Puhi Sewer and Water Company

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August 20, 2024

Via E-Filing

The Honorable Chair and Members of the
Hawaii Public Utilities Commission
465 South King Street
Kekuanaoa Building, Room 103
Honolulu, HI 96813

RE: (Non-Docketed) Case No. 2023-04661, Aqua Puhi, LLC, dba Puhi Sewer and Water Company's Submission of the Utility Natural Hazard Mitigation Report

Dear Commissioners and Commission Staff:

Aqua Puhi, LLC, dba Puhi Sewer and Water Company hereby submits its Natural Hazard and Mitigation Report pursuant to Order No. 40396, filed on November 21, 2023, in Case No. 2023-04661 (non-docketed).

Thank you for your attention in this matter. If you should have any questions, please do not hesitate to contact the undersigned.

Sincerely,

Ann L. Sokei
General Manager
Aqua Puhi, LLC

cc: Division of Consumer Advocacy

Utility Natural Hazard Mitigation Report

for Aqua Puhi, LLC

The purpose of this report is to document ongoing efforts and future mitigation plan to address natural hazards as they relate to Aqua Puhi LLC assets, utility service, capital expenditures, operations, and finances.

This report is filed in reference to Public Utilities Commission

non-docketed, Order No. 40396, Case No. 2023-04661

Prepared by:

AQUA ENGINEERS
AN EMPLOYEE OWNED COMPANY

August 2024.

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List of Acronyms:

AE	Aqua Engineers, Inc.
ATS	Automatic Transfer Switch
CIP	Capital Improvement Project
CMT	Corporate Management Team
DLNR	Department of Land and Natural resources
DRC	Direct Report in Charge
FEMA	Federal Emergency Management Agency
FM	Force main
GIS	Geographic Information System
GM	General Manager
HEMA	Hawaii Emergency Management Agency
HSC	Health and Safety Coordinator
KEMA	Kauai Emergency Management Agency
LP WWTP	Lihue-Puhi Wastewater Treatment Plant
OD	Operations Director
OM	Operations Manager
O&M	Operation and Maintenance
OPS	Aqua Engineers Operation and Maintenance personnel
OS	Operations Supervisor
PUC	Public Utility Commission
Report	Natural Hazard Mitigation Report
SCADA	Supervisory Control and Data Acquisition
SPS	Schuler Sewer Pump Station

I. Introduction

Aqua Puhi LLC ("**Utility**") submits this Utility Natural Hazard Mitigation Report ("**Report**") as required by the Hawaii Public Utilities Commission (PUC) pursuant to Non-Docketed Case Number 2023-04661, Order No. 40396. This Report details the Utility's ongoing efforts, and future mitigation plans to address natural hazards as they relate to their provision of Utility service, capital expenditures, operations, and/or finances.

Aqua Puhi LLC provides wastewater collection and treatment services to residential and commercial customers in Lihue and Puhi service area. The wastewater treatment plant produces recycled water quality effluent that discharges into the Puakea golf course holding pond that is ultimately used for irrigation. Utility assets include:

1. Lihue-Puhi Wastewater Treatment Plant (LP WWTP), located at 2180 Kanio Street, Lihue HI 96766,
2. Schuler Sewer Pump Station (SPS), located off Hookiwi St, in Halelani Village at Puhi, Lihue, HI 96766,
3. Sewer Pump Stations SPS #1 and SPS #2, located in Puakea development, currently in conveyance process, and
4. Underground collection system of sewer manholes, gravity sewer lines, and force main.

Aqua Engineers, Inc. serves as operation and maintenance (O&M) service provider for all Utility's assets.

II. Mitigation/adaptation plans for natural hazards.

This section details the specific mitigation and adaptation strategies developed to protect the wastewater system from potential impact of natural hazard.

a. Natural hazard mitigation plan objectives are first to protect human life, followed by protection of the environment, property, and maintenance of the essential wastewater system operations.

b. The Utility's expectations for safety and natural hazard mitigation and preparedness are reduction and elimination of long-term risk to human life and property from hazards. Some of the key Utility's performance goals are zero untreated wastewater spills from the Utility assets to the environment and zero partially treated water disposal outside of the LP WWTP.

c. Employees at the Utility and Aqua Engineers Inc. are trained to emergency procedures and know where to find information before, during and after the emergencies. Utility and O&M Service Provider Communication Chart and Key Roles

list is included in Appendix A. A sample of an action plan/check list for power failure is included in the Appendix B.

d. Natural hazards like **tsunamis, hurricanes and floods** historically resulted in increased flows through the Utility assets, but the actual assets were not exposed to flooding, and no property damages or interruption of services were recorded.

    i. The Utility assets are easily accessible via public and private roads. Per flood hazard maps as depicted on the FEMA Digital Flood Hazard Areas Map (DFIRM) effective 5/1/2021 [1], Utility assets are located outside of special flood hazard areas and the risks of floods hazard are considered minimal.

