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May 14, 2025

Via email only at county.clerk@mauicounty.us

Honorable Alice L. Lee, Chair
and Members of the Council
County of Maui
Wailuku, Hawaii 96793

**SUBJECT: Litigation Matter – Authorization for Special Counsel
Lahaina Wastewater Facility
NPDES PERMIT NO. HI 0021848**

Dear Chair Lee and Council Members:

Please find attached separately a proposed resolution entitled "AUTHORIZING THE EMPLOYMENT OF SPECIAL COUNSEL BEVERIDGE & DIAMOND PC AS SPECIAL COUNSEL TO ASSIST THE COUNTY OF MAUI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT IN THE PERMITTING PROCESS AND REPRESENT THE COUNTY IN ANY LEGAL CHALLENGES ARISING OUT OF THE ISSUANCE OF A NPDES PERMIT FOR THE LAHAINA WASTEWATER FACILITY (NPDES PERMIT NO. HI 0021848)." The purpose of the proposed resolution is to hire special counsel to assist the Department with the permitting process and to represent the County in any legal challenges to the permit. Proposed counsel has specialized expertise in Clean Water Act laws and administrative rules and has extensive experience representing municipalities regarding wastewater regulations.

May I request that the proposed resolution be scheduled for discussion and action, or referral to the appropriate standing committee as soon as possible, as public comment on the proposed permit closes on May 21, 2025, and the Department anticipates that a permit would be issued soon thereafter.

Also attached herewith is a copy of NPDES PERMIT NO. HI 0021848.

It is anticipated that an executive session may be necessary to discuss questions and issues pertaining to the powers, duties, privileges, immunities, and liabilities of the County, the Council, and/or the Committee.

Chair Alice Lee

May 14, 2025

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Should you have any questions or concerns, please do not hesitate to contact us. Thank you for your anticipated assistance in this matter

Sincerely,



THOMAS KOLBE
Deputy Corporation Counsel

cc: Shayne Agawa, Director, DEM
Eric Nakagawa, Wastewater Reclamation Division Chief, DEM

Attachment: Copy of NPDES Permit No. HI 0021848

**NOTICE OF PUBLIC COMMENT PERIOD AND PUBLIC HEARING ON
PROPOSED REVISED WATER POLLUTION CONTROL PERMIT FOR
LAHAINA WASTEWATER RECLAMATION FACILITY
NPDES PERMIT NO. HI 0021848**

DOCKET NO. HI 0021848

**PUBLIC COMMENT PERIOD
Monday, April 21, 2025 – Wednesday, May 21, 2025**

The State of Hawaii, Department of Health (DOH), Clean Water Branch (CWB) will hold a public hearing in Lahaina, Maui regarding the proposed revised National Pollutant Discharge Elimination System (NPDES) permit (Public Hearing Permit) for the Lahaina Wastewater Reclamation Facility (Facility).

Date: Wednesday, May 21, 2025
Time: 10:00 a.m.
Location: Lahaina Civic Center Main Hall
1840 Honoapiilani Highway
Lahaina, Maui, Hawaii 96761

Electronic copies of the Public Hearing Permit, fact sheet, and other information are also available online at <https://health.hawaii.gov/cwb/clean-water-branch-home-page/public-notices-and-updates/>.

The NPDES permit is a regulatory mechanism to control water pollution through the issuance of permits. The purpose of issuing an NPDES permit is to implement federal NPDES regulations and State NPDES rules to help protect human health and the environment. An NPDES permit imposes restrictions and requirements on discharges of pollutants from permitted sites/facilities. Permittees (entities that have NPDES permit coverage) are legally obligated to comply with all requirements specified in the issued permit.

NPDES permits do not serve the purpose of authorizing or approving any activities and actions, including, but not limited to, wastewater reuse. Issuance of an NPDES permit does not convey any other rights, authorizations, approvals, or any other ability not specified in the permit.

The Facility collects and treats municipal wastewater from a population of approximately 40,000 in the City of West Maui. The Facility utilizes primary, secondary, and tertiary wastewater treatment. For disposal, a portion of the effluent is reused for irrigation with the remaining volume being discharged to the four (4) underground injection wells at the Facility. The effluent in the injection wells flows to seeps along the coastline to the southwest of the Facility at North Kaanapali Beach. The ultimate receiving water is the Pacific Ocean, which is designated as a Class A, Dry Marine Open Coastal Water, under Hawaii Administrative Rules, Section 11-54-3(c)(2). It is the objective for Class A waters to protect their use for recreational purposes and aesthetic enjoyment. Any other use shall be permitted as long as it is compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters.

The DOH-CWB tentatively recommends to the Director of Health (Director) to issue the Public Hearing Permit, revised from the proposed permit presented at the public hearing held on October 1, 2024. The Public Hearing Permit is the result of significant public comments and testimony regarding more stringent effluent limitations and submission of many project plans among other topics.

The DOH-CWB invites written and oral testimony at the public hearing concerning the Public Hearing Permit to discharge tertiary treated wastewater from the Facility to the Facility's underground injection wells, subject to certain effluent limitations and special conditions. An NPDES permit would be issued to the County of Maui, Department of Environmental Management, 200 South High Street, Wailuku, Hawaii, 96793.

The County of Maui's Department of Environmental Management published a Notice of Clean Water Branch Recommendations for Lahaina Wastewater Reclamation Facility; NPDES Permit No. HI 0021848; Docket No. HI 0021848; on June 30, 2023, in *The Maui News*. The Director of Health received a significant number of requests for a public hearing. On October 1, 2024, a public hearing was held to receive testimony on the proposed permit.

The DOH is holding a public hearing in accordance with Hawaii Revised Statutes Chapters 91 and 342D and HAR Section 11-55-13 due to significant public interest generated by the previous public comment period and public hearing. The DOH invites written and oral testimony at the public hearing concerning the Public Hearing Permit.

