Documentation to Amend Drinking Water Health Advisory in Zone G1

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

Interagency Drinking Water System Team
Zone G1 Removal Action Report
February 2022

TABLE OF CONTENTS

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

Interagency Drinking Water System Team
Zone G1 Removal Action Report
February 2022

Line of Evidence 0

Introduction

Zone G1 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 G1 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 G1, 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 G1 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 G1 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 G1, 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 G1 with: • EDMS Residential Flushing Records Zone G1 • EDMS Non-Residential Flushing Records Zone G1 • NAVFAC SCADA Data Zone G1 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 G1.
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

February 24, 2022

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

SUBJ: ZONE G1 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 G1 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 November 20th, 2021, 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. On the 23rd of November, Admiral Paparo directed an independent investigation of the spill event and ordered the investigating officer to determine any connection between the 20 November event and the spill that occurred on May 6th, 2021. The results of the investigation are pending public release.

On November 27th, 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. They jointly made the decision to stop Red Hill Tank fuel transfer operations based on the ongoing investigation into the recent spills.

On November 28th, 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 in the Navy's drinking water system. As more calls were received, it became clear that the reports were clustered around neighborhoods fed by the Red Hill Shaft Well. On the evening of the 28th, the Navy shut down that well and stood up the Region's Emergency Operations Center to handle the issue. More reports of contaminated water continued to come in over the next 24 hours. On November 29th, Admiral Paparo, the senior Navy commander in Hawaii, ordered the establishment of a Joint Crisis Action Team, and the Navy immediately began flushing its potable water distribution system.

On December 8th, 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 14th, HDOH, the U.S. Navy, the U.S. Army and the EPA signed the Joint Drinking Water Sampling Plan. On December 17th, the parties 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 members of the IDWS Team jointly signed the Water Distribution System Recovery Plan agreement.

The flushing of the water distribution lines resumed on December 20, 2021. Residential and non-residential 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 G1.

3. The removal action report (RAR) for Zone G1 documents two specific lines of evidence necessary to amend the drinking water health advisory for Zone G1 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: 2022.02.24 18:41:24 -10'00'

M. W. Meno
CAPT, CEC, USN

Interagency Drinking Water System Team
Zone G1 Removal Action Report
February 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.

WETZEL.CHRISTOPHER.JAMES.1540194862
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.

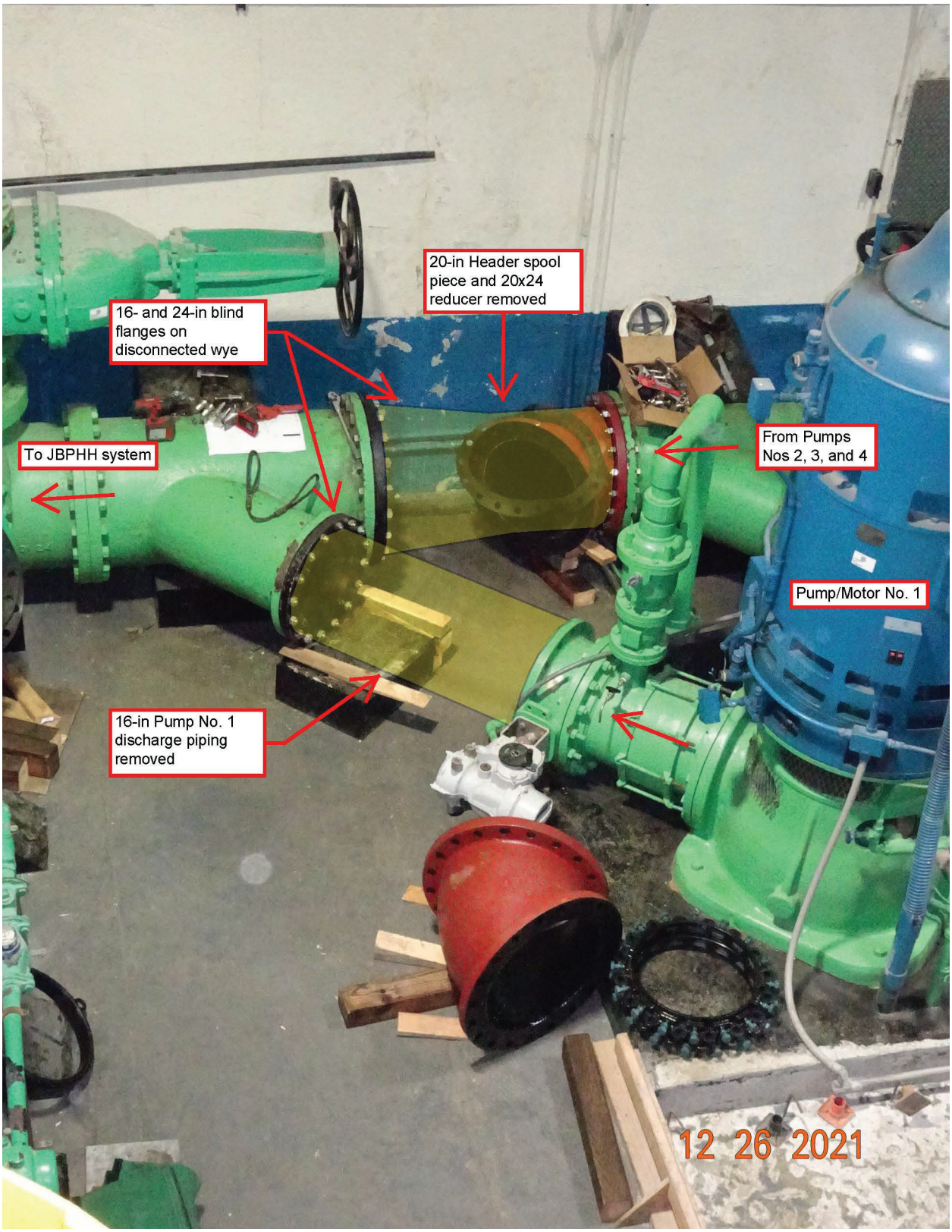
3. Physical isolation was performed with in-house NAVFAC forces, with a completion date of 24 December 2021. This work was performed by isolating the system from the pumps at the "wye" fitting adjacent to Red Hill Pump #1. The wye fitting is shown on Enclosure (1). A blind flange was placed on the main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

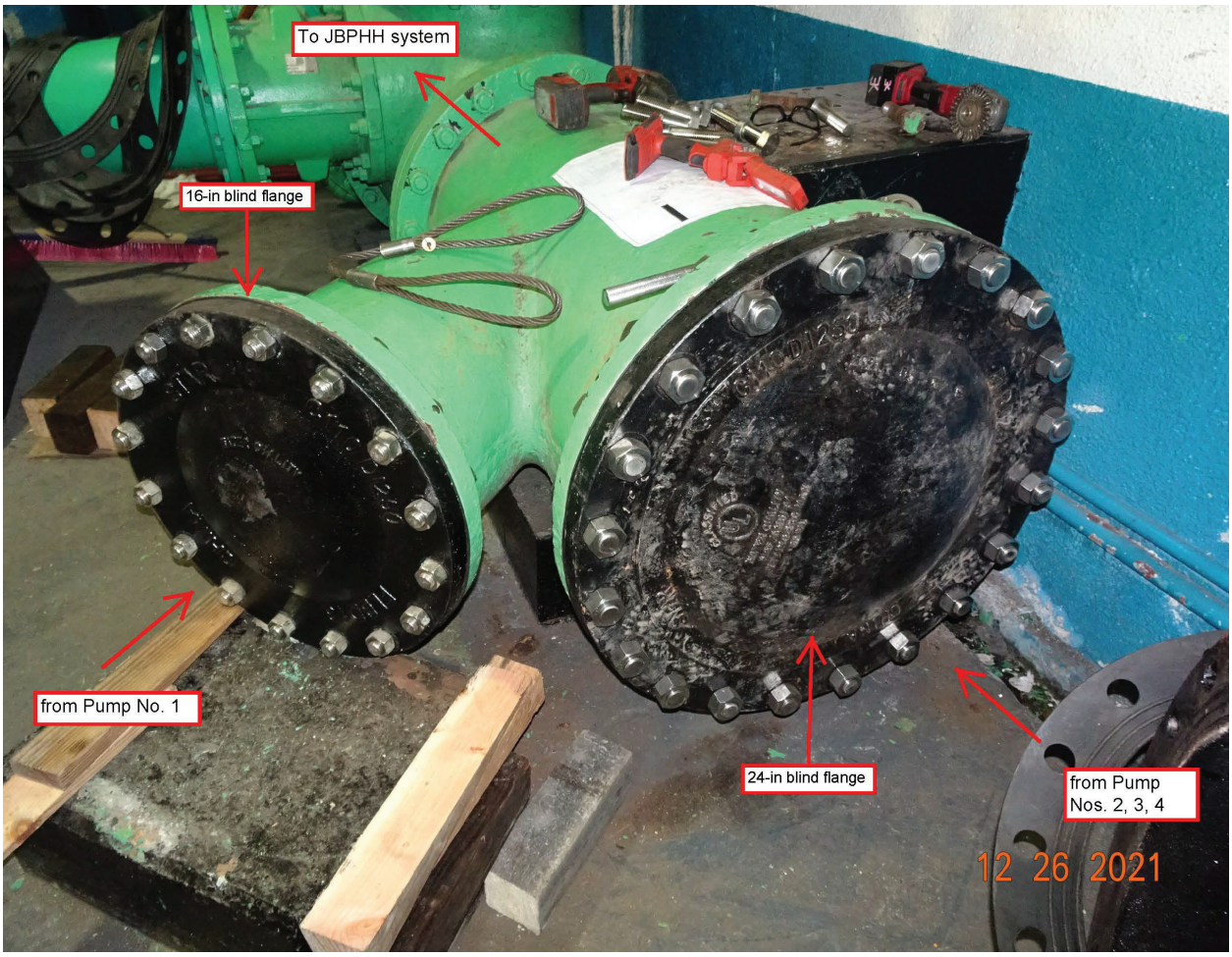
MITCHELL.JEREMY.W.1395400700
Digitally signed by MITCHELL.JEREMY.W.1395400700
Date: 2022.01.04 07:56:02 -10'00'

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

NAVFAC

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	[signature]
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	[signature]
10 JUN 20	0900			REDHILL	MCC MP#1	PUMP OVERHAUL		012	[signature]
16 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

Locked Out		Back in Service		Location	Circuit / Equipment being LOTO	Reason for LOTO	Lock No.	Tag No.	Authorized Employee
Date	Time	Date	Time						
3DEC 21	0920			REDHILL	MCC MP#3	COMMAND INTEREST WORK IN WELL			[illegible]
3DEC 21	0927			REDHILL	MCC MP#4	COMMAND INTEREST WORK IN WELL			[illegible]
3DEC 21				HALAWA	MCC #3	COMMAND INTEREST ISOLATE SYSTEM			[illegible]

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.

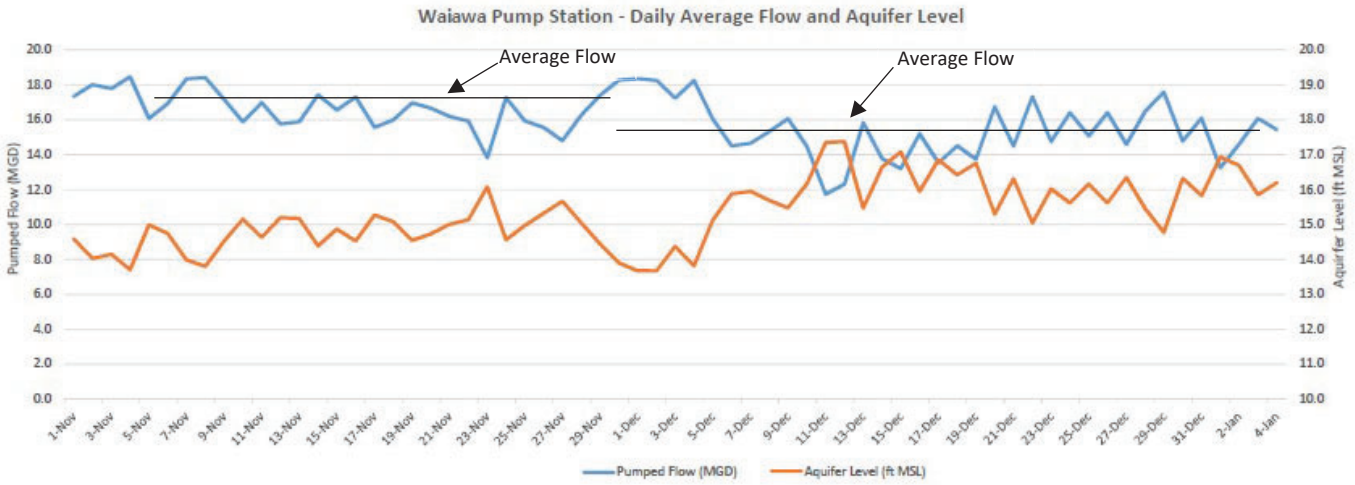


Figure 1. Waiawa Shaft Daily Average Flows and Aquifer Water Surface Elevation

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

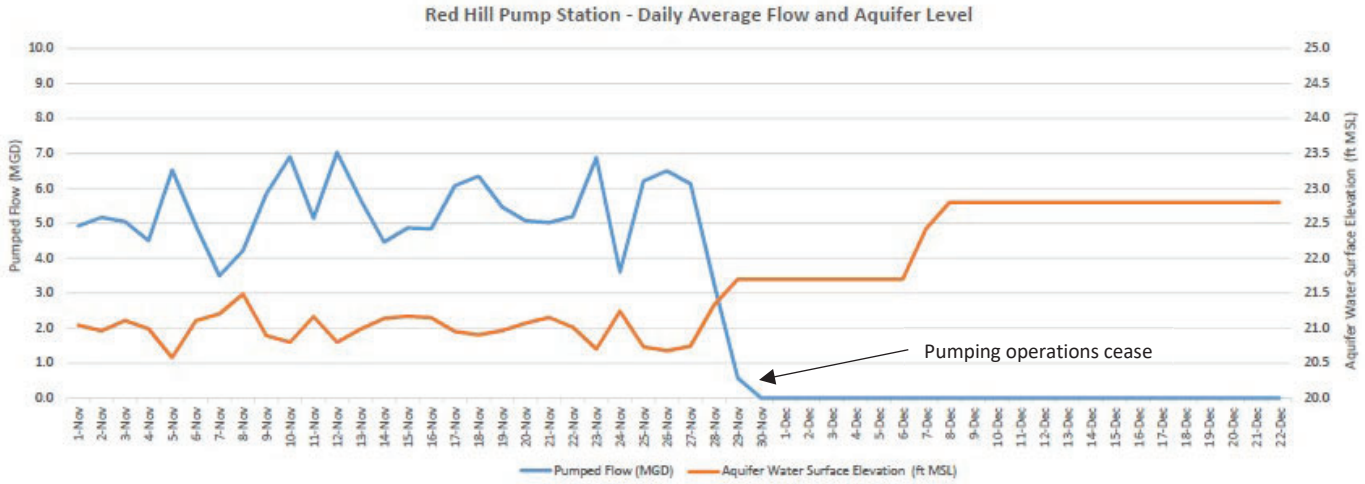


Figure 2. Red Hill Shaft Daily Average Flows and Aquifer Water Surface Elevation

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.

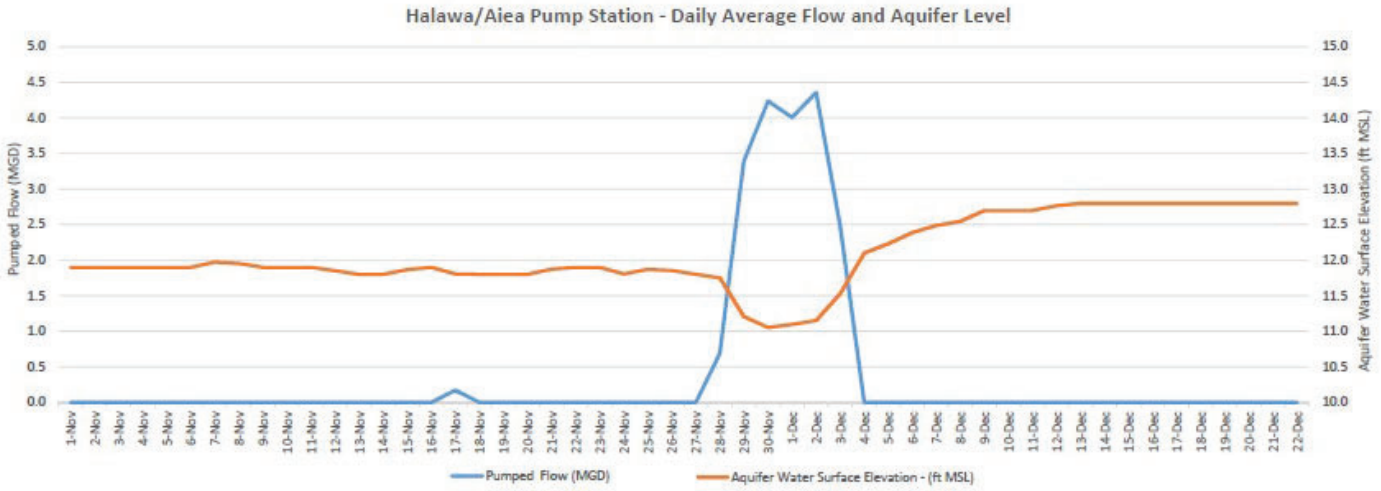


Figure 2. Halawa/Aiea Shaft Daily Average Flows and Aquifer Water Surface Elevation

Photograph of Concrete Blocking Between Air-gapped Isolation Flange

Interagency Drinking Water System Team
Zone G1 Removal Action Report
February 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 G1 Removal Action Report
February 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/0091
February 19, 2022

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

Dear DOH Director:

SUBJECT: CERTIFICATE REGARDING CROSS CONNECTION CONTROL REVIEW AND CONFIRMATION – ZONE G1

Enclosure: [1] ZONE G1: POL Activities Backflow Prevention Devices
[2] ZONE G1: 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 G1**, are identified in Enclosure [1], "Zone G1: 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 G1

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: 2022.02.19 13:36:54 -10'00'

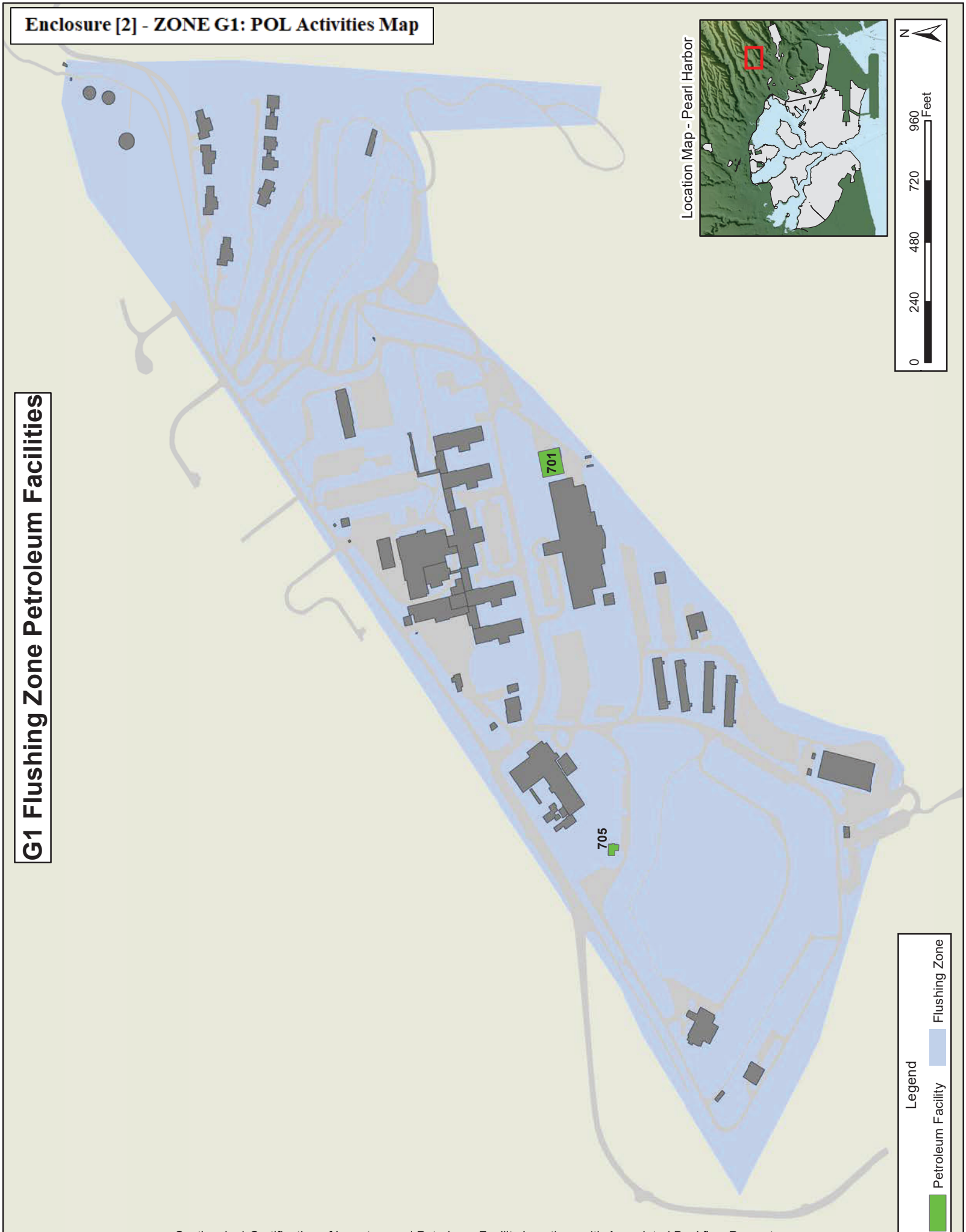
R. E. HARMEYER
Captain, CEC, U.S. Navy
Public Works Officer
By Direction of the
Commanding Officer

Enclosure [1] - ZONE G1: POL Activities Backflow Prevention Devices

POL Activities Backflow Prevention Devices **Zone: G1**

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, 1 HOSE BIB	SPIDERS FACILITY	EYE WASH STATION	AST D-KTR-1 / 12,000 GAL DIESEL AST D-KTR-2 (692) / 100 GAL DIESEL AST D-KTR-3 (694) / 100 GAL DIESEL AST D-KTR-4 (695) / 100 GAL DIESEL AST D-KTR-5 (696) / 100 GAL DIESEL	HOSE BIB W/ AVB	AVB	0.75	N/A	N/A	N/A	N/A	N/A
SA-QFW 11872	701	1 OF 2 BLDG FEED	AST 701-1 / 7,000 GAL DIESEL	WATTS	909	2	89107	1/1/2000	N/A	8/23/2021	N/A
SA-QFW 11871	701	2 OF 2 BLDG FEED	AST 701-2 / 275 GAL DIESEL AST 701-3 / 275 GAL DIESEL	WATTS	909	4	200780	6/1/1997	N/A	8/24/2021	N/A
SA-QFW 11869	701	IRRIGATION	AST 701-2 / 275 GAL DIESEL AST 701-3 / 275 GAL DIESEL	WATTS	909	2	90144	12/18/2018	N/A	8/24/2021	N/A
NO BFP ASSETS, 1 HOSE BIB	705	STORAGE	CONTAINERS / 1@55-GAL DRUM	HOSE BIB W/ AVB	AVB	0.75	N/A	N/A	N/A	N/A	N/A

Enclosure [2] - ZONE G1: POL Activities Map



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

Distribution:
Electronic only, via CNRH Gateway
https://g2.cnic.navy.mil/CNRH/SitePages/Home.aspx

Interagency Drinking Water System Team
Zone G1 Removal Action Report
February 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 G1 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 G1 is part of the JBPHH Drinking Water system that is operated and maintained by the United States Navy. Flushing operations for Zone G1 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 G1 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 G1 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 G1 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 G1:

6.1. DESCRIPTION OF FLOW: This zone is fed by a single 36-inch transmission main that transfers water from Waiawa Shaft to the main JBPHH area. It transfers to a 30-inch interconnect and then to a 24-inch transmission main that feeds the Halawa/Camp Smith booster pumps. From there, a 12-inch transmission line feeds Camp Smith demands and 3 tanks with a total volume of 0.54 MG. See Figure 1 for a schematic representation of the flows through Zone G1.

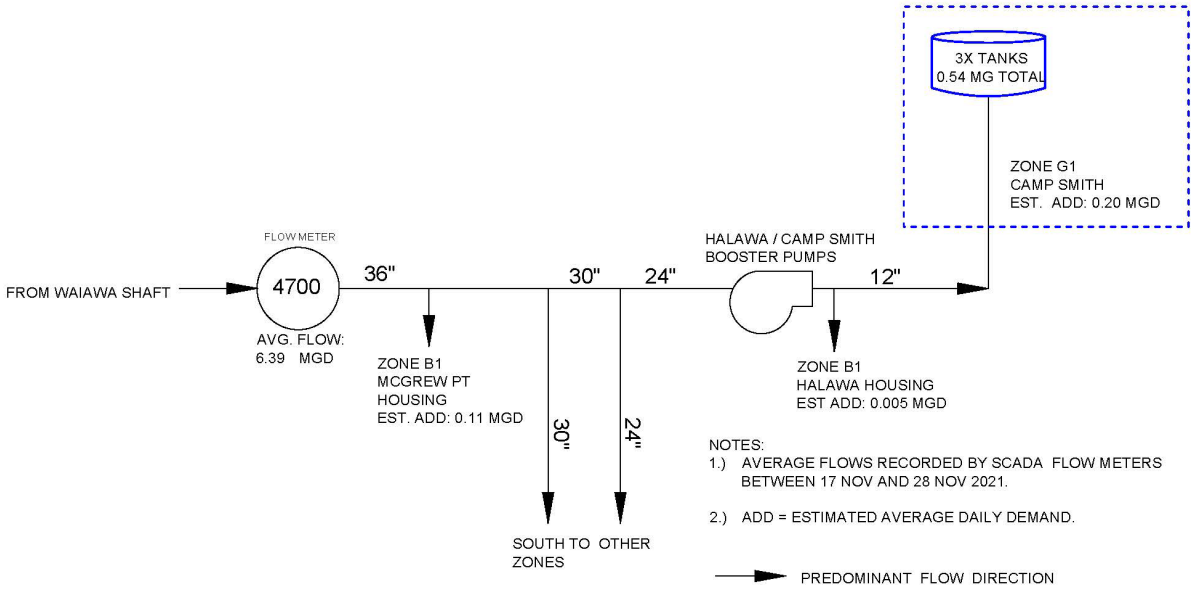


Figure 1: Zone G1 Flow Schematic

Flow in the 36-inch transmission main feeding Zone G1 was recorded by Meter 4700. For the 10-days of data prior to the 28 November 2021 incident, an average flow of 6.39 MGD was transferred from Waiawa Shaft through the transmission main. Meter 4700 also indicated that flow in the 36-inch transmission main did not reverse. The demands in McGrew Point and Halawa Housing are very small in comparison with the flows being transferred by the 36-inch transmission main which means that the 30- and 24-inch transmission mains feeding the southern zones did not reverse and Waiawa Shaft was likely the main source of water to Zone G1.

6.2. WATER USE/TENANTS: Water users in Zone G1 (Camp Smith) include the large administrative facilities for Marine Corps Forces Pacific (MARFORPAC) and Indo Pacific Command (INDOPACOM). There are also some barracks facilities and 10 single family residences.

6.3. PIPE VOLUME: Per section 2.5.1.1. of the DWDSRP, Flush Zone G1 has a mainline pipe volume of 80 thousand gallons (KGal). The 540 KGal of water volume in the tanks was also included in the volume calculation for a total of 620 KGal. The zone was included in Phase #3 and a minimum turnover volume of 1,240 KGal was passed through the system. With the exception of the 12-inch main transmission pipeline feeding Camp Smith, mainline pipes in the zone are 4 to 10-inches in diameter.

6.4. PRIORITY: Zone G1 was included in Phase #3 with two volumetric turnovers minimum. The likelihood of contamination entering this zone is very low because it is fed solely from Waiawa Shaft.

6.5. HYDRANT SELECTION: The flushing hydrants 26 and CS-18 were selected to be near the hydraulic extremities of the pipe network so that “clean” water from Waiawa Shaft would be pulled from the transmission main connection through the pipe networks prior to discharge from the system.

6.5.1. Flushing hydrants CS-3 and CS-6 were not possible to reach with the trailer mounted mobile GACs. The terrain was steep and the trucks were unable to traverse to the hydrants identified. Flushing of Zone G1 was completed through hydrants 26 and CS-18.

6.6. DEAD-END LINES: Zone G1 is well networked with few opportunities for dead-end lines. Additional distribution samples were not necessary in this zone per DoH and EPA.

