7
4-Feb-22	2:30:00	04-Feb-22	2:30:00	61.4	28.8	73.0	70.0	70.0	69.7	71.0	64.0	35.9	61.0	63.6
4-Feb-22	3:00:00	04-Feb-22	3:00:00	61.4	28.8	73.0	69.7	70.3	69.6	71.0	64.0	35.5	61.0	63.0
4-Feb-22	3:30:00	04-Feb-22	3:30:00	61.4	28.8	72.7	69.7	69.7	69.3	71.0	64.0	35.1	61.0	63.0
4-Feb-22	4:00:00	04-Feb-22	4:00:00	61.4	28.8	72.1	69.1	70.0	69.0	70.7	64.0	35.0	61.0	63.0
4-Feb-22	4:30:00	04-Feb-22	4:30:00	61.4	28.8	72.1	69.4	69.4	69.0	70.1	64.0	35.0	61.0	63.0
4-Feb-22	5:00:00	04-Feb-22	5:00:00	60.2	28.2	71.6	68.5	68.6	68.0	69.6	64.0	34.1	60.1	62.0
4-Feb-22	5:30:00	04-Feb-22	5:30:00	62.9	27.6	71.0	69.0	69.6	67.6	69.8	64.0	33.6	58.9	61.3
4-Feb-22	6:00:00	04-Feb-22	6:00:00	67.6	27.8	73.2	74.7	75.0	69.4	72.0	64.0	35.0	60.0	63.0
4-Feb-22	6:30:00	04-Feb-22	6:30:00	67.6	27.8	78.0	74.3	75.0	69.1	72.0	64.0	35.0	60.0	63.0
4-Feb-22	7:00:00	04-Feb-22	7:00:00	67.6	27.8	78.0	74.6	74.7	69.1	72.0	64.0	35.0	60.3	63.0
4-Feb-22	7:30:00	04-Feb-22	7:30:00	67.6	27.8	78.0	74.6	74.8	70.0	72.3	64.0	35.0	60.6	63.0
4-Feb-22	8:00:00	04-Feb-22	8:00:00	67.6	27.8	77.7	74.0	73.7	70.0	72.0	64.0	35.0	60.8	63.0
4-Feb-22	8:30:00	04-Feb-22	8:30:00	67.6	27.8	77.0	73.0	71.7	69.7	72.0	64.0	35.0	60.7	62.7
4-Feb-22	9:00:00	04-Feb-22	9:00:00	67.6	28.3	77.5	73.5	72.2	70.0	72.3	64.0	35.0	60.7	63.0
4-Feb-22	9:30:00	04-Feb-22	9:30:00	68.8	28.8	78.0	73.7	72.7	69.8	72.7	64.0	35.4	61.6	64.5
4-Feb-22	10:00:00	04-Feb-22	10:00:00	69.6	28.8	78.0	74.0	73.8	71.0	73.0	64.0	36.3	62.1	64.7
4-Feb-22	10:30:00	04-Feb-22	10:30:00	69.6	28.8	78.0	74.6	73.6	71.0	73.0	64.0	37.0	63.0	65.0

4-Feb-22	11:00:00	04-Feb-22	11:00:00	69.6	28.8	78.3	74.5	73.2	70.3	73.5	64.0	37.0	63.0	65.3
4-Feb-22	11:30:00	04-Feb-22	11:30:00	69.6	29.8	78.3	75.0	74.0	70.9	74.0	64.0	37.0	63.0	65.0
4-Feb-22	12:00:00	04-Feb-22	12:00:00	69.6	29.8	78.3	74.6	73.3	71.0	73.7	64.0	36.5	62.7	65.0
4-Feb-22	12:30:00	04-Feb-22	12:30:00	69.6	29.8	78.6	74.8	73.3	71.2	73.7	64.0	36.9	63.0	65.0
4-Feb-22	13:00:00	04-Feb-22	13:00:00	69.6	29.8	78.9	74.7	73.9	72.0	73.7	64.0	37.0	63.0	65.2
4-Feb-22	13:30:00	04-Feb-22	13:30:00	62.7	29.1	75.4	69.1	64.6	70.2	72.0	64.0	36.6	61.7	65.3
4-Feb-22	14:00:00	04-Feb-22	14:00:00	60.8	28.3	71.7	68.2	67.6	68.7	70.3	64.0	34.7	61.0	62.7
4-Feb-22	14:30:00	04-Feb-22	14:30:00	61.0	27.8	71.6	68.0	67.3	69.0	69.7	64.0	34.7	61.0	62.7
4-Feb-22	15:00:00	04-Feb-22	15:00:00	61.2	27.8	71.6	68.0	67.6	68.5	70.0	64.0	34.1	60.0	62.4
4-Feb-22	15:30:00	04-Feb-22	15:30:00	63.6	28.3	73.7	70.6	69.4	69.1	72.8	64.0	34.6	60.6	62.0
4-Feb-22	16:00:00	04-Feb-22	16:00:00	68.5	28.8	78.0	74.7	74.2	70.7	73.0	64.0	36.0	62.0	63.8
4-Feb-22	16:30:00	04-Feb-22	16:30:00	69.6	28.8	78.9	75.6	75.3	71.0	73.7	64.0	36.7	62.8	65.0
4-Feb-22	17:00:00	04-Feb-22	17:00:00	69.6	29.3	79.0	76.0	76.0	71.3	74.0	64.0	37.0	62.7	65.0
4-Feb-22	17:30:00	04-Feb-22	17:30:00	69.6	29.8	79.0	76.0	76.0	71.5	74.0	64.0	37.0	63.0	65.0
4-Feb-22	18:00:00	04-Feb-22	18:00:00	69.6	29.8	79.0	75.3	75.4	72.0	74.0	64.0	37.0	63.0	65.0
4-Feb-22	18:30:00	04-Feb-22	18:30:00	69.6	29.8	79.0	75.8	76.0	71.5	74.0	64.0	37.0	63.0	65.0
4-Feb-22	19:00:00	04-Feb-22	19:00:00	69.6	29.8	79.0	75.7	75.7	71.3	74.0	64.0	37.0	63.0	65.0
4-Feb-22	19:30:00	04-Feb-22	19:30:00	63.7	28.2	75.5	72.5	72.7	70.6	72.0	64.0	36.1	62.2	62.7
4-Feb-22	20:00:00	04-Feb-22	20:00:00	60.9	26.9	72.0	68.7	69.3	68.7	70.0	64.0	34.6	60.2	62.6
4-Feb-22	20:30:00	04-Feb-22	20:30:00	60.9	26.9	72.0	68.6	69.0	68.0	70.0	64.0	34.0	60.0	62.0
4-Feb-22	21:00:00	04-Feb-22	21:00:00	60.9	26.9	72.0	68.0	69.0	68.0	70.0	64.0	34.0	60.0	62.0
4-Feb-22	21:30:00	04-Feb-22	21:30:00	62.5	27.0	72.0	69.5	70.9	69.1	70.0	64.0	34.0	60.0	62.0
4-Feb-22	22:00:00	04-Feb-22	22:00:00	69.1	28.9	76.9	76.0	77.2	71.0	72.6	64.0	35.8	62.0	64.1
4-Feb-22	22:30:00	04-Feb-22	22:30:00	69.1	28.9	78.0	75.6	76.0	71.0	73.1	64.0	36.4	62.0	64.7
4-Feb-22	23:00:00	04-Feb-22	23:00:00	69.1	28.9	79.0	75.7	75.7	71.0	73.7	64.0	36.7	62.7	65.0
4-Feb-22	23:30:00	04-Feb-22	23:30:00	69.1	29.3	79.0	76.0	76.3	71.3	74.0	64.0	37.0	63.0	65.0