Persons who wish to testify are asked to review the Public Hearing Permit and fact sheet prior to providing testimony and are required to submit a written copy of their testimony. Oral testimony may be subject to a time limit. Written statements will be accepted at the public hearing; by email at cleanwaterbranch@doh.hawaii.gov; hand-delivered to 2827 Waimano Home Road, Room 225, Pearl City, Hawaii 96782, or the DOH Maui District Health Office at 54 High Street, Room 300, Wailuku, Hawaii 96793 until 4:30 p.m. on Wednesday, May 21, 2025; or by mail at P.O. Box 3378, Honolulu, Hawaii 96801-3378, postmarked by May 21, 2025. The documents are also available for public inspection, Monday through Friday (excluding holidays) from 7:45 a.m. until 4:15 p.m., at the DOH offices listed above. Copies may be bought.

All commentors shall include their name, address, and email address in their written testimony. All commentors who believe any condition of the Public Hearing Permit is inappropriate or that the DOH-CWB's tentative recommendation to issue the Public Hearing Permit is inappropriate, must raise all reasonably ascertainable issues from the implementing Federal NPDES regulations and provide the corresponding citations from Title 40 of the Code of Federal Regulations.

For more information or if you have special needs due to disability, please contact Mr. Reef Migita, Supervisor of the CWB Engineering Section at 808-586-4309 or at the above email or physical address at least seven (7) days before the public hearing date. For those who use a TTY/TDD, please call through Sprint Relay Hawaii, at 1-711 or 1-877-447-5991. The DOH-CWB will try to provide the requested arrangements but cannot guarantee all arrangements can be accommodated by the hearing deadline.

If the DOH-CWB believes, after considering all timely written testimony and oral testimony, that no substantive changes to the conditions of the Public Hearing Permit are necessary or warranted, then DOH-CWB may recommend to the Director that the Public Hearing Permit be issued.

Please notify anyone you know who would be interested in this matter.

DARRYL LUM, P.E.
Clean Water Branch Chief

**AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Clean Water Act (CWA), as amended, (33 U.S.C. Section 1251 et seq. CWA); Hawaii Revised Statutes (HRS) Chapter 342D; and Hawaii Administrative Rules (HAR) Chapters 11-54 and 11-55,

**COUNTY OF MAUI
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

(hereinafter PERMITTEE),

is authorized to discharge treated wastewater to the receiving waters named Pacific Ocean through Effluent Monitoring Location (EML) Serial No. 001 and any combination of injection wells identified as:

Injection Well No.	Latitude	Longitude
001	20°56'45.94" N	156°41'12.37" W
002	20°56'45.15" N	156°41'12.62" W
003	20°56'42.31" N	156°41'15.12" W
004	20°56'41.56" N	156°41'15.70" W

from its Lahaina Wastewater Reclamation Facility located at 3300 Honoapiilani Highway, Lahaina, Hawaii, 96761,

in accordance with the general requirements, effluent limitations, monitoring requirements and other conditions set forth herein, and in the Department of Health (DOH) "Standard NPDES Permit Conditions (Version 16)," that is available on the DOH, Clean Water Branch (CWB) website at: <http://health.hawaii.gov/cwb/site-map/home/standard-npdes-permit-conditions/>.

All references to Title 40 of the Code of Federal Regulations (CFR) are to regulations that are in effect on July 1, 2024, except as otherwise specified. Unless otherwise specified herein, all terms are defined as provided in the applicable regulations in Title 40 of the CFR.

Failure to comply with any condition, requirement, and/or effluent limitation in this permit is an enforceable violation and your National Pollutant Discharge Elimination System (NPDES) permit may be terminated. Examples of enforceable violations include, but are not limited to: Unauthorized discharges where a pollutant was not disclosed in the NPDES application, but was detected by monitoring-only requirements in the permit or by other means determined by the DOH; failure to sample, analyze, or submit water quality results as required in the NPDES permit; and discharging pollutants in locations that were not authorized in the NPDES permit. If you violate HRS

Chapter 342D, you may be subject to penalties of up to \$60,000 per violation per day and up to two (2) years in jail.

Falsification of information, including providing information in the NPDES application that does not match what is actually occurring at the facility, may result in criminal penalties for the Permittee and their authorized representative as provided in CWA Section 309 and HRS Section 342D-35.

This permit will become effective on **<Date>**.

This permit and the authorization to discharge will expire at midnight, **<Date>**. To renew this permit, the Permittee shall submit a renewal application at least 360 days prior to the expiration date of this permit.

Signed this **<Date>**.

(For) Director of Health

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the effective date of this permit and lasting until the expiration date of this permit, the Permittee is authorized to discharge treated wastewater thru Effluent Monitoring Location (EML) Serial No. 001. The discharge shall be limited and monitored as specified below.

Effluent Characteristics	Discharge Limitations ¹				Monitoring Requirements	
	Average Monthly	Average Weekly	Maximum Daily	Units	Measurement Frequency	Sample Type
Flow	2	2	9.0	MGD	Continuous/ Estimate ³	Recorder/ Totalizer
Biochemical Oxygen Demand (5-day @ 20 Deg. C) (BOD ₅)	30	45	2	mg/L		
	2251.8 ⁴	3377.7 ⁴	2	lbs/day		
	The average monthly percent removal shall not be less than 85 percent				1/Day ⁵	24-Hour Composite
Total Suspended Solids (TSS)	30	45	2	mg/L	1/Day ⁵	24-Hour Composite
	2251.8 ⁴	3377.7 ⁴	2	lbs/day		
	The average monthly percent removal shall not be less than 85 percent					

MGD – Million Gallons per Day

mg/L – Milligrams per Liter

lbs/day – Pounds per Day

- 1 Compliance with mass-based effluent limitations shall be determined using the following formula:

$$\text{lbs/day} = 8.34 * \text{concentration (mg/L)} * \text{flow (MGD)}$$
- 2 The Permittee shall monitor and report the test results.
- 3 Both influent and effluent flows shall be measured, as specified in Part A.2 of this permit.
- 4 The mass emission rates for discharge limitations for BOD₅ and TSS are based on a design flow of 9.0 MGD.
- 5 Both influent and effluent samples shall be taken, as specified in Parts A.2 and A.3 of this permit.