6.7. FLUSHING ACTUALS: Water was simultaneously discharged through:

18	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
1-Jan	20:00	8:00	21:52		10:08	20220101 2000-0800	N/A
2-Jan	8:00	20:00		13:43	5:43	20220102 0800-2000	Y
2-Jan	8:00	20:00	19:06		0:54	20220102 0800-2000	Y
2-Jan	20:00	8:00		2:34	6:34	20220102 2000-0800	N/A
3-Jan	8:00	20:00	19:02		0:58	20220103 0800-2000	N/A
3-Jan	20:00	8:00		3:35	5:35	20220103 2000-0800	Y

TOTAL RUN @ FLOW of 200	
TIME	29:52
VOLUME	61600 Gallons

26	Shift		Flush Time			Documentation	
Date	Begin	End	Start	Stop	RunTime	Email Summary	UT Log
1-Jan	20:00	8:00	22:30		9:30	20220101 2000-0800	N/A
2-Jan	8:00	20:00		13:46	5:46	20220102 0800-2000	Y
2-Jan	8:00	20:00	19:25		0:35	20220102 0800-2000	Y
2-Jan	20:00	8:00			12:00	20220102 2000-0800	N/A
3-Jan	8:00	20:00			12:00	20220103 0800-2000	N/A
3-Jan	20:00	8:00		3:45	7:45	20220103 2000-0800	N/A
4-Jan	8:00	20:00	8:15	19:10	10:55	20220104 0800-2000	Y
4-Jan	20:00	8:00	5:07		11:40	20220104 0800-2000	N/A
5-Jan	8:00	20:00			12:00	20220105 0800-2000	N/A
5-Jan	20:00	8:00			12:00	20220105 2000-0800	N/A
6-Jan	8:00	20:00			12:00	20220106 0800-2000	N/A
6-Jan	20:00	8:00		5:22	9:22	20220106 2000-0800	N/A

TOTAL RUN @ FLOW of 200	
TIME	115:33
VOLUME	1213275 Gallons

Hydrant	Volume
18	61,600
26	1,213,275
TOTAL	1,274,875

6.7.7. The total volume flushed through the system was 1,275 KGal for 2 volumetric turnovers.

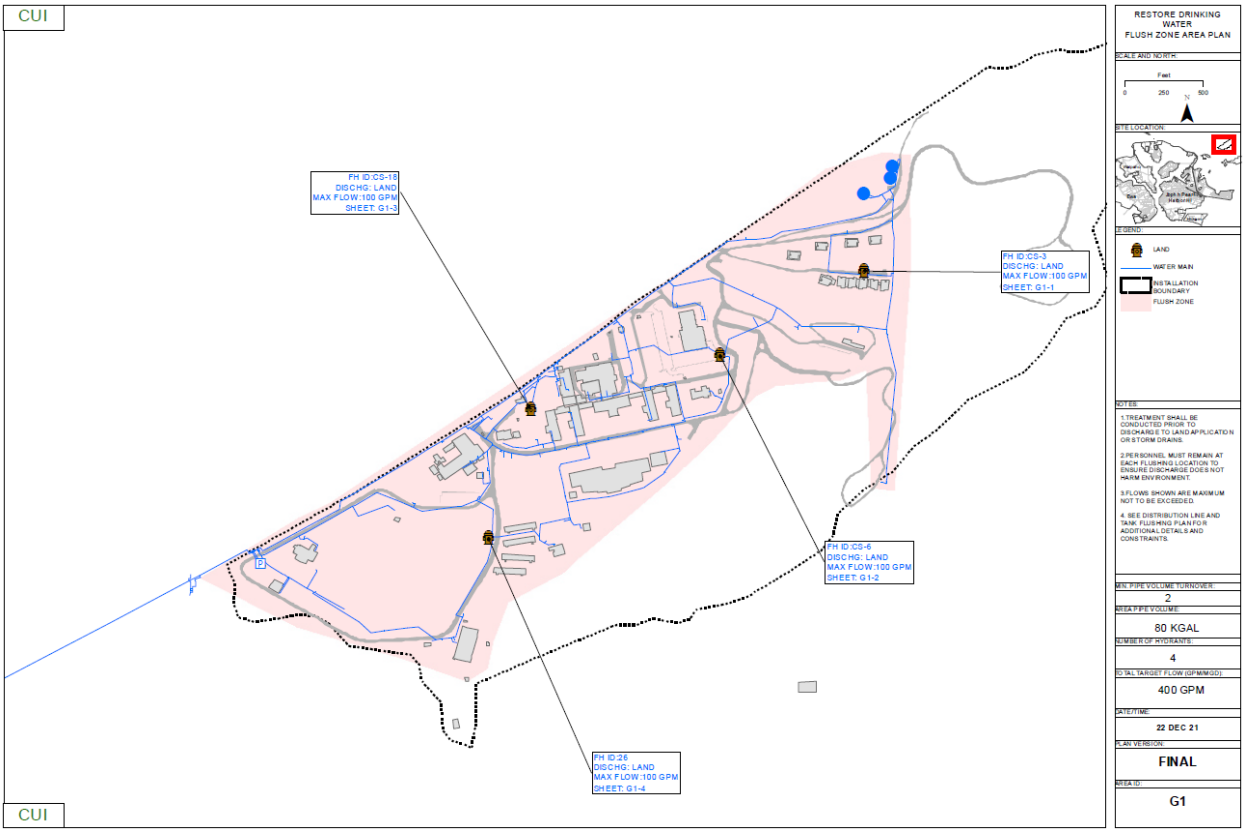


Figure 1: Flush Zone G1

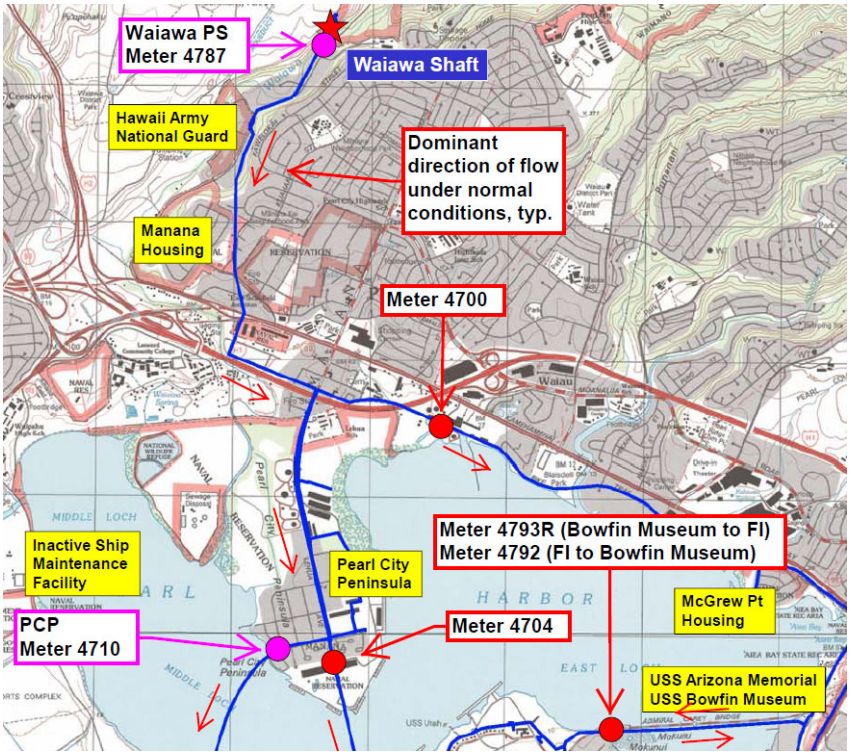


Figure 2: SCADA Meter Locations

6.8. SCADA Data: Daily average flow data collected between 18 November 2021 and 09 January 2022 is shown in Figure 3 below. Instantaneous (1 minute) flow data at meters 4700, 4710 and 4704 was also reviewed to ensure that the direction of flow did not reverse.:

6.8.1. Meter 4787 (Figure 1) at Waiawa Shaft shows an average flow of 15.53 MGD.

6.8.2. An average of 6.60 MGD continued through Meter 4700 towards McGrew Point. Flow did not reverse on this meter during this time period.

6.8.3. The majority of the remaining volume, approximately 8.9 MGD flowed through Zone A1.

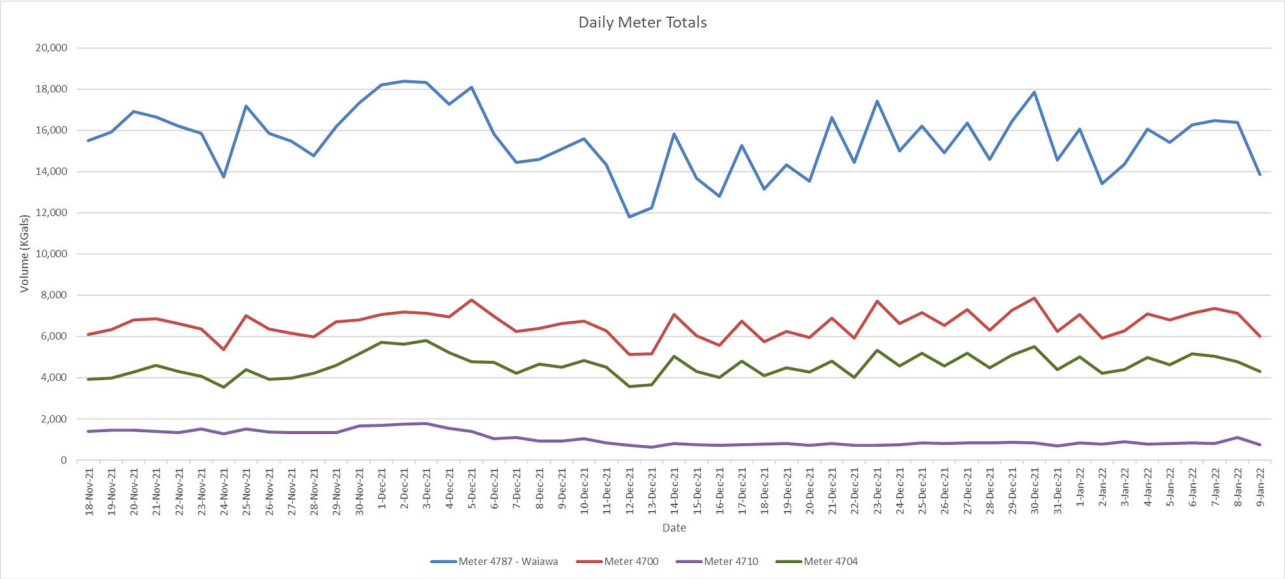


Figure 3: SCADA Daily Meter Totals 18Nov21 – 09Jan22

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 <awhelton@purdue.edu>
Sent: Saturday, January 8, 2022 4:58 AM
To: Lee, Andre K (NAVFAC HI BD) CIV USN NAVFAC HAWAII PEARL (USA) <andre.k.lee4.civ@us.navy.mil>
Cc: Isaacson, Kristofer P <isaacsok@purdue.edu>; Proctor, Caitlin Rose <proctoc@purdue.edu>
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.

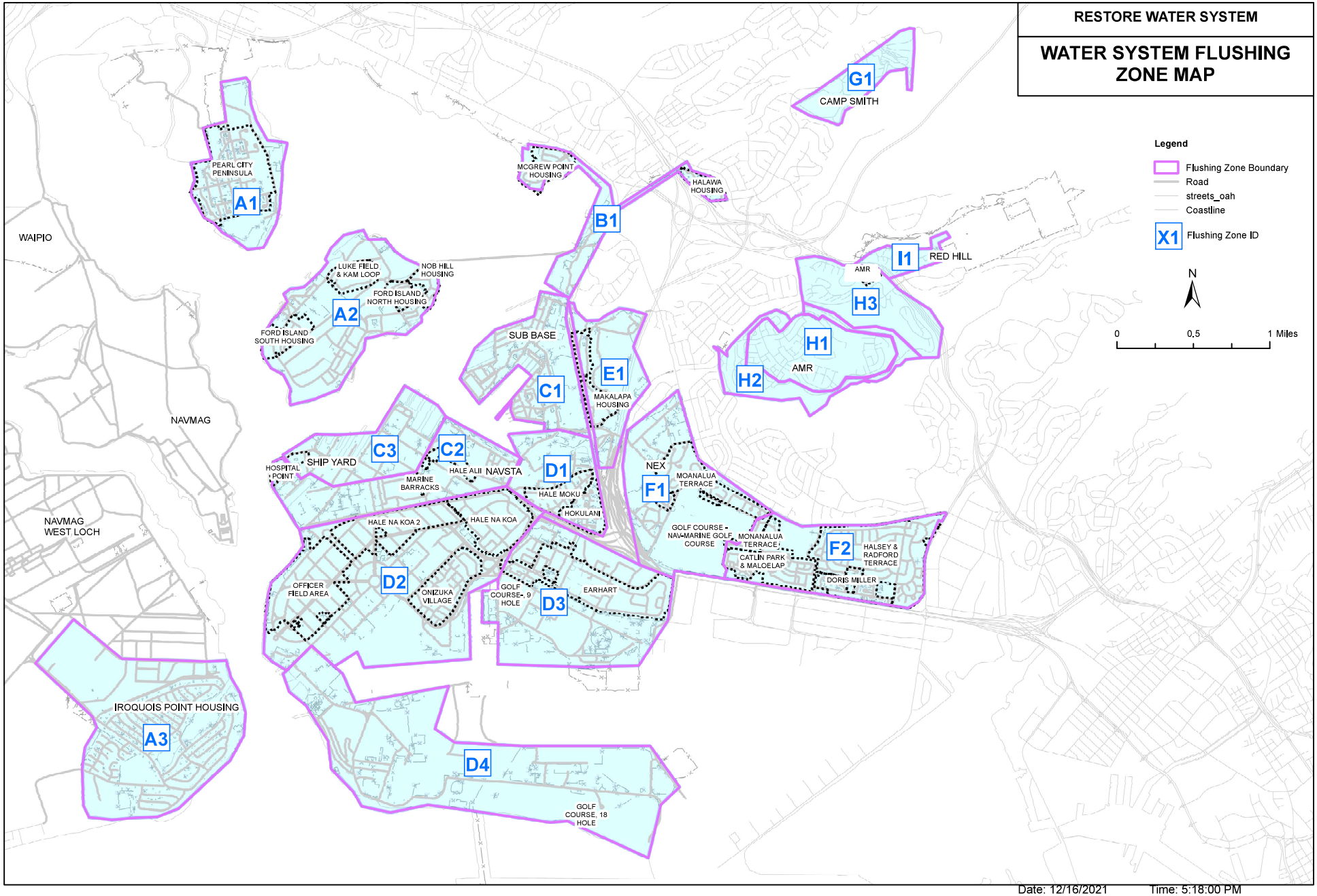
Andy

Cell/text: [redacted]

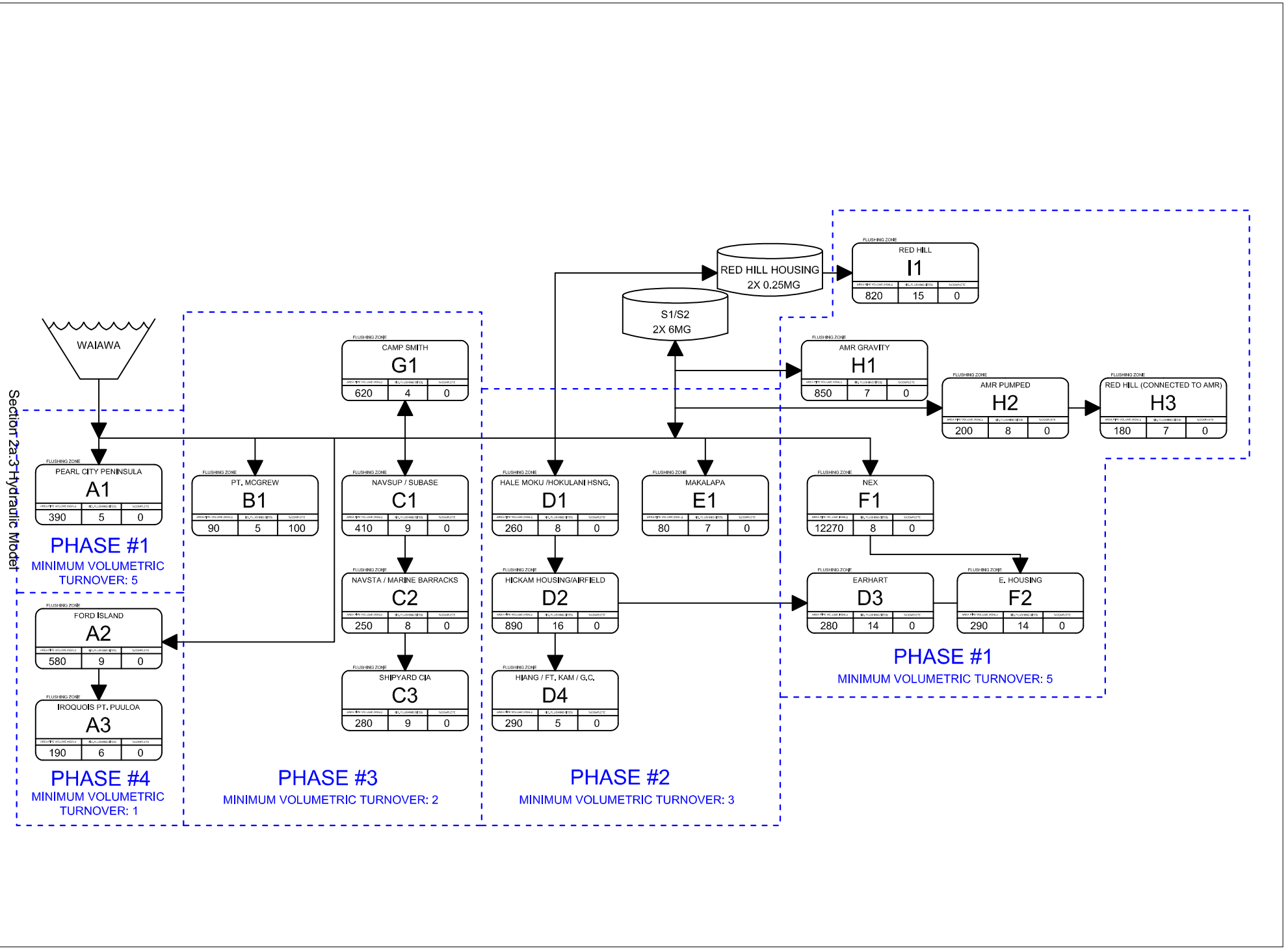
**Link to Dr.Whelton's Paper: https://pubs.rsc.org/en/content/articlelanding/2015/ew/c5ew00118h

RESTORE WATER SYSTEM

WATER SYSTEM FLUSHING ZONE MAP



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

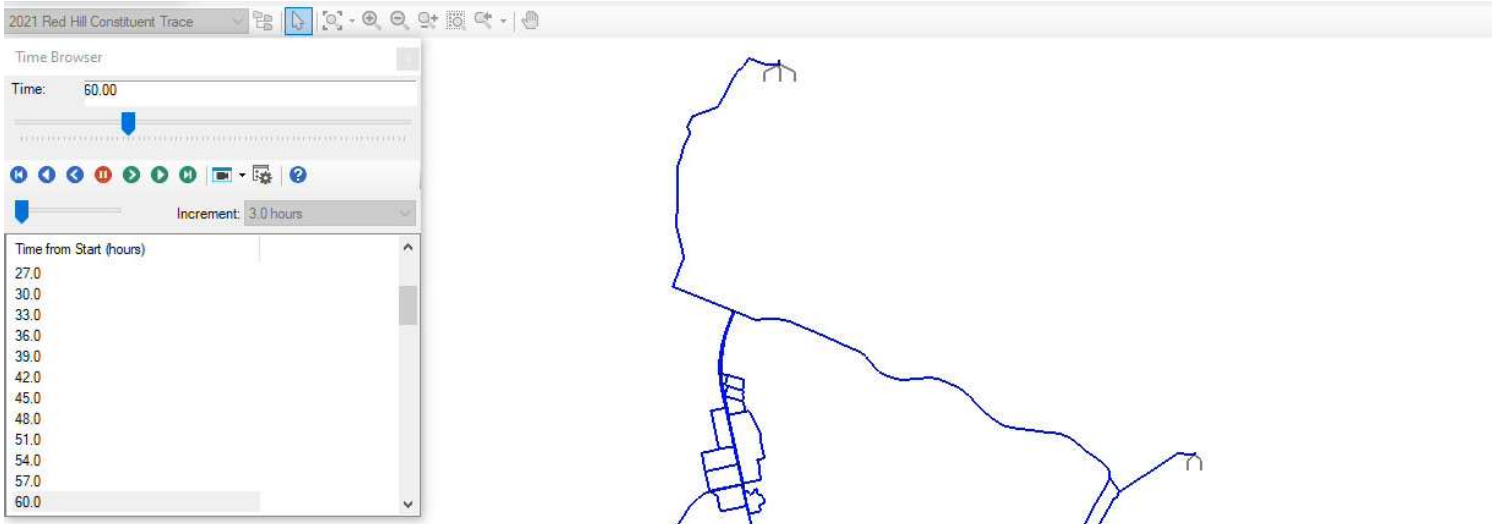

Section 2a:3-Hydraulic Model
WAIAWA
RED HILL HOUSING
2X 0.25MG
S1/S2
2X 6MG
FLUSHING ZONE
RED HILL
I1
820
15
0
FLUSHING ZONE
CAMP SMITH
G1
620
4
0
FLUSHING ZONE
AMR GRAVITY
H1
850
7
0
FLUSHING ZONE
AMR PUMPED
H2
200
8
0
FLUSHING ZONE
RED HILL (CONNECTED TO AMR)
H3
180
7
0
FLUSHING ZONE
PEARL CITY PENINSULA
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

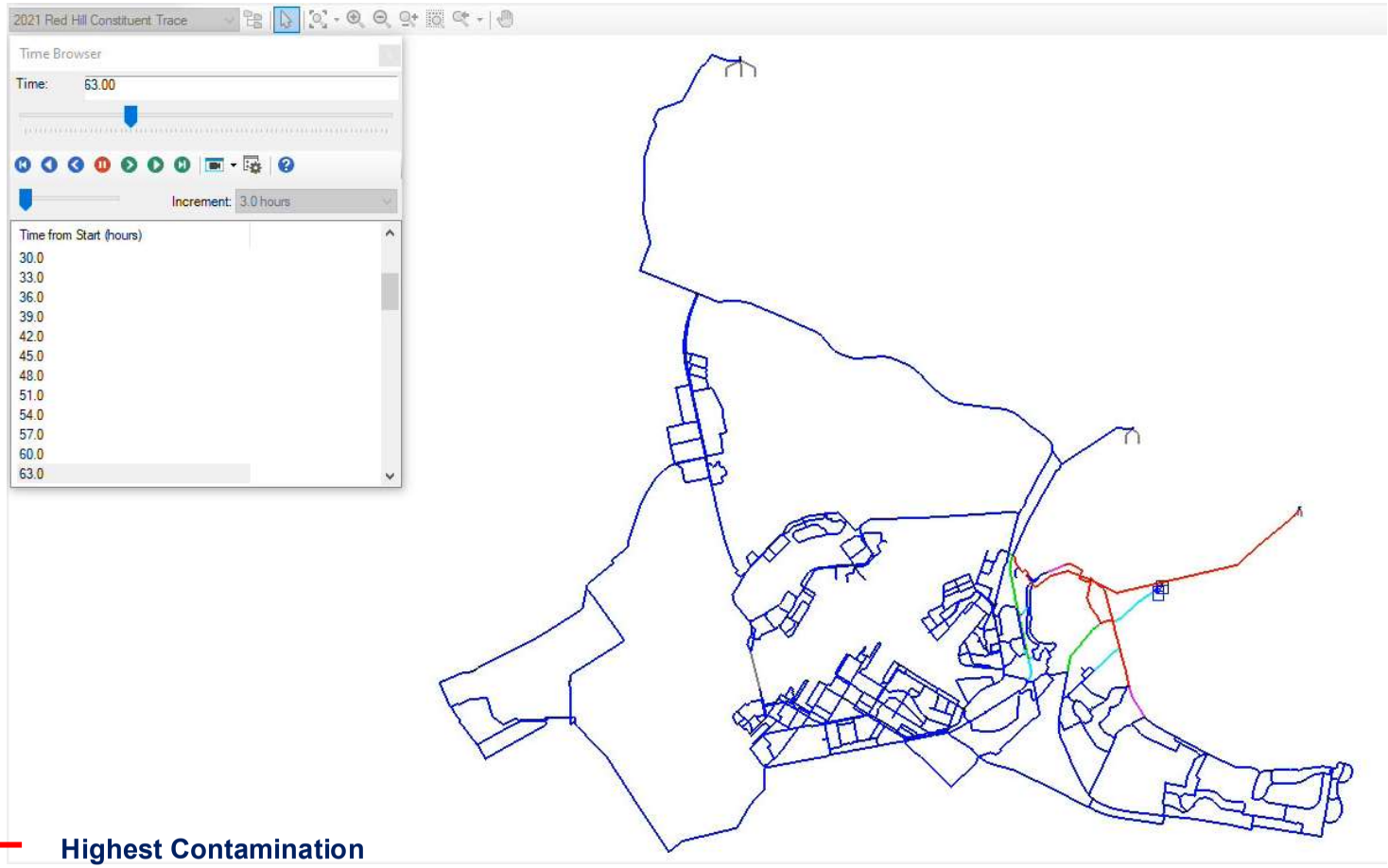
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

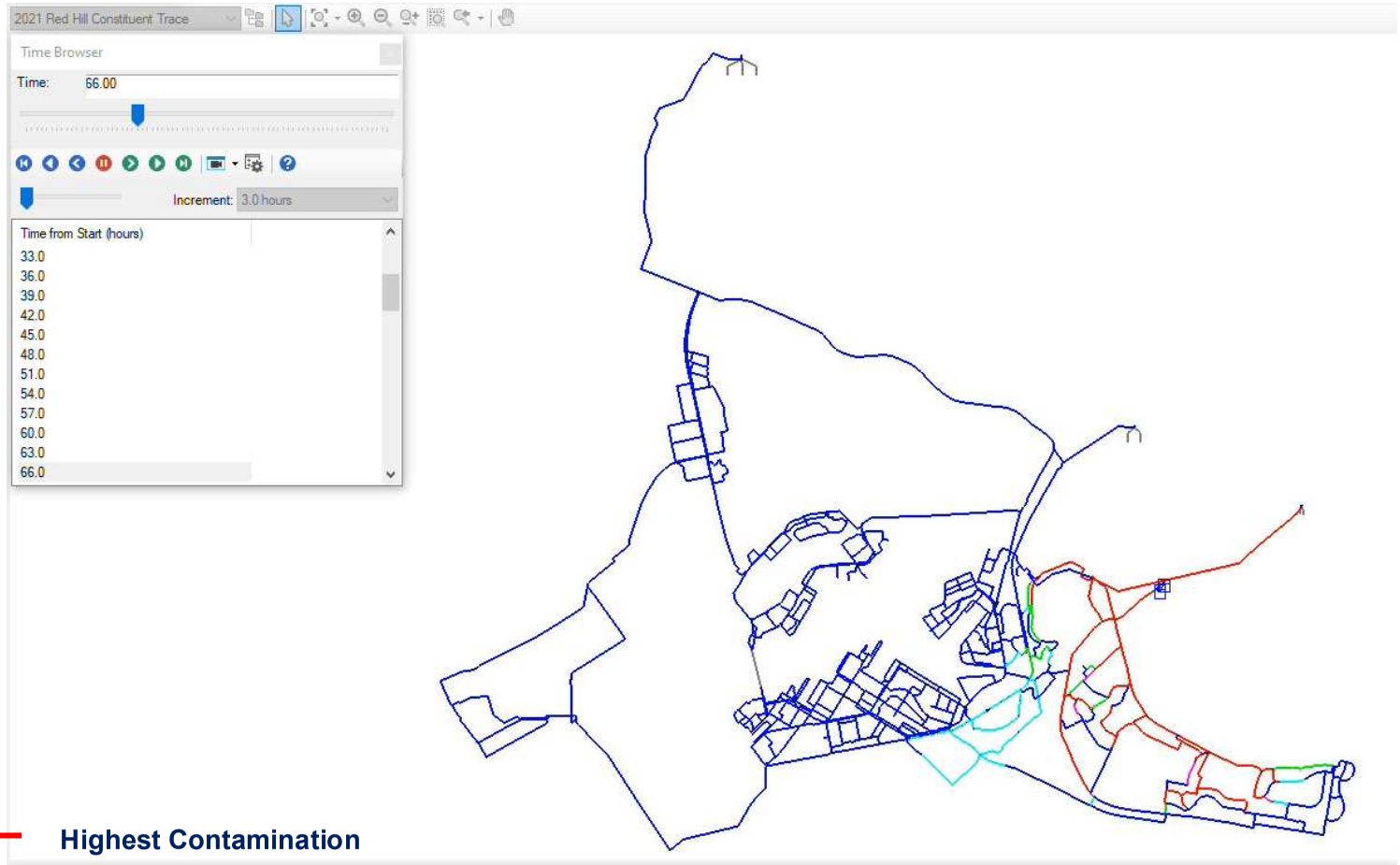
JBPHH Hydraulic Model



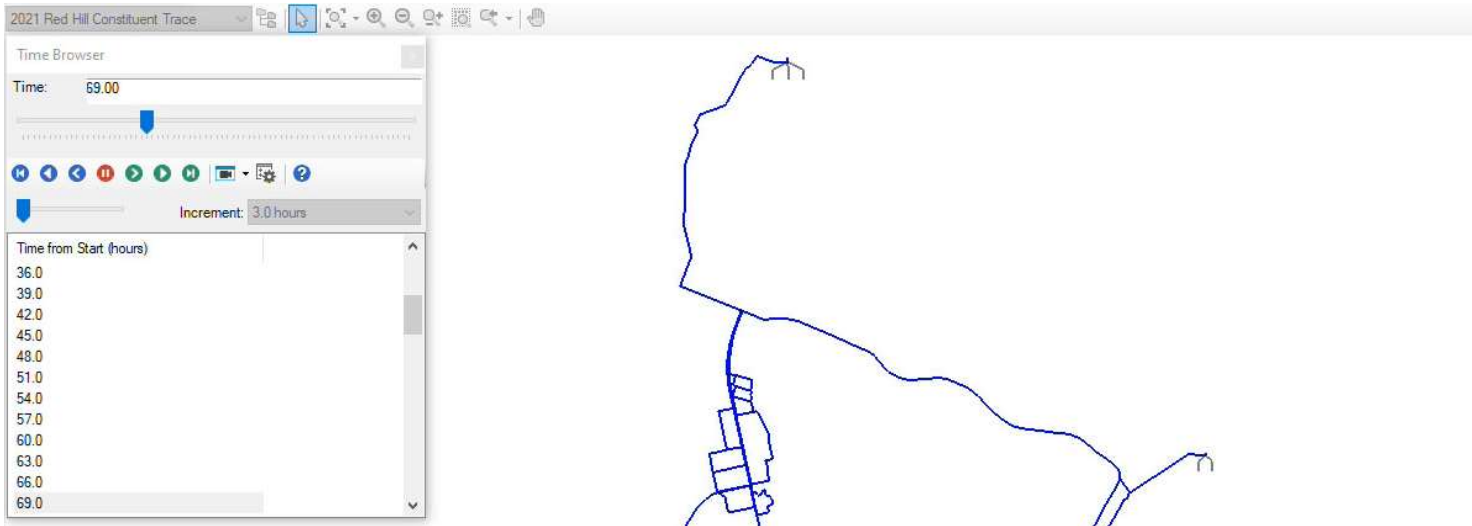
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