    ii. Per Tsunami Evacuation Zone map as depicted by the State of Hawaii, Emergency Management Agency [2], all the Utility assets are located in the safe zone and the direct risk of Tsunamis are considered minimal.

e. To mitigate the potential damages from **floods resulting from natural hazards**, the Utility implemented the following strategies:

    i. Storm drains are inspected and cleaned regularly to maintain effective storm drainage.

    ii. Gravity collection system is regularly flushed and cleaned to maintain designed flow capacities in case of emergencies.

    iii. Critical gravity system areas are identified for inspection to determine the pipe integrity and need for necessary replacement prior to failures.

    iv. Critical components of the treatment system were identified for improvements to provide redundancy that will help mitigate disruptions in service caused by increased flows or failures and damages caused by natural disasters.

    v. Structure and infrastructure design: Utility and O&M service provider continuously look for ways to improve the plant safety, process reliability and redundancy that will ensure uninterrupted treatment during high flow events and potential natural hazard events. These improvements are achieved by periodic capital improvement projects (CIP).

f. Based on historical data related to past natural hazards, the Utility assets are most likely to be affected by **power outage** that may further result in equipment failure, inadequate wastewater treatment and/or inability to dispose adequately treated effluent to designated disposal site.

g. To mitigate the potential damages from **power outages** resulting from natural hazards, the Utility implemented the following strategies:

    i. Back-up power generators and automatic transfer switches (ATS) are installed at LP WWTP and SPSs. All emergency power generators, ATS's and

fuel storage tanks are inspected and tested by their O&M service provider weekly to ensure uninterrupted service.

ii. LP WWTP and SPSs are equipped with emergency by-pass connection as additional safety measure that may be utilized in case of pump(s) and/or emergency generator failures.

iii. Utility owns a self-priming skid mounted Dri-Prime Pump that can be hauled and used for emergency sewage by-pass pumping when the need arises.

iv. LP WWTP and SPSs are equipped with alarms and remote monitoring, to minimize the potential for disruption in service caused by loss of power.

v. In case of prolong equipment and back-up power failure, there are two containment areas within the property lines of the LP WWTP that can provide emergency storage of inadequately treated wastewater for the duration of 10 days of regular flows, or less (in case of high wet weather flows). This water can then be returned into the treatment process upon return to standard operating procedures.

h. To mitigate the potential damages from **wildfire spreading**, the Utility implemented the following strategies:

i. Regular housekeeping measures and best management practices are implemented to minimize potentials for hazardous material spills, using double containment tanks, containment pallets and proper disposal of unused materials at LP WWTP and SPSs.

ii. Grass, foliage, and vegetation are regularly trimmed and inspected.

iii. Utility equipment electrical components and fuel tanks are regularly inspected to avoid potentials for electrical fires and prevent fuel leaks.

iv. Fire extinguishers are available at the LP WWTP and SPSs for small and isolated fires.

i. System equipment protection: Utility process controls utilize call out alarms to the operators to alert them of equipment malfunctions, process disruptions and power losses so that they can react in timely manner and prevent equipment damage, and/or spills to the environment.

j. System equipment inspection: Critical components of the treatment process are regularly inspected, and replacements are scheduled for aging equipment to prevent unexpected failures and disruption of service.

k. Data collection and evaluation: Key performance indicators, are continuously monitored and evaluated using advance technology sensors and equipment for remote data monitoring.

III. Past utility hazard response plans, Lessons learned:

a. Natural hazards in the past most often resulted in power outages that lasted less than 6 hr. To prevent damage to the equipment and processes, and to provide uninterrupted services during power outages, the emergency power generators with automatic transfer switches and fuel storage tanks that can provide uninterrupted power for minimum of 48 hours are installed at LP WWTP and SPSs and are inspected and tested weekly.

b. Increased flows that resulted from the natural hazards in the past, most often lasted less than 24 hours. During the past high flow events the potential infiltration manholes are identified and equipped with watertight covers to minimize storm water infiltration into the wastewater collection system.

c. Natural hazards usually interrupts the supply chain of critical materials. Critical material and chemicals necessary for treatment process are identified and stored on site in the amounts to support minimum of 7 days of operation.