Residential Sampling Report for Flushing Zone
C1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:				C1-BLDG0417	C1-BLDG0444	C1-BLDG0479	C1-BLDG0490	C1-BLDG0550	C1-BLDG0584	C1-BLDG0654	C1-BLDG0661
Location Type:				Non-Residence	Non-Residence	Non-Residence	Non-Residence	Non-Residence	Medical Building	Non-Residence	Non-Residence
Residence:				Building 417,IMF RIGGER DIVER SHOP, 2656 Kuahua Ave	Building 444,WAREHOUSE, 2525 Kuahua Ave	Building 479,WAREHOUSE GENERAL DEPOT, 1025 Quincy St	Building 490,GENERAL WAREHOUSE CVRD,	Building 550,NAVFAC PAC GPMO, B550 Arizona St	Building 584,CAREER INFORMATION CENTER, 2367 North Rd	Building 654,BEQ/PAQUET HALL/GALLEY, 655 Cromwell Cir	Building 661,ADMINISTRATION BUILDING, 661 Morton St
Field Sample ID:				220131C1AT04	220131C1AT03	220128C1DT05	220131C1AT05	220128C1DT03	220128C1BT06	220128C1CT01	220128C1DT04
Sample Date:				2022-01-31	2022-01-31	2022-01-28	2022-01-31	2022-01-28	2022-01-28	2022-01-28	2022-01-28
Sample Type:				N	N	N	N	N	N	N	N
GENCHEM (mg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: C22B001 rev1**	**SDG: C22B001 rev1**	**SDG: C22A059 rev1**	**SDG: C22B001 rev1**	**SDG: C22A059 rev1**	**SDG: C22A059 rev1**	**SDG: C22A059 rev1**	**SDG: C22A059 rev1**
Total Organic Carbon	2	None	None	None	0.200 U	**1.62**	**1.68**	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
HC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 5801097981**	**SDG: 5801097981**	**SDG: DA41378**	**SDG: 5801097981**	**SDG: DA41378**	**SDG: DA41363**	**SDG: DA41378**	**SDG: DA41378**
Petroleum Hydrocarbons (as Diesel)	200	400	None	None	92.0 U	92.0 U	190 U	92.0 U	190 U	190 U	190 U	190 U
Petroleum Hydrocarbons (as Gasoline)	200	300	None	None	31.0 U	31.0 U	40.0 U	31.0 U	40.0 U	40.0 U	40.0 U	40.0 U
Petroleum Hydrocarbons (as Motor Oil)	200	500	None	None	180 U	180 U	190 U	180 U	190 U	190 U	190 U	190 U
Total Petroleum Hydrocarbons	211				--	--	--	--	--	--	--	--
HG (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 810134921**	**SDG: 810134921**	**SDG: DA41378**	**SDG: 810134921**	**SDG: DA41378**	**SDG: DA41363**	**SDG: DA41378**	**SDG: DA41378**
Mercury	0.025	0.025	2	2	0.0560 U	0.0560 U	0.0250 U	0.0560 U	0.0250 U	0.0250 U	0.0250 U	0.0250 U
METAL (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 810134921**	**SDG: 810134921**	**SDG: DA41378**	**SDG: 810134921**	**SDG: DA41378**	**SDG: DA41363**	**SDG: DA41378**	**SDG: DA41378**
Antimony	6	6	6	6	0.0570 U	0.0570 U	0.100 U	0.0570 U	0.100 U	0.100 U	0.100 U	0.100 U
Arsenic	10	10	10	10	0.890 U	0.890 U	0.500 U	0.890 U	**0.500 J**	0.500 U	0.510 U	0.500 U
Barium	220	220	2000	2000	**2.10**	**2.50**	**1.90 J**	**2.30**	**4.00**	**2.60**	**2.10**	**2.00**
Beryllium	0.66	0.66	4	4	0.0830 U	0.0830 U	0.150 U	0.0830 U	0.100 U	0.150 U	0.150 U	0.100 U
Cadmium	3	3	5	5	0.140 U	0.140 U	0.0500 UJ	0.140 U	0.100 U	0.0500 U	0.0510 UJ	0.100 U
Chromium	11	11	100	100	**1.50**	**0.430 J**	**1.20 J**	**1.80**	0.500 U	**0.700 J**	**1.20 J**	**1.40 J**
Copper	2.9	2.9	1300	1300	**50.0**	**4.30**	**109**	**39.0**	**3.10**	**20.8**	**36.7**	**19.0**
Lead	15	5.6	15	15	**0.200 J**	**0.550**	**0.180 J**	**0.140 J**	**0.600**	**0.240 J**	0.130 U	**0.200 J**
Mercury	0.025	0.025	2	2	--	--	--	--	--	--	--	--
Selenium	5	5	50	50	1.60 U	1.60 U	0.300 UJ	1.60 U	0.300 U	0.300 UJ	0.310 UJ	0.300 U
Thallium	2	2	2	2	0.160 U	0.160 U	0.0500 U	0.160 U	**0.100 J**	0.0500 U	0.0510 U	**0.100 J**

Residential Sampling Report for Flushing Zone
C1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:				C1-BLDG0662	C1-BLDG0662	C1-BLDG0667	C1-BLDG0680	C1-BLDG0718	C1-BLDG1323	C1-BLDG1335	C1-BLDG1514
Location Type:				Non-Residence	Non-Residence	Non-Residence	Non-Residence	Non-Residence	Non-Residence	Non-Residence	Medical Building
Residence:				Building 662,NGIS - NAVY TDY (LOCKWOOD HALL), 1366 Dealey Cir	Building 662,NGIS - NAVY TDY (LOCKWOOD HALL), 1366 Dealey Cir	Building 667,MWR PIER SIDE FITNESS CENTER	Building 680, JBPHH Federal FIRE STATION, B680 Nimitz St	Building 718,LAUNDRY-BOQ 1729, 1260 Pierce St	Building 1323,GABRUNAS BEQ BLDG A	Building 1335,EastM. BARRACKS, DALWITZ HALL	Building 1514,SMART CLINIC/NAVY RELIEF-PEARL HARBOR, 1514 Makalapa Rd
Field Sample ID:				220128C1BT07	220130C1CT06	220128C1CT03	220128C1CT02	220130C1CT02	220131C1AT06	220128C1CT04	220128C1BT05
Sample Date:				2022-01-28	2022-01-30	2022-01-28	2022-01-28	2022-01-30	2022-01-31	2022-01-28	2022-01-28
Sample Type:				N	N (72 Hour Stagnation)	N	N	N (72 Hour Stagnation)	N	N	N
GENCHEM (mg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: C22A059 rev1**	**SDG: C22A069rev1**	**SDG: C22A059 rev1**	**SDG: C22A059 rev1**	**SDG: C22A069rev1**	**SDG: C22B001 rev1**	**SDG: C22A059 rev1**	**SDG: C22A059 rev1**
Total Organic Carbon	2	None	None	None	**1.62**	0.200 UJ	**1.94**	0.200 U	**1.70 J**	**1.64**	0.200 U	**1.56**
HC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: DA41378**	**SDG: 5801097921**	**SDG: DA41378**	**SDG: DA41378**	**SDG: 5801097921**	**SDG: 5801097981**	**SDG: DA41378**	**SDG: DA41363**
Petroleum Hydrocarbons (as Diesel)	200	400	None	None	190 UJ	91.0 U	190 U	190 U	91.0 U	92.0 U	190 U	190 U
Petroleum Hydrocarbons (as Gasoline)	200	300	None	None	40.0 U	31.0 U	40.0 U	40.0 U	31.0 U	31.0 U	40.0 U	40.0 U
Petroleum Hydrocarbons (as Motor Oil)	200	500	None	None	190 UJ	180 U	190 U	190 U	180 U	180 U	190 U	190 U
Total Petroleum Hydrocarbons	211				--	--	--	--	--	--	--	--
HG (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: DA41378**	**SDG: 35693536**	**SDG: DA41378**	**SDG: DA41378**	**SDG: 35693536**	**SDG: 810134921**	**SDG: DA41378**	**SDG: DA41363**
Mercury	0.025	0.025	2	2	0.0250 U	0.0900 U	0.0250 U	0.0250 U	0.0900 U	0.0560 U	0.0250 U	0.0250 U
METAL (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: DA41378**	**SDG: 35693536**	**SDG: DA41378**	**SDG: DA41378**	**SDG: 35693536**	**SDG: 810134921**	**SDG: DA41378**	**SDG: DA41363**
Antimony	6	6	6	6	0.100 U	0.210 U	0.100 U	0.100 U	0.210 U	0.0570 U	0.100 U	0.100 U
Arsenic	10	10	10	10	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.890 U	0.510 U	0.500 U
Barium	220	220	2000	2000	**1.80 J**	**1.80**	**1.90 J**	**2.10**	**1.80**	**2.00**	**2.00**	**3.50**
Beryllium	0.66	0.66	4	4	0.150 U	0.0700 U	0.150 U	0.150 U	0.0700 U	0.0830 U	0.150 U	0.150 U
Cadmium	3	3	5	5	0.0500 UJ	0.120 U	0.0500 UJ	0.0500 UJ	0.120 U	0.140 U	0.0510 UJ	0.0500 U
Chromium	11	11	100	100	**1.40 J**	**1.40 J**	**1.10 J**	**1.30 J**	**1.30 J**	**1.50**	**1.40 J**	**1.50 J**
Copper	2.9	2.9	1300	1300	**35.9**	**34.9**	**58.8**	**18.9**	**53.1**	**26.0**	**36.9**	**24.7**
Lead	15	5.6	15	15	**0.520**	0.220 U	0.130 U	**0.170 J**	**0.340 J**	**0.160 J**	0.130 U	**1.30**
Mercury	0.025	0.025	2	2	--	--	--	--	--	--	--	--
Selenium	5	5	50	50	0.300 UJ	**1.00**	0.300 UJ	0.300 UJ	**1.20**	1.60 U	0.310 UJ	0.300 U
Thallium	2	2	2	2	0.0500 U	0.500 U	0.0500 U	0.0500 U	0.500 U	0.160 U	0.0510 U	0.0500 U