Parameter	Units	Effluent Limitations ¹			Monitoring Requirements	
		Average Annual	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
pH ²	standard units	Not less than 7.6 and not greater than 8.6			5/Week	Grab
Chronic Toxicity <i>Pimephales promelas</i> ³	Pass/Fail	--	--	Pass ⁴	1/Quarter	24-Hour Composite
Chronic Toxicity <i>Ceriodaphnia dubia</i> ³	Pass/Fail	--	--	Pass ⁴	1/Quarter	24-Hour Composite
Chronic Toxicity <i>Raphidocelis subcapitata</i> (formerly known as <i>Selenastrum capricornutum</i>) ³	Pass/Fail	--	--	Pass ⁴	1/Quarter	24-Hour Composite
Fecal Coliform	CFU/ 100 mL	--	5.2 ⁵	200	1/Day	Grab
Enterococcus ⁶	CFU/ 100 mL	--	35 ⁵	130 ⁷	5/Month ⁸	Grab
Total Nitrogen	µg/L	9	9	9	1/Month	Grab or Composite
	lbs/day	8.25 ^{10,11}	9	13.51 ^{7,11}		

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Parameter	Units	Effluent Limitations ¹			Monitoring Requirements	
		Average Annual	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Ammonia Nitrogen	µg/L	2.00 ¹⁰	⁹	5.00 ⁷	1/Month	Grab or Composite
Total Phosphorus	µg/L	⁹	⁹	⁹	1/Month	Grab or Composite
	lbs/day	1.20 ^{10,11}	⁹	2.25 ^{7,11}		
Temperature	°C	--	⁹	--	1/Week	Grab
Turbidity	NTU	0.20	⁹	0.50	1/Month	Grab
Acenaphthene	µg/L	--	90	320	1/Year	¹²
Acrolein	µg/L	--	--	18	1/Year	¹²
Acrylonitrile	µg/L	7.0	--	--	1/Year	¹²
Aldrin	µg/L	0.00000077	--	1.3	1/Year	¹²
Anthracene	µg/L	--	400	--	1/Year	¹²
Benzo(a)Anthracene	µg/L	0.0013	--	--	1/Year	¹²
Dibenzo(a,h)Anthracene	µg/L	0.00013	--	--	1/Year	¹²
Antimony ¹³	µg/L	--	640	--	1/Year	¹²
Arsenic ¹³	µg/L	0.14	--	36	1/Year	¹²
Benzene	µg/L	16	--	1,700	1/Year	¹²
Benzidine	µg/L	0.011	--	--	1/Year	¹²
Beryllium ¹³	µg/L	--	0.038	--	1/Year	¹²
Bromoform	µg/L	120	--	--	1/Year	¹²
Butylbenzyl Phthalate	µg/L	0.10	--	--	1/Year	¹²
Cadmium ¹³	µg/L	--	--	9.4	1/Year	¹²
Carbon Tetrachloride	µg/L	5.0	--	16,000	1/Year	¹²
Chlordane	µg/L	0.00032	--	0.0040	1/Year	¹²
Chlorine	µg/L	--	--	7.5	1/Year	¹²
Chlorobenzene	µg/L	--	800	--	1/Year	¹²
Chlorodibromomethane	µg/L	21	--	--	1/Year	¹²
Bis(2-Chloroethyl) Ether	µg/L	2.2	--	--	1/Year	¹²
Chloroform	µg/L	--	2,000	--	1/Year	¹²
Bis(Chloromethyl) Ether	µg/L	0.017	--	--	1/Year	¹²
2-Chloronaphthalene	µg/L	--	1,000	--	1/Year	¹²
2-Chlorophenol	µg/L	--	800	--	1/Year	¹²
3-Methyl-4-Chlorophenol	µg/L	--	2,000	--	1/Year	¹²
Chlorpyrifos	µg/L	--	--	0.0056	1/Year	¹²
Chromium (VI) ¹³	µg/L	--	--	50	1/Year	¹²
Chrysene	µg/L	0.13	--	--	1/Year	¹²
Copper ¹³	µg/L	--	--	3.5	1/Year	¹²
Cyanide	µg/L	--	--	1.0	1/Year	¹²
Demeton	µg/L	--	--	0.10	1/Year	¹²
Di-n-Butyl Phthalate	µg/L	--	30	--	1/Year	¹²
Dichlorobenzenes	µg/L	--	--	660	1/Year	¹²
1,2-Dichlorobenzene	µg/L	--	3,000	--	1/Year	¹²
1,3-Dichlorobenzene	µg/L	--	10	--	1/Year	¹²
1,4-Dichlorobenzene	µg/L	--	900	--	1/Year	¹²
3,3'-Dichlorobenzidine	µg/L	0.15	--	--	1/Year	¹²
Dichlorobromomethane	µg/L	27	--	--	1/Year	¹²
DDD	µg/L	0.00012	--	1.2	1/Year	¹²
DDE	µg/L	0.000018	--	--	1/Year	¹²
DDT	µg/L	0.000030	--	0.0010	1/Year	¹²