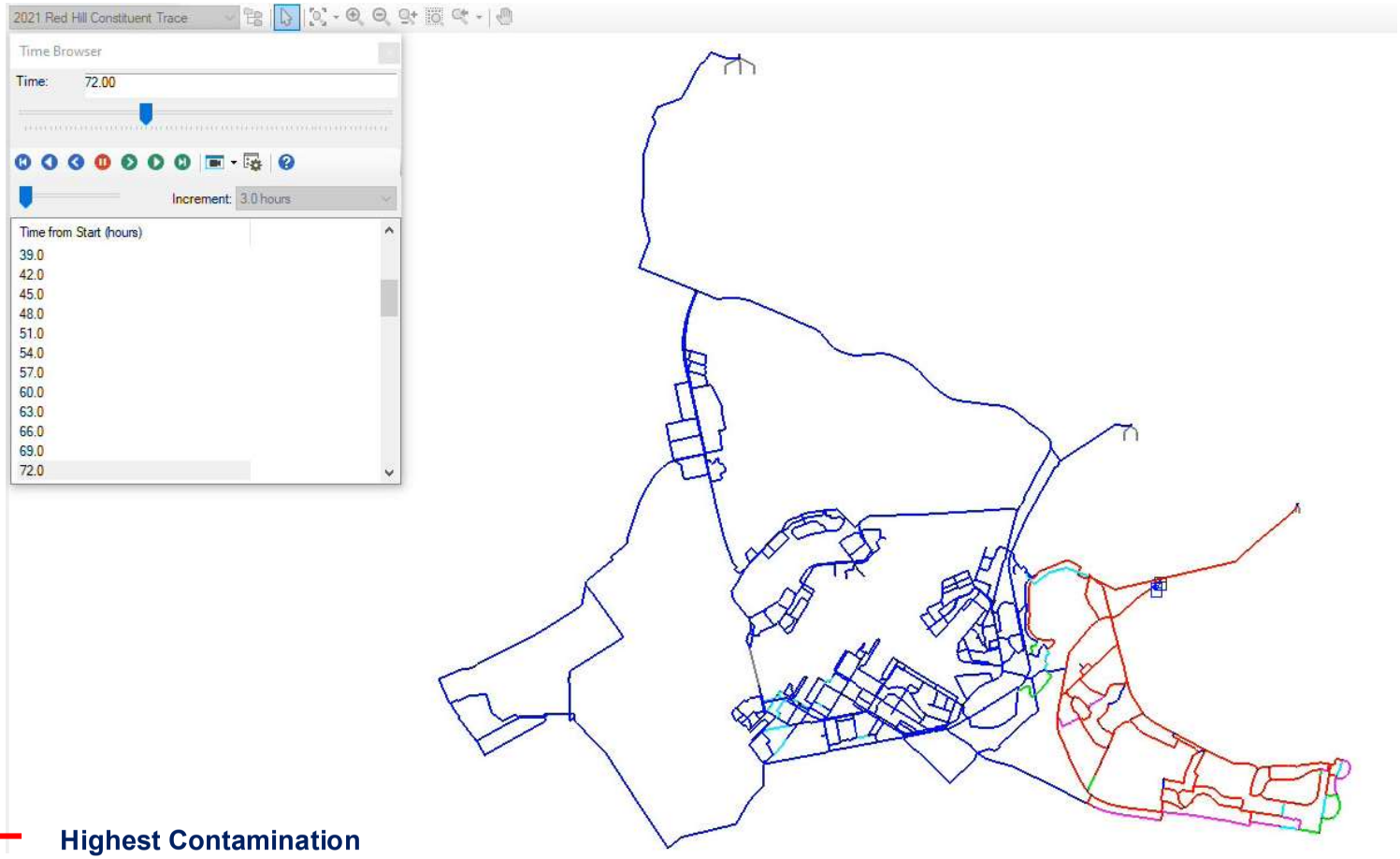
JBPHH Hydraulic Model



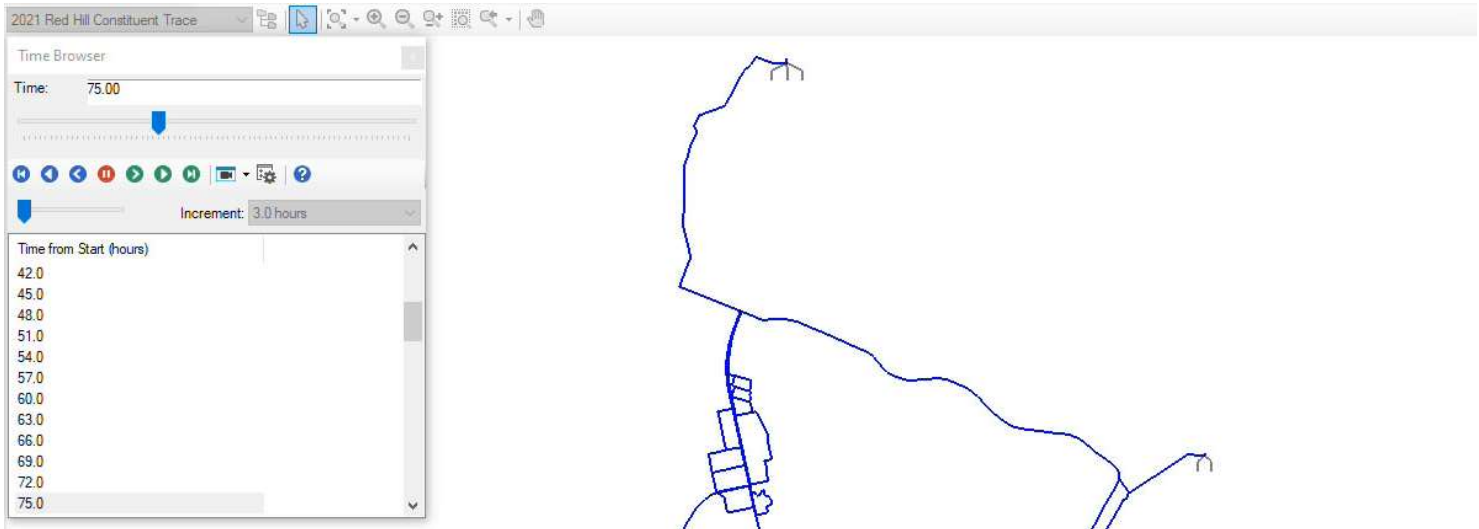
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



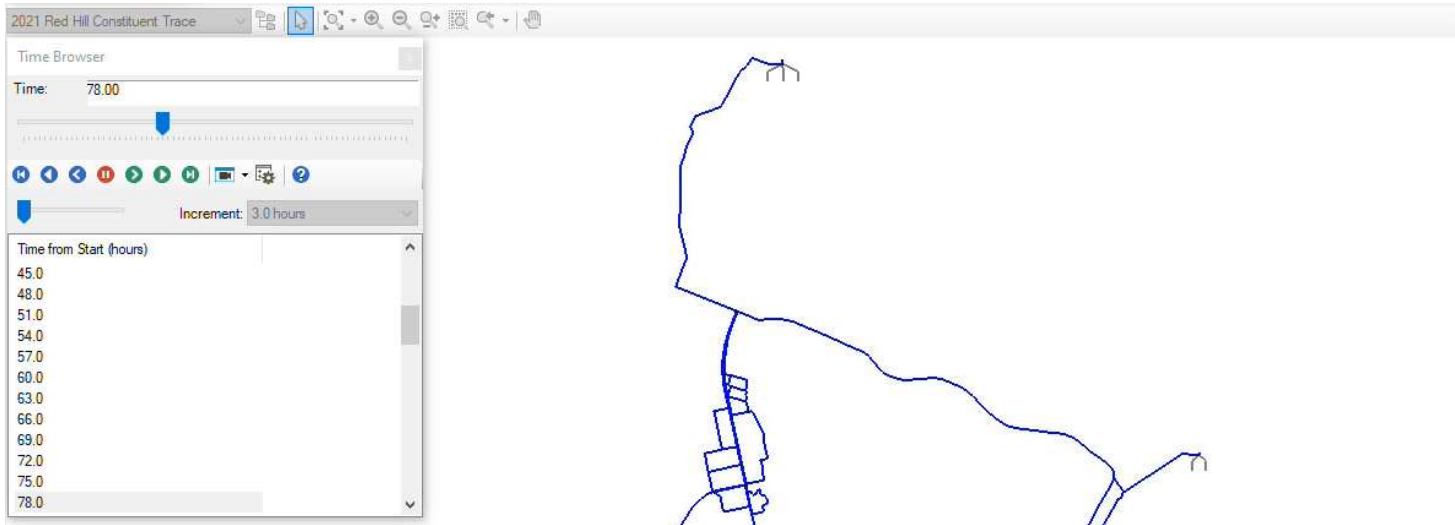
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

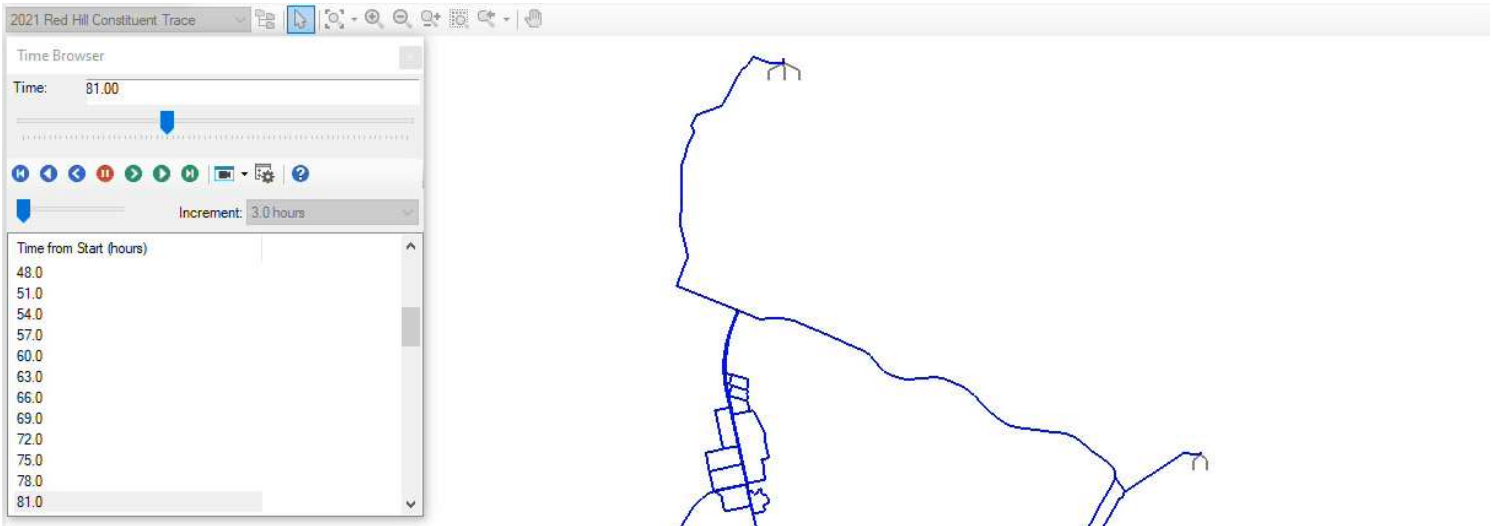
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

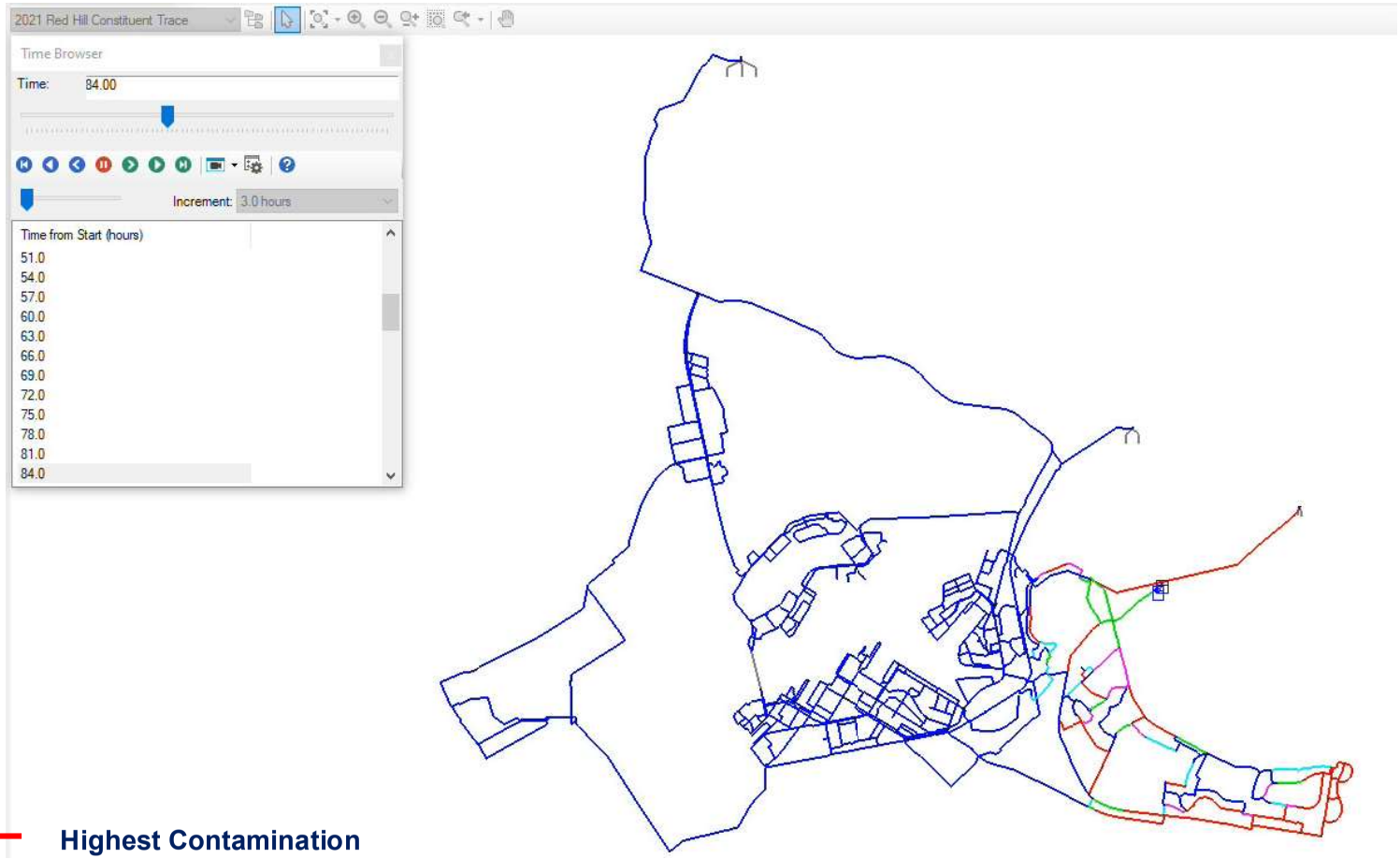
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

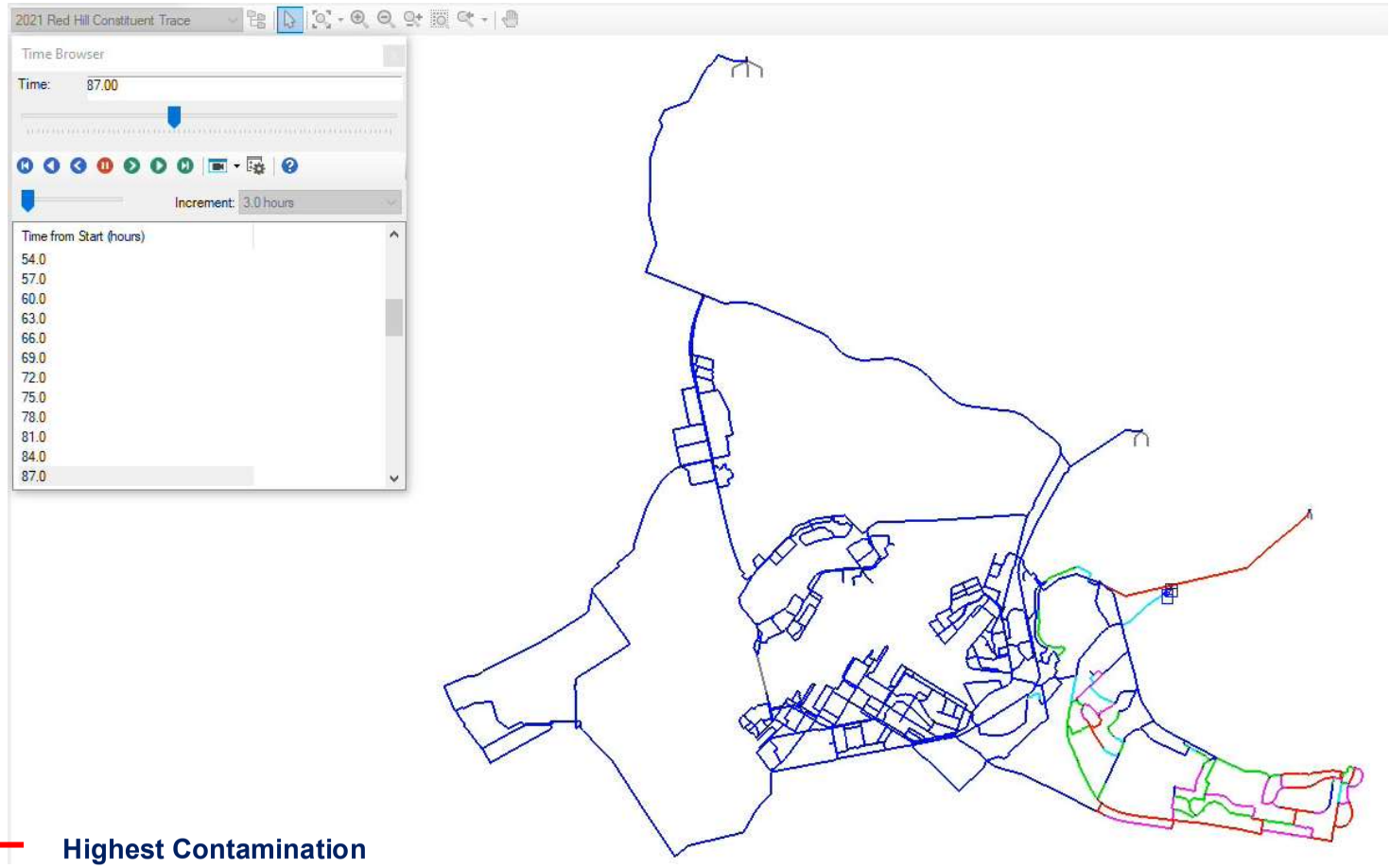
JBPHH Hydraulic Model



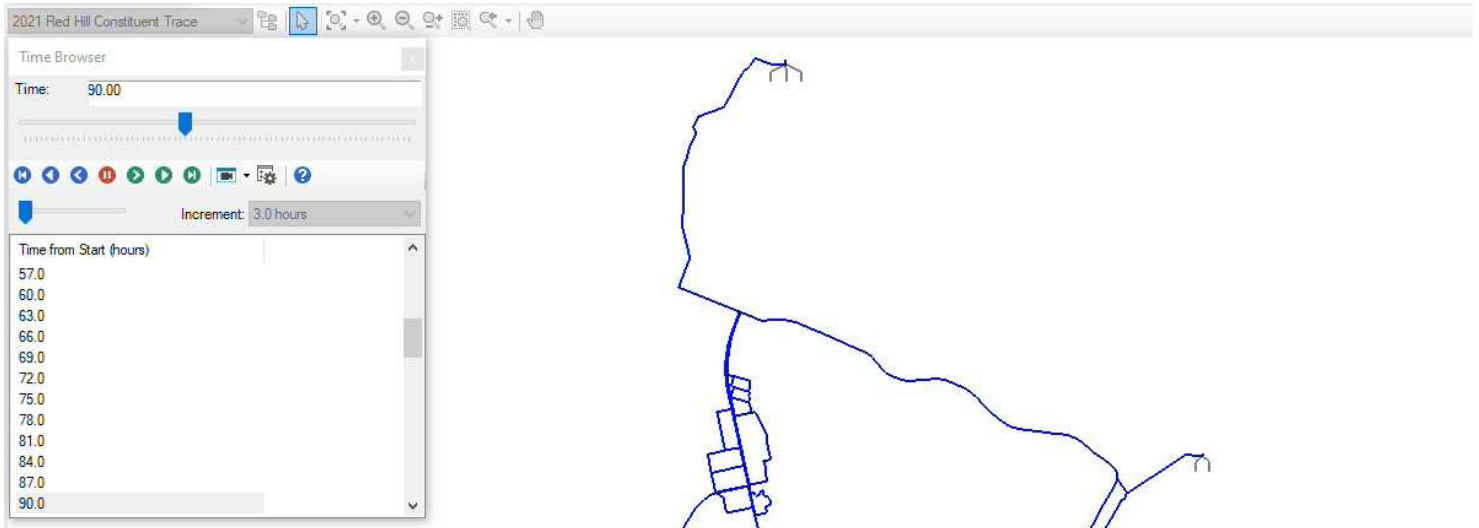
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



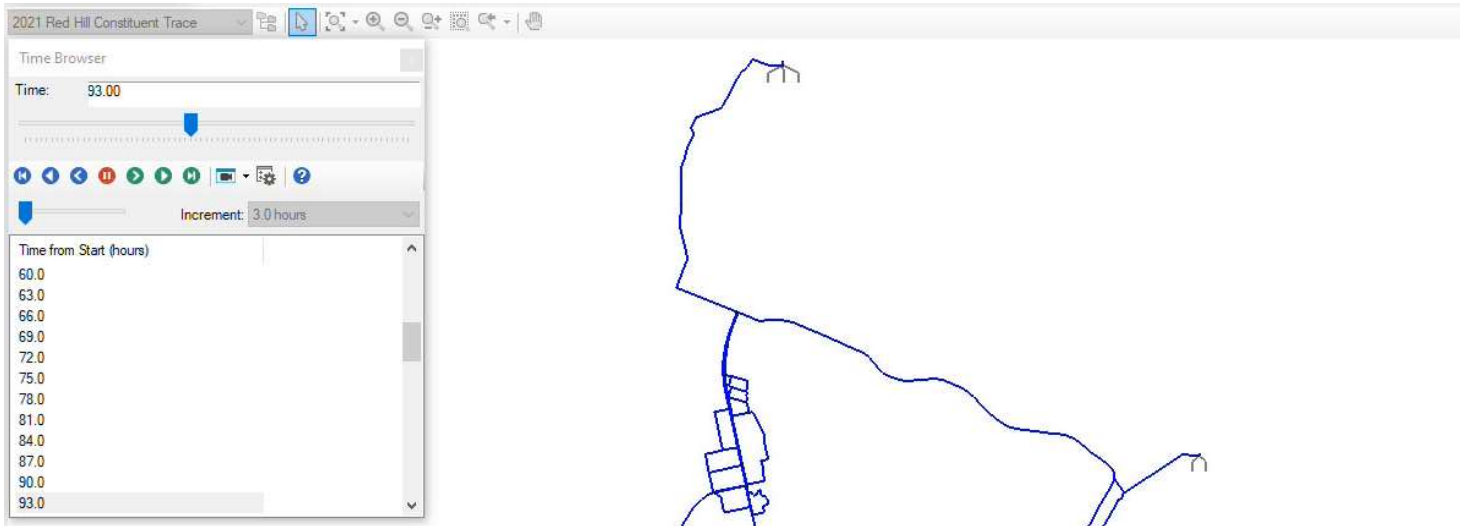
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

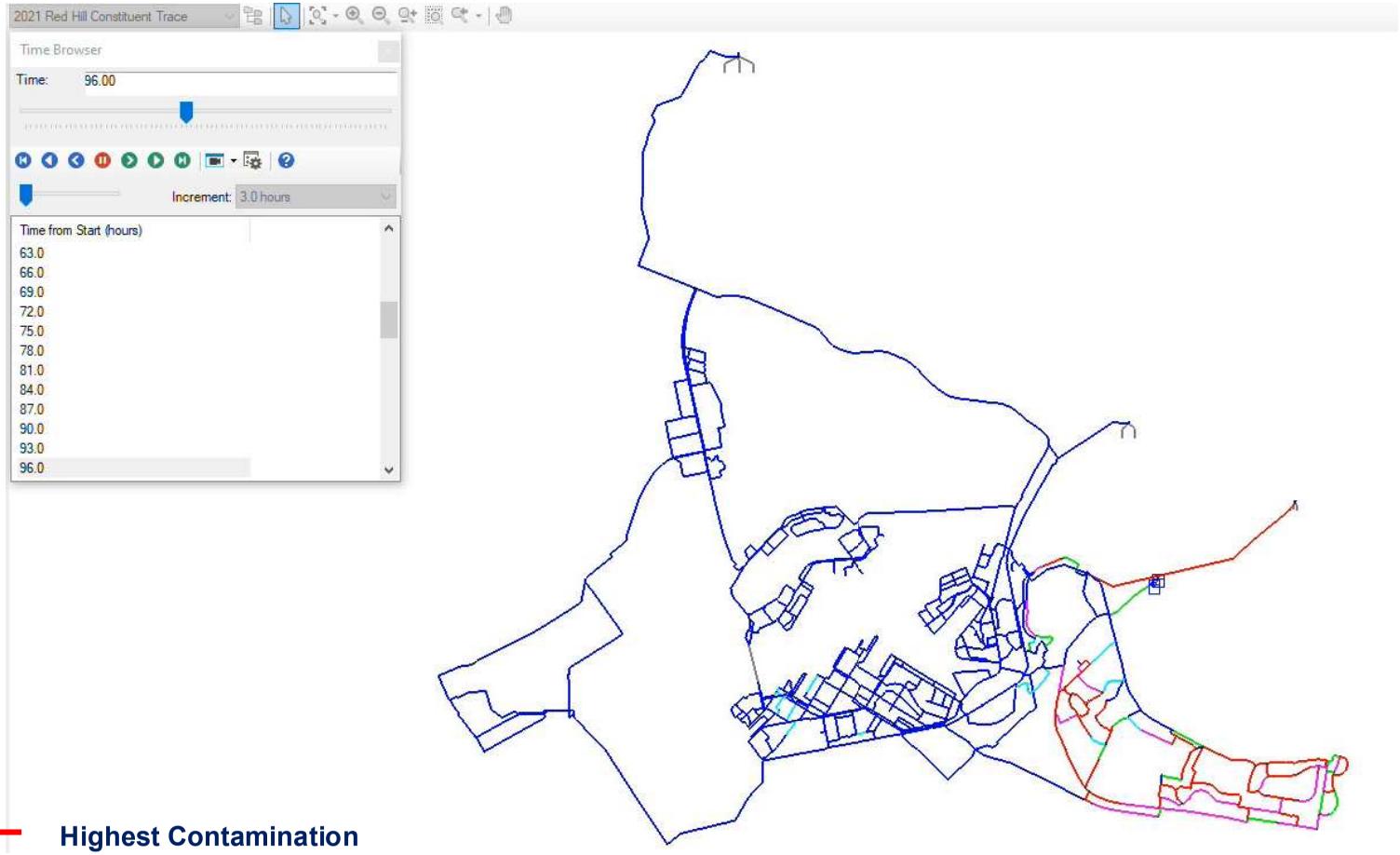
JBPHH Hydraulic Model



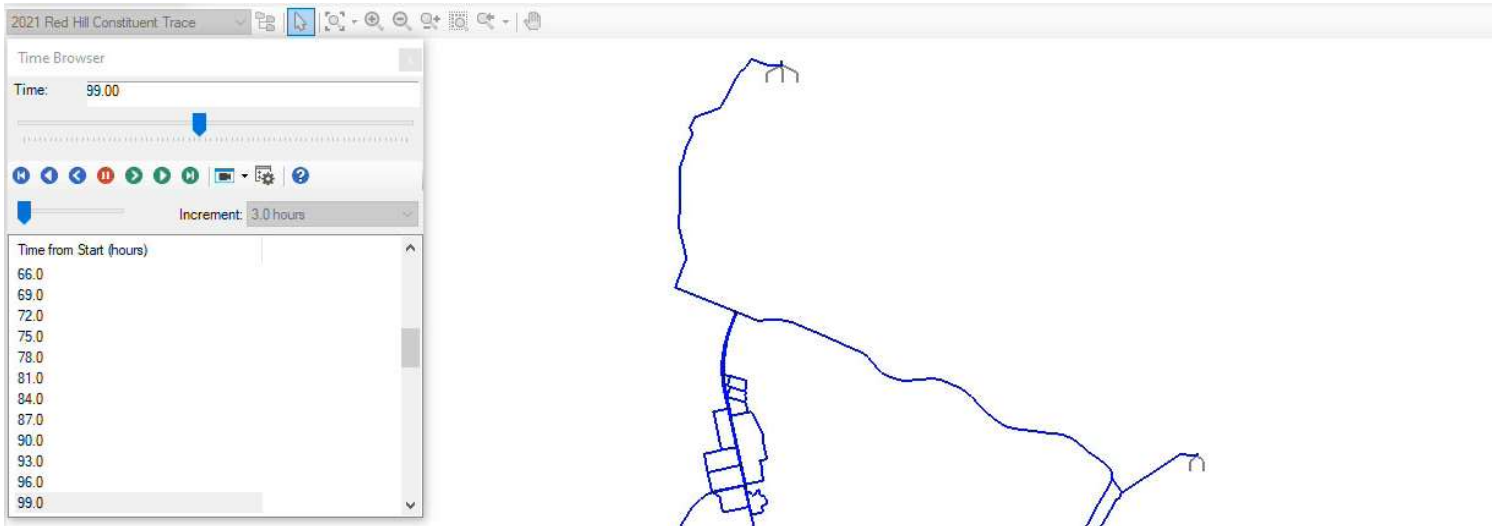
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