Residential Sampling Report for Flushing Zone
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Location ID:					C1-BLDG1535	C1-BLDG1655	C1-BLDG1655	C1-BLDG2186	C1-BLDG2186
Location Type:					Medical Building	Child Development Center	Child Development Center	Non-Residence	Non-Residence
Residence:					Building 1535,MEDICAL CLINIC/SARP-PEARL HARBOR, B1535 North Road	Building 1655,CHILD CARE CENTER-NAVAL STATION CDC, 915 North Rd	Building 1655,CHILD CARE CENTER-NAVAL STATION CDC, 915 North Rd	Building 2186,NEX MINI-MART HOLOMOKU, 1477 North Rd	Building 2186,NEX MINI-MART HOLOMOKU, 1477 North Rd
Field Sample ID:					220128C1AT09	220127C1KT01	220127C1LT01	220131C1AT01	220131C1AT02
Sample Date:					2022-01-28	2022-01-27	2022-01-27	2022-01-31	2022-01-31
Sample Type:					N	N	N	N	FD
GENCHEM (mg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: C22A059 rev1**	**SDG: DA41363**	**SDG: C22A054 rev1**	**SDG: C22B001 rev1**	**SDG: C22B001 rev1**
Total Organic Carbon	2	None	None	None	**1.80**	**0.540**	0.200 U	0.200 U	**1.79**
HC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: DA41363**	**SDG: 5801097511**	**SDG: 5801097511**	**SDG: 5801097981**	**SDG: 5801097981**
Petroleum Hydrocarbons (as Diesel)	200	400	None	None	190 U	96.0 U	92.0 U	92.0 U	92.0 U
Petroleum Hydrocarbons (as Gasoline)	200	300	None	None	40.0 U	**52.0 J**	**63.0 J**	31.0 U	31.0 U
Petroleum Hydrocarbons (as Motor Oil)	200	500	None	None	190 U	190 U	180 U	180 U	180 U
Total Petroleum Hydrocarbons	211				--	52	63	--	--
HG (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: DA41363**	**SDG: DA41363**	**SDG: 810133901**	**SDG: 810134921**	**SDG: 810134921**
Mercury	0.025	0.025	2	2	0.0250 U	--	0.0560 U	0.0560 U	0.0560 U
METAL (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: DA41363**	**SDG: 983694**	**SDG: 810133901**	**SDG: 810134921**	**SDG: 810134921**
Antimony	6	6	6	6	0.100 U	0.110 U	0.0570 U	0.0570 U	0.0570 U
Arsenic	10	10	10	10	0.500 U	0.210 U	0.890 U	0.890 U	0.890 U
Barium	220	220	2000	2000	**1.70 J**	**2.00**	**1.80 J**	**2.10**	**1.90 J**
Beryllium	0.66	0.66	4	4	0.150 U	0.0910 U	0.0830 U	0.0830 U	0.0830 U
Cadmium	3	3	5	5	0.0500 U	**0.0320 J**	0.140 U	0.140 U	0.140 U
Chromium	11	11	100	100	**1.50 J**	**2.00**	**1.70**	**1.60**	**1.60**
Copper	2.9	2.9	1300	1300	**53.5**	**260**	**17.0**	**110**	**110**
Lead	15	5.6	15	15	0.130 U	**49.0**	**0.150 J**	**0.460 J**	**0.330 J**
Mercury	0.025	0.025	2	2	--	0.0200 U	--	--	--
Selenium	5	5	50	50	0.300 U	0.260 U	1.60 UJ	1.60 U	1.60 U
Thallium	2	2	2	2	0.0500 U	0.0410 U	0.160 U	0.160 U	0.160 U