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Parameter	Units	Effluent Limitations ¹			Monitoring Requirements	
		Average Annual	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
1,2-Dichloroethane	µg/L	650	--	38,000	1/Year	¹²
1,1-Dichloroethylene	µg/L	--	20,000	--	1/Year	¹²
Trans-1,2-Dichloroethylene	µg/L	--	4,000	--	1/Year	¹²
2,4-Dichlorophenol	µg/L	--	60	--	1/Year	¹²
Chlorophenoxy Herbicide (2,4-D)	µg/L	--	12,000	--	1/Year	¹²
Dichloropropanes	µg/L	--	--	3,400	1/Year	¹²
1,2-Dichloropropane	µg/L	31	--	--	1/Year	¹²
1,3-Dichloropropene	µg/L	12	--	260	1/Year	¹²
Dieldrin	µg/L	0.0000012	--	0.0019	1/Year	¹²
Diethyl Phthalate	µg/L	--	600	--	1/Year	¹²
Dimethyl Phthalate	µg/L	--	2,000	--	1/Year	¹²
2,4-Dimethylphenol	µg/L	--	3,000	--	1/Year	¹²
Dinitrophenols	µg/L	--	1,000	--	1/Year	¹²
2,4-Dinitrophenol	µg/L	--	300	--	1/Year	¹²
2-Methyl-4,6-Dinitrophenol	µg/L	--	30	--	1/Year	¹²
Dinitrotoluenes	µg/L	--	--	200	1/Year	¹²
2,4-Dinitrotoluene	µg/L	1.7	--	--	1/Year	¹²
1,2-Diphenylhydrazine	µg/L	0.20	--	--	1/Year	¹²
Endosulfan	µg/L	--	--	0.0087	1/Year	¹²
alpha-Endodulfan	µg/L	--	30	--	1/Year	¹²
beta-Endosulfan	µg/L	--	40	--	1/Year	¹²
Endosulfan Sulfate	µg/L	--	40	--	1/Year	¹²
Endrin	µg/L	--	--	0.0023	1/Year	¹²
Endrin Aldehyde	µg/L	--	1.0	--	1/Year	¹²
Ethylbenzene	µg/L	--	130	140	1/Year	¹²
Bis(2-Ethylhexyl) Phthalate	µg/L	0.37	--	--	1/Year	¹²
Fluoranthene	µg/L	--	--	13	1/Year	¹²
Benzo(b)fluoranthene	µg/L	0.0013	--	--	1/Year	¹²
Benzo(k)fluoranthene	µg/L	0.013	--	--	1/Year	¹²
Fluorene	µg/L	--	70	--	1/Year	¹²
Guthion	µg/L	--	--	0.010	1/Year	¹²
Heptachlor	µg/L	0.0000059	--	0.0036	1/Year	¹²
Heptachlor Epoxide	µg/L	0.000032	--	--	1/Year	¹²
Hexachlorobenzene	µg/L	0.000079	--	--	1/Year	¹²
Hexachlorobutadiene	µg/L	0.010	--	11	1/Year	¹²
Hexachlorocyclohexane - technical	µg/L	0.010	--	--	1/Year	¹²
Hexachlorocyclohexane-alpha	µg/L	0.00039	--	--	1/Year	¹²
Hexachlorocyclohexane-beta	µg/L	0.014	--	--	1/Year	¹²
Hexachlorocyclohexane - gamma	µg/L	--	--	0.16	1/Year	¹²
Hexachlorocyclopentadiene	µg/L	--	--	2.0	1/Year	¹²
Hexachloroethane	µg/L	0.10	--	310	1/Year	¹²
Isophorone	µg/L	1,800	--	4,300	1/Year	¹²
Lead ¹³	µg/L	--	--	5.9	1/Year	¹²

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Parameter	Units	Effluent Limitations ¹			Monitoring Requirements	
		Average Annual	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Malathion	µg/L	--	--	0.10	1/Year	12
Mercury ¹³	µg/L	--	--	0.029	1/Year	12
Methoxychlor	µg/L	--	0.020	0.030	1/Year	12
Methyl Bromide	µg/L	--	10,000	--	1/Year	12
Methylene Chloride	µg/L	1,000	--	--	1/Year	12
Bis(2-Chloro-1-methylethyl) Ether	µg/L	--	4,000	--	1/Year	12
Methylmercury	µg/L	--	0.30	--	1/Year	12
Mirex	µg/L	--	--	0.0010	1/Year	12
Naphthalene	µg/L	--	--	780	1/Year	12
Nickel ¹³	µg/L	--	--	8.4	1/Year	12
Nitrobenzene	µg/L	--	600	2,200	1/Year	12
Nitrophenols	µg/L	--	--	1,600	1/Year	12
Nitrosamines	µg/L	1.2	--	--	1/Year	12
Nitrosodibutylamine	µg/L	0.22	--	--	1/Year	12
Nitrosodiethylamine	µg/L	1.2	--	--	1/Year	12
N-Nitrosodimethylamine	µg/L	3.0	--	--	1/Year	12
N-Nitrosodiphenylamine	µg/L	6.0	--	--	1/Year	12
N-Nitrosodi-n-Propylamine	µg/L	0.51	--	--	1/Year	12
Nitrosopyrrolidine	µg/L	34	--	--	1/Year	12
Pentachlorobenzene	µg/L	--	0.10	--	1/Year	12
Pentachloroethane	µg/L	--	--	130	1/Year	12
Pentachlorophenol	µg/L	0.040	--	13	1/Year	12
Phenol	µg/L	--	--	170	1/Year	12
Polychlorinated Biphenyls (PCBs)	µg/L	0.000064	--	0.030	1/Year	12
Pyrene	µg/L	--	30	--	1/Year	12
Benzo(a)Pyrene	µg/L	0.00013	--	--	1/Year	12
Indeno(1,2,3-cd) Pyrene	µg/L	0.0013	--	--	1/Year	12
Selenium ¹³	µg/L	--	--	71	1/Year	12
Silver ¹³	µg/L	--	--	2.7	1/Year	12
1,2,4,5-Tetrachlorobenzene	µg/L	--	0.030	--	1/Year	12
2,3,7,8-TCDD (Dioxin)	µg/L	0.000000051	--	--	1/Year	12
1,1,2,2-Tetrachloroethane	µg/L	3.0	--	3,000	1/Year	12
Tetrachloroethylene	µg/L	29	--	145	1/Year	12
2,3,5,6-Tetrachlorophenol	µg/L	--	--	440	1/Year	12
Thallium ¹³	µg/L	--	0.47	710	1/Year	12
Toluene	µg/L	--	520	2,100	1/Year	12
Toxaphene	µg/L	--	--	0.00020	1/Year	12
Tributyltin	µg/L	--	--	0.010	1/Year	12
1,2,4-Trichlorobenzene	µg/L	0.076	--	--	1/Year	12
1,1,1-Trichloroethane	µg/L	--	--	10,400	1/Year	12
1,1,2-Trichloroethane	µg/L	8.9	--	--	1/Year	12
Trichloroethylene	µg/L	7.0	--	700	1/Year	12
2,4,5-Trichlorophenol	µg/L	--	600	--	1/Year	12
2,4,6-Trichlorophenol	µg/L	2.8	--	--	1/Year	12
Chlorophenoxy Herbicide (2,4,5-TP)	µg/L	--	400	--	1/Year	12

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Parameter	Units	Effluent Limitations ¹			Monitoring Requirements	
		Average Annual	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Vinyl Chloride	µg/L	1.6	--	--	1/Year	¹²
Zinc ¹³	µg/L	--	--	91	1/Year	12

CFU/100 mL – Colony Forming Units per 100 Milliliters

µg/L – Micrograms per Liter

lbs/day – Pounds per Day

°C – degrees Centigrade

NTU – Nephelometric Turbidity unit

¹ Compliance with mass-based effluent limitations shall be determined using the following formula:

$$\text{lbs/day} = 8.34 * \text{concentration (mg/L)} * \text{flow (MGD)}$$

² Both influent and effluent samples shall be taken, as specified in Part A.2 and A.3. of the permit.