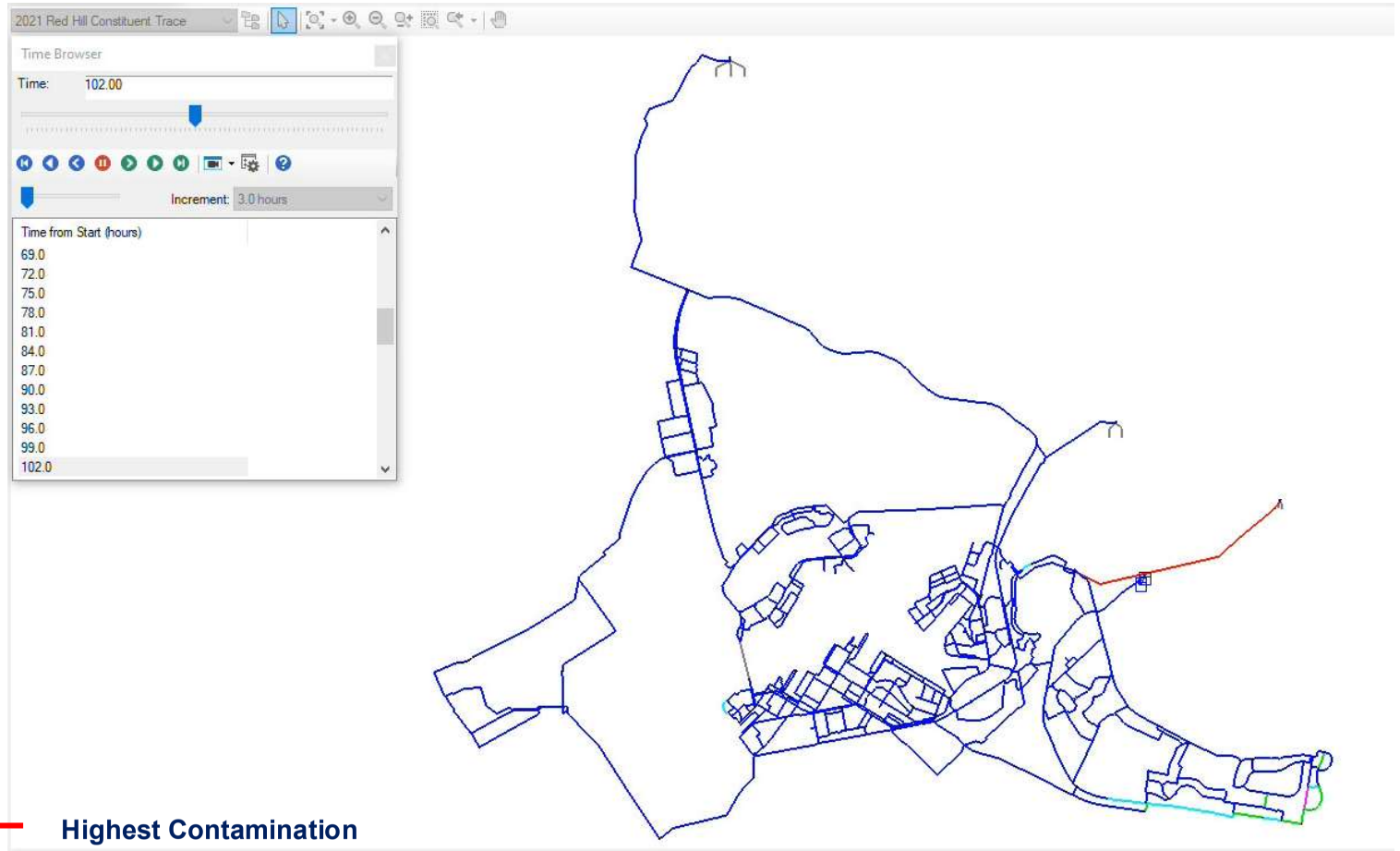
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

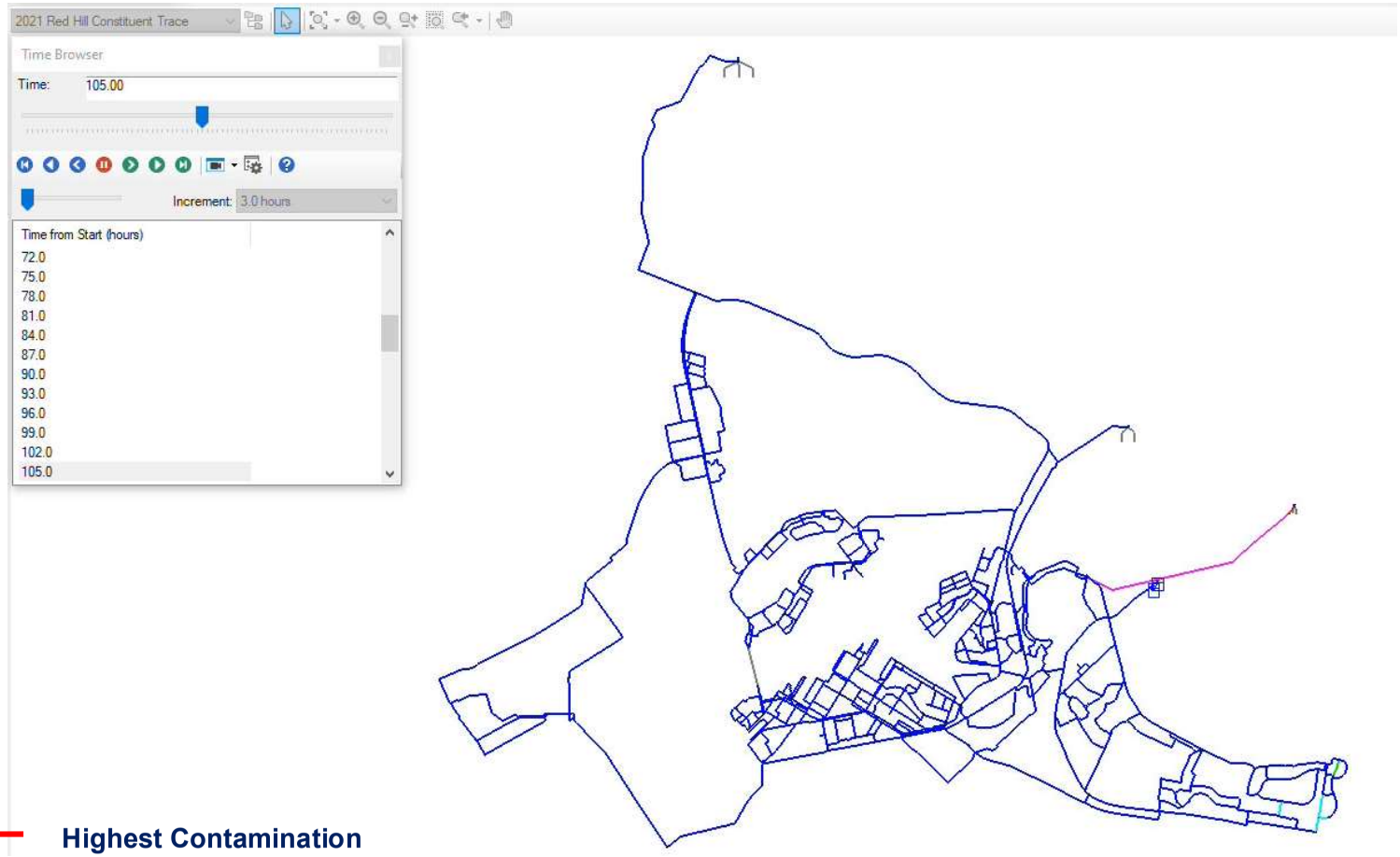
JBPHH Hydraulic Model



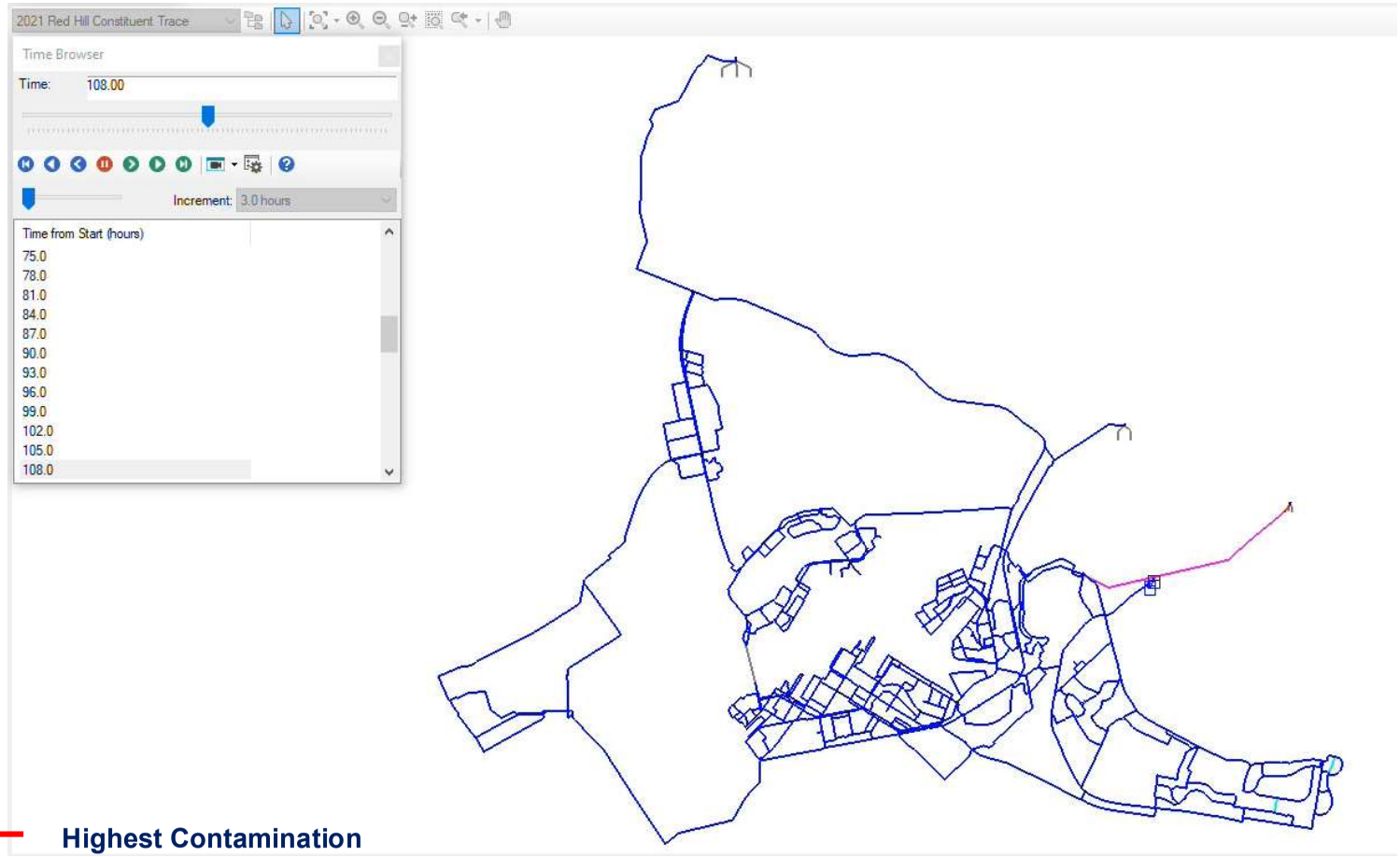
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



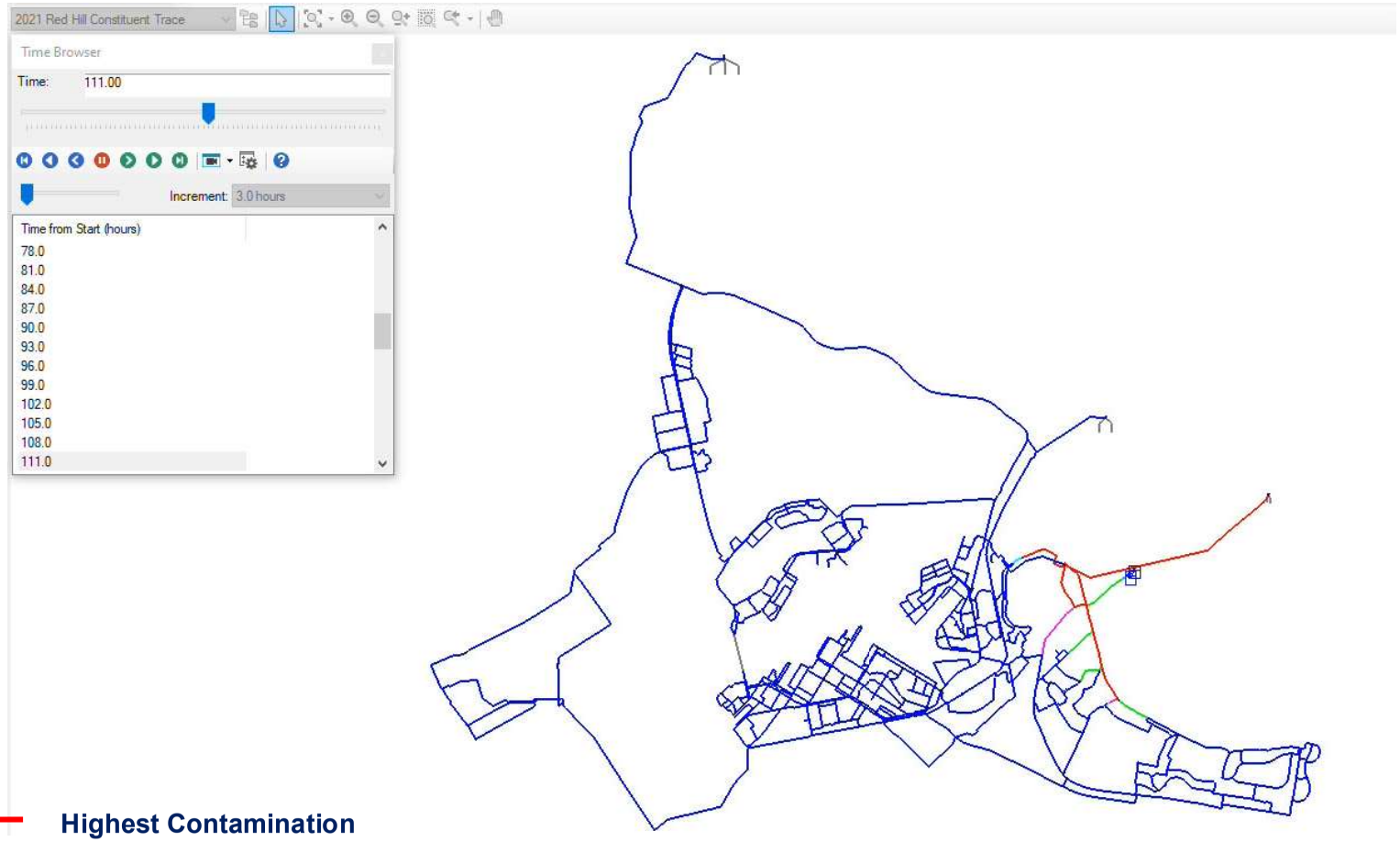
JBPHH Hydraulic Model



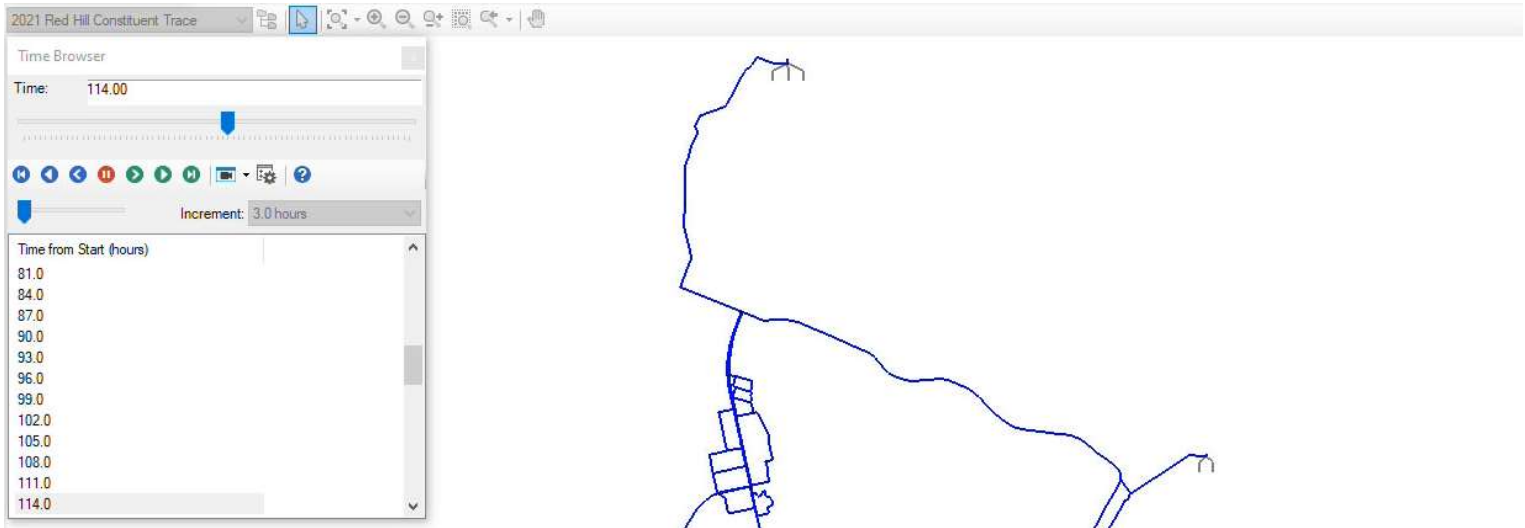
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



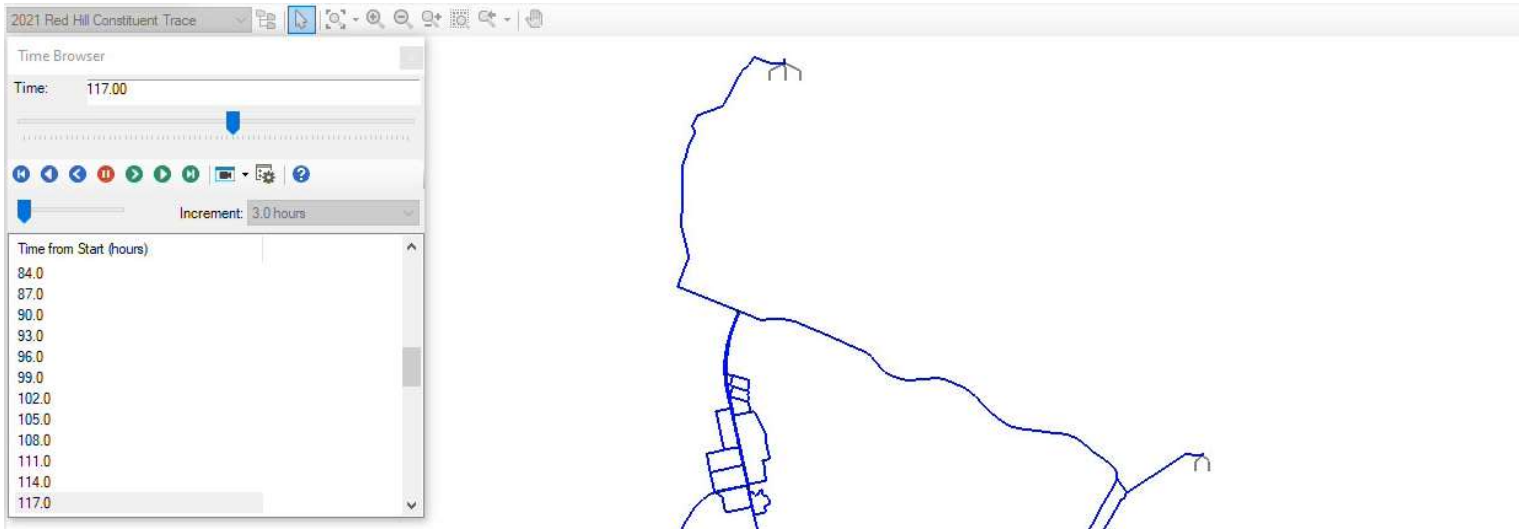
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

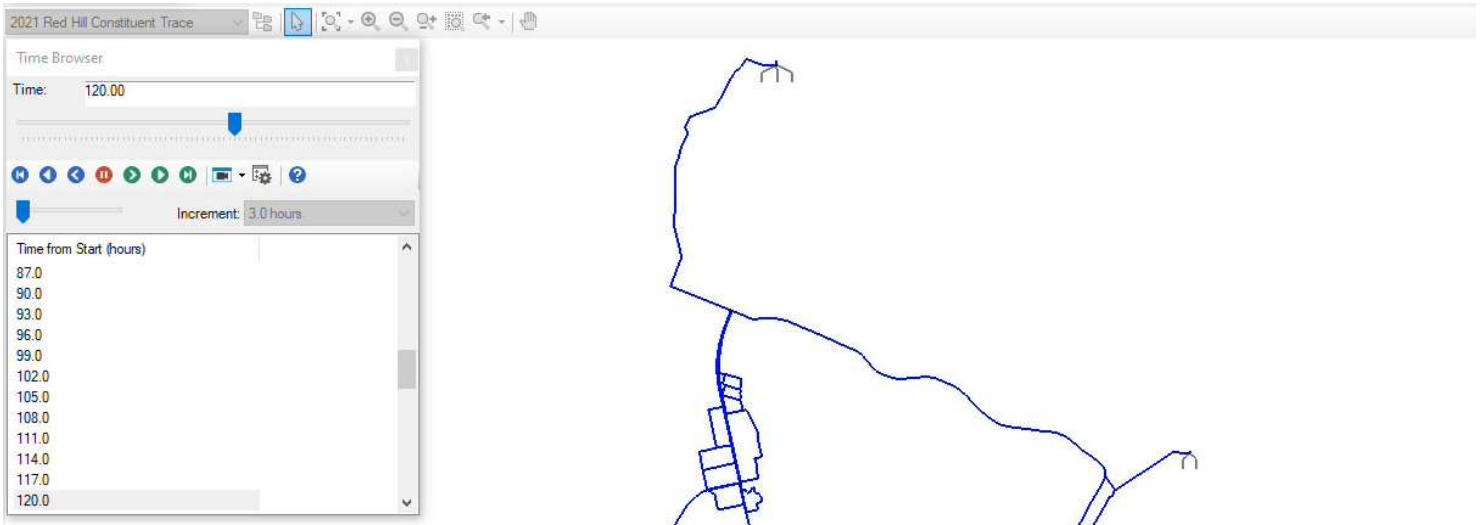
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

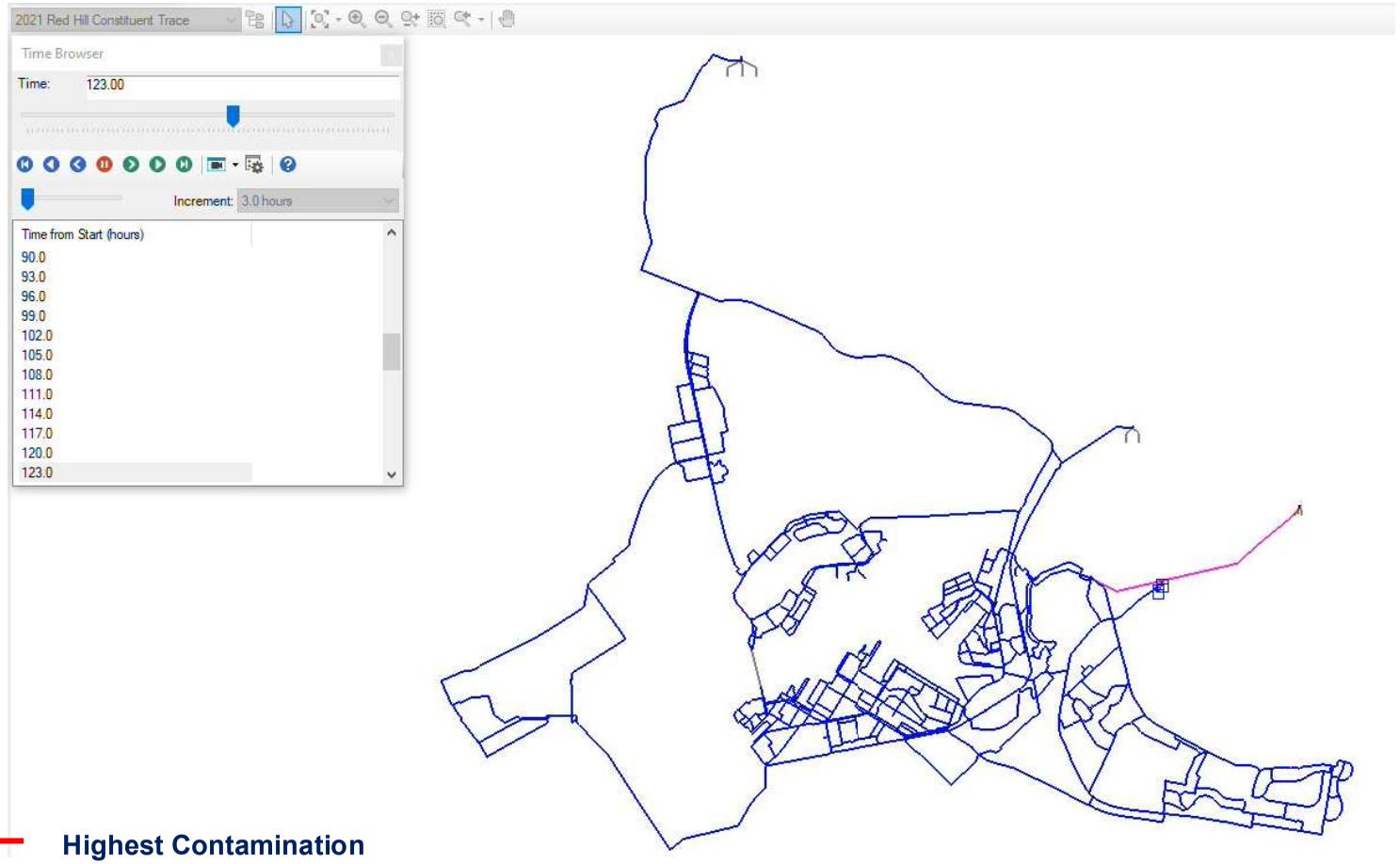
JBPHH Hydraulic Model



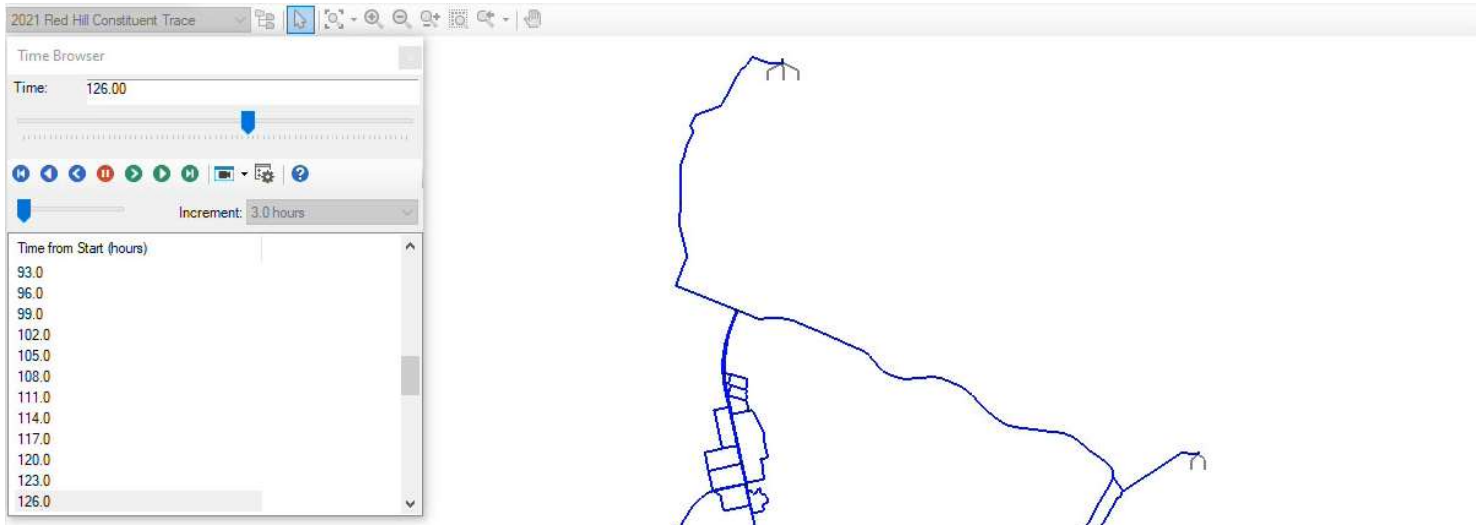
Highest Contamination

Lowest Contamination

JBPHH Hydraulic Model



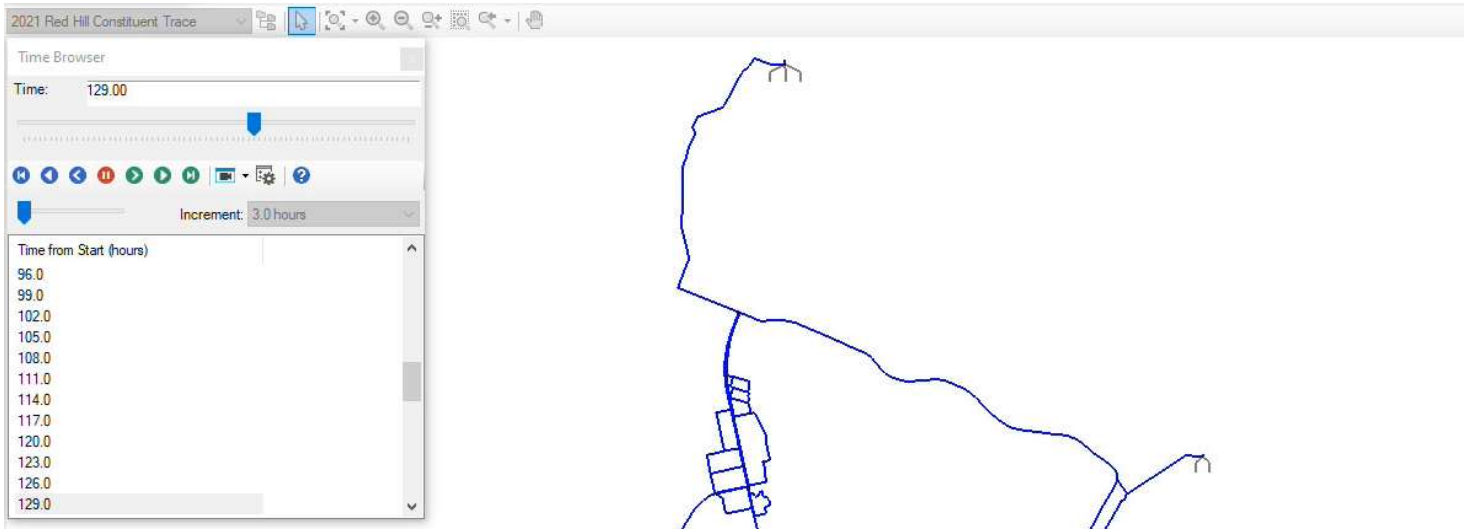
JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