Residential Sampling Report for Flushing Zone
C1 Zone Residential DW Sampling
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Location ID:				C1-BLDG0417	C1-BLDG0444	C1-BLDG0479	C1-BLDG0490	C1-BLDG0550	C1-BLDG0584	C1-BLDG0654	C1-BLDG0661
Location Type:				Non-Residence	Non-Residence	Non-Residence	Non-Residence	Non-Residence	Medical Building	Non-Residence	Non-Residence
Residence:				Building 417,IMF RIGGER DIVER SHOP, 2656 Kuahua Ave	Building 444,WAREHOUSE, 2525 Kuahua Ave	Building 479,WAREHOUSE GENERAL DEPOT, 1025 Quincy St	Building 490,GENERAL WAREHOUSE CVRD,	Building 550,NAVFAC PAC GPMO, B550 Arizona St	Building 584,CAREER INFORMATION CENTER, 2367 North Rd	Building 654,BEQ/PAQUET HALL/GALLEY, 655 Cromwell Cir	Building 661,ADMINISTRATION BUILDING, 661 Morton St
Field Sample ID:				220131C1AT04	220131C1AT03	220128C1DT05	220131C1AT05	220128C1DT03	220128C1BT06	220128C1CT01	220128C1DT04
Sample Date:				2022-01-31	2022-01-31	2022-01-28	2022-01-31	2022-01-28	2022-01-28	2022-01-28	2022-01-28
Sample Type:				N	N	N	N	N	N	N	N
SVOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: 810134921**	**SDG: 810134921**	**SDG: DA41378**	**SDG: 810134921**	**SDG: DA41378**	**SDG: DA41363**	**SDG: DA41378**	**SDG: DA41378**
1-Methylnaphthalene	2.1	10	None	None	0.0200 U	0.0210 U	0.240 U	0.0210 U	0.240 U	0.240 U	0.240 U	0.240 U
2-Methylnaphthalene	4.7	10	None	None	0.0200 U	0.0210 U	0.240 U	0.0210 U	0.240 U	0.240 U	0.240 U	0.240 U
Benzo(a)pyrene	0.06	0.06	0.2	0.2	0.0100 U	0.0100 U	0.00950 U	0.0100 U	0.00950 U	0.00970 U	0.00950 U	0.00960 U
Bis(2-ethylhexyl)phthalate	3	3	6	6	0.610 U	0.620 U	1.60 U	0.620 U	1.30 U	0.610 U	0.820 U	0.380 U
Naphthalene	12	17	None	None	0.0200 U	0.0210 U	0.240 U	0.0210 U	0.240 U	0.240 U	0.240 U	0.240 U
VOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: C22B001 rev1**	**SDG: C22B001 rev1**	**SDG: C22A059 rev1**	**SDG: C22B001 rev1**	**SDG: C22A059 rev1**	**SDG: C22A059 rev1**	**SDG: C22A059 rev1**	**SDG: C22A059 rev1**
1,1,1-Trichloroethane	11	11	200	200	0.119 U	0.119 U	0.119 U	0.119 U	0.119 U	0.119 U	0.119 U	0.119 U
1,1,2-Trichloroethane	5	5	3	5	0.288 U	0.288 U	0.288 U	0.288 U	0.288 U	0.288 U	0.288 U	0.288 U
1,1-Dichloroethene	7	7	7	7	0.128 U	0.128 U	0.128 U	0.128 U	0.128 U	0.128 U	0.128 U	0.128 U
1,2,4-Trichlorobenzene	70	70	70	70	0.318 U	0.318 U	0.318 U	0.318 U	0.318 U	0.318 U	0.318 U	0.318 U
1,2-Dichlorobenzene	10	10	600	600	0.272 U	0.272 U	0.272 U	0.272 U	0.272 U	0.272 U	0.272 U	0.272 U
1,2-Dichloroethane	5	5	5	5	0.0884 U	0.0884 U	0.0884 U	0.0884 U	0.0884 U	0.0884 U	0.0884 U	0.0884 U
1,2-Dichloropropane	5	5	5	5	0.129 U	0.129 U	0.129 U	0.129 U	0.129 U	0.129 U	0.129 U	0.129 U
1,4-Dichlorobenzene	5	5	75	None	0.245 U	0.245 U	0.245 U	0.245 U	0.245 U	0.245 U	0.245 U	0.245 U
Benzene	5	5	5	5	0.0846 U	0.0846 U	0.0846 U	0.0846 U	0.0846 U	0.0846 U	0.0846 U	0.0846 U
Carbon Tetrachloride	5	5	5	5	0.165 U	0.165 U	0.165 U	0.165 U	0.165 U	0.165 U	0.165 U	0.165 U
Chlorobenzene	25	25	100	100	0.146 U	0.146 U	0.146 U	0.146 U	0.146 U	0.146 U	0.146 U	0.146 U
cis-1,2-Dichloroethene	70	70	70	70	0.0570 U	0.0570 U	0.0570 U	0.0570 U	0.0570 U	0.0570 U	0.0570 U	0.0570 U
Ethylbenzene	700	7.3	700	700	0.141 U	0.141 U	0.141 U	0.141 U	0.141 U	0.141 U	0.141 U	0.141 U
m,p-Xylene	10000	13	None	None	0.317 U	0.317 U	0.317 U	0.317 U	0.317 U	0.317 U	0.317 U	0.317 U
Methylene chloride	5	5	5	5	2.15 U	2.15 U	2.15 U	2.15 U	2.15 U	2.15 U	2.15 U	2.15 U
o-Xylene	10000	13	None	None	0.157 U	0.157 U	0.157 U	0.157 U	0.157 U	0.157 U	0.157 U	0.157 U
Styrene	10	10	100	100	0.224 U	0.224 U	0.224 U	0.224 U	0.224 U	0.224 U	0.224 U	0.224 U
Tetrachloroethene (PCE)	5	5	5	5	0.125 U	0.125 U	0.125 U	0.125 U	0.125 U	0.125 U	0.125 U	0.125 U
Toluene	1000	9.8	1000	1000	0.120 U	0.120 U	0.120 U	0.120 U	0.120 U	0.120 U	0.120 U	0.120 U
trans-1,2-Dichloroethene	100	100	100	100	0.0958 U	0.0958 U	0.0958 U	0.0958 U	0.0958 U	0.0958 U	0.0958 U	0.0958 U
Trichloroethene (TCE)	5	5	5	5	0.0574 U	0.0574 U	0.0574 U	0.0574 U	0.0574 U	0.0574 U	0.0574 U	0.0574 U
Vinyl chloride	2	2	2	2	0.611 U	0.611 U	0.611 U	0.611 U	0.611 U	0.611 U	0.611 U	0.611 U
Xylenes, Total	10000	13	10000	10000	--	--	--	--	--	--	--	--