³ The Permittee shall test one species of the three (3) chronic test species (*P. promelas*, *C. dubia*, and *R. subcapitata*) each calendar month such that each species is tested at least once per quarter.

⁴ "Pass", as described in Part B.3 of this permit.

⁵ Effluent limitation expressed as a monthly geometric mean.

⁶ Enterococci samples shall be analyzed using Method 1600, *Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl-β-D-Glucoside Agar(mEI)* (EPA 821-R-09-016) or the most current EPA approved method specified in 40 CFR 136.

⁷ Effluent limitation expressed as single sample maximum and compliance shall be determined as each individual sample result shall not exceed this maximum value.

⁸ Samples shall be collected five days per month where samples are equally spaced at six-day intervals or unequally spaced at five-, six-, seven-, or eight-day intervals, provided that the total period covered is between 25 and 30 days. Enterococcus results shall be reported as a geometric mean and as the single sample maximum.

⁹ The Permittee shall monitor and report the parameter analytical test results.

¹⁰ Effluent limitation expressed as an annual geometric mean.

¹¹ The mass emission rates for discharge limitations for Total Nitrogen and Total Phosphorus are based on a design flow of 9.0 MGD.

¹² Sample type shall be as indicated in Appendix 1.

¹³ Effluent analyses for metals shall be reported as total recoverable.

2. For individual discharge parameters monitored in the influent and effluent, monitoring shall be conducted on the same day.

3. All influent and effluent monitoring shall be arranged so that each day of the calendar week is represented once per month (i.e., for discharge parameters monitoring five (5) days per week or three (3) days per week, or once per two (2) months (i.e., for discharge parameters monitored once per week). If the Permittee cannot arrange monitoring as prescribed, the Permittee shall provide a written explanation of the reasons with the discharge monitoring report.

4. Samples taken in compliance with the monitoring requirements in Part A of this permit shall be taken at the following locations:

a. Influent Monitoring, Monitoring Location INF: All influent samples shall be taken:

(1) downstream of any additions to the trunk sewer;

- (2) upstream of any in-plant return flows; and
 - (3) prior to treatment where representative samples of the influent can be obtained.
- b. EML Serial No. 001: All effluent samples shall be taken:
 - (1) downstream from any additions to the facility after all treatment processes; and
 - (2) where representative samples of the final effluent can be obtained prior to entering the four (4) injection wells.
5. Test procedures for the analysis of pollutants shall conform with regulations published pursuant to Section 304(h) of the CWA.
6. Unless otherwise noted in this permit, all pollutant parameters shall be determined according to methods prescribed in 40 CFR 136, promulgated pursuant to Section 304(h) of the CWA. Applications for the use of alternative test methods shall be submitted according to 40 CFR 136.4.
7. The Permittee shall use test methods with detection limits that reflect the applicable numerical limitations as specified in HAR Chapter 11-54 and must be sufficiently sensitive as defined at 40 CFR 122.21(e)(3) and 122.44(i)(1)(iv). For situations where the discharge limitation is below the detection limits of the available test methods, the test method which has the detection limit closest to the discharge limitation shall be used.
8. "Grab sample" means an individual sample collected at a randomly-selected time over a period not exceeding 15 minutes.
9. "Composite sample" means a combination of at least eight (8) sample aliquots, collected at periodic intervals during the operating hours of the Facility over a 24-hour period. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically.

B. WHOLE-EFFLUENT TOXICITY REQUIREMENTS

1. Monitoring Frequency

The Permittee shall conduct monthly chronic toxicity tests on flow weighted 24-hour composite effluent samples in accordance with the procedures outlined below using one (1) of the three (3) test species each calendar month such that each species is tested once per quarter. The Permittee shall report each month's result on the Discharge Monitoring Report (DMR) for that month.

2. Test Species and Methods

The Permittee shall conduct chronic toxicity testing on *Pimephales promelas*, *Ceriodaphnia dubia*, and *Raphidocelis subcapitata* (formerly known as *Selenastrum capricornutum*) using the test methods manual *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/821/R-02/013, October 2002). Consistent with this requirement, the Permittee shall use the following test methods specific to each test species:

Test Species	Test Method	Toxicity Measurement	Test Duration	Test Type
Fathead Minnow (<i>Pimephales promelas</i>)	Survival and Teratogenicity Test Method 1001.0	Pass/Fail (P/F)	Seven (7) day, Chronic	Static Renewal
Daphnid (<i>Ceriodaphnia dubia</i>)	Reproduction Test Method 1002.0	Pass/Fail (P/F)	Seven (7) day, Chronic	Static Renewal
Green Alga (<i>Raphidocelis subcapitata</i> formerly known as <i>Selenastrum capricornutum</i>)	Growth Test Method 1003.0	Pass/Fail (P/F)	Four (4) day, (96 hour)	Static

3. Chronic WET Permit Limit

- a. All State waters shall be free from chronic toxicity as measured using the toxicity tests listed in HAR Section 11-54-10, or other methods specified by the DOH. For this discharge, chronic toxicity shall be analyzed through a determination of "Pass" or "Fail" from a single-effluent concentration chronic toxicity test at the instream waste concentration (IWC) using the Test of Significant Toxicity approach as described in *National Pollutant*

Discharge Elimination System Test of Significant Toxicity Implementation Document (EPA 833-R-10-003, 2010). For any one (1) chronic toxicity test, the chronic WET permit limit that must be met is rejection of the null hypothesis (Ho):

IWC (percent effluent) mean response $\leq 0.75 \times$ Control mean response.

For EML Serial No. 001, an IWC of 100% effluent shall be used.