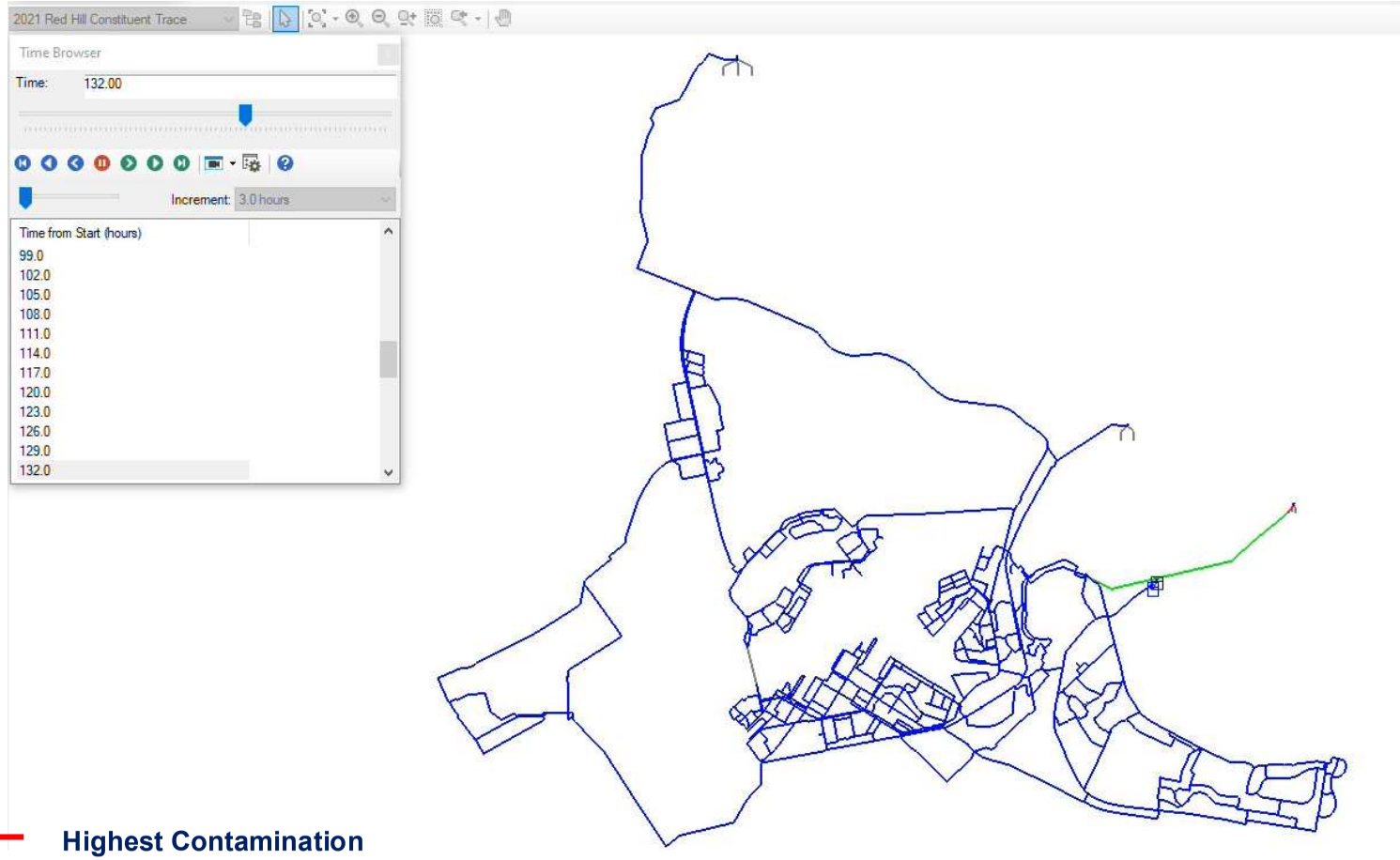
JBPHH Hydraulic Model



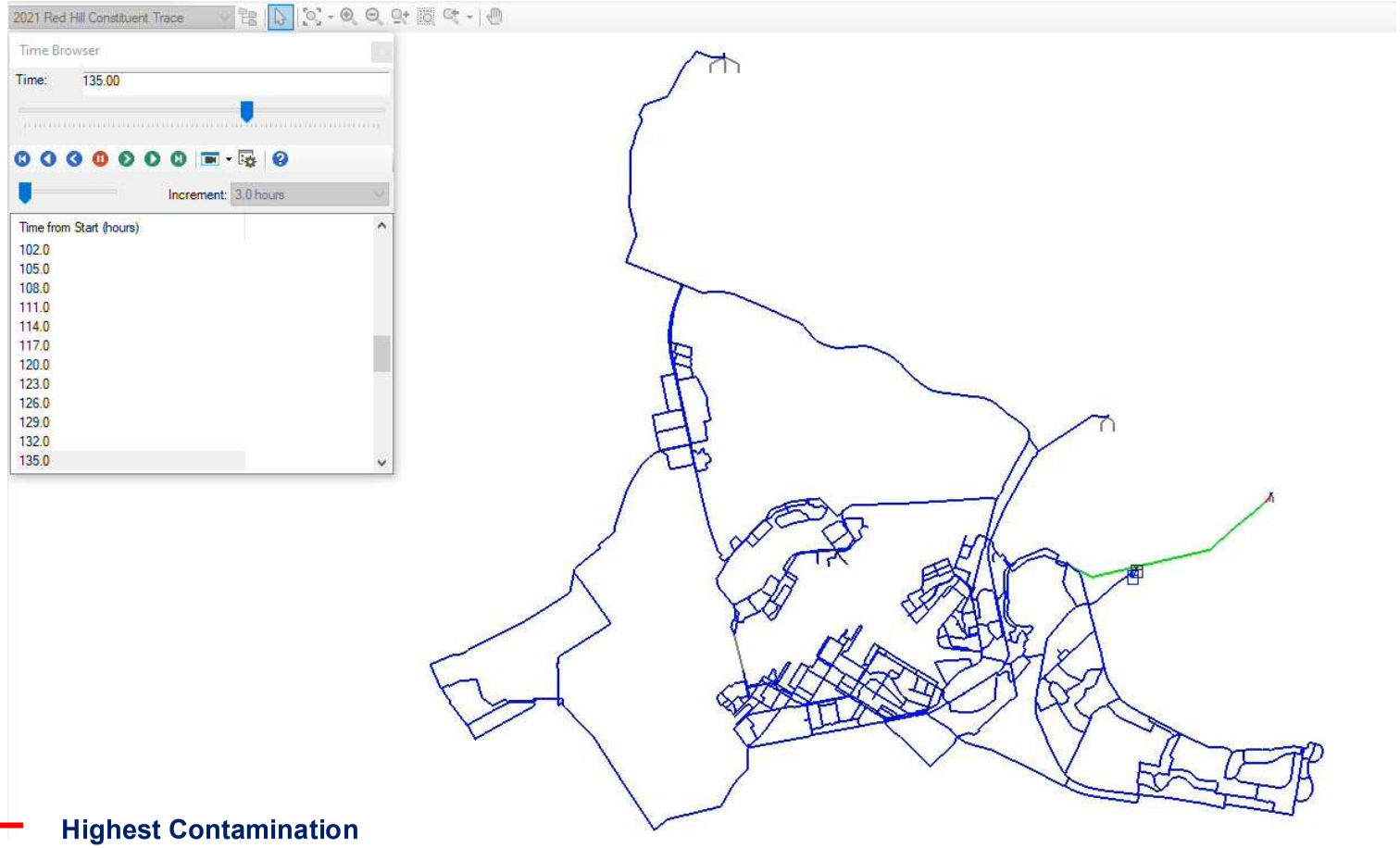
Highest Contamination

Lowest Contamination

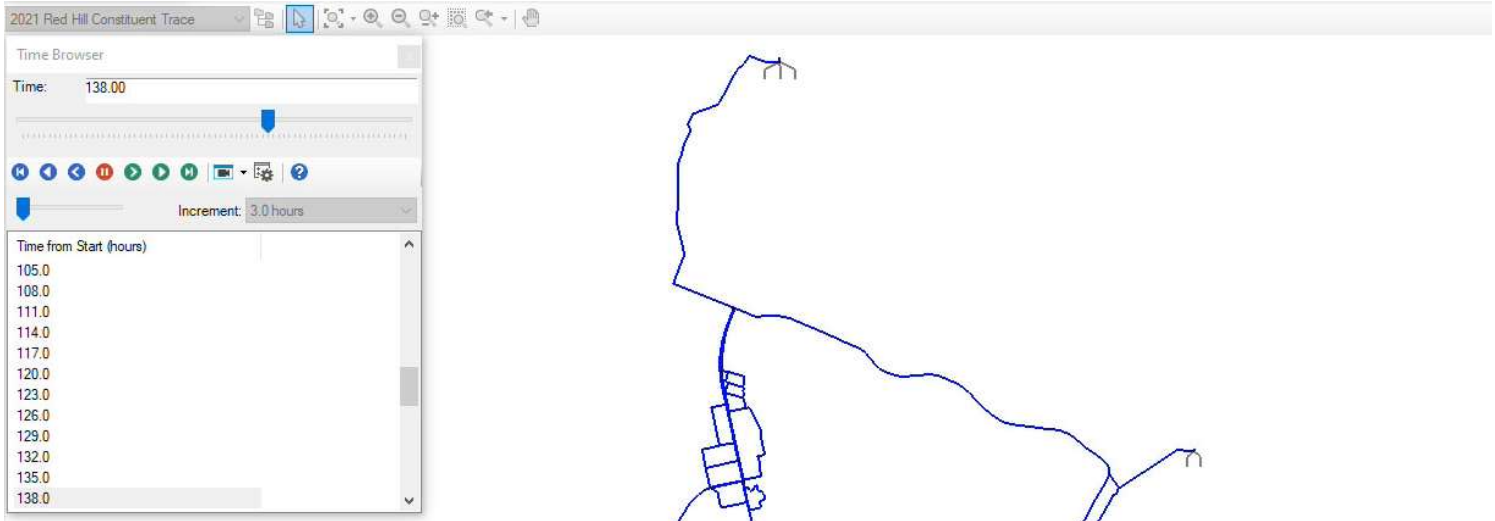
JBPHH Hydraulic Model



JBPHH Hydraulic Model



JBPHH Hydraulic Model



Highest Contamination

Lowest Contamination

28 February 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 G1

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

Encl: (1) Distribution System Flushing Records Zone G1

1. The completed records of distribution flushing, as shown in Enclosure (1), document the flushing of 2 hydrants in Zone G1 in accordance with Reference (a) with an exception:

a. Planned for 5 hydrants in Reference (a), the conditions of the storm drains at the time of flushing were not suitable to handle proposed flush volumes. Hydrants 18 and 26 were selected to compensate with higher volumes in consultation with the Department of Health and as documented in Enclosure (1).

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)
18	Storm Drain	61,600
26	Storm Drain	1,213,275
		Total: 1,274,875 gallons

3. Zone B1 was required to flush 1,240,000 gallons per Reference (a), paragraph 2.5.3.4, which was exceeded.

Very respectfully,

LCDR, CEC, USN

DALY.JOHN.FRANCIS.III.1365462468
2022.02.28 20:16:07 -10'00'

J. F. DALY III
LCDR, CEC, USN

TABLE OF CONTENTS

18	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
1-Jan	20:00	8:00	21:52		10:08	20220101 2000-0800	N/A
2-Jan	8:00	20:00		13:43	5:43	20220102 0800-2000	Y
2-Jan	8:00	20:00	19:06		0:54	20220102 0800-2000	Y
2-Jan	20:00	8:00		2:34	6:34	20220102 2000-0800	N/A
3-Jan	8:00	20:00	19:02		0:58	20220103 0800-2000	N/A
3-Jan	20:00	8:00		3:35	5:35	20220103 2000-0800	Y

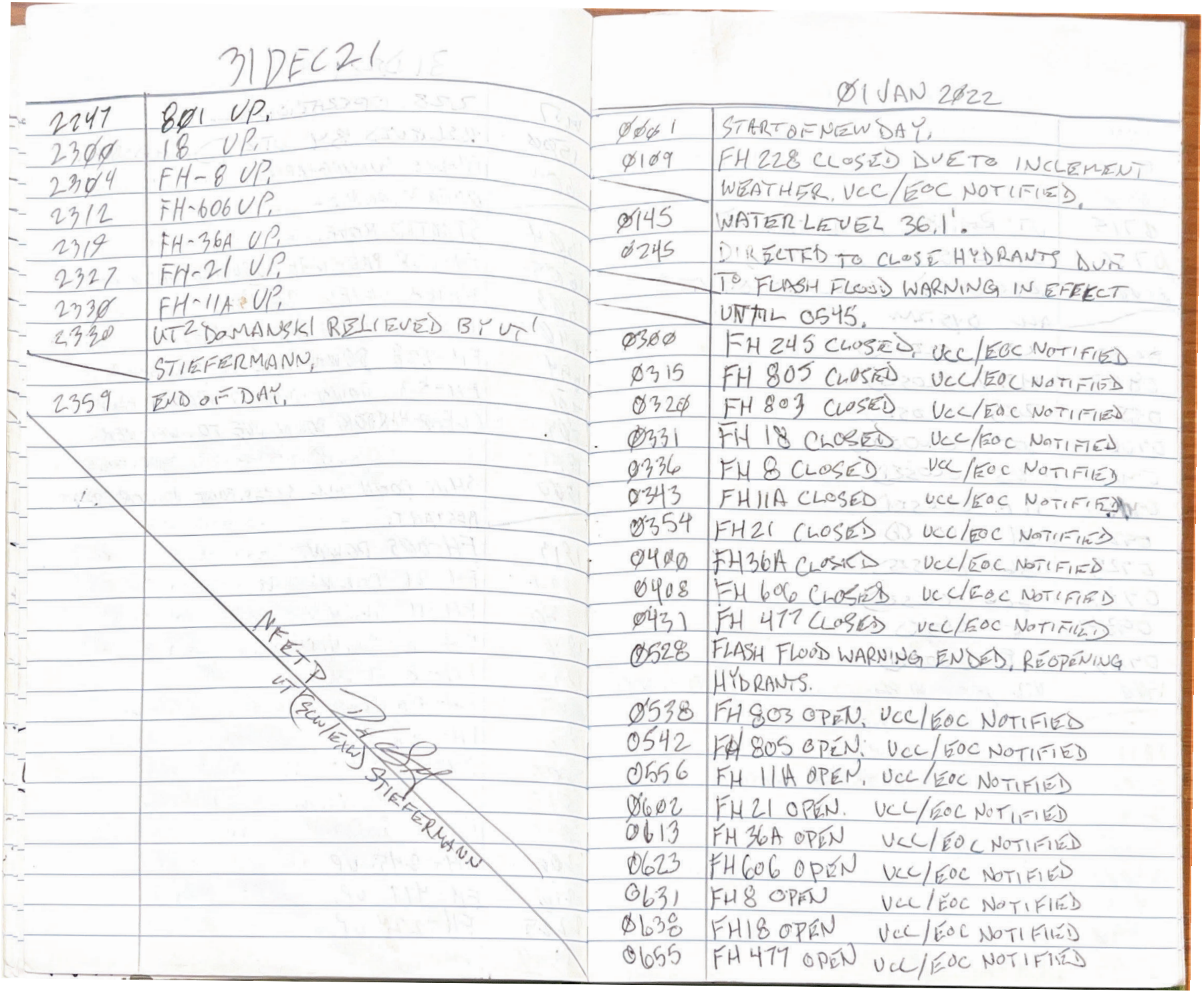
TOTAL RUN @ FLOW of 200		
TIME	29:52	
VOLUME	70400	Gallons

26	Shift		Flush Time			Documentation	
Date	**Begin**	**End**	**Start**	**Stop**	**RunTime**	**Email Summary**	**UT Log**
1-Jan	20:00	8:00	22:30		9:30	20220101 2000-0800	N/A
2-Jan	8:00	20:00		13:46	5:46	20220102 0800-2000	Y
2-Jan	8:00	20:00	19:25		0:35	20220102 0800-2000	Y
2-Jan	20:00	8:00			12:00	20220102 2000-0800	N/A
3-Jan	8:00	20:00			12:00	20220103 0800-2000	N/A
3-Jan	20:00	8:00		3:45	7:45	20220103 2000-0800	N/A
4-Jan	8:00	20:00	8:15	19:10	10:55	20220104 0800-2000	Y
4-Jan	20:00	8:00	5:07		11:40	20220104 0800-2000	N/A
5-Jan	8:00	20:00			12:00	20220105 0800-2000	N/A
5-Jan	20:00	8:00			12:00	20220105 2000-0800	N/A
6-Jan	8:00	20:00			12:00	20220106 0800-2000	N/A
6-Jan	20:00	8:00		5:22	9:22	20220106 2000-0800	N/A

TOTAL RUN @ FLOW of 200		
TIME	115:33	
VOLUME	1386600	Gallons

Hydrant	Volume
18	70,400
26	1,386,600
TOTAL	**1,457,000**

ENCL (1)



31 DEC 21

2247	801 UP.
2300	18 UP.
2304	FH-8 UP.
2312	FH-606 UP.
2319	FH-36A UP.
2327	FH-21 UP.
2330	FH-11A UP.
2330	UT2 DOMANSKI RELIEVED BY UT1 STIEFERMANN.
2359	END OF DAY.

01 JAN 2022

0001	START OF NEW DAY.
0109	FH 228 CLOSED DUE TO INCLEMENT WEATHER. VCC/EOC NOTIFIED.
0145	WATER LEVEL 36.1'.
0245	DIRECTED TO CLOSE HYDRANTS DUE TO FLASH FLOOD WARNING IN EFFECT UNTIL 0545.
0300	FH 245 CLOSED. VCC/EOC NOTIFIED
0315	FH 805 CLOSED VCC/EOC NOTIFIED
0320	FH 803 CLOSED VCC/EOC NOTIFIED
0331	FH 18 CLOSED VCC/EOC NOTIFIED
0336	FH 8 CLOSED VCC/EOC NOTIFIED
0343	FH11A CLOSED VCC/EOC NOTIFIED
0354	FH21 CLOSED VCC/EOC NOTIFIED
0400	FH36A CLOSED VCC/EOC NOTIFIED
0408	FH 606 CLOSED VCC/EOC NOTIFIED
0431	FH 477 CLOSED VCC/EOC NOTIFIED
0528	FLASH FLOOD WARNING ENDED. REOPENING HYDRANTS.
0538	FH 803 OPEN. VCC/EOC NOTIFIED
0542	FH 805 OPEN. VCC/EOC NOTIFIED
0556	FH 11A OPEN. VCC/EOC NOTIFIED
0602	FH 21 OPEN. VCC/EOC NOTIFIED
0613	FH 36A OPEN VCC/EOC NOTIFIED
0623	FH 606 OPEN VCC/EOC NOTIFIED
0631	FH 8 OPEN VCC/EOC NOTIFIED
0638	FH 18 OPEN VCC/EOC NOTIFIED
0655	FH 477 OPEN VCC/EOC NOTIFIED

MET P UT (EOW/EAW) STIEFERMANN

01 JAN 2022

0705	FH245 OPEN. UCC/EOC NOTIFIED.
0714	FH288 OPEN. UCC/EOC NOTIFIED.
0530	BACKLOG; LOGBOOK ENTRIES SENT TO EOC.
0715	UT1 RHINE AS DUTY UT.
0730	CHECKS IN AT UCC,
0800	RECEIVED CALL TO SHUT OFF ALL SYSTEM.
0530	288 CLOSED
0842	477 CLOSED
0857	245 CLOSED
0906	805 CLOSED
0907	803 CLOSED
0916	11A CLOSED
0921	21 CLOSED
0925	36A CLOSED
0931	606 CLOSED
0934	6 CLOSED
0937	18 CLOSED
1500	UT2 DOMANSKI PROPERLY ASSUMES ALL DUTIES AS DUTY UT. UT1 RHINE PROPERLY RELIEVED AS DUTY UT.
1811	WATER LEVEL 34'.
2100	FH-40, FH-42, FH-426 PRIMED AND STAND BY.
2140	G1-18 UP.
2300	G1-26 UP.
2300	UT2 DOMANSKI RELIEVED BY UT STIEFERMANN
2325	FH-606 UP.
2330	FH-36A UP.
2335	FH-21 UP.

01 JAN 2022

2350	11A OPEN.
2359	END OF DAY.

NFETP

UT1 RHINE (EXW)

UT2 STIEFERMANN (EXW)

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 USC
0700	BEGAN ROVE.
0822	FH 1 STARTED IN [illegible]
0859	FH 18 (FAMILY S.) ON
0947/0947	FH 40 (F2) ON
[illegible]	FH 42 (F2) ON
1050	THROTTLED 40(F2) FOR TESTING
1055	RESUMED 1045 ON 40(F2)
1105	THROTTLED 1 IN F2 FOR TESTING.
1118	RESUMED NORMAL PRESSURE OF FH/1 IN F2
1237	20 OFF (DS)
1240	40 - OFF (F2)
1249	34 OFF (F2)
1253	1 - OFF F2
1300	11A OFF
1305	21 OFF
1309	42 OFF
1314	18
0109	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 ZONE F1 OPEN.
1906	G1 FH-18 OPEN.
1925	G1 FH-26 OPEN.

02 JAN 22

1945	191 SATURATED. VT CONTRACTOR WATCH SECURED
1945	WATER LEVEL 30'.
2017	FH-1 NORTH OPEN.
2049	WATER LEVEL 28'.
2237	VT DOMANSKI RELIEVED BY VT STIEFERMANN.
2350	HYDRANT 405 CLOSED DUE TO FLOODING.
2359	END OF DAY.

NTETP
VT (SLWIEKEN) STIEFERMANN

03 JAN 2022

0001	START OF NEW DAY.
0135	HYDRANT 405 OPENED. VCC/EOC NOTIFIED.
0213	VCC REPORTED BURST HOSE FH G1 18.
0233	HYDRANT FH G1 18 CLOSED. DAMAGED
	SECTION OF HOSE ROLLED AND PLACED
	WITH GAC. VCC/EOC NOTIFIED.
0527	LOGBOOK ENTRIES SUBMITTED TO EOC.
0528	WATER LEVEL 31.7'
0645	VT STIEFERMANN RELIEVED BY VT RHINE
0700	CHECKED IN AT VCC.
0715	BEGAN ROVE
0909	405 SHUT DOWN
0942	426 SHUT DOWN
0957	34 SHUT DOWN
1016	1 NORTH SHUT DOWN
1029	1 SOUTH SHUT DOWN
1009 LE	202 SHUT DOWN
1030	273 SHUT DOWN
1024 LE.	LT CRUZ CALLED TO CLOSE ALL HYDRANT
	FOR FLOOD WARNING
1038	26(G.S.) CLOSED
1050	11A CLOSED
1054	21 CLOSED
1059	36A CLOSED (WILL BE FOR 6HR+)
1105	606 CLOSED
1120	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-410
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	ASSITED AECOM W/ TESTING ON 442
0935	ASSITED AECOM W/ TESTING ON 465
0950	ASSITED 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 2L(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. FH-542 OPEN.

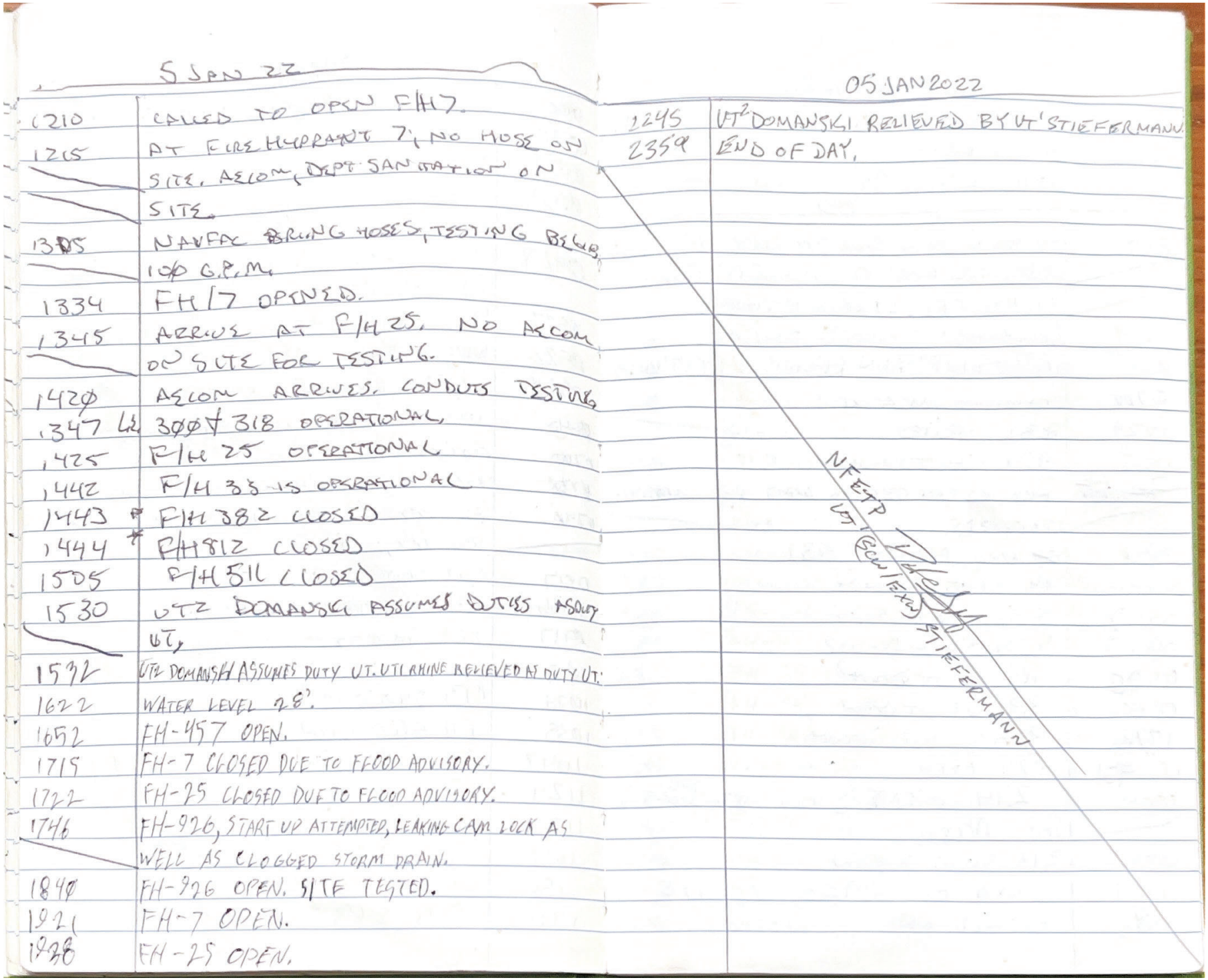
04JAN22

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 "G" 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	UT[2] DOMANSKY RELIEVED BY UT[1] STIEFERMANN
2359	END OF DAY.