IV. Utility pre- and post-hazard mobilization and response guidelines, communications, and reporting information

a. Employees at the Utility and Aqua Engineers Inc. are trained to emergency procedures and know where to find information before, during and after the emergencies. Utility and O&M Service Provider Communication Chart and Key Roles list is included in Appendix A. A sample of an action plan/check list for power failure is included in the Appendix B. The extent of actions required is dictated by the type and severity of the event.

b. As part of pre-hazard preparedness, the Utility and O&M service provided monitor weather forecasts and natural environment prediction signs. If the possibility for natural hazard that may result in high flows through the Utility assets is recognized, the operation team may alter the standard operating procedure to reduce the level of water in the treatment pond days prior to the event, in order to minimize the impact to the treatment process and the environment. In addition, the O&M service provider is instructed to test all backup generators and confirm that the fuel for backup generators is available.

a. When an unusual conditions or possible emergency is discovered, the first priority of the observing personnel is to determine whether the situation is immediately life threatening. If any circumstance poses an immediate danger to human health or

safety, personnel is trained and instructed to evacuate the area and contact appropriate agencies and utilities.

b. If the situation is not immediately life threatening, the discovering personnel is instructed to notify the Direct Responsible in Charge (DRC), Operations Supervisor and/or Operations Manager and, continue to provide operations services at the facility, at the extent possible. Operations Supervisor and/or Operations Manager will further alert the company management, utilities and/or regulatory agencies, as needed, and following the procedures developed for each specific hazardous event.

c. After an emergency has reached a measure of safety for the personnel, a thorough evaluation of damages will be performed to determine if there were any reportable spills to the environment that require reporting and/or remediation.

d. If reportable spills are identified, Operations Manager will inform the regulatory agencies and public, per regulatory requirements.

e. In case of any spills to the environment the areas will be fenced off to restrict public access and the reports will include measures that the utility will utilize to clean up and restore the areas.

f. After the successful hazard exposure remediation, the operation procedures developed for emergency situations will be reviewed and amended as needed.

V. Damage assessment, restoration priorities, and materials management plans.

a. In case of a natural hazard, priority is always protection of human life, followed by protection of the environment, property, and maintenance of essential wastewater system operations.

b. After an emergency has reached a measure of safety for the personnel, a thorough damage assessment will be performed to evaluate the extent and nature of the damages to the wastewater treatment equipment and to determine the steps needed to restore the continuity of the wastewater services and minimize impact to the customers and health and safety of the environment.

c. Alternative modes of operation may be implemented to by-pass any damaged equipment until full replacement or restauration.

d. After the successful damage remediation, the operation procedures developed for emergency situations will be reviewed and amended as needed.

VI. Business continuity plans for during or after a natural hazard event.

a. Employees at the Utility and Aqua Engineers Inc. are trained to respond before, during and after a natural hazard by having action item checklists, communication protocols and key contact information immediately available. A sample of an action plan/check list for power failure is included in the Appendix B.

b. Alternative modes of operation may be implemented to by-pass any damaged equipment until full replacement or restauration.

c. Utility assets are covered by Markel American Insurance Company property insurance policy. The policy provides building property, business personal property, off premises utility service interruption and income coverage.

d. Any significant changes in the financial health of the Utility due to a natural hazard event will be reported to the PUC immediately upon occurrence of the event by way of written correspondence. If a major portion of the plant is damaged and requires a significant financial investment, the Utility will provide monthly written updates to the Commission until the Utility deems it has reached resolution and returned to normal operations with information including but not limited to physical and financial impairment of the asset(s), replacement cost, required financing for asset replacement, plans to include asset replacement in rate base through a future rate case, impact on customers and any plans to assist customers to avoid disruption in service due to the physical and financial impairment of plant.

e. The Commission will be copied on any correspondence regarding notices to other relevant government agencies regarding major effects on the Utility's operations or finances due to a natural hazard event.

VII. Resiliency efforts and mitigation planning projects and/or programs that are currently ongoing or are planned to be constructed and/or implemented over the next five years.

a. Utility and the O&M service provider continuously review standard operating procedures to identify the ways to improve the plant safety, process reliability and redundancy that will ensure uninterrupted treatment during high flow events, loss of power evens and other risks related of potential natural hazards. These improvements are accomplished by investments in the capital improvement projects (CIPs) as the needs are recognized and prioritized. Currently the plant is going through several CIPs that include replacement of aging equipment (to include influent flow meter, headworks, tertiary filters, aeration blowers, headers and

diffusers) with same or more reliable advance technologies that will provide not only higher reliability of the process, but also redundancy that may help mitigate the consequences related to potential natural hazards.

b. Remote monitoring: The O&M service provider personnel operates the plant 7 days per week for 8 hours per day. To reduce the opportunities for process disruption during non-working hours, new Supervisory Control and Data Acquisition (SCADA) system will be implemented to enable remote plant monitoring and control capabilities for early detection of potential process disruptions and provide ample time for operators to address the potential emergency in a timely manner. To improve warning and emergency communication, Utility uses a diversity of communication media including land line, cellular communication and cloud based critical data monitoring.

c. Mapping: Critical gravity sewer assets are being mapped using Geographic Information System (GIS) mapping to improve access and coordination of asset maintenance and periodic conditional assessment.

d. All new employees at Utility and O&M service provider are trained in emergency procedures and where to find information during the emergency.

e. Facility critical components are identified, and spare components are maintained for redundancy.