- b. A test result that rejects this null hypothesis is reported as "Pass" on the DMR form. A test result that does not reject this null hypothesis is reported as "Fail" on the DMR form. To calculate either "Pass" or "Fail", the Permittee shall follow the instructions in *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document*, (EPA 833-R-10-003, 2010), Appendix A. If a WET test result is reported as "Fail," then the Permittee shall follow Part B.6 (Accelerated Toxicity Testing and TRE/TIE Process) of this permit.
4. Quality Assurance
- a. Quality assurance measures, instructions, and other recommendations and requirements are found in the EPA chronic test methods manual previously referenced. Additional requirements are specified below.
 - b. This discharge is subject to a determination of "Pass" or "Fail" from a single-effluent concentration chronic toxicity test at the IWC (for statistical flowchart and procedures, see *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document*, Appendix A. During Step 6 of Appendix A, the Permittee shall use an alpha value of 0.05 for *Pimephales promelas*, *Ceriodaphnia dubia*, and *Raphidocelis subcapitata* (formerly known as *Selenastrum capricornutum*). The chronic IWC for EML Serial No. 001 is 100 percent effluent.
 - c. Effluent dilution water and control water shall be receiving water or laboratory water, as described in the test methods manual *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/821/R-02/013, 2002). If the dilution water is different from test organism culture water, then a second control using culture water shall also be used.
 - d. If organisms are not cultured in-house, then concurrent testing with a reference toxicant shall be conducted. If organisms are cultured in-house, then monthly reference toxicant testing is sufficient. Reference toxicant tests and effluent toxicity tests shall be conducted using the same test conditions (e.g., same test duration, etc.).

- e. All multi-concentration reference toxicant test results must be reviewed and reported according to EPA guidance on the evaluation of concentration-response relationships found in *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing* (40 CFR 136) (EPA/821/B-00/004, 2000).
 - f. If either the reference toxicant or effluent toxicity tests do not meet all test acceptability criteria in the test methods manual, then the Permittee shall re-sample and re-test within 14 calendar days.
 - g. If the discharged effluent is chlorinated, then chlorine shall not be removed from the effluent sample prior to toxicity testing without written approval by the DOH.
5. Initial Investigation Toxicity Reduction Evaluation (TRE) Work Plan

Within 90 calendar days of the permit effective date, the Permittee shall prepare and submit to the DOH a copy of its Initial Investigation TRE Work Plan (1-2 pages) for review. This work plan shall include steps the Permittee intends to follow if toxicity is measured above the chronic WET permit limit and shall include the following, at minimum:

- a. A description of the investigation and evaluation techniques that would be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency.
 - b. A description of methods for maximizing in-house treatment system efficiency, good housekeeping practices, and a list of all chemicals used in operations at the facility.
 - c. An indication of who would conduct the Toxicity Identification Evaluation (TIE) if a TIE is necessary (i.e., an in-house expert or outside contractor).
 - d. A flow chart of the workplan steps.
6. Accelerated Toxicity Testing and TRE/TIE Process
- a. If a chronic WET test results in a "Fail" and the source of toxicity is known (e.g., a temporary plant upset), then the Permittee shall conduct one (1) additional toxicity test using the same species and test method. This toxicity test shall begin within 14 calendar days of receipt of the "Fail" test result. If the additional toxicity test results in a "Pass", then the Permittee may return to the regular testing frequency.
 - b. If a chronic WET test results in a "Fail" and the source of toxicity is not known, then the Permittee shall conduct six (6) additional toxicity tests

using the same species and test method, approximately every two (2) weeks, over a 12-week period. This testing shall begin within 14 calendar days of receipt of the "Fail" test result. If all of the additional toxicity tests result in a "Pass", then the Permittee may return to the regular testing frequency.

- c. If one (1) of the additional toxicity tests (in paragraph Parts B.6.a or B.6.b) results in a "Fail", then, within 14 calendar days of receipt of this test result, the Permittee shall initiate a TRE using, according to the type of treatment facility, EPA manual *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants* (EPA/833/B-99/002, 1999) or EPA manual *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations* (EPA/600/2-88/070, 1989). In conjunction, the Permittee shall develop and implement a Detailed TRE Work Plan which shall include the following:
- (1) Further actions undertaken by the Permittee to investigate, identify, and correct the causes of toxicity;
 - (2) Actions the Permittee will take to mitigate the effects of the discharge and prevent the recurrence of toxicity; and
 - (3) A schedule for these actions.

The Permittee may discontinue accelerated toxicity testing upon the written approval by the DOH.

- d. The Permittee may initiate a TIE as part of a TRE to identify the causes of toxicity using the same species and test method and, as guidance, EPA manuals: *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures* (EPA/600/6-91/003, 1991); *Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/080, 1993); *Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/081, 1993); and *Marine Toxicity Identification Evaluation (TIE): Phase I Guidance Document* (EPA/600/R-96-054, 1996). Further, the Permittee may be required by the DOH to initiate a TIE as part of a TRE.
- e. Prior to conducting a TIE, the Permittee shall submit a TIE plan to the DOH. The TIE plan, at a minimum shall:
- (1) Discuss previous TIE efforts and other available data useful in developing TIE procedures;

- (2) Evaluate available operations and effluent data;
- (3) Identify and discuss site-specific considerations for the TIE effort;
- (4) Include a comprehensive quality control program;
- (5) Establish a monitoring program;
- (6) Identify test methods and statistical methods to be used for the TIE effort;
- (7) Identify the TIE procedures for the baseline toxicity tests and TIE manipulations;
- (8) Discuss additional potential analysis that might be helpful in evaluating the causative toxicant(s) or appropriate treatability, such as pollutant scans for toxic effluent;
- (9) Discuss the personnel and their qualifications for the team conducting the TIE results interpretation; and
- (10) Include follow-up procedures for use if the TIE is inconclusive.

The Permittee shall incorporate all comments received from the DOH within 14 calendar days of the TIE plan submittal. Within 14 calendar days of the TIE plan submittal, the Permittee shall commence with the TIE.