NTE UT[1] 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.
0507	HYDRANT 26 OPENED. VCC/EOC NOTIFIED.
0522	WATER LEVEL 33.8'
0530	LOGBOOK ENTRIES SUBMITTED TO EOC
0640	UT RHINE ASSUMES DUTIES AS DUTY UT.
0700	CHECKS IN AT VCC
0730	RECIEVED CALL 542 FLOODING OUT.
0740	ARRIVED AT SITE, CLOSED 542, SENT MATCHES 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 50 SHUTDOWN
1142	FH 8103 SHUTDOWN
1151	FH 805 SHUTDOWN
1206	FH 803 SHUTDOWN



5 JAN 22

1210	CALLED TO OPEN F/H 7.
1215	AT FIRE HYDRANT 7, NO HOSE ON SITE. AECOM, DEPT SANITATION ON SITE.
1305	NAVFAC BRING HOSES, TESTING BEGIN 100 G.P.M.
1334	FH/7 OPENED.
1345	ARRIVE AT F/H 25. NO AECOM ON SITE FOR TESTING.
1420	AECOM ARRIVES. CONDUTS TESTING
1347 LL	300 & 318 OPERATIONAL,
1425	F/H 25 OPERATIONAL
1442	F/H 33 IS OPERATIONAL
1443 *	F/H 382 CLOSED
1444 *	F/H 812 CLOSED
1505	F/H 511 CLOSED
1530	UT2 DOMANSKI ASSUMES DUTIES AS UT,
1532	UT2 DOMANSKI ASSUMES DUTY UT. UTLRHINE 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.
1938	FH-25 OPEN.

05 JAN 2022

1245	UT2 DOMANSKI RELIEVED BY UT STIEFERMANN
2359	END OF DAY.

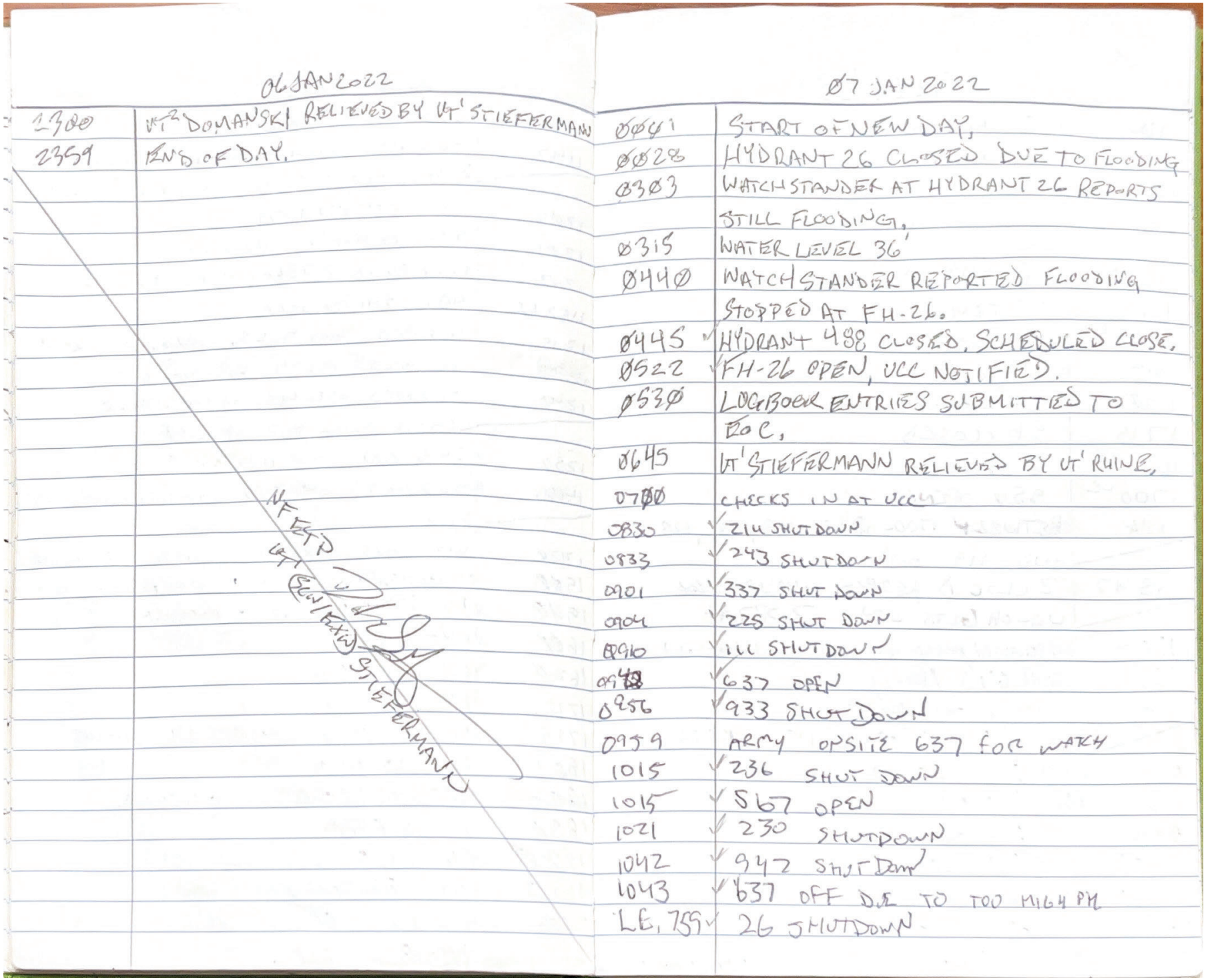
NFETP
UT (SCW TEXAS) STIEFERMANN

06 JAN 2022

0001	START OF NEW DAY.
0145	START ROVE.
0317	WATER LEVEL 34'
03	POJ
0450 ✓	FH 16 CLOSED DUE TO LACK OF PERSONNEL WITH FLIGHTLINE ACCESS.
	UCC NOTIFIED. LT CRUZ NOTIFIED.
0530	LOGBOOK SUBMITTED TO EOC.
0645	UT STIEFERMANN RELIEVED BY UT RHINE.
0700	CHECKED IN AT UCC
0729 ✓	931 OPENED
0805 ✓	924 SHUTDOWN
~~0740~~ 0745 LE	ARRIVED AT 931 TO WAIT FOR WATCH STANDARDS.
0840	~~DE~~ ARMY ARRIVE AT 931
0840 ✓	14 SHUT DOWN
0854 ✓	5 SHUT DOWN
0857 ✓	924 SHUT DOWN
0900 ✓	19 SHUT DOWN
0932 ✓	33 SHUT DOWN
1000 ✓	318 SHUT DOWN
LE 931 ✓	927 OPEN
1004 ✓	214 OPENED. CALL DOF 220-2746 FOR ACCESS
1033 ✓	315 SHUT DOWN
1104 ✓	TURNED ON 179 FOR TESTING
1145 ✓	TURNED ON 179 200GPM.

06 JAN 2022

1146 ✓	TURNED OFF 179 FOR FLOODING.
1147	TRACED NEW STORM DRAIN; REROUTE DISCHARGE.
1200 ✓	TURNED ON 179.
1201 ✓	931 REPORTED FLOODING.
1202 ✓	TURNED OFF 931.
1152 LE ✓	457 SHUTDOWN
1215	TURNED ON 4 FOR TESTING.
1238	TURNED ON 4 FOR 2000 GPM.
1240	TURNED OFF 4; DUE TO WATER FLOOD FROM TOP OF GAL.
1250 ✓	243 ON.
1400 ✓	TURNED ON 337. NO WATCHES ON SITE.
1420	WATCHES ARRIVE; DUTY UT DEPARTS
1500	UTD DOMANSKI ASSUMES DUTY UT. UTI RHINE RELIEVED AT DUTY UT.
1540 ✓	FH-931 CLOSED. DUE TO FLOODING.
1600 ✓	FH-7 CLOSED.
1630 ✓	FH-25 CLOSED.
1719 ✓	FH-942 OPEN.
1725 ✓	FH-488 CONTACT INFO: MIKE-(789)289-4118
1802 ✓	FH-230 OPEN.
1806 ✓	FH-243 CLOSED, DUE TO FLOODING.
1830 ✓	FH-3 OPEN.
1920 ✓	FH-111 OPEN.
1950 ✓	FH-488 OPEN.
2006 ✓	FH-225 OPEN.
2245 ✓	FH-18 A2 OPEN.



06 JAN 2022

1300	WT 2 DOMANSKI RELIEVED BY WT STIEFERMAN
2359	END OF DAY.

07 JAN 2022

0001	START OF NEW DAY,
0028	HYDRANT 26 CLOSED DUE TO FLOODING
0303	WATCHSTANDER AT HYDRANT 26 REPORTS STILL FLOODING,
0315	WATER LEVEL 36'
0440	WATCHSTANDER REPORTED FLOODING STOPPED AT FH-26.
0445	HYDRANT 488 CLOSED, SCHEDULED CLOSE.
0522	FH-26 OPEN, UCC NOTIFIED.
0530	LOGBOOK ENTRIES SUBMITTED TO EOC,
0645	WT STIEFERMANN RELIEVED BY WT RHINE,
0700	CHECKS IN AT UCC
0830	214 SHUTDOWN
0833	243 SHUTDOWN
0901	337 SHUT DOWN
0904	225 SHUT DOWN
0910	111 SHUTDOWN
0948	637 OPEN
0956	933 SHUT DOWN
0959	ARMY ONSITE 637 FOR WATCH
1015	236 SHUT DOWN
1015	567 OPEN
1021	230 SHUTDOWN
1042	947 SHUT DOWN
1043	637 OFF DUE TO TOO HIGH PM
LE, 759	26 SHUTDOWN

NF ENTD WT [illegible] STIEFERMANN

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

From: Kelly, Austin A 1st Lt USAF 647 ABG (USA)
Sent: Saturday, January 1, 2022 10:46 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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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: 01 Jan 22 0800L - 2000L JBPHH DWDSRP Flush Report
Signed By: austin.kelly.2@us.af.mil

Ladies & Gentlemen,

There is not flush report for today's 0800-2000 shift, as flushing was suspended. Below is a summary update on distribution flushing.

Current Location Summary:
A2 FH ID 1-14 – Flushing Stopped
A2 FH ID 5-16 – Flushing Stopped
D2 FH ID 003 – Flushing Stopped
D2 FH ID 006 (No GAC) – Flushing Stopped
D2 FH ID 276 – Flushing Stopped
D2 FH ID 325 – Flushing Stopped
D2 FH ID 363 – Flushing Stopped
D2 FH ID 429 – Flushing Stopped
D3 FH ID 477 - Flushing Stopped
F1 FH ID FH-8 (No GAC) – Flushing Stopped
F1 FH ID 11A – Flushing Stopped
F1 FH ID 18 – Flushing Stopped
F1 FH ID 21 – Flushing Stopped
F1 FH ID 36A – Flushing Stopped
F1 FH ID 606 – Flushing Stopped
G1 FH ID 18 – Flushing resumed 2152
G1 FH ID 26 – Flushing stopped

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

From: Joseph, Craig M TSgt USAF (USA) <craig.m.joseph@navy.mil>
Sent: Sunday, January 2, 2022 10:45 AM
To: 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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); Kelly, Austin A 1st Lt USAF 647 ABG (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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)
Subject: INFO: 01-02 Jan 22 2000L - 0800L JBPHH DWDSRP Flush Report
Attachments: 01 Jan - 02 Jan 22 2000L - 0800L JBPHHH DWDSRP Flush Report.pdf
Signed By: craig.joseph.2@us.af.mil

ALCON,

Attached is the flush report for Saturday-Sunday, 01 Jan 22 – 02 Jan 22, 2000L – 0800L. Also below is a summary on distribution flushing below. All personnel were placed on standby until 1930 local. Flushing started back at 2152 local.

Current Location Summary:
2152 – G1 FH18 – Flushing started first time
2230 – G1 FH 26 – Flushing started first time
2328 – F1 FH 606 – Flushing resumed
2333 – F1 FH 36 A – Flushing resumed
2341 – F1FH 21 – Flushing resumed
2349 – F1 FH 11A Flushing resumed

v/r

CRAIG M. JOSEPH, TSgt, USAF
NCOIC Pavements & Equipment
647th Civil Engineer Squadron
Joint Base Pearl Harbor-Hickam, HI 96853-5111
DSN: 315-447-5244
Comm: (808) 449-1934
Cell: 912-373-5208

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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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: austin.kelly.2@us.af.mil

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

Times from UT Log

C1 / 405 / 14 / ON 15:22
D3 / 426 / 18 / ON 18:06
D3 / 202 / 19 / ON 16:50
D3 / 273 / 16 / ON 16:00
F1 / 36A / 6 / ON 18:11
F1 / 21 / 7 / ON 18:03
F1 / 11A / 8 / ON 17:58
F1 / 42 / 9 / OFF due to 10:40on, 13:09 off, 17:46 on, 18:28 off
F1 / 18 / 3 / ON 13:15on. 13:43 off. 18:31 on
F1 / 606 / 1 / ON 13:30 off. 18:18 on
F2 / 1 South / 10 / ON 17:10
F2 / 1 North / 12 / ON 20:17
F2 / 34 / 11 / ON 12:49 off 16:55 on
F2 / 40 / 5 / ON 0917 on. 12:46 off. 17:30 on.
F2 / 51 / 20 / OFF
G1 / 18 / 17 / ON 1343 off, 19:06 on

G1 / 26 / 4 / ON 19:25

Very Respectfully,

Austin Kelly, 1st Lt, USAF
Airfield Deputy Assistant Public Works Officer
Naval Facilities Engineering Systems Command HI
Public Works Department, JBPHH
DSN: 808-449-3128
Email: austin.a.kelly3.mil@us.navy.mil

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

From: Wiley, Scottie R Capt USAF 647 ABG (USA) <scottie.wiley@navy.mil>
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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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

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

From: Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA) <maria-angela-grace.a@navy.mil>
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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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: maria_angela_grace.asistio.1@us.af.mil

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

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

From: Wiley, Scottie R Maj USAF 647 ABG (USA) <scottie.wiley@navy.mil>
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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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/

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

From: Joseph, Craig M TSgt USAF (USA) <craig.m.joseph@navy.mil>
Sent: Sunday, January 2, 2022 10:45 AM
To: 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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); Kelly, Austin A 1st Lt USAF 647 ABG (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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)
Subject: INFO: 01-02 Jan 22 2000L - 0800L JBPHH DWDSRP Flush Report
Attachments: 01 Jan - 02 Jan 22 2000L - 0800L JBPHHH DWDSRP Flush Report.pdf
Signed By: craig.joseph.2@us.af.mil

ALCON,

Attached is the flush report for Saturday-Sunday, 01 Jan 22 – 02 Jan 22, 2000L – 0800L. Also below is a summary on distribution flushing below. All personnel were placed on standby until 1930 local. Flushing started back at 2152 local.

Current Location Summary:
2152 – G1 FH18 – Flushing started first time
2230 – G1 FH 26 – Flushing started first time
2328 – F1 FH 606 – Flushing resumed
2333 – F1 FH 36 A – Flushing resumed
2341 – F1FH 21 – Flushing resumed
2349 – F1 FH 11A Flushing resumed

v/r

CRAIG M. JOSEPH, TSgt, USAF
NCOIC Pavements & Equipment
647th Civil Engineer Squadron
Joint Base Pearl Harbor-Hickam, HI 96853-5111
DSN: 315-447-5244
Comm: (808) 449-1934
Cell: 912-373-5208

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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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: austin.kelly.2@us.af.mil

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

Times from UT Log

C1 / 405 / 14 / ON 15:22
D3 / 426 / 18 / ON 18:06
D3 / 202 / 19 / ON 16:50
D3 / 273 / 16 / ON 16:00
F1 / 36A / 6 / ON 18:11
F1 / 21 / 7 / ON 18:03
F1 / 11A / 8 / ON 17:58
F1 / 42 / 9 / OFF due to 10:40on, 13:09 off, 17:46 on, 18:28 off
F1 / 18 / 3 / ON 13:15on. 13:43 off. 18:31 on
F1 / 606 / 1 / ON 13:30 off. 18:18 on
F2 / 1 South / 10 / ON 17:10
F2 / 1 North / 12 / ON 20:17
F2 / 34 / 11 / ON 12:49 off 16:55 on
F2 / 40 / 5 / ON 0917 on. 12:46 off. 17:30 on.
F2 / 51 / 20 / OFF
G1 / 18 / 17 / ON 19:06

G1 / 26 / 4 / ON off at 13:46, on at 19:25

Very Respectfully,

Austin Kelly, 1st Lt, USAF
Airfield Deputy Assistant Public Works Officer
Naval Facilities Engineering Systems Command HI
Public Works Department, JBPHH
DSN: 808-449-3128
Email: austin.a.kelly3.mil@us.navy.mil

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

From: Wiley, Scottie R Capt USAF 647 ABG (USA) <scottie.wiley@navy.mil>
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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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

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

From: Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA) <maria-angela-grace.a@navy.mil>
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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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: maria_angela_grace.asistio.1@us.af.mil

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

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

From: Wiley, Scottie R Maj USAF 647 ABG (USA) <scottie.wiley@navy.mil>
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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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/

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

From: Asistio, Maria Angela Grace L 2d LT USAF USN NAVFAC HAWAII PEARL (USA) <maria-angela-grace.a@navy.mil>
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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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: maria_angela_grace.asistio.1@us.af.mil

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 on at 08:15 closed at 19:10 UT LOG
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) <scottie.wiley@navy.mil>
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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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 on at 05:07 per UT LOG
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 <brittany.szczepanik.1@us.af.mil>
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); craig.m.joseph@navy.mil; Duarte, Israel A MSgt USAF (USA); peter.a.ahleong1@navy.mil; jason.a.collins2@navy.mil; Williams, Malcolm J Capt USAF 647 ABG (USA); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); malcolm.williams@navy.mil; 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); brent.t.natsuhara@navy.mil; jimmy.cope@navy.mil; Baranowski, Phillip J CPO USN NAVFAC SE JAX FL (USA); john.parada@navy.mil; 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); gregory.e.credle@navy.mil; Lett, Julius J SMSgt USAF (USA); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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: brittany.szczepanik.1@us.af.mil

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	on at 13:47	UT LOG		
C2	FH 300 / 23	Flushing Started	on at 13:47	UT LOG		
C2	FH 315 / 10	Flushing Started				
F2	FH 19 / 12	Flushing Started (First Time)	on at 10:35	Flush LOG		
F2	FH 33	Flushing Started (First Time)	on at 14:42	UT LOG		
F2	FH 14 / 17	Flushing Started	on at 09:53	Flush LOG		
F2	FH 7	Flushing Resumed	on at 13:34	closed at 17:15	on at 19:21	UT LOG
F2	FH 25	Flushing Resumed	on at 14:25	closed at 17:22	on at 19:38	UT LOG
D4	FH 168 / 14	Flushing Started	on at 12:00	Flush LOG		
D4	FH 457	Flushing Started (First Time)	on at 16:52	UT LOG		
E1	FH 924	Flushing Resumed	on at 18:40	UT LOG		

G1	FH 26 / 4	Flushing Started	0507	UT LOG

Very Respectfully,

BRITTANY A. SZCZEPANIK, 2d Lt, USAF
Project Programmer/ ICAP Engineer
NAVFAC HI, FMD JBPHH
647 CES/CEN
DSN: 448-2795

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

From: Wiley, Scottie R Maj USAF 647 ABG (USA) <scottie.wiley@navy.mil>
Sent: Thursday, January 6, 2022 2:10 PM
To: Szczepanik, Brittany A 2d LT USAF (USA); 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); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); john.parada@navy.mil; 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); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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: 20220106 0800L - 2000L JBPHH DWDSRP Flush Report
Attachments: 20220106 2000L - 0800L JBPHHH DWDSRP Flush Report.pdf
Signed By: scottie.wiley@us.af.mil

Ladies & Gentlemen,

Attached is the flush report for Wednesday/Thursday, 05/06 Jan 22, 0800L – 2000L. Below is a summary of current distribution flushing.

Current Location Summary:

Zone	Hydrant / GAC	Latest Status
F2	FH 5 / 20	No Change
C2	FH 318 / 25	No Change
C2	FH 300 / 23	No Change
C2	FH 315 / 10	No Change
F2	FH 19 / 12	No Change
F2	FH 33	No Change
F2	FH 14 / 17	No Change
F2	FH 7	No Change
F2	FH 25	No Change
D4	FH 168 / 14	Flushing Complete (0450L)
D4	FH 457	No Change
E1	FH 924	No Change

G1	FH 26 / 4	No Change
E1	FH ID 927 / 19	Flushing Began (0730L)
E1	FH ID 931 / 18	Flushing Began (0730L)

r/

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 (315) 471-4485
Comm: (808) 471-4485
Gov Cell: (808) 295-2106

Parada, John J LT USN NCG 1 (USA)

From: SZCZEPANIK, BRITTANY A 2d Lt USAF AETC 71 STUS/STU <brittany.szczepanik.1@us.af.mil>
Sent: Thursday, January 6, 2022 10:36 PM
To: Wiley, Scottie R Maj USAF 647 ABG (USA); Kelly, Austin A 1st Lt USAF 647 ABG (USA); craig.m.joseph@navy.mil; Duarte, Israel A MSgt USAF (USA); peter.a.ahleong1@navy.mil; jason.a.collins2@navy.mil; Williams, Malcolm J Capt USAF 647 ABG (USA); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); malcolm.williams@navy.mil; 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); brent.t.natsuhara@navy.mil; jimmy.cope@navy.mil; Baranowski, Phillip J CPO USN NAVFAC SE JAX FL (USA); john.parada@navy.mil; 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); gregory.e.credle@navy.mil; Lett, Julius J SMSgt USAF (USA); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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: 20220106 0800L - 2000L JBPHH DWDSRP Flush Report
Attachments: 20220106 0800L - 2000L JBPHH DWDSRP Flush Report.pdf
Signed By: brittany.szczepanik.1@us.af.mil

Ladies & Gentlemen,

Attached is the flush report for Thursday, 06 Jan 22, 0800L – 2000L. Below is a summary of current distribution flushing.

Current Location Summary:

Zone	Hydrant / GAC	Latest Status	Time	Source
F2	FH 5 / 20	Flushing Complete	0854	UT Log
C2	FH 318 / 25	Flushing Complete	1000	UT Log
C2	FH 300 / 23	Flushing Complete		
C2	FH 315 / 10	Flushing Complete	1033	UT Log
F2	FH 19 / 12	Flushing Complete	0900	UT Log
F2	FH 33	Flushing Complete	0932	UT Log
F2	FH 14 / 17	Flushing Complete	0840	UT Log
F2	FH 7	Flushing Complete	1600	UT Log
F2	FH 25	Flushing Complete	1630	UT Log
D4	FH 457	Flushing Complete	1152	UT Log
E1	FH 926	Flushing Complete		
G1	FH 26 / 4	Flushing		

			Time	Source
E1	FH ID 927 / 19	Flushing	0921	UT Log
E1	FH ID 931 / 18	Flushing	On 0729-Off 1202	UT Log
C3	FH 179 / 7	Flushing	1200	UT Log
B1	FH 4 / 22	Flushing	1033	UT Log
E1	FH 933 /11	Flushing		
C2	FH 337 / 17	Flushing	1400	UT Log
F2	FH 214 / 8	Flushing Complete	1004	UT Log
C2	FH 225 / 5	Flushing	2006	UT Log
A3	FH 18 / 14	Flushing	2245	UT Log
C2	FH 243 / 6	Flushing	On 1250-Off 1806	UT Log
D4	FH 488 / 16	Flushing	1950	UT Log
C3	FH 230 / 23	Flushing	1802	UT Log
E1	FH 942 / 20	Flushing	1719	UT Log
C3	FH 111 /10	Flushing	1920	UT Log
B1	FH 3 / 12	Flushing	1830	UT Log
C3	FH 236 / 25	Flushing		
D4	FH 168	Flushing Complete	0450	UT Log
E1	FH 924	Flushing Complete	0805	UT Log

Project Programmer/ ICAP Engineer
NAVFAC HI, FMD JBPHH
647 CES/CEN
DSN: 448-2795

Parada, John J LT USN NCG 1 (USA)

From: SZCZEPANIK, BRITTANY A 2d Lt USAF AETC 71 STUS/STU <brittany.szczepanik.1@us.af.mil>
Sent: Friday, January 7, 2022 10:18 PM
To: Wiley, Scottie R Maj USAF 647 ABG (USA); Kelly, Austin A 1st Lt USAF 647 ABG (USA); craig.m.joseph@navy.mil; Duarte, Israel A MSgt USAF (USA); peter.a.ahleong1@navy.mil; jason.a.collins2@navy.mil; Williams, Malcolm J Capt USAF 647 ABG (USA); carl.chase@navy.mil; nicholas.d.cruz@navy.mil; scott.d.wieser; Gruber, Marjorie J LCDR USN CBMU 303 (USA); nicholas.d.cruz@navy.mil; 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); malcolm.williams@navy.mil; 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); brent.t.natsuhara@navy.mil; jimmy.cope@navy.mil; Baranowski, Phillip J CPO USN NAVFAC SE JAX FL (USA); john.parada@navy.mil; 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); gregory.e.credle@navy.mil; Lett, Julius J SMSgt USAF (USA); nicholas.d.cruz@navy.mil; kevin.lachat@navy.mil; 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: 20220106 2000L - 0800L JBPHH DWDSRP Flush Report
Signed By: brittany.szczepanik.1@us.af.mil

Ladies & Gentlemen,

Attached is the flush report for Thursday/Friday, 06/07 Jan 22, 2000L – 0800L. Below is a summary of current distribution flushing.

Current Location Summary:

2000 - 0800 6/7 Jan 2022			Time	Source
E1	FH 926	Flushing Complete	On 0522-Off 0854	UT Log
G1	FH 26 / 4	Flushing Complete	On 0522-Off 0759	UT Log
E1	FH ID 927 / 19	Flushing Complete	0745	UT Log
E1	FH ID 931 / 18	Flushing Complete	0645	UT Log
C3	FH 179 / 7	Flushing Complete	1207	UT Log
B1	FH 4 / 22	Flushing Complete	1132	UT Log
E1	FH 933 /11	Flushing Complete	0956	UT Log
C2	FH 337 / 17	Flushing Complete	0901	UT Log
F2	FH 214 / 8	Flushing Complete	0830	UT Log
C2	FH 225 / 5	Flushing Complete	0904	UT Log
A3	FH 18 / 14	Flushing Complete	1142	UT Log
C2	FH 243 / 6	Flushing Complete	0833	UT Log
D4	FH 488 / 16	Flushing Complete	0445	UT Log

			Time	Source
C3	FH 230 / 23	Flushing Complete	1021	UT Log
E1	FH 942 / 20	Flushing Complete	1042	UT Log
C3	FH 111 /10	Flushing Complete	0910	UT Log
B1	FH 3 / 12	Flushing Complete	1140	KTR Log
C3	FH 236 / 25	Flushing Complete	1015	UT Log
D4	FH 637	Flushing	On 1814-Off 2345	UT & KTR Log
B1	FH 3	Flushing Complete	1109	UT Log
E1	FH 946	Flushing Complete	On 1400-Off 2224	UT Log
B1	FH 8	Flushing Complete	On 1530-Off 2255	UT Log
A3	FH 56	Flushing Complete	On 1434-Off 1715	UT Log
B1	FH 5	Flushing Complete	On 1617-Off 2235	UT Log
A3	FH 34	Flushing Complete	On 1409-Off 2124	KTR Log
A3	LFH 2	Flushing Complete	On 1644-Off 1847	UT Log
E1	FH 950	Flushing Complete	On 1700-Off 2308	UT Log
C3	FH 119	Flushing Complete	On 1615-Off 2100	EWG Log
C3	FH 128	Flushing Complete	On 1715-Off 2100	EWG Log
C3	FH 129	Flushing Complete	On 1620-Off 2100	EWG Log
C3	FH 135	Flushing Complete	On 1637-Off 2100	EWG Log
D4	FH 567	Flushing Complete	On 1015-Off 2330	UT Log

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
Digitally signed by MENO.MICHAEL.WAYNE.JR.1088310035
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

HARMEYER.RANDALL.ERNEST.1186692663
Digitally signed by HARMEYER.RANDALL.ERNEST.1186692663
Date: 2022.02.26 12:51:26 -10'00'

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.