Residential Sampling Report for Flushing Zone
C1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:				C1-BLDG0662	C1-BLDG0662	C1-BLDG0667	C1-BLDG0680	C1-BLDG0718	C1-BLDG1323	C1-BLDG1335	C1-BLDG1514
Location Type:				Non-Residence	Non-Residence	Non-Residence	Non-Residence	Non-Residence	Non-Residence	Non-Residence	Medical Building
Residence:				Building 662,NGIS - NAVY TDY (LOCKWOOD HALL), 1366 Dealey Cir	Building 662,NGIS - NAVY TDY (LOCKWOOD HALL), 1366 Dealey Cir	Building 667,MWR PIER SIDE FITNESS CENTER	Building 680, JBPHH Federal FIRE STATION, B680 Nimitz St	Building 718,LAUNDRY-BOQ 1729, 1260 Pierce St	Building 1323,GABRUNAS BEQ BLDG A	Building 1335,EastM. BARRACKS, DALWITZ HALL	Building 1514,SMART CLINIC/NAVY RELIEF-PEARL HARBOR, 1514 Makalapa Rd
Field Sample ID:				220128C1BT07	220130C1CT06	220128C1CT03	220128C1CT02	220130C1CT02	220131C1AT06	220128C1CT04	220128C1BT05
Sample Date:				2022-01-28	2022-01-30	2022-01-28	2022-01-28	2022-01-30	2022-01-31	2022-01-28	2022-01-28
Sample Type:				N	N (72 Hour Stagnation)	N	N	N (72 Hour Stagnation)	N	N	N
SVOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: DA41378**	**SDG: 35693536**	**SDG: DA41378**	**SDG: DA41378**	**SDG: 35693536**	**SDG: 810134921**	**SDG: DA41378**	**SDG: DA41363**
1-Methylnaphthalene	2.1	10	None	None	0.240 U	0.170 U	0.240 U	0.240 U	0.180 U	0.0200 U	0.240 U	0.240 U
2-Methylnaphthalene	4.7	10	None	None	0.240 U	0.180 U	0.240 U	0.240 U	0.190 U	0.0200 U	0.240 U	0.240 U
Benzo(a)pyrene	0.06	0.06	0.2	0.2	0.00960 U	0.0190 U	0.00960 U	0.00950 U	0.0200 U	0.0100 U	0.00950 U	0.00950 U
Bis(2-ethylhexyl)phthalate	3	3	6	6	1.50 U	0.470 U	1.40 U	1.10 U	0.470 U	0.610 U	1.50 U	0.590 U
Naphthalene	12	17	None	None	0.240 U	0.170 U	0.240 U	0.240 U	0.180 U	0.0200 U	0.240 U	0.240 U
VOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: C22A059 rev1**	**SDG: C22A069rev1**	**SDG: C22A059 rev1**	**SDG: C22A059 rev1**	**SDG: C22A069rev1**	**SDG: C22B001 rev1**	**SDG: C22A059 rev1**	**SDG: C22A059 rev1**
1,1,1-Trichloroethane	11	11	200	200	0.119 U	0.119 U	0.119 U	0.119 U	0.119 U	0.119 U	0.119 U	0.119 U
1,1,2-Trichloroethane	5	5	3	5	0.288 U	0.288 U	0.288 U	0.288 U	0.288 U	0.288 U	0.288 U	0.288 U
1,1-Dichloroethene	7	7	7	7	0.128 U	0.128 U	0.128 U	0.128 U	0.128 U	0.128 U	0.128 U	0.128 U
1,2,4-Trichlorobenzene	70	70	70	70	0.318 U	0.318 U	0.318 U	0.318 U	0.318 U	0.318 U	0.318 U	0.318 U
1,2-Dichlorobenzene	10	10	600	600	0.272 U	0.272 U	0.272 U	0.272 U	0.272 U	0.272 U	0.272 U	0.272 U
1,2-Dichloroethane	5	5	5	5	0.0884 U	0.0884 U	0.0884 U	0.0884 U	0.0884 U	0.0884 U	0.0884 U	0.0884 U
1,2-Dichloropropane	5	5	5	5	0.129 U	0.129 U	0.129 U	0.129 U	0.129 U	0.129 U	0.129 U	0.129 U
1,4-Dichlorobenzene	5	5	75	None	0.245 U	0.245 U	0.245 U	0.245 U	0.245 U	0.245 U	0.245 U	0.245 U
Benzene	5	5	5	5	0.0846 U	0.0846 U	0.0846 U	0.0846 U	0.0846 U	0.0846 U	0.0846 U	0.0846 U
Carbon Tetrachloride	5	5	5	5	0.165 U	0.165 U	0.165 U	0.165 U	0.165 U	0.165 U	0.165 U	0.165 U
Chlorobenzene	25	25	100	100	0.146 U	0.146 U	0.146 U	0.146 U	0.146 U	0.146 U	0.146 U	0.146 U
cis-1,2-Dichloroethene	70	70	70	70	0.0570 U	0.0570 U	0.0570 U	0.0570 U	0.0570 U	0.0570 U	0.0570 U	0.0570 U
Ethylbenzene	700	7.3	700	700	0.141 U	0.141 U	0.141 U	0.141 U	0.141 U	0.141 U	0.141 U	0.141 U
m,p-Xylene	10000	13	None	None	0.317 U	0.317 U	0.317 U	0.317 U	0.317 U	0.317 U	0.317 U	0.317 U
Methylene chloride	5	5	5	5	2.15 U	2.15 U	2.15 U	2.15 U	2.15 U	2.15 U	2.15 U	2.15 U
o-Xylene	10000	13	None	None	0.157 U	0.157 U	0.157 U	0.157 U	0.157 U	0.157 U	0.157 U	0.157 U
Styrene	10	10	100	100	0.224 U	0.224 UJ	0.224 U	0.224 U	0.224 UJ	0.224 U	0.224 U	0.224 U
Tetrachloroethene (PCE)	5	5	5	5	0.125 U	0.125 U	0.125 U	0.125 U	0.125 U	0.125 U	0.125 U	0.125 U
Toluene	1000	9.8	1000	1000	0.120 U	0.120 U	0.120 U	0.120 U	0.120 U	0.120 U	0.120 U	0.120 U
trans-1,2-Dichloroethene	100	100	100	100	0.0958 U	0.0958 U	0.0958 U	0.0958 U	0.0958 U	0.0958 U	0.0958 U	0.0958 U
Trichloroethene (TCE)	5	5	5	5	0.0574 U	0.0574 U	0.0574 U	0.0574 U	0.0574 U	0.0574 U	0.0574 U	0.0574 U
Vinyl chloride	2	2	2	2	0.611 U	0.611 U	0.611 U	0.611 U	0.611 U	0.611 U	0.611 U	0.611 U
Xylenes, Total	10000	13	10000	10000	--	--	--	--	--	--	--	--

Residential Sampling Report for Flushing Zone
C1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					C1-BLDG1535	C1-BLDG1655	C1-BLDG1655	C1-BLDG2186	C1-BLDG2186
Location Type:					Medical Building	Child Development Center	Child Development Center	Non-Residence	Non-Residence
Residence:					Building 1535,MEDICAL CLINIC/SARP-PEARL HARBOR, B1535 North Road	Building 1655,CHILD CARE CENTER-NAVAL STATION CDC, 915 North Rd	Building 1655,CHILD CARE CENTER-NAVAL STATION CDC, 915 North Rd	Building 2186,NEX MINI-MART HOLOMOKU, 1477 North Rd	Building 2186,NEX MINI-MART HOLOMOKU, 1477 North Rd
Field Sample ID:					220128C1AT09	220127C1KT01	220127C1LT01	220131C1AT01	220131C1AT02
Sample Date:					2022-01-28	2022-01-27	2022-01-27	2022-01-31	2022-01-31
Sample Type:					N	N	N	N	FD
SVOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: DA41363**	**SDG: 810133901**	**SDG: 810133901**	**SDG: 810134921**	**SDG: 810134921**
1-Methylnaphthalene	2.1	10	None	None	0.240 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
2-Methylnaphthalene	4.7	10	None	None	0.240 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
Benzo(a)pyrene	0.06	0.06	0.2	0.2	0.00950 U	0.00980 U	0.00980 U	0.0100 U	0.0100 U
Bis(2-ethylhexyl)phthalate	3	3	6	6	0.670 U	0.590 U	0.590 U	0.610 U	0.610 U
Naphthalene	12	17	None	None	0.240 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
VOC (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: C22A059 rev1**	**SDG: DA41363**	**SDG: C22A054 rev1**	**SDG: C22B001 rev1**	**SDG: C22B001 rev1**
1,1,1-Trichloroethane	11	11	200	200	0.119 U	0.500 U	0.119 U	0.119 U	0.119 U
1,1,2-Trichloroethane	5	5	3	5	0.288 U	0.500 U	0.288 U	0.288 U	0.288 U
1,1-Dichloroethene	7	7	7	7	0.128 U	0.500 U	0.128 U	0.128 U	0.128 U
1,2,4-Trichlorobenzene	70	70	70	70	0.318 U	0.500 U	0.318 U	0.318 U	0.318 U
1,2-Dichlorobenzene	10	10	600	600	0.272 U	0.500 U	0.272 U	0.272 U	0.272 U
1,2-Dichloroethane	5	5	5	5	0.0884 U	0.500 U	0.0884 U	0.0884 U	0.0884 U
1,2-Dichloropropane	5	5	5	5	0.129 U	0.500 U	0.129 U	0.129 U	0.129 U
1,4-Dichlorobenzene	5	5	75	None	0.245 U	0.500 U	0.245 U	0.245 U	0.245 U
Benzene	5	5	5	5	0.0846 U	0.500 U	0.0846 U	0.0846 U	0.0846 U
Carbon Tetrachloride	5	5	5	5	0.165 U	0.500 U	0.165 U	0.165 U	0.165 U
Chlorobenzene	25	25	100	100	0.146 U	0.500 U	0.146 U	0.146 U	0.146 U
cis-1,2-Dichloroethene	70	70	70	70	0.0570 U	0.500 U	0.0570 U	0.0570 U	0.0570 U
Ethylbenzene	700	7.3	700	700	0.141 U	0.500 U	0.141 U	0.141 U	0.141 U
m,p-Xylene	10000	13	None	None	0.317 U	0.500 U	0.317 U	0.317 U	0.317 U
Methylene chloride	5	5	5	5	2.15 U	0.500 U	2.15 U	2.15 U	2.15 U
o-Xylene	10000	13	None	None	0.157 U	0.500 U	0.157 U	0.157 U	0.157 U
Styrene	10	10	100	100	0.224 U	0.500 U	0.224 U	0.224 U	0.224 U
Tetrachloroethene (PCE)	5	5	5	5	0.125 U	0.500 U	0.125 U	0.125 U	0.125 U
Toluene	1000	9.8	1000	1000	0.120 U	0.500 U	0.120 U	0.120 U	0.120 U
trans-1,2-Dichloroethene	100	100	100	100	0.0958 U	0.500 U	0.0958 U	0.0958 U	0.0958 U
Trichloroethene (TCE)	5	5	5	5	0.0574 U	0.500 U	0.0574 U	0.0574 U	0.0574 U
Vinyl chloride	2	2	2	2	0.611 U	0.500 U	0.611 U	0.611 U	0.611 U
Xylenes, Total	10000	13	10000	10000	--	0.500 U	--	--	--