7. Reporting of Chronic Toxicity Monitoring Results

- a. The Permittee shall report on the DMR for the month in which the toxicity test was conducted: "Pass" or "Fail" (based on the Welch's t-test result), the calculated "percent mean response at IWC", where:

percent mean response at IWC = $((\text{Control mean response} - \text{IWC mean response}) \div \text{Control mean response}) \times 100$,

and to assist in evaluation of the test result, the standard deviations for the IWC mean response and the Control mean response.

- b. The Permittee shall submit a full laboratory report for all toxicity testing as an attachment to the DMR for the month in which the toxicity test was conducted. The laboratory report shall contain:
 - (1) The toxicity test results;
 - (2) The dates of sample collection and initiation of each toxicity test;

- (3) All results for effluent parameters monitored concurrently with the toxicity test(s); and
 - (4) Progress reports on TRE/TIE investigations.
 - c. The Permittee shall notify the DOH in writing within five (5) business days of exceedance of the chronic WET permit limitation. This notification shall describe:
 - (1) Actions the Permittee has taken or will take to investigate, identify, and correct the causes of toxicity; the status of actions required by this permit; and schedule for actions not yet completed; or
 - (2) Reason(s) that no action has been taken.
- 8. Permit Reopener for Chronic Toxicity
 - a. In accordance with 40 CFR 122 and 124, this permit may be modified to include new effluent limitations or permit conditions to address chronic toxicity in the effluent or receiving waterbody, as a result of the discharge or to implement new, revised, or newly interpreted water quality standards (WQSs) applicable to chronic toxicity.
 - b. Nothing in Part B waives any remedy or penalty applicable under HRS Chapter 342D.

C. WATER QUALITY CRITERIA

1. Basic Water Quality Criteria Applicable to All Waters:
 - a. The discharge shall comply with applicable WQSs for receiving waters adopted by the DOH under HAR Chapter 11-54, Water Quality Standards, effective October 22, 2021.
 - b. The discharge shall not interfere with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife and allows recreational activities in and on the water.
 - c. The discharge of treated wastewater through EML Serial No. 001 shall not cause the following water quality criteria to be violated:
 - (1) All State waters shall be free from pollutants in concentrations which exceed the acute criteria listed in HAR Section 11-54 Appendix E. All State waters shall also be free from acute toxicity as measured using the toxicity tests listed in HAR Section 11-54-10, or other methods specified by the DOH.
 - (2) All State waters shall be free from pollutants in concentrations which on average during any 24-hour period exceed the chronic criteria listed in HAR Section 11-54 Appendix E. All State waters shall also be free from chronic toxicity as measured using the toxicity tests listed in HAR Section 11-54-10, or other methods specified by the DOH.
 - (3) All State waters shall be free from pollutants in concentrations which, on average during any 30-day period, exceed the "fish consumption" criteria for non-carcinogens in HAR Section 11-54 Appendix E. All State waters shall also be free from pollutants in concentrations, which on average during any 12-month period, exceed the "fish consumption" criteria for pollutants identified as carcinogens in HAR Section 11-54 Appendix E.
 - (4) All State waters shall be free of substances attributable to domestic, industrial, or other controllable sources of pollutants, include:
 - (a) Material that will settle to form objectionable sludge or bottom deposits;
 - (b) Floating debris, oil, grease, scum, or other floating materials;

- (c) Substances in amounts sufficient to produce taste in the water or detectable off-flavor in the flesh of fish, or in amounts sufficient to produce objectionable color, turbidity, or other conditions in the receiving waters;
- (d) High or low temperatures; biocides; pathogenic organisms; toxic, radioactive, corrosive, or other deleterious substances at levels or in combinations sufficient to be toxic or harmful to human, animal, plant, or aquatic life, or in amounts sufficient to interfere with any beneficial use of the water;
- (e) Substances or conditions or combinations thereof in concentrations which produce undesirable aquatic life; and
- (f) Soil particles resulting from erosion on land involved in earthwork, such as the construction of public works; highways; subdivisions; recreational, commercial, or industrial developments; or the cultivation and management of agricultural lands.

2. Recreational Criteria for All State Waters

The discharge of treated wastewater to Injection Wells 001 through 004 shall not cause the following water quality criteria to be violated in State waters:

- a. Enterococcus content shall not exceed a geometric mean of 35 CFU per 100 milliliters over any 30-day interval.
- b. A Statistical Threshold Value (STV) of 130 CFU/100mL shall be used for enterococcus. The STV shall not be exceeded by more than 10 percent of samples taken within the same 30-day interval in which the geometric mean is calculated.
- c. State waters in which enterococcus content does not exceed the standard shall not be lowered in quality.
- d. Raw or inadequately treated sewage, sewage for which the degree of treatment is unknown, or other pollutants of public health significance, as determined by the DOH, shall not be present in natural public swimming, bathing, or wading areas. Warning signs shall be posted by the Permittee where the subsurface discharge has been identified by the DOH as causing or contributing to the enterococcus count.

D. RECEIVING WATER MONITORING PROGRAM REQUIREMENTS

The Permittee shall conduct receiving water monitoring at nearshore and seep water quality monitoring stations, as described below.

1. Nearshore Bacterial and Visual Water Quality Monitoring

- a. Nearshore monitoring data are to assess compliance with the recreational criteria for all State waters described in Part C of this permit.
- b. The Permittee shall establish five (5) nearshore monitoring stations representing the North and South Seep Groups south of Kahekili Beach Park and adjacent to Honokowai Point (as identified in the 2013 Lahaina Tracer Study). Two (2) monitoring stations shall be within the North Seep Group, two (2) monitoring stations shall be within the South Seep Group, and one (1) monitoring station shall be centrally located between the two (2) groups of seeps.
- c. The following water quality parameters shall be sampled at each site:

Parameter	Units	Sample Type	Monitoring Frequency
Enterococci	CFU/100 mL	Surface Grab	5/Month ¹
Visual Observations	--	Visual	5/Month ^{1,2}

¹ Samples shall be collected five days per month where samples are equally spaced at six-day intervals or unequally spaced at five-, six-, seven-, or eight-day intervals, provided that the total period covered is between 25 and 30 days.

² Wind direction and speed, weather, and sea condition shall be recorded for each day of sampling. At each station, unusual color, turbidity, odor, or other physical evidence of sewage or factors impacting analytical results shall be noted on the log sheet.