HARMEYER.RANDALL.ERNEST.1186692663
Digitally signed by HARMEYER.RANDALL.ERNEST.1186692663
Date: 2022.02.22 17:19:23 -10'00'

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.

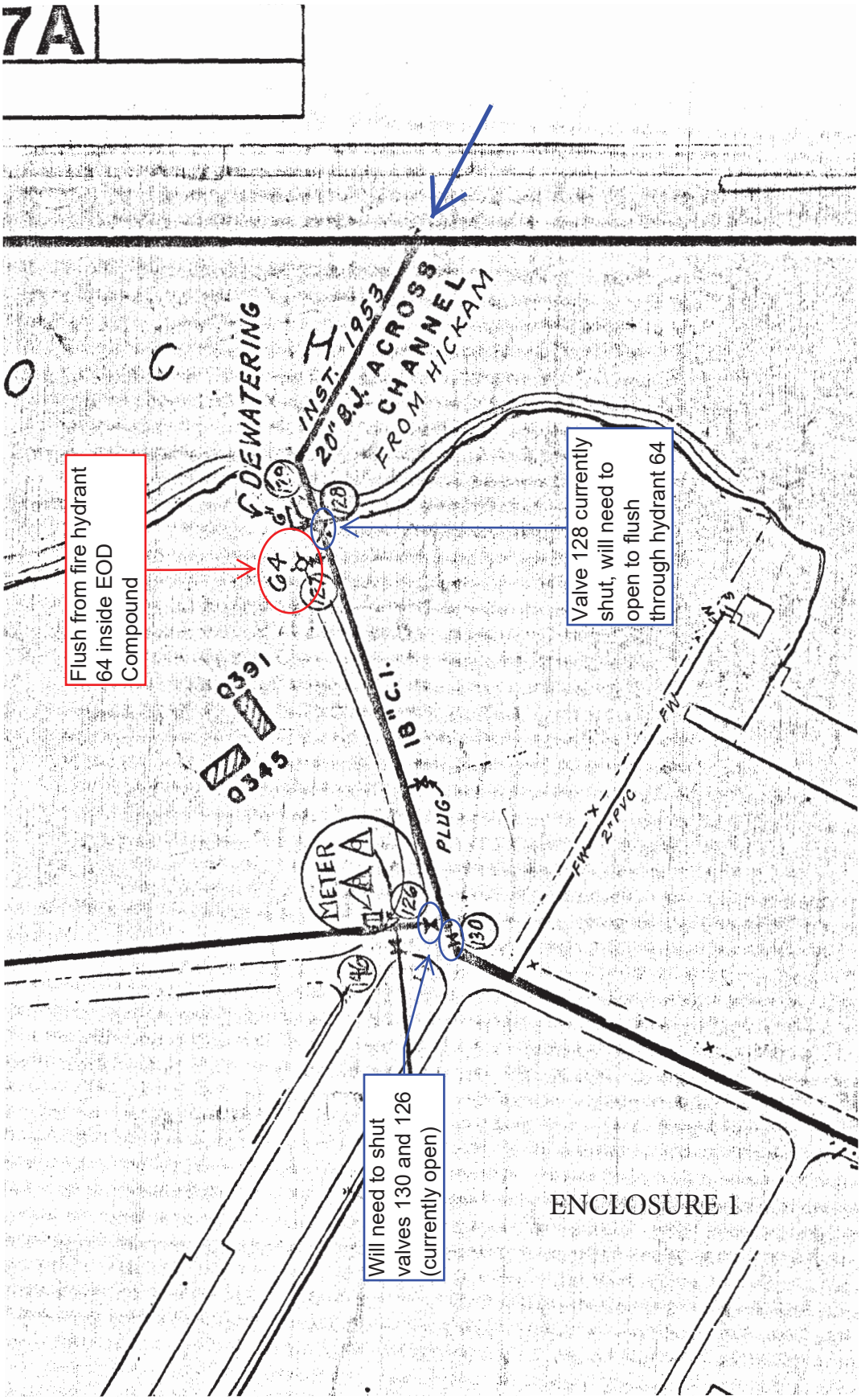
2. Like most looped systems, the water in this interconnection flows in both directions depending on demand. On work days, when residents are typically not on Iroquois Point and the Joint Base is operating, water typically flows from west to east. On nights and weekends, the water may flow from east 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.

HARMEYER.RANDALL.ERNEST.1186692663
Digitally signed by HARMEYER.RANDALL.ERNEST.1186692663
Date: 2022.02.26 12:12:29 -10'00'

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.

HARMEYER.RANDALL.ERNEST.1186692663

Digitally signed by HARMEYER.RANDALL.ERNEST.1186692663
Date: 2022.02.22 16:59:08 -10'00'

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

ENCL(6)

February 24, 2022

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

SUBJ: ZONE G1 DISTRIBUTION SYSTEM EXCEEDANCE INVESTIGSTION SUMMARY AND RESULTS

Encl: (1) Zone G1 Stage 2 Distribution Sampling Report

1. The Zone G1 Distribution System sampling results are shown in enclosures. The G1 distribution sample was taken at a hydrant. 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. All chemical and metal detections are shown in enclosure (1). There were no sample results above a MCL or DoH project screening level that requires further action. The IDWST determined that additional distribution samples were not required in Zone G1 based on the distribution system layout.

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
Digitally signed by MENO.MICHAEL.WAYNE.JR.1088310035
Date: 2022.02.24 17:57:39 -10'00'

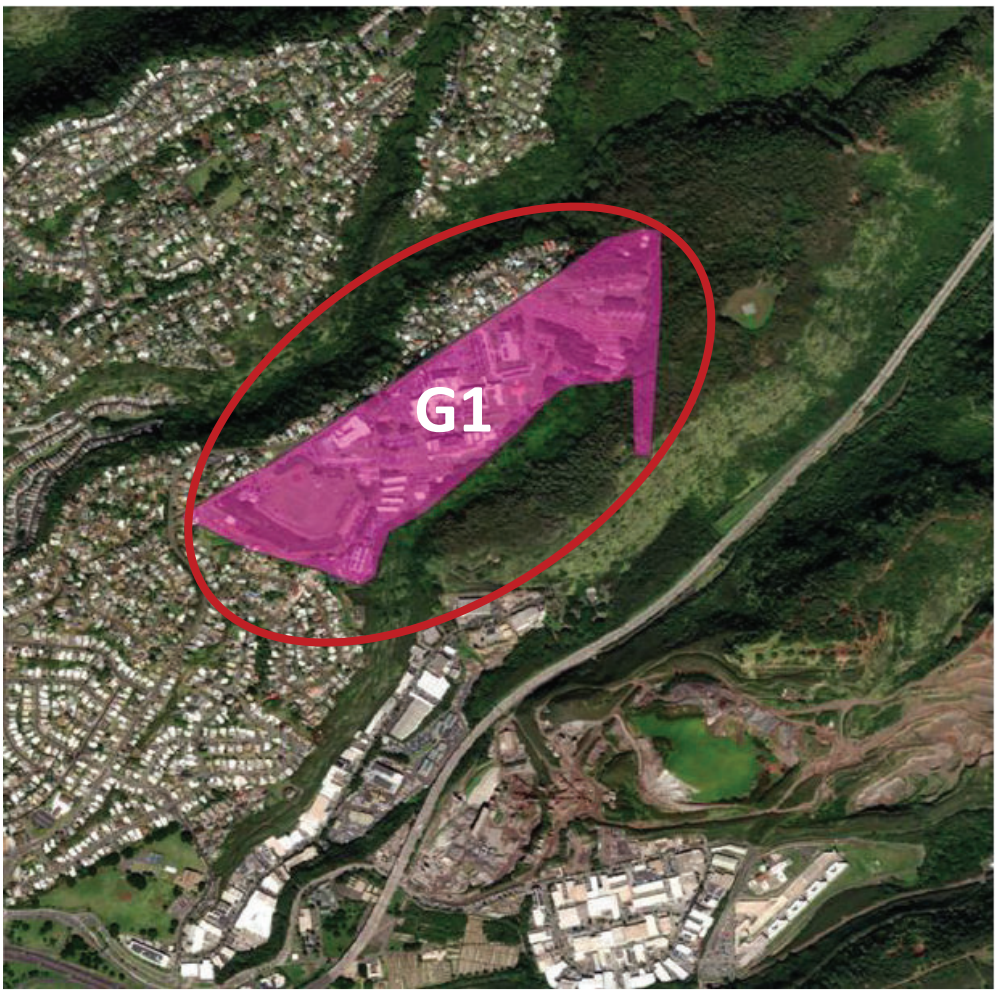
M. W. Meno
CAPT, CEC, USN

Interagency Drinking Water System Team

Drinking Water Distribution System Recovery Plan: *Stage 2 Sampling Results for Zone G1*

Joint Base Pearl-Hickam (JBPHH)

28 January 2022



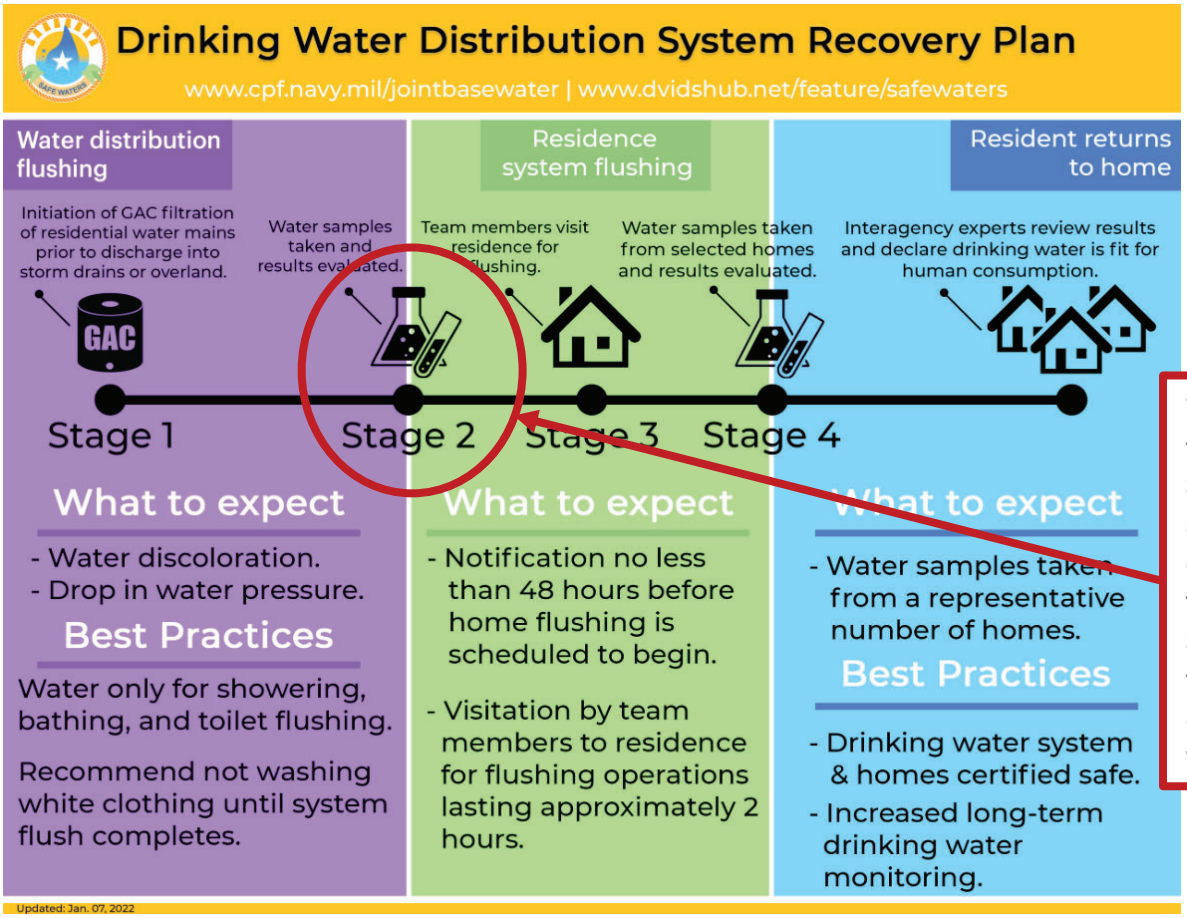
Neighborhoods included in Zone G1: Camp Smith

EXECUTIVE SUMMARY FOR ZONE G1

The State of Hawaii Department of Health's (DOH) November 29, 2021 Public Health Advisory for the JPBHH Public Water System for Zone G1 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 G1. 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 G1

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	01/08/2022	ppb	5	MCL	ND	**Yes**	Discharge from factories; Leaching from gas storage tanks and landfills
Ethylbenzene	01/08/2022	ppb	700	MCL	ND	**Yes**	Discharge from petroleum refineries
Toluene	01/08/2022	ppb	1000	MCL	ND	**Yes**	Discharge from petroleum factories
m,p-Xylenes	01/08/2022	ppb	10000	MCL	ND	**Yes**	Discharge from petroleum factories; Discharge from chemical factories
o-Xylenes	01/08/2022	ppb	10000	MCL	ND	**Yes**	
1-Methylnaphthalene	01/08/2022	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	01/08/2022	ppb	4.7	ISP	0.0101	**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	01/08/2022	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	01/08/2022	ppb	15	ISP	0.812	**Yes**	Corrosion of household plumbing systems; Erosion of natural deposits
Total Petroleum Hydrocarbons (TPH)-Gasoline	01/08/2022	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	01/08/2022	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	01/08/2022	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)	01/08/2022	ppb	2000	ISP	217	**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							
Arsenic	01/08/2022	ppb	10	MCL	0.0785	**Yes**	Erosion from natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium	01/08/2022	ppb	2000	MCL	2.89	**Yes**	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chromium	01/08/2022	ppb	100	MCL	1.28	**Yes**	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints
Copper	01/08/2022	ppb	1300	AL	10.8	**Yes**	Corrosion of household plumbing systems; Erosion of natural deposits
Selenium	01/08/2022	ppb		MCL	0.165	**Yes**	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
Volatile Organic Compounds							
Bromoform	01/07/2022	ppb	–	–	2.6	**Yes**	One of the trihalomethane compounds; see TTHM
Dibromochloromethane	01/07/2022	ppb	–	–	0.78	**Yes**	One of the trihalomethane compounds; see TTHM
Total Trihalomethanes (TTHM)	01/07/2022	ppb	80	MCL	3.38	**Yes**	By-product of drinking water disinfection
Synthetic Organic Compounds (SOCs) or Semi-Volatile Organic Compounds (SVOCs)							
Di-n-Octylphthalate	01/07/2022	ppb	–	–	0.30	**Yes**	Commonly used as a plasticizer in the production of plastic and plastic coating to increase flexibility; Enters the environment as the result of manufacture and use

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.*

Drinking Water Distribution System Recovery Plan: Stage 2 Sampling Results for Zone G1

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 G1?

The final round of distribution water main flushing in Zone G1 was completed on January 06, 2022.

How much water was flushed through the water distribution system in Zone G1?

From January 01 – 06, 2022, a total of 1.2 million gallons was flushed through Zone G1.

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.

Interagency Drinking Water System Team
Zone G1 Removal Action Report
February 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 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 G1 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 G1, as well as pressure logs for the distribution system during facility flushing operations. The completion of irrigation flushing in Zone G1, 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

28 February 2022

MEMORANDUM

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

Subj: RECORDS OF COMPLETED RESIDENTIAL AND NON-RESIDENTIAL FLUSHING ZONE G1

Ref: (a) Single Family Home Flushing Plan Checklist and Standard Operating Procedures, December 2021
(b) Non-Residential Flushing Plan, January 2022

Encl: (1) EDMS Residential Flushing Records Zone G1
(2) EDMS Non-Residential Flushing Records Zone G1
(3) JBPHH System Pressure SCADA Data

1. This memo documents the completion of residential and non-residential flushing in Zone G1. The completed records of residential flushing, as shown in Enclosure (1), document the flushing of 10/10 homes in EDMS. The completed records of non-residential flushing, as shown in Enclosure (2), document the flushing of all 40 facilities in EDMS.

2. Meter 7158, located at the Fleet and Industrial Supply Center Print Shop, and meter 4710, located on Pearl City Peninsula are the nearest meters to Zone G1. Meter readings for these two meters document that the distribution system maintained a pressure of at least 30 pounds per square inch (psi) for the duration of residential and non-residential flushing, as shown in Enclosure (3). Enclosure (3) also documents that all meters in the distribution system, except meter 2805, which was secured on 3 Dec 2021, maintain a pressure of at least 30 psi for the duration of residential and non-residential flushing in Zone G1.

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.

Very respectfully,

BINGHAM.TREVOR.AMMON.1131940048

Digitally signed by BINGHAM.TREVOR.AMMON.1131940048
Date: 2022.02.28 09:23:38 -10'00'

T. A. BINGHAM
CDR, CEC, USN

Flushing Zone G1

2022-01-21

Total Homes	Percent Complete	No Access	Flushed on Selected Dates
10	100.0 %	0	10

Zone	Address	Arrive Date	Start Time	Finish Time	Certified	Summary General Notes	Unable To Access	Access Reason
Flushing Zone G1	739 Anderson Road (G1-ANDE0739)	21-Jan-22	08:48	08:56	☑		☐	
Flushing Zone G1	749 Anderson Road (G1-ANDE0749)	21-Jan-22	10:17	12:38	☑		☐	
Flushing Zone G1	751 Anderson Road (G1-ANDE0751)	21-Jan-22	08:49	11:57	☑		☐	
Flushing Zone G1	755 Anderson Road (G1-ANDE0755)	21-Jan-22	08:52	11:54	☑		☐	
Flushing Zone G1	761 Anderson Road (G1-ANDE0761)	21-Jan-22	08:48	12:18	☑		☐	
Flushing Zone G1	763 Anderson Road (G1-ANDE0763)	21-Jan-22	08:48	11:19	☑		☐	
Flushing Zone G1	2133 Baugh Road (G1-BAUG2133)	21-Jan-22	20:30	10:10	☑		☐	
Flushing Zone G1	2151 Baugh Road (G1-BAUG2151)	21-Jan-22	21:00	10:46	☑		☐	
Flushing Zone G1	2165 Baugh Road (G1-BAUG2165)	21-Jan-22	11:04	14:26	☑		☐	
Flushing Zone G1	2173 Baugh Road (G1-BAUG2173)	21-Jan-22	11:50	14:26	☑		☐	

Key

- Not Started
- No Access
- In Progress
- Complete

Flushing Zone G1

2022-01-21 - 2022-01-25

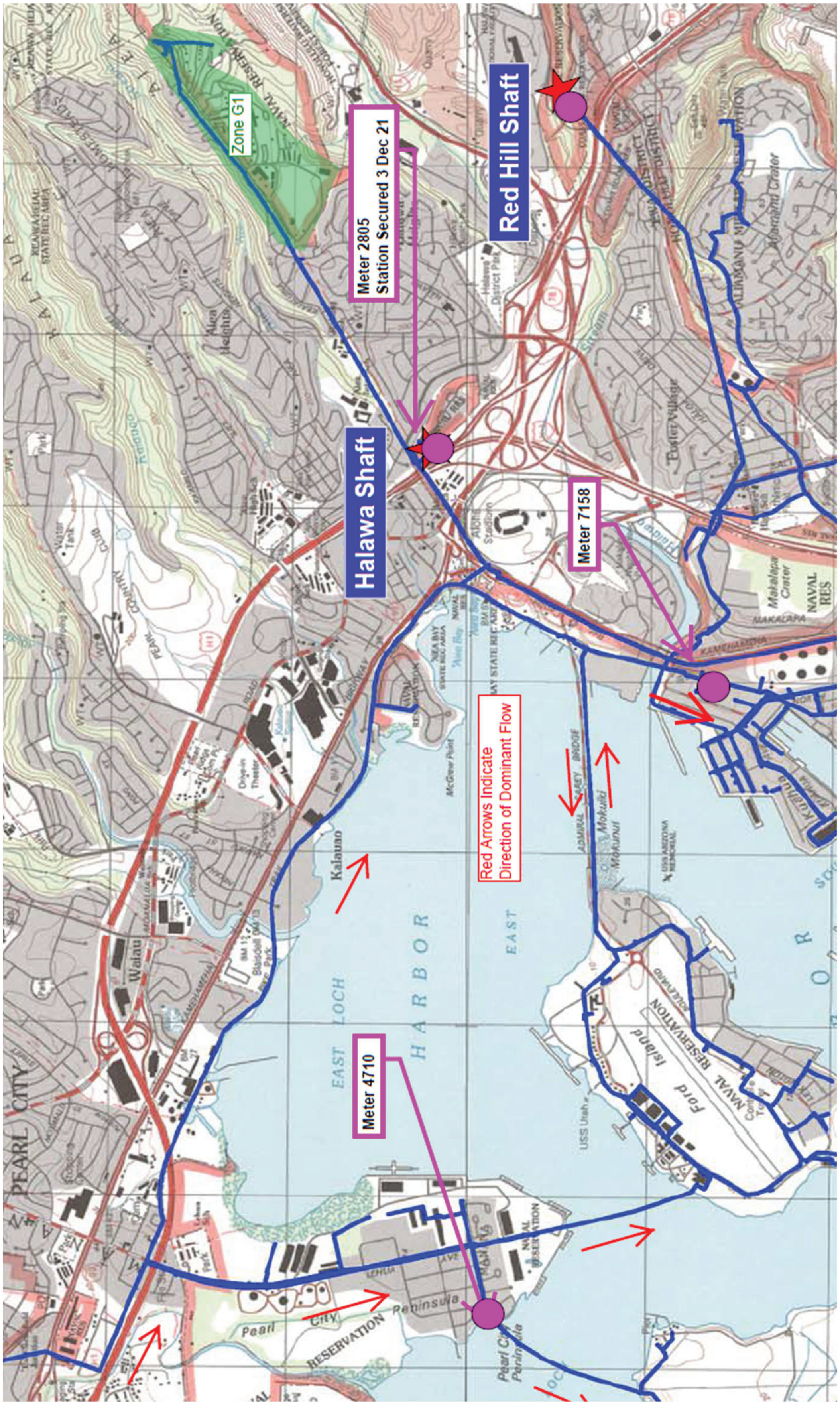
Total Facilities	Total	Percent Complete	No	Flushed on Selected Dates
40	40	100.0 %	0	40

Zone	Address	Arrive Date	Start Time	Finish Time	Certified	Summary General Notes	Unable To Access	Access Reason
Flushing Zone G1	Building 1, TELEPHONE EXCHANGE BLDG	21-Jan-22	09:00	12:38	☑		☐	
Flushing Zone G1	Building 125, COMBAT TRAIN'G	21-Jan-22	10:00	12:51	☑		☐	
Flushing Zone G1	Building 125A, COMBAT TRAIN'G	21-Jan-22	09:00	12:27	☑		☐	
Flushing Zone G1	Building 1A, ADMINISTRATIVE OFFICE	21-Jan-22	10:00	12:57	☑		☐	
Flushing Zone G1	Building 1B, ADMINISTRATIVE OFFICE	21-Jan-22	10:00	12:56	☑		☐	
Flushing Zone G1	Building 20, ADMINISTRATIVE OFFICE	21-Jan-22	09:00	12:45	☑		☐	
Flushing Zone G1	Building 20A, ADMINISTRATIVE OFFICE	21-Jan-22	10:00	12:59	☑		☐	
Flushing Zone G1	Building 20C, ADMINISTRATIVE OFFICE	21-Jan-22	08:00	12:59	☑		☐	
Flushing Zone G1	Building 20E, ADMINISTRATIVE OFFICE	21-Jan-22	08:00	13:00	☑		☐	
Flushing Zone G1	Building 2AA, ADMINISTRATIVE OFFICE	21-Jan-22	10:00	13:00	☑		☐	
Flushing Zone G1	Building 2C, EDUCATIONAL SRVCS	21-Jan-22	08:00	13:01	☑		☐	
Flushing Zone G1	Building 2D, VISUAL INFORMATION FAC	21-Jan-22	10:00	13:02	☑		☐	
Flushing Zone G1	Building 366, STG AIR/GRD ORG UTS	21-Jan-22	09:00	12:50	☑		☐	
Flushing Zone G1	Building 3A, STG AIR.GRD ORG UTS	21-Jan-22	10:00	13:02	☑		☐	
Flushing Zone G1	Building 3AA, ADMINISTRATIVE OFFICE	21-Jan-22	08:00	13:03	☑		☐	
Flushing Zone G1	Building 3B, ADMINISTRATIVE OFFICE	21-Jan-22	10:00	13:04	☑		☐	
Flushing Zone G1	Building 4, REG/INST EMER OPS CTR (G1-	21-Jan-22	09:00	12:41	☑		☐	
Flushing Zone G1	Building 401, UNACC ENL HSG (G1-	21-Jan-22	09:00	12:32	☑		☐	
Flushing Zone G1	Building 402,INDOPACOM (G1-	24-Jan-22	08:00	14:14	☑		☐	
Flushing Zone G1	Building 403, UNACC ENL HSG (G1-	21-Jan-22	10:00	12:33	☑		☐	
Flushing Zone G1	Building 404, UNACC ENL HSG (G1-	21-Jan-22	10:00	12:31	☑		☐	
Flushing Zone G1	Building 450, INDOOR PHYSICAL FIT CTR	21-Jan-22	10:00	12:24	☑		☐	
Flushing Zone G1	Building 451, INDOOR PHYSICAL FIT CTR	21-Jan-22	09:00	12:25	☑		☐	
Flushing Zone G1	Building 452, SEC BUILDING (G1-	21-Jan-22	09:00	12:29	☑		☐	
Flushing Zone G1	Building 453, PUBLIC TOILET (G1-	21-Jan-22	10:00	13:07	☑		☐	
Flushing Zone G1	Building 5,INDOPACOM (G1-BLDG0005)	24-Jan-22	09:00	14:08	☑		☐	
Flushing Zone G1	Building 500,INDOPACOM (G1-	25-Jan-22	10:00	15:55	☑		☐	
Flushing Zone G1	Building 501, COMMUNITY REC CTR (G1-	21-Jan-22	10:00	12:21	☑		☐	
Flushing Zone G1	Building 5A, MISC UTILITY BLDG (G1-	21-Jan-22	11:00	13:04	☑		☐	
Flushing Zone G1	Building 6, EXCHGE AUTO REPAIR STA	21-Jan-22	08:00	12:43	☑		☐	
Flushing Zone G1	Building 600, PUBLIC WORKS SHOP (G1-	21-Jan-22	10:00	12:30	☑		☐	
Flushing Zone G1	Building 601, SEC BUILDING (G1-	21-Jan-22	11:00	13:05	☑		☐	
Flushing Zone G1	Building 601A, ARMORY (G1-	21-Jan-22	10:00	13:06	☑		☐	
Flushing Zone G1	Building 612, FIRE STATION (G1-	21-Jan-22	10:00	13:07	☑		☐	
Flushing Zone G1	Building 615,INDOPACOM (G1-	25-Jan-22	08:00	15:56	☑		☐	
Flushing Zone G1	Building 700,INDOPACOM (G1-	25-Jan-22	09:00	15:57	☑		☐	
Flushing Zone G1	Building 701,INDOPACOM (G1-	24-Jan-22	10:00	15:59	☑		☐	
Flushing Zone G1	Building 80, REG/INST EMER OPS CTR	21-Jan-22	09:00	12:46	☑		☐	
Flushing Zone G1	Building 81, ADMINISTRATIVE OFFICE	21-Jan-22	08:00	12:46	☑		☐	
Flushing Zone G1	Building 82, STANDBY GENERATOR BLDG	21-Jan-22	10:00	12:47	☑		☐	

Key

- Not Started
- No Access
- In Progress
- Complete

Enclosure (3)


Zone G1
Meter 2805
Station Secured 3 Dec 21
Red Hill Shaft
Halawa Shaft
Meter 7158
Red Arrows Indicate
Direction of Dominant Flow
Meter 4710
PEARL CITY
EAST LOCH
HARBOR
Ford Island
NAVAL RESERVATION
Pearl City Peninsula
Kalauao
Aloha Stadium
Foster Village
Makalapa Crater
NAVAL RES
Aiea Heights
Waiau
Drive-in Theater
McGrew Point
USS Utah
USS ARIZONA MEMORIAL
Mokuumeume
ADMIRAL CLAREY BRIDGE
Halawa District Park