VIII. Information regarding how utility plans to request to recover the costs for construction and/or implementation of these projects and/or programs.

a. Utility intends to recover cost related to capital improvement investments through periodic Rate Case applications. The next Rate Case application is scheduled for 2025.

IX. Appendices

Appendix A: Utility and O&M Service Provider Communication Chart and Key Roles.

Appendix B: A Sample of an Action plans for emergencies caused by power failure.

X. References:

[1] FEMA Digital Flood Hazard Areas (DFIRM) map effective 5/1/2021: https://geoportal.hawaii.gov/datasets/HiStateGIS::flood-hazard-areas-dfirm-statewide/explore?location=22.036512%2C-159.339600%2C11.42

[2] State of Hawaii, Emergency Management Agency (HEMA): Tsunami Evacuation Zone map: https://dod.hawaii.gov/hiema/public-resources/tsunami-evacuation-zone/

XI. Contact Information:

Ann Sokei, Aqua Puhi LLC General Manager: ann@aquaengineers.com

Kevin J. Newton, Aqua Puhi LLC, Secretary of Member: kevin@aquaengineers.com

XII. Disclaimer:

The purpose of this report is to document ongoing efforts and future mitigation plan to address natural hazards as they relate to LP WWTP services, capital expenditures, operations, and finances. The focus of this document is mitigation, which is action taken to reduce or eliminate long-term risk to human life and property from hazards. This document is intended to be a starting point for gathering ideas and should not be used as the only source for identifying actions.

Appendix A

Utility and O&M Service Provider (AE) Communication Chart and Key Roles in case of emergency and crisis:

Position/Title	Directly informs and reports on emergency status to:	Role
AE field O&M personnel **(OPS)**	DRC	Collects data and performs impact assessment.
AE Direct Report in Charge **(DRC)**	OS	Provides guidance to OPS.
AE Operations Supervisor **(OS)**	HSC, OM and Utility GM	Establishes emergency coordination team and center. Collaborate with coordination team to determine the action and response plan and reporting needs.
AE Operations Manager **(OM)**	OD	Collaborate with coordination team to determine the action and response plan and reporting needs.
AE Health and Safety Coordinator **(HSC)**		Collaborate with coordination team to determine the action and response plan and reporting needs.
Utility General Manager **(GM)**		Collaborate with coordination team to determine the action and response plan and reporting needs.
AE Operations Director **(OD)**	President and CMT	Provides strategic oversight and directions to emergency coordination team.
AE Corporate Management Team **(CMT)**	President and Utility GM	Coordinates and directs business continuity after the emergency and crises have passed.

Note: roles rather than names and phone numbers are used in the above chart to minimize the confusion caused by personnel changes and rotations within the company. The O&M service provider personnel are trained on communication protocols and have their current contact information updated regularly.

Reporting to government agencies (as applicable):

Agency	Contact number	Reason to contact
Department of Health (DOH)	808-586-4294	Spills to environment per DOH guidelines
911	911	Any emergency
Kauai Fire Department	808-241-4980	Fire
Kauai Emergency Management Agency (KEMA)	808-241-1800 or 808-241-1860	Any natural disaster and for coordination of risk and available assets

Appendix B

Sample of Action Plan for Power Failure – Check List

In case of power failure, emergency generators at the plant and pump station (2) will provide sufficient power for emergency lighting and plant/pump station controls.

✓	Line No.	Task
	1	Notify DRC, Operations Supervisor of power outage.
	2	Activate/check status of emergency power supply.
	3	Assign someone to monitor the status of the emergency power supply during the incident and report any problems to the Operations Supervisor. If the emergency generator fails to start in automatic status, initiate operation manually only after performing the following:
		a) Verify the Generator Room storage area is open and clear of obstruction
		b) Check the fuel delivery system
		c) Check the Emergency Generator Engine for proper water and oil levels
	4	Once power has been restored, re-set and restart all affected plant equipment.
	5	Notify KIUC. If applicable, request periodic status updates.
	6	Notify the Operations Supervisor.
	7	If power failure is due to local equipment failure, develop and implement recovery plan.
	8	If power failure appears to be the result of an intentional act:
		a) Provide support to the Police Department and other law enforcement agencies (for example preserve evidence and interview witnesses)
		b) Maintain documentation and forward to the Operations Supervisor at the conclusion of the emergency event.

Check box when an item was completed or, if an item was not applicable, place “N/A” in the box. The tasks listed above are general guidelines for responding to emergency. Specific response actions may vary depending upon the nature and extent of the emergency event.

The foregoing document was electronically filed with the State of Hawaii Public Utilities Commission's Case and Document Management System (CDMS).