Residential Sampling Report for Flushing Zone
C1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Notes:

-- indicates that the sample was Not Analyzed for the analyte

Results highlighted yellow exceed the ISP
Results in purple font also exceed the EALs
Results in green font also exceed the DOH MCL
Results in blue font also exceed the EPA MCL
Results from G1/G3 sampling, where the G3 result is greater than the G1 result, have a red border and the associated G1/G3 result in parentheses for comparison

µg/L = Micrograms per Liter

March 7, 2022

From: Naval Facilities Engineering Systems Command Representative, IDWS Team
To: Interagency Drinking Water System Team

SUBJ: ZONE C1 EXCEEDANCE INVESTIGATION SUMMARY AND RESAMPLE RESULTS

Ref: (a) DoH's Guidance on the Approach to Amending the Public Health Advisory, Addendum 1 dtd 12 FEB 2022

Encl: (1) Zone C1 Exceedance Sample Report
(2) Zone C1 Child Development Center Lead Resample Results
(3) NAVFACSYSCOM Hawaii ltr to Director, Child Development Center dated 07 MAR 2022
(4) DoH SVOC Sample Results for Zone C1
(5) DoH TPH Sample Results for Zone C1

1. Enclosure (1) contains the lead exceedance sample report for Zone C1. The sample result was 49 part per billion (ppb) which is above the Safe Drinking Water Act (SDWA) action level for lead of 15 ppb. The IDWST reviewed the data associated with the Child Development Center and recommended that the faucet be replaced and the location resampled. The faucet was replaced on February 25, 2022 and resampled on February 26, 2022. A first draw sample and a sample at 30 seconds was taken on February 26, 2022. Both samples taken had results below the action level for lead as shown in enclosure (2). Enclosure (3) documents notification of the lead exceedance to the Director of the Child Development Center and the letter provides information on the health effects and actions taken to date. Based on this information, the IDWST determined that no further action was required beyond long-term monitoring sampling.

2. Enclosures (4) and (5) are the test results for samples taken by DoH. There were no exceedances above the MCL or exceedances above the ISP that required further action. The laboratory reports will be made publically available at https://jbphh-safewaters.org/ upon amendment of the health advisory for Zone C1.

3. I certify under penalty of law that I have personally examined and I am familiar with the information submitted and the submitted information is true, accurate, and complete.

MENO.MICHAEL.WAYNE.JR.1088310035
Digitally signed by MENO.MICHAEL.WAYNE.JR.1088310035
Date: 2022.03.07 20:31:11 -10'00'

M. W. Meno
Captain, U.S. Navy Civil Engineer Corps

Section 2b.3 Exceedance Investigation Summary and Resample Results

Zone C1 ISP or MCL Exceedance Report
C1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:	C1-BLDG1655
Location Type:	Child Development Center
Residence:	Building 1655,CHILD CARE CENTER-NAVAL STATION CDC, 915 North Rd
Field Sample ID:	220127C1KT01
Sample Date:	2022-01-27
Sample Type:	N

METAL (µg/L)	Incident Specific Parameters	DOH Environmental Action Levels Table D-1A Groundwater Action Levels	DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents	Environmental Protection Agency Maximum Contaminant Levels	SDG: 983694
Lead	15	5.6	15	15	**49.0**

Notes:

-- indicates that the sample was Not Analyzed for the analyte

Results highlighted yellow exceed the ISP
Results in purple font also exceed the EALs
Results in green font also exceed the DOH MCL
Results in blue font also exceed the EPA MCL
Results from G1/G3 sampling, where the G3 result is greater than the G1 result, have a red border and the associated G1/G3 result in parentheses for comparison

µg/L = Micrograms per Liter

Zone C1 ISP or MCL Exceedance Resample Report
C1 Zone Residential DW and Distribution Resampling Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Section 2b.3 Exceedance Investigation Summary and Resample Results

Location ID:					C1-BLDG1655	C1-BLDG1655
Location Type:					Child Development Center	Child Development Center
Residence:					Building 1655,CHILD CARE CENTER-NAVAL STATION CDC, 915 North Rd	Building 1655,CHILD CARE CENTER-NAVAL STATION CDC, 915 North Rd
Field Sample ID:					C1-TW-0014751-22057-N	C1-TW-0014751-22057-N-R1
Sample Date:					2022-02-26	2022-02-26
Sample Type:					N	N
HG (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: DA42369**	**SDG: DA42369**
Mercury	2	0.025	2	2	0.0250 U	0.0250 U
METAL (µg/L)	**Incident Specific Parameters**	**DOH Environmental Action Levels Table D-1A Groundwater Action Levels**	**DOH Safe Drinking Water Branch (SDWB) Regulatory Constituents**	**Environmental Protection Agency Maximum Contaminant Levels**	**SDG: DA42369**	**SDG: DA42369**
Antimony	6	6	6	6	0.100 U	0.100 U
Arsenic	10	10	10	10	0.500 U	0.500 U
Barium	2000	220	2000	2000	**1.80 J**	**2.00**
Beryllium	4	0.66	4	4	0.150 U	0.150 U
Cadmium	5	3	5	5	0.0500 U	0.0500 U
Chromium	100	11	100	100	**1.80 J**	**2.00**
Copper	1300	2.9	1300	1300	**41.0**	**119 J**
Lead	15	5.6	15	15	**0.160 J**	**0.240 J**
Selenium	50	5	50	50	0.300 U	0.300 U
Thallium	2	2	2	2	0.0500 U	0.0500 U

Notes:

-- indicates that the sample was Not Analyzed for the analyte

Results highlighted yellow exceed the ISP
Results in purple font also exceed the EALs
Results in green font also exceed the DOH MCL
Results in blue font also exceed the EPA MCL
Results from G1/G3 sampling, where the G3 result is greater than the G1 result, have a red border and the associated G1/G3 result in parentheses for comparison

µg/L = Micrograms per Liter

ENCL (2)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND, HAWAII
400 MARSHALL ROAD
JBPHH HI 96860-3139

11330
Ser 00/00151
March 7, 2022

Child Development Center
915 North Road, Building 1655
Joint Base Pearl Harbor-Hickam, Hawaii 96860

Dear CDC Director,

SUBJECT: ACTION LEVEL EXCEEDANCE OF LEAD IN DRINKING WATER AT THE JOINT BASE PEARL HARBOR-HICKAM CHILD DEVELOPMENT CENTER

1. This letter is to follow up to a verbal notification that there was an action level (AL) exceedance of lead in a drinking water sample collected at the Pier Side Child Development Center (CDC) at 915 North Road, Building 1655 at Joint Base Pearl Harbor-Hickam (JBPHH) on January 27, 2022. Per Title 40 of the Code of Federal Regulations (CFR), Section 141.23, the AL for lead is 15 parts per billion (ppb). The level detected in the specific water fixture at the CDC was 49 ppb.

a. **What Is Lead**. Lead is a naturally occurring metal in soils, ground water, and surface waters. Lead and lead compounds have been used in a variety of products in and around homes, including paint, ceramics, pipes and plumbing materials, solders, gasoline, batteries, ammunition, and cosmetics. Lead may enter the environment from past and current uses.

b. **How Can it Affect My Health**. Lead is particularly dangerous to children because their growing bodies absorb more lead than adults do, and their brains and nervous systems are more sensitive to the damaging effects of lead. Pregnant women may also be a concern due to effects on her developing baby.