			Meter											
Date	Time	Date/Time	4787	4127	2805	4710	5004	5002	9050	7158	6780	2550	1846	1485
21-Jan-22	0:00:00	21-Jan-2200:00	70.4	33.8	3.2	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-2200:30	70.4	33.8	3.2	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-2201:00	70.4	34.7	3.2	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-2201:30	68.5	35.7	3.2	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-2202:00	62.4	34.7	3.2	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-2202:30	62.4	33.8	3.2	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-2203:00	62.4	34.8	3.2	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-2203:30	62.4	35.7	3.2	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-2204:00	62.0	35.7	3.2	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-2204:30	60.4	35.7	3.2	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-2205:00	60.4	35.7	3.2	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-2205:30	60.4	35.7	3.2	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-2206:00	64.7	34.8	3.2	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-2206:30	68.2	34.7	3.2	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-2207:00	68.2	34.7	3.2	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-2207:30	68.2	34.7	3.2	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-2208:00	68.2	34.3	3.2	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-2208:30	68.2	34.7	3.2	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-2209:00	68.2	34.7	3.2	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-2209:30	68.1	34.6	3.2	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-2210:00	67.9	33.8	3.2	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-2210:30	67.9	33.8	3.2	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-2211:00	68.7	34.2	3.2	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-2211:30	70.1	35.7	3.2	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-2212:00	70.1	35.7	3.2	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-2212:30	70.1	35.7	3.2	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-2213:00	70.1	35.7	3.2	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-2213:30	70.1	35.7	3.2	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-2214:00	70.1	35.7	3.2	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-2214:30	70.1	35.7	3.2	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-2215:00	70.1	35.7	3.2	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-2215:30	65.3	36.5	3.2	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-2216:00	61.1	36.5	3.2	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-2216:30	61.1	33.8	3.2	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-2217:00	61.1	33.8	3.2	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-2217:30	61.1	32.8	3.2	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-2218:00	59.5	32.8	3.2	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-2218:30	59.2	33.4	3.2	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	19:00:00	59.2	35.0	3.2	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	19:30:00	68.0	35.7	3.2	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	20:00:00	68.6	35.7	3.2	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	20:30:00	68.6	35.9	3.2	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	21:00:00	68.6	35.8	3.2	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	21:30:00	68.6	35.7	3.2	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	22:00:00	68.7	34.9	3.2	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	22:30:00	70.5	34.7	3.2	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	23:00:00	70.5	34.7	3.2	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	23:30:00	70.5	34.7	3.2	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	0:00:00	70.5	34.7	3.2	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	0:30:00	69.6	34.6	3.2	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	1:00:00	61.1	33.7	3.2	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	1:30:00	61.0	35.7	3.2	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	2:00:00	61.0	35.7	3.2	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	2:30:00	61.0	35.7	3.2	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	3:00:00	61.0	35.7	3.2	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	3:30:00	61.0	35.7	3.2	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	4:00:00	61.0	35.7	3.2	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	4:30:00	61.0	35.7	3.2	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	5:00:00	62.6	36.5	3.2	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	5:30:00	69.1	36.7	3.2	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	6:00:00	69.1	36.7	3.2	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	6:30:00	69.1	36.7	3.2	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	7:00:00	69.1	35.8	3.2	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	7:30:00	69.1	35.7	3.2	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	8:00:00	69.1	35.3	3.2	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	8:30:00	69.1	34.7	3.2	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	9:00:00	69.1	26.6	3.2	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	9:30:00	69.1	29.9	3.2	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	10:00:00	69.1	27.0	3.2	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	10:30:00	60.8	25.6	3.2	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	11:00:00	60.1	30.4	3.2	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	11:30:00	59.9	32.7	3.2	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	12:00:00	63.2	34.4	3.2	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	12:30:00	69.0	34.9	3.2	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	13:00:00	69.0	29.0	3.2	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	13:30:00	69.0	32.7	3.2	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	14:00:00	69.0	35.8	3.2	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	14:30:00	69.0	36.1	3.2	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	15:00:00	69.0	35.3	3.2	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	15:30:00	69.3	35.1	3.2	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	16:00:00	67.7	35.1	3.2	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	16:30:00	61.4	35.1	3.2	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	17:00:00	61.4	35.1	3.2	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	17:30:00	61.4	35.1	3.2	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	18:00:00	61.4	35.1	3.2	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	18:30:00	61.4	35.1	3.2	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-22	19:00:00	62.2	35.1	3.2	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-22	19:30:00	68.8	35.1	3.2	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-22	20:00:00	68.8	35.1	3.2	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-22	20:30:00	68.8	35.1	3.2	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-22	21:00:00	68.8	35.1	3.2	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-22	21:30:00	68.8	35.1	3.2	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-22	22:00:00	70.7	35.1	3.2	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-22	22:30:00	70.8	35.1	3.2	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-22	23:00:00	70.8	35.1	3.2	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-22	23:30:00	70.8	35.1	3.2	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-22	0:00:00	64.6	33.6	3.2	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-22	0:30:00	62.4	32.2	3.2	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-22	1:00:00	62.4	32.2	3.2	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-22	1:30:00	62.4	33.7	3.2	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-22	2:00:00	62.4	34.2	3.2	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-22	2:30:00	62.4	34.2	3.2	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-22	3:00:00	60.3	34.2	3.2	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-22	3:30:00	60.3	34.6	3.2	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-22	4:00:00	60.3	35.1	3.2	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-22	4:30:00	60.3	36.0	3.2	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-22	5:00:00	61.2	37.1	3.2	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-22	5:30:00	68.8	37.1	3.2	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-22	6:00:00	68.8	36.5	3.2	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-22	6:30:00	68.8	35.0	3.2	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-22	7:00:00	69.8	34.2	3.2	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-22	7:30:00	70.8	34.2	3.2	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-22	8:00:00	70.8	32.5	3.2	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-22	8:30:00	70.8	33.7	3.2	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-22	9:00:00	70.8	34.2	3.2	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-22	9:30:00	70.8	35.1	3.2	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-22	10:00:00	70.8	35.5	3.2	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-22	10:30:00	68.6	36.1	3.2	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-22	11:00:00	61.5	36.1	3.2	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-22	11:30:00	60.2	36.1	3.2	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-22	12:00:00	59.5	36.1	3.2	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-22	12:30:00	62.9	36.4	3.2	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-22	13:00:00	68.3	37.1	3.2	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-22	13:30:00	68.3	37.1	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	3.2	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	07:00	67.9	33.2	3.2	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	07:30	67.9	33.2	3.2	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	08:00	67.9	33.4	3.2	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	08:30	67.9	34.8	3.2	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-22	09:00	67.9	36.8	3.2	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-22	09:30	69.8	37.1	3.2	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-22	10:00	70.1	35.8	3.2	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-22	10:30	70.2	35.1	3.2	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-22	11:00	70.2	34.1	3.2	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-22	11:30	70.2	32.2	3.2	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-22	12:00	69.6	31.9	3.2	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-22	12:30	68.7	32.6	3.2	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-22	13:00	68.8	33.3	3.2	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-22	13:30	68.8	33.8	3.2	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-22	14:00	68.7	35.0	3.2	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-22	14:30	68.5	35.1	3.2	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-22	15:00	68.5	34.6	3.2	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-22	15:30	68.5	34.2	3.2	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-22	16:00	68.5	34.2	3.2	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-22	16:30	68.5	34.2	3.2	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-22	17:00	68.5	34.2	3.2	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-22	17:30	68.5	34.2	3.2	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-22	18:00	68.5	34.2	3.2	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-22	18:30	63.2	34.2	3.2	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-22	19:00	60.1	34.2	3.2	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-22	19:30	60.4	34.2	3.2	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-22	20:00	59.1	33.9	3.2	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-22	20:30	58.4	33.2	3.2	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-22	21:00	63.7	33.2	3.2	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-22	21:30	67.8	33.6	3.2	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-22	22:00	67.8	34.2	3.2	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-22	22:30	67.8	34.1	3.2	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-22	23:00	67.8	32.3	3.2	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-22	23:30	67.8	32.2	3.2	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-22	00:00	67.8	32.4	3.2	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-22	00:30	69.4	34.1	3.2	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-22	01:00	69.9	34.2	3.2	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-22	01:30	69.9	34.7	3.2	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-22	02:00	69.9	34.3	3.2	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-22	02:30	69.9	34.2	3.2	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	3.2	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	3.2	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-2204:00	69.9	34.2	3.2	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-2204:30	64.1	34.2	3.2	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-2205:00	60.3	34.2	3.2	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-2205:30	60.9	34.2	3.2	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-2206:00	59.9	33.4	3.2	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-2206:30	59.9	34.2	3.2	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-2207:00	59.9	34.2	3.2	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-2207:30	59.9	34.2	3.2	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-2208:00	59.9	34.2	3.2	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-2208:30	59.9	33.3	3.2	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-2209:00	63.6	33.5	3.2	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-2209:30	67.5	34.2	3.2	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-2210:00	68.4	34.2	3.2	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-2210:30	69.4	34.2	3.2	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-2211:00	69.3	34.5	3.2	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-2211:30	69.3	33.9	3.2	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-2212:00	69.3	31.5	3.2	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-2212:30	69.3	31.4	3.2	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-2213:00	69.3	33.2	3.2	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-2213:30	69.3	33.2	3.2	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-2214:00	69.3	33.2	3.2	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-2214:30	69.3	32.3	3.2	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-2215:00	69.3	32.4	3.2	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-2215:30	69.3	32.2	3.2	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-2216:00	63.6	32.8	3.2	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-2216:30	61.9	33.2	3.2	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-2217:00	61.9	33.2	3.2	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-2217:30	61.0	33.2	3.2	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-2218:00	59.9	33.2	3.2	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-2218:30	59.9	33.2	3.2	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-2219:00	59.9	33.2	3.2	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-2219:30	64.9	33.2	3.2	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-2220:00	68.3	33.6	3.2	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-2220:30	68.3	34.2	3.2	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-2221:00	68.3	33.3	3.2	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-2221:30	68.3	33.2	3.2	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-2222:00	68.5	33.5	3.2	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-2222:30	70.3	33.2	3.2	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	3.2	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	3.2	79.9	76.3	77.0	72.0	74.1	65.8	37.0	63.0	66.0

Residential Sampling Report for Sampling Zone
G1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					G1-ANDE0739	G1-ANDE0749	G1-ANDE0751	G1-ANDE0755	G1-ANDE0761	G1-ANDE0761	G1-ANDE0763	G1-BAUG2133
Location Type:					Residence	Residence	Residence	Residence	Residence	Residence	Residence	Residence
Residence:					739 Anderson Road	749 Anderson Road	751 Anderson Road	755 Anderson Road	761 Anderson Road	761 Anderson Road	763 Anderson Road	2133 Baugh Road
Field Sample ID:					G1-TW-2201002-22023-N	G1-TW-2201003-22023-N	G1-TW-2201004-22023-N	G1-TW-2201005-22023-N	G1-TW-2201006-22023-3-N	G1-TW-2201006-22023-N	G1-TW-2201007-22023-N	G1-TW-2201001-22023-3-N
Sample Date:					2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23
Sample Type:					N	N	N	N	FD	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: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**
Total Organic Carbon	2	None	None	None	**7.43 J**	**8.44 J**	**7.54 J**	**7.22 J**	**9.53 J**	**11.6 J**	**12.6 J**	**9.11 J**
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: 5801095811**	**SDG: 5801095811**	**SDG: 5801095811**	**SDG: 5801095811**	**SDG: 5801095811**	**SDG: 5801095811**	**SDG: 5801095811**	**SDG: 5801095811**
Petroleum Hydrocarbons (as Diesel)	200	400	None	None	92.0 U	92.0 U	91.0 U	91.0 U	91.0 U	91.0 U	92.0 U	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 UJ	31.0 U	31.0 U	31.0 U
Petroleum Hydrocarbons (as Motor Oil)	200	500	None	None	180 U	180 U	180 U	180 U	180 U	180 U	180 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: 810129391**	**SDG: 810129391**	**SDG: 810129391**	**SDG: 810129391**	**SDG: 35692278**	**SDG: 35692278**	**SDG: 35692278**	**SDG: 810129391**
Mercury	0.025	0.025	2	2	0.0560 U	0.0560 U	0.0560 U	0.0560 U	0.0900 U	0.0900 U	0.0900 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: 810129391**	**SDG: 810129391**	**SDG: 810129391**	**SDG: 810129391**	**SDG: 35692278**	**SDG: 35692278**	**SDG: 35692278**	**SDG: 810129391**
Antimony	6	6	6	6	0.0570 U	0.0570 U	0.0570 U	0.0570 U	0.210 U	**0.330 J**	0.210 U	0.0570 U
Arsenic	10	10	10	10	0.890 U	0.890 U	0.890 U	0.890 U	0.500 U	0.500 U	0.500 U	0.890 U
Barium	220	220	2000	2000	**3.40**	**3.10**	**3.20**	**3.20**	**3.10**	**3.00**	**3.00**	**3.80**
Beryllium	0.66	0.66	4	4	0.0830 U	0.0830 U	0.0830 U	0.0830 U	0.0700 U	0.0700 U	0.0700 U	0.0830 U
Cadmium	3	3	5	5	0.140 U	0.140 U	0.140 U	0.140 U	0.120 U	0.120 U	0.120 U	0.140 U
Chromium	11	11	100	100	**1.80**	**1.80**	**1.80**	**1.80**	**1.20 J**	**1.30 J**	**1.40 J**	**1.80**
Copper	2.9	2.9	1300	1300	**7.60**	**9.80**	**24.0**	**19.0**	**20.7**	**21.3**	**17.4**	**12.0**
Lead	15	5.6	15	15	**0.350 J**	**0.430 J**	**0.690**	**0.810**	**0.480 J**	**0.640 J**	**0.250 J**	**0.350 J**
Selenium	5	5	50	50	1.60 U	1.60 U	1.60 U	1.60 U	0.830 U	0.830 U	0.830 U	1.60 U
Thallium	2	2	2	2	0.160 U	0.160 U	0.160 U	0.160 U	0.500 U	0.500 U	0.500 U	0.160 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: 810129391**	**SDG: 810129391**	**SDG: 810129391**	**SDG: 810129391**	**SDG: 35692278**	**SDG: 35692278**	**SDG: 35692278**	**SDG: 810129391**
1-Methylnaphthalene	2.1	10	None	None	0.0190 U	0.0190 U	0.0190 U	0.0190 U	0.180 UJ	0.180 U	0.170 U	0.0200 U
2-Methylnaphthalene	4.7	10	None	None	0.0190 U	0.0190 U	0.0190 U	0.0190 U	0.190 UJ	0.190 U	0.180 U	0.0200 U

Residential Sampling Report for Sampling Zone
G1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:	G1-BAUG2133	G1-BAUG2151	G1-BAUG2165	G1-BAUG2173	G1-BLDG002AA	G1-BLDG0401	G1-BLDG0401	G1-BLDG0402
Location Type:	Residence	Residence	Residence	Residence	Non-Residence	Non-Residence	Non-Residence	Non-Residence
Residence:	2133 Baugh Road	2151 Baugh Road	2165 Baugh Road	2173 Baugh Road	Building 2AA, ADMINISTRATIVE OFFICE	Building 401, UNACC ENL HSG	Building 401, UNACC ENL HSG	Building 402,INDOPACOM
Field Sample ID:	G1-TW-2201001-22023-N	G1-TW-2201008-22023-N	G1-TW-2201009-22023-N	G1-TW-2201010-22023-N	G1-TW-2201024-22023-N	G1-TW-2201025-22023-3-N	G1-TW-2201025-22023-N	G1-TW-2201026-22023-N
Sample Date:	2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-25	2022-01-25	2022-01-25	2022-01-25
Sample Type:	N	N	N	N	N	FD	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: C22A048rev1	SDG: C22A048rev1	SDG: C22A048rev1	SDG: C22A048rev1	SDG: C22A050	SDG: C22A050	SDG: C22A050	SDG: C22A050
Total Organic Carbon	2	None	None	None	**10.5 J**	**1.96 J**	**9.65 J**	**2.05 J**	0.200 U	**1.55**	**2.01**	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: 5801095811	SDG: 5801095811	SDG: 5801095811	SDG: 5801095811	SDG: 5801096651	SDG: 5801096651	SDG: 5801096651	SDG: 5801096651
Petroleum Hydrocarbons (as Diesel)	200	400	None	None	93.0 U	93.0 U	93.0 U	92.0 U	91.0 U	91.0 U	**150**	96.0 U
Petroleum Hydrocarbons (as Gasoline)	200	300	None	None	31.0 U	31.0 U	31.0 U	31.0 U	100 UJ	100 UJ	100 UJ	100 UJ
Petroleum Hydrocarbons (as Motor Oil)	200	500	None	None	190 U	190 U	190 U	180 U	180 U	180 U	180 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: 810129391	SDG: 35692278	SDG: 35692278	SDG: 35692278	SDG: 810131291	SDG: 810131291	SDG: 810131291	SDG: 810131291
Mercury	0.025	0.025	2	2	0.0560 U	0.0900 U	0.0900 U	0.0900 U	0.0560 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: 810129391	SDG: 35692278	SDG: 35692278	SDG: 35692278	SDG: 810131291	SDG: 810131291	SDG: 810131291	SDG: 810131291
Antimony	6	6	6	6	0.0570 U	0.210 U	0.210 U	0.210 U	0.0570 U	0.0570 U	0.0570 U	0.0570 U
Arsenic	10	10	10	10	0.890 U	0.500 U	0.500 U	0.500 U	0.890 U	0.890 U	0.890 U	0.890 U
Barium	220	220	2000	2000	**3.80**	**3.80**	**4.40**	**4.60**	**2.80**	**3.60**	**3.40**	**3.70**
Beryllium	0.66	0.66	4	4	0.0830 U	0.0700 U	0.0700 U	0.0700 U	0.0830 U	0.0830 U	0.0830 U	0.0830 U
Cadmium	3	3	5	5	0.140 U	0.120 U	0.120 U	0.120 U	0.140 U	0.140 U	0.140 U	0.140 U
Chromium	11	11	100	100	**1.70**	**1.40 J**	**1.30 J**	**1.30 J**	**1.80**	**1.80**	**1.90**	**1.80**
Copper	2.9	2.9	1300	1300	**13.0**	**13.9**	**15.3**	**11.9**	**49.0**	**54.0**	**51.0**	**27.0**
Lead	15	5.6	15	15	**0.380 J**	**0.230 J**	**0.260 J**	**0.610 J**	**0.360 J**	**0.620**	**0.520**	**0.360 J**
Selenium	5	5	50	50	1.60 U	0.830 U	0.830 U	0.830 U	1.60 U	**1.60 J**	1.60 U	**1.70 J**
Thallium	2	2	2	2	0.160 U	0.500 U	0.500 U	0.500 U	0.160 U	0.160 U	0.160 U	0.160 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: 810129391	SDG: 35692278	SDG: 35692278	SDG: 35692278	SDG: 810131291	SDG: 810131291	SDG: 810131291	SDG: 810131291
1-Methylnaphthalene	2.1	10	None	None	0.0190 U	0.180 U	0.180 U	0.180 U	0.0200 U	0.0190 U	0.0190 U	0.0200 U
2-Methylnaphthalene	4.7	10	None	None	0.0190 U	0.190 U	0.190 U	0.190 U	0.0200 U	0.0190 U	0.0190 U	0.0200 U

Residential Sampling Report for Sampling Zone
G1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:	G1-BLDG0403	G1-BLDG0404
Location Type:	Non-Residence	Non-Residence
Residence:	Building 403, UNACC ENL HSG	Building 404, UNACC ENL HSG
Field Sample ID:	G1-TW-2201027-22023-N	G1-TW-2201028-22023-N
Sample Date:	2022-01-25	2022-01-25
Sample Type:	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: C22A050	SDG: C22A050
Total Organic Carbon	2	None	None	None	0.200 U	**1.52**

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: 5801096651	SDG: 5801096651
Petroleum Hydrocarbons (as Diesel)	200	400	None	None	94.0 U	91.0 U
Petroleum Hydrocarbons (as Gasoline)	200	300	None	None	100 UJ	100 UJ
Petroleum Hydrocarbons (as Motor Oil)	200	500	None	None	190 U	180 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: 810131291	SDG: 810131291
Mercury	0.025	0.025	2	2	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: 810131291	SDG: 810131291
Antimony	6	6	6	6	0.0570 U	0.0570 U
Arsenic	10	10	10	10	0.890 U	0.890 U
Barium	220	220	2000	2000	**3.60**	**3.70**
Beryllium	0.66	0.66	4	4	0.0830 U	0.0830 U
Cadmium	3	3	5	5	0.140 U	0.140 U
Chromium	11	11	100	100	**1.80**	**1.80**
Copper	2.9	2.9	1300	1300	**56.0**	**46.0**
Lead	15	5.6	15	15	**0.490 J**	**0.510**
Selenium	5	5	50	50	1.60 U	**1.90 J**
Thallium	2	2	2	2	0.160 U	0.160 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: 810131291	SDG: 810131291
1-Methylnaphthalene	2.1	10	None	None	0.0200 U	0.0190 U
2-Methylnaphthalene	4.7	10	None	None	0.0200 U	0.0190 U

Residential Sampling Report for Sampling Zone
G1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					G1-ANDE0739	G1-ANDE0749	G1-ANDE0751	G1-ANDE0755	G1-ANDE0761	G1-ANDE0761	G1-ANDE0763	G1-BAUG2133
Location Type:					Residence	Residence	Residence	Residence	Residence	Residence	Residence	Residence
Residence:					739 Anderson Road	749 Anderson Road	751 Anderson Road	755 Anderson Road	761 Anderson Road	761 Anderson Road	763 Anderson Road	2133 Baugh Road
Field Sample ID:					G1-TW-2201002-22023-N	G1-TW-2201003-22023-N	G1-TW-2201004-22023-N	G1-TW-2201005-22023-N	G1-TW-2201006-22023-3-N	G1-TW-2201006-22023-N	G1-TW-2201007-22023-N	G1-TW-2201001-22023-3-N
Sample Date:					2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23
Sample Type:					N	N	N	N	FD	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: 810129391**	**SDG: 810129391**	**SDG: 810129391**	**SDG: 810129391**	**SDG: 35692278**	**SDG: 35692278**	**SDG: 35692278**	**SDG: 810129391**
Benzo(a)pyrene	0.06	0.06	0.2	0.2	0.00970 U	0.00970 U	0.00970 U	0.00970 U	0.0200 UJ	0.0200 U	0.0190 U	0.0100 U
Bis(2-ethylhexyl)phthalate	3	3	6	6	0.580 U	0.580 U	0.580 U	0.580 U	0.470 UJ	0.470 U	0.470 U	0.600 U
Naphthalene	12	17	None	None	0.0190 U	0.0190 U	0.0190 U	0.0190 U	0.180 UJ	0.180 U	0.170 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: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**
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

Notes:

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

Residential Sampling Report for Sampling Zone
G1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					G1-BAUG2133	G1-BAUG2151	G1-BAUG2165	G1-BAUG2173	G1-BLDG002AA	G1-BLDG0401	G1-BLDG0401	G1-BLDG0402
Location Type:					Residence	Residence	Residence	Residence	Non-Residence	Non-Residence	Non-Residence	Non-Residence
Residence:					2133 Baugh Road	2151 Baugh Road	2165 Baugh Road	2173 Baugh Road	Building 2AA, ADMINISTRATIVE OFFICE	Building 401, UNACC ENL HSG	Building 401, UNACC ENL HSG	Building 402,INDOPACOM
Field Sample ID:					G1-TW-2201001-22023-N	G1-TW-2201008-22023-N	G1-TW-2201009-22023-N	G1-TW-2201010-22023-N	G1-TW-2201024-22023-N	G1-TW-2201025-22023-3-N	G1-TW-2201025-22023-N	G1-TW-2201026-22023-N
Sample Date:					2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-25	2022-01-25	2022-01-25	2022-01-25
Sample Type:					N	N	N	N	N	FD	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: 810129391**	**SDG: 35692278**	**SDG: 35692278**	**SDG: 35692278**	**SDG: 810131291**	**SDG: 810131291**	**SDG: 810131291**	**SDG: 810131291**
Benzo(a)pyrene	0.06	0.06	0.2	0.2	0.00970 U	0.0200 U	0.0200 U	0.0200 U	0.00980 U	0.00970 UJ	0.00970 U	0.00990 U
Bis(2-ethylhexyl)phthalate	3	3	6	6	0.580 U	0.470 U	0.480 U	0.470 U	0.590 U	0.580 U	0.580 U	0.600 U
Naphthalene	12	17	None	None	0.0190 U	0.180 U	0.180 U	0.180 U	0.0200 U	0.0190 U	0.0190 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: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A050**	**SDG: C22A050**	**SDG: C22A050**	**SDG: C22A050**
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

Residential Sampling Report for Sampling Zone
G1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:	G1-BLDG0403	G1-BLDG0404
Location Type:	Non-Residence	Non-Residence
Residence:	Building 403, UNACC ENL HSG	Building 404, UNACC ENL HSG
Field Sample ID:	G1-TW-2201027-22023-N	G1-TW-2201028-22023-N
Sample Date:	2022-01-25	2022-01-25
Sample Type:	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: 810131291	SDG: 810131291
Benzo(a)pyrene	0.06	0.06	0.2	0.2	0.00980 U	0.00970 U
Bis(2-ethylhexyl)phthalate	3	3	6	6	0.590 U	0.580 U
Naphthalene	12	17	None	None	0.0200 U	0.0190 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: C22A050	SDG: C22A050
1,1,1-Trichloroethane	11	11	200	200	0.119 U	0.119 U
1,1,2-Trichloroethane	5	5	3	5	0.288 U	0.288 U
1,1-Dichloroethene	7	7	7	7	0.128 U	0.128 U
1,2,4-Trichlorobenzene	70	70	70	70	0.318 U	0.318 U
1,2-Dichlorobenzene	10	10	600	600	0.272 U	0.272 U
1,2-Dichloroethane	5	5	5	5	0.0884 U	0.0884 U
1,2-Dichloropropane	5	5	5	5	0.129 U	0.129 U
1,4-Dichlorobenzene	5	5	75	None	0.245 U	0.245 U
Benzene	5	5	5	5	0.0846 U	0.0846 U
Carbon Tetrachloride	5	5	5	5	0.165 U	0.165 U
Chlorobenzene	25	25	100	100	0.146 U	0.146 U
cis-1,2-Dichloroethene	70	70	70	70	0.0570 U	0.0570 U
Ethylbenzene	700	7.3	700	700	0.141 U	0.141 U
m,p-Xylene	10000	13	None	None	0.317 U	0.317 U
Methylene chloride	5	5	5	5	2.15 U	2.15 U
o-Xylene	10000	13	None	None	0.157 U	0.157 U
Styrene	10	10	100	100	0.224 U	0.224 U
Tetrachloroethene (PCE)	5	5	5	5	0.125 U	0.125 U
Toluene	1000	9.8	1000	1000	0.120 U	0.120 U
trans-1,2-Dichloroethene	100	100	100	100	0.0958 U	0.0958 U
Trichloroethene (TCE)	5	5	5	5	0.0574 U	0.0574 U
Vinyl chloride	2	2	2	2	0.611 U	0.611 U

Residential Sampling Report for Sampling Zone
G1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

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

February 28, 2022

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

SUBJ: ZONE G1 EXCEEDANCE INVESTIGATION SUMMARY AND RESULTS

Encl: (1) Zone G1 Exceedance Investigation Sample Results from EDMS

1. This letter documents the Zone G1 residence sampling results. Enclosure (1) contains the results of this sampling. There were no MCL or table 2 exceedances that required remedial action. There were numerous sample results above the ISP of 2 parts per million (ppm) for total organic carbon (TOC).

2. Within 45 calendar days after amendment of the public health advisory for Zone G1, the Navy will complete a comprehensive investigation of the large cluster of 10 high TOC results between 7.22 ppm and 12.6 ppm on Anderson Road and Baugh Road. The investigation will include, but not be limited to, the identification of the cause of the high TOC, a tabular presentation of the free chlorine as compared to all 18 TOC sample results in Zone G1, and a cross-connection survey.

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

Digitally signed by MENO.MICHAEL.WAYNE.JR.1088310035
Date: 2022.02.28 19:27:22 -10'00'

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

Zone G1 Exceedance Report
G1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					G1-ANDE0739	G1-ANDE0749	G1-ANDE0751	G1-ANDE0755	G1-ANDE0761	G1-ANDE0761	G1-ANDE0763	G1-BAUG2133
Location Type:					Residence	Residence	Residence	Residence	Residence	Residence	Residence	Residence
Residence:					739 Anderson Road	749 Anderson Road	751 Anderson Road	755 Anderson Road	761 Anderson Road	761 Anderson Road	763 Anderson Road	2133 Baugh Road
Field Sample ID:					G1-TW-2201002-22023-N	G1-TW-2201003-22023-N	G1-TW-2201004-22023-N	G1-TW-2201005-22023-N	G1-TW-2201006-22023-3-N	G1-TW-2201006-22023-N	G1-TW-2201007-22023-N	G1-TW-2201001-22023-3-N
Sample Date:					2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23	2022-01-23
Sample Type:					N	N	N	N	FD	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: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**
Total Organic Carbon	2	None	None	None	**7.43 J**	**8.44 J**	**7.54 J**	**7.22 J**	**9.53 J**	**11.6 J**	**12.6 J**	**9.11 J**

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

mg/L = Milligrams per Liter

Zone G1 Exceedance Report
G1 Zone Residential DW Sampling
Chemistry Results
Drinking Water Sampling, JBPHH, Oahu Hawaii

Location ID:					G1-BAUG2133	G1-BAUG2165	G1-BAUG2173	G1-BLDG0401
Location Type:					Residence	Residence	Residence	Non-Residence
Residence:					2133 Baugh Road	2165 Baugh Road	2173 Baugh Road	Building 401, UNACC ENL HSG
Field Sample ID:					G1-TW-2201001-22023-N	G1-TW-2201009-22023-N	G1-TW-2201010-22023-N	G1-TW-2201025-22023-N
Sample Date:					2022-01-23	2022-01-23	2022-01-23	2022-01-25
Sample Type:					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: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A048rev1**	**SDG: C22A050**
Total Organic Carbon	2	None	None	None	**10.5 J**	**9.65 J**	**2.05 J**	**2.01**

Section 2b.3 Exceedance Investigation Summary and Results

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

11000
Ser PWO/0099
February 19, 2022

Interagency Drinking Water System Team

SUBJECT: CERTIFICATION OF IRRIGATION LINE FLUSHING – JOINT BASE PEARL HARBOR-HICKAM - ZONE G1

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 G1, generally known as Camp Smith, have been operated and flushed following Dept. of Health guidance, 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: 2022.02.19 07:30:20 -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 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.