Even low levels of lead exposure in children can result in:
- Behavior and learning problems,
- Lower IQ and hyperactivity
- Slowed growth
- Hearing problems
- Anemia

In rare cases, ingestion of lead can cause seizures, coma, and even death. In pregnant and nursing women, lead can pass from the mother to her baby. This can result in serious effects to the developing fetus and infant including:
- Cause the baby to be born too early or too small
- Hurt the baby's brain, kidneys, and nervous system
- Increase the likelihood of learning or behavioral problems
- Put the mother at risk for miscarriage

c. **What This Means**. The CDC and other building occupants should continue not to consume the tap water in accordance with the Hawaii Department of Health's health advisory and use bottled water or alternative sources of water provided by the Navy until the health advisory is amended. **Since the initial sample collection on January 27, 2022, the fixture has been replaced and additional samples were taken on February 26, 2022. Both samples were below the action level for lead. This indicates that there was a fixture plumbing issue not a distribution system issue.**

2. The CDC is part of the Red Hill Drinking Water Long Term Monitoring Program. For the next two years, PHES water will be sampled approximately 6 times over the next two years. NAVFAC HI will assist in providing guidance and additional testing. For more information, please contact my POC, Sherri Eng at 808-471-3858 or at sherri.r.eng.civ@us.navy.mil.

3. Please ensure this information is appropriately shared with staff and water users.

Sincerely,

J. G. MEYER
Captain, CEC, U.S. Navy
Commanding Officer

DOH SVOCs-Results
Navy Water System Incident
Red Hill, Post-Flushing, Flushing Area C1

Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/6/2022	Zone C-1 Distribution			1-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/6/2022	Zone C-1 Distribution			2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			2-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/6/2022	Zone C-1 Distribution			4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Acetochlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Alachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Atrazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Bromacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Butachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Caffeine by method 525mod	ND	U(R7)	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Chloroneb	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Chrysene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Di(2-Ethylhexyl)phthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Diazinon (Qualitative)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Dieldrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Diethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Dimethoate	ND	U(R7)	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution

DOH SVOCs-Results
Navy Water System Incident
Red Hill, Post-Flushing, Flushing Area C1

Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/6/2022	Zone C-1 Distribution			Di-n-Butylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Endrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			EPTC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Fluorene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Heptachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Isophorone	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Lindane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Malathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Metolachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Metribuzin	ND	U(LE)	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Molinate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Naphthalene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Parathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Phenanthrene	ND	U(BM)	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Propachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Simazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Terbacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/6/2022	Zone C-1 Distribution			Trifluralin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	1-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	2-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-02	Neches St	Arizona St	4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Acetochlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Alachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Atrazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Bromacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Butachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Caffeine by method 525mod	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Chloroneb	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Chrysene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Di(2-Ethylhexyl)phthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Diazinon (Qualitative)	ND	U	UJ	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Dieldrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Diethylphthalate	0.043	J	J	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Dimethoate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Di-n-Butylphthalate	0.083	J	J	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Endrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-02	Neches St	Arizona St	EPTC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Fluorene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Heptachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Isophorone	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Lindane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Malathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Metolachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Metribuzin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Molinate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Naphthalene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Parathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Phenanthrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Propachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Simazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Terbacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-02	Neches St	Arizona St	Trifluralin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	1-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	2-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Acetochlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Alachlor	ND	U	U	ug/L	Not Detected	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Atrazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Bromacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Butachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Caffeine by method 525mod	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Chloroneb	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Chrysene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Di(2-Ethylhexyl)phthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Diazinon (Qualitative)	ND	U	UJ	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Dieldrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Diethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Dimethoate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Di-n-Butylphthalate	0.10	J	J	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Endrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	EPTC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Fluorene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Heptachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Distribution

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Red Hill, Post-Flushing, Flushing Area C1

Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Isophorone	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Lindane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Malathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Metolachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Metribuzin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Molinate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Naphthalene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Parathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Phenanthrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Propachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Simazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Terbacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Trifluralin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	1-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	2-Methylnaphthalene	NI			ug/L	Not Identified	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Acetochlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Alachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Atrazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Bromacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Butachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Caffeine by method 525mod	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Chloroneb	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Chrysene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Di(2-Ethylhexyl)phthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Diazinon (Qualitative)	ND	U	UJ	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Dieldrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Diethylphthalate	0.043	J	J	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Dimethoate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Di-n-Butylphthalate	0.50	J	J	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Endrin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	EPTC	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Fluorene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Heptachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Isophorone	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Lindane	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Malathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Metolachlor	ND	U	U	ug/L	Not Detected	C1	Distribution

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Metribuzin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Molinate	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Naphthalene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Parathion	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Phenanthrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Propachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Pyrene	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Simazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Terbacil	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Distribution
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Trifluralin	ND	U	U	ug/L	Not Detected	C1	Distribution
1/27/2022	012722-27-01	North Rd.	Nimitz St	1-Methylnaphthalene	ND			ug/L	Non Detect	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	2-Methylnaphthalene	ND			ug/L	Non Detect	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Acetochlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Alachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Atrazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Bromacil	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Butachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Caffeine by method 525mod	ND	U	U	ug/L	Not Detected	C1	Non-Residential

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/27/2022	012722-27-01	North Rd.	Nimitz St	Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Chloroneb	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Chrysene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Di(2-Ethylhexyl)phthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Diazinon (Qualitative)	ND	U	UJ	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Dieldrin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Diethylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Dimethoate	ND	U(R7)	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Di-n-Butylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Endrin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	EPTC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Fluorene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Heptachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Isophorone	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Lindane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Malathion	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Metolachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Metribuzin	ND	U(R7)	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Molinate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Naphthalene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Parathion	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Phenanthrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential

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Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/27/2022	012722-27-01	North Rd.	Nimitz St	Propachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Simazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Terbacil	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-27-01	North Rd.	Nimitz St	Trifluralin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	1-Methylnaphthalene	ND			ug/L	Non Detect	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2,4-DDD	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2,4-DDE	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2,4-DDT	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2,4-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2,6-Dinitrotoluene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	2-Methylnaphthalene	ND			ug/L	Non Detect	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	4,4-DDD	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	4,4-DDE	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	4,4-DDT	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Acenaphthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Acenaphthylene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Acetochlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Alachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Alpha-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	alpha-Chlordane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Atrazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Benz(a)Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Benzo(a)pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Benzo(b)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Benzo(g,h,i)Perylene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Benzo(k)Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Beta-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Bromacil	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Butachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Butylbenzylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Caffeine by method 525mod	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Chlorobenzilate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Chloroneb	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Chlorothalonil(Draconil,Bravo)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Chlorpyrifos (Dursban)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Chrysene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Delta-BHC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Di-(2-Ethylhexyl)adipate	ND	U	U	ug/L	Not Detected	C1	Non-Residential

DOH SVOCs-Results
Navy Water System Incident
Red Hill, Post-Flushing, Flushing Area C1

Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/27/2022	012722-34-01	North Rd.	Nimitz St	Di(2-Ethylhexyl)phthalate	0.23	J	J	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Diazinon (Qualitative)	ND	U	UJ	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Dibenz(a,h)Anthracene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Dichlorvos (DDVP)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Dieldrin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Diethylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Dimethoate	ND	U(R7)	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Dimethylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Di-n-Butylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Di-N-octylphthalate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Endosulfan I (Alpha)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Endosulfan II (Beta)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Endosulfan Sulfate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Endrin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Endrin Aldehyde	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	EPTC	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Fluoranthene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Fluorene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	gamma-Chlordane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Heptachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Heptachlor Epoxide (isomer B)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Hexachlorobenzene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Hexachlorocyclopentadiene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Indeno(1,2,3,c,d)Pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Isophorone	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Lindane	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Malathion	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Methoxychlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Metolachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Metribuzin	ND	U(R7)	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Molinate	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Naphthalene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Parathion	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Pendimethalin	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Permethrin (mixed isomers)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Phenanthrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Propachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Pyrene	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Simazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Terbacil	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Terbuthylazine	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	Thiobencarb (ELAP)	ND	U	U	ug/L	Not Detected	C1	Non-Residential
1/27/2022	012722-34-01	North Rd.	Nimitz St	trans-Nonachlor	ND	U	U	ug/L	Not Detected	C1	Non-Residential

DOH SVOCs-Results
Navy Water System Incident
Red Hill, Post-Flushing, Flushing Area C1

Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit	Results Category	Zone	Feature Type
1/27/2022	012722-34-01	North Rd.	Nimitz St	Trifluralin	ND	U	U	ug/L	Not Detected	C1	Non-Residential

Exceeds the ISP
Bold= Detected

DOH TPH-Results
Navy Water System Incident
Red Hill, Post-Flushing, Flushing Area C1

Date Collected	Location Name	Street Name	Closest Cross Street	Analyte	Results	Lab Qualifier	Validator Qualifier	Results Unit (ug/L = ppb	Results Category	Zone	Feature Type	Sheen Present	Odor
1/6/2022	Zone C-1 Distribution			C8-C44	**49**	J	J+	ug/L	Detected	C1	Distribution	No	No
1/6/2022	Zone C-1 Distribution			TPH-g	ND	U	U	ug/L	Not Detected	C1	Distribution	No	No
1/6/2022	Zone C-1 Distribution			Diesel Range Organics (DRO)-C10-C28	ND	U	U	ug/L	Not Detected	C1	Distribution	No	No
1/6/2022	Zone C-1 Distribution			Gas Range Organics C8-C10	ND	U	U	ug/L	Not Detected	C1	Distribution	No	No
1/6/2022	Zone C-1 Distribution			Oil Range Organics (C28-C40)	ND	U	U	ug/L	Not Detected	C1	Distribution	No	No
1/17/2022	011722-20-02	Neches St	Arizona St	TPH-g	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-02	Neches St	Arizona St	C8-C44	**56**		J+	ug/L	Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-02	Neches St	Arizona St	Diesl Range Organics (DRO)-C10-C28	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-02	Neches St	Arizona St	Gas Range Organics C8-C10	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-02	Neches St	Arizona St	Oil Range Organics (C28-C40)	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	TPH-g	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	C8-C44	47	J	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Diesl Range Organics (DRO)-C10-C28	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Gas Range Organics C8-C10	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/17/2022	011722-20-03	Radford Dr	Kamehameha Hwy	Oil Range Organics (C28-C40)	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	no
1/18/2022	011822-48-03	Makalapa Dr	Kamakani Pl	Oil Range Organics (C28-C40)	ND	U	U	ug/L	Not Detected	C1	Distribution	No	No
1/27/2022	012722-27-01	North Rd.	Nimitz St	TPH as Gas	ND	U	U	ug/L	Not Detected	C1	Non-Residential	No	No odor
1/27/2022	012722-27-01	North Rd.	Nimitz St	C9-C40	**48**	J	J	ug/L	Detected	C1	Non-Residential	No	No odor
1/27/2022	012722-27-01	North Rd.	Nimitz St	Diesel Range Organic C9-C25	**37**	J	J	ug/L	Detected	C1	Non-Residential	No	No odor
1/27/2022	012722-27-01	North Rd.	Nimitz St	Oil Range Organic C24-C40	ND	U	U	ug/L	Not Detected	C1	Non-Residential	No	No odor
1/27/2022	012722-34-01	North Rd.	Nimitz St	TPH as Gas	ND	U	U	ug/L	Not Detected	C1	Non-Residential	No	No
1/27/2022	012722-34-01	North Rd.	Nimitz St	C9-C40	**44**	J	J	ug/L	Detected	C1	Non-Residential	No	No
1/27/2022	012722-34-01	North Rd.	Nimitz St	Diesel Range Organic C9-C25	**35**	J	J	ug/L	Detected	C1	Non-Residential	No	No
1/27/2022	012722-34-01	North Rd.	Nimitz St	Oil Range Organic C24-C40	ND	U	U	ug/L	Not Detected	C1	Non-Residential	No	No
1/17/2022	011722-20-04	Waterfront St	Waterfront St	C8-C44	47	J	U	ug/L	Not Detected	C1	Distribution	Not Noted	Not Noted
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Diesl Range Organics (DRO)-C10-C28	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	Not Noted
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Gas Range Organics C8-C10	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	Not Noted
1/17/2022	011722-20-04	Waterfront St	Waterfront St	Oil Range Organics (C28-C40)	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	Not Noted
1/17/2022	011722-20-04	Waterfront St	Waterfront St	TPH as Gas	ND	U	U	ug/L	Not Detected	C1	Distribution	Not Noted	Not Noted

Exceeds the ISP
Bold= Detected

Section 2b.3 Exceedance Investigation Summary and Resample Results

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND, HAWAII
400 MARSHALL ROAD
JBPHH, HAWAII 96860-3139

11000
Ser PWO/00100
February 28, 2022

Interagency Drinking Water System Team

SUBJECT: CERTIFICATION OF IRRIGATION LINE FLUSHING – JOINT BASE PEARL HARBOR-HICKAM - ZONE C1

ENCL: (1) Dept. of Health Irrigation System Flushing Guidance

On behalf of the United States Department of the Navy, operator of the Joint Base Pearl Harbor-Hickam Public Water System (PWS ID No. 360 Water System), and in connection with and pursuant to the removal action required by the DOH Hazard Evaluation and Emergency Response Office Incident Case No. 20211128-1848, the undersigned certifies that the Navy has made all necessary inquiry into their Water System and represents and warrants as set forth below.

Landscape irrigation systems in Zone C1, generally known as the SUBBASE area, have been operated and flushed following Enclosure (1), and subsequent to the approved distribution line flushing conducted in December, 2021.

The undersigned has due authority to deliver this Certification on behalf of the Navy.

Sincerely,

HARMEYER.RANDALL.ERNEST.1186692663
Digitally signed by HARMEYER.RANDALL.ERNEST.1186692663
Date: 2022.02.28 07:17:26 -10'00'

R. E. HARMEYER
Captain, CEC, U.S. Navy
Public Works Officer
By Direction
of the Commanding Officer

DOH guidance for active irrigation line purging/flushing

Given the minimal quantities and concentration of fuel contamination in the irrigation lines, along with the expected degradation due to time, the following guidance lines are being provided:

System operator responsibility:

- Determine what the irrigation system pipe size is (for volume calculations).
- Calculate the approximate amount of time needed to complete 3 volumetric turnovers of the subject line (est. duration per foot).
- Assess how long each line will need to be purged/flushed based on the above estimates.
- Notify community.
- Cover or otherwise minimize any spray from the system (traffic cone) in order to prevent contact.
- Purge irrigation system under supervision for the estimated duration.
- Allow ground to absorb and dry.
- Notify residents to avoid area for the next 24 hours.
- Prevent/minimize any runoff.
- Prevent contact with the irrigation water.

Enclosure (1)

DOH Guidance for Active Irrigation Line Purging and Flushing

Given the minimal quantities and concentration of fuel contamination in the irrigation lines, along with the expected degradation due to time, the following guidance lines are being provided:

System operator responsibility:

- Determine what the irrigation system pipe size is (for volume calculations).
- Calculate the approximate amount of time needed to complete 3 volumetric turnovers of the subject line (est. duration per foot).
- Assess how long each line will need to be purged/flushed based on the above estimates.
- Notify community.
- Cover or otherwise minimize any spray from the system (traffic cone) in order to prevent contact.
- Purge irrigation system under supervision for the estimated duration.
- Allow ground to absorb and dry.
- Notify residents to avoid area for the next 24 hours.
- Prevent/minimize any runoff.
- Prevent contact with the irrigation water.

Navy/Army must develop a standard operating procedure incorporating the above guidance and provide training to personnel responsible for execution of the irrigation line purging/flushing.