- d. Inability to conduct nearshore monitoring due to inclement weather or hazardous conditions which may endanger the lives of the facility's personnel shall not constitute a violation of this permit. If the Permittee is unable to conduct nearshore monitoring, the rationale shall be reported in the monthly DMR.
- e. Monitoring results shall be reported in a tabular format as an attachment to the monthly DMR and include probable sources and an explanation of any exceedances. All enterococcus results shall be reported. Monthly geometric mean of enterococcus results shall be calculated and reported.

2. Seep Water Quality Monitoring

- a. The Permittee shall establish four (4) seep monitoring stations consistent with those established under Section D.1. above and two (2) control stations, one (1) located north of the North Seep Group and the other located south of the South Seep Group. Seep stations shall be located using a global positioning device which affords a high degree of accuracy and precision that allow reoccupation of the station within ± 6 meters. Seep sampling shall be conducted to be representative of seep quality prior to mixing with the receiving water. Controls stations shall be representative of the receiving water and, to the extent feasible, distant from other potential land-based sources into receiving waters.
- b. The following water quality parameters shall be sampled at seep monitoring stations unless otherwise specified:

Parameter	Units	Sample Type	Monitoring Frequency
Visual Observations ¹	--	Visual	1/Quarter
Dissolved Oxygen	mg/L	Grab	1/Quarter
pH	standard units	Grab	1/Month
Temperature	°C	Grab	1/Month
Salinity	ppt	Grab	1/Month
Turbidity	NTU	Grab	1/Quarter
Total Nitrogen	µg/L	Grab	1/Month
Ammonia Nitrogen	µg/L	Grab	1/Month
Total Phosphorus	µg/L	Grab	1/Month
Chlorophyll a	µg/L	Grab	1/Month
Enterococci ²	CFU/100 mL	Grab	1/Month

mg/L – Milligrams per Liter

°C – Degrees Celsius

ppt – Parts per Thousand

NTU – Nephelometric Turbidity Units

µg/L – Micrograms per Liter

CFU/100 mL – Colony Forming Units per 100 Milliliters

¹ Wind direction and speed, weather, water current, tidal condition, water color, odor and flowing material shall be recorded for each day of sampling. The dates and times of sampling shall also be reported.

² Enterococci samples shall be analyzed using Method 1600, *Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl-β-D-Glucoside Agar(mEI)* (EPA 821-R-09-016) or the most current EPA approved method specified in 40 CFR 136.

- c. Inability to conduct seep monitoring due to inclement weather or hazardous conditions which may endanger the lives of the facility's personnel shall not constitute a violation of this permit. If this Permittee is unable to conduct seep monitoring, the rationale shall be reported as an attachment with the monthly DMR.

- d. Visual observations, dissolved oxygen, and turbidity shall be reported quarterly and all other parameters with monthly monitoring requirements shall be reported monthly in the corresponding DMRs. Monitoring results shall be reported in a tabular format as an attachment to the Annual Receiving Water Monitoring Report and include probable sources and an explanation of any exceedances.

3. Annual Receiving Water Monitoring Report

The Permittee shall submit an Annual Receiving Water Monitoring Report by the last business day of March of each year. The Annual Receiving Water Monitoring Reports shall summarize and discuss monitoring results for the previous year. Reports shall include, at minimum:

- a. A description of climatic and receiving water characteristics at the time of sampling (weather observations, floating debris, discoloration, wind speed and direction, swell or wave action, time of sampling, tide height, etc.);
- b. A description of all sampling stations, including differences unique to each station (e.g., station location, depth, sediment grain size, distribution of bottom sediment, rocks, and shell litter, calcareous worm tubes, etc.). This ocean bottom information shall be recorded at least once per calendar year at the permit designated stations;
- c. A record shall be kept of the individual(s) performing sampling or measurements. A description of the sample collection and preservation procedures used in the survey shall be included in the report;
- d. A description of methods used for laboratory analyses. Variations in procedure may be acceptable, but any such changes shall be reported to the EPA and DOH, before implementation. All such variations must be reported with the analytical results; and
- e. An in-depth discussion of monitoring results. All tabulations and computations shall be explained.

E. WASTEWATER POLLUTION PREVENTION PROGRAM

1. Flow Rate Notification

The Permittee shall notify the DOH and the EPA in writing no later than 90 calendar days after the 30-day average dry weather discharge flow rate equals or exceeds 75 percent of the actual treatment capacity of the Facility as reported in the most recent Annual Wastewater Pollution Prevention Program Report. The report shall include:

- a. The date on which the 30-day average discharge flow rate equals or exceeds 75 percent of the actual treatment capacity of the Facility;
- b. Estimate of when the 30-day average discharge flow rate will equal or exceed the actual treatment capacity of the Facility; and
- c. The schedule of compliance to provide additional treatment capacity before the 30-day average discharge flow rate equals the actual treatment capacity of the Facility.

Notifications shall be submitted through the Electronic Signature CWB Compliance Submittal Form for Individual NPDES Permits and NGPCs unless otherwise instructed by the DOH. This form is accessible through the e-Permitting Portal website at: <https://eha-cloud.doh.hawaii.gov/epermit/>.

2. Implementation of the Schedule of Compliance for Flow Rate Notification

- a. The Permittee shall comply with the provisions of the schedule of compliance after approval by the DOH.
- b. The Permittee shall initiate contingency plans to provide additional treatment capacity no later than 90 calendar days following the date on which the 30-day average discharge flow rate equals or exceeds 85 percent of the actual treatment capacity of the Facility as reported in the most recent Annual Wastewater Pollution Prevention Program Report.
- c. The DOH may grant a special exemption to eliminate the requirement for a contingency plan. The Permittee shall request such an exemption in writing and may include the request in the Annual Wastewater Pollution Prevention Program Report. The DOH shall notify the Permittee in writing of their decision.

3. Annual Wastewater Pollution Prevention Program Report

The Permittee shall submit an Annual Wastewater Pollution Prevention Program Report summarizing critical parameters which impact the operations of the Facility to the DOH by the last working day of April of each year, unless otherwise instructed by the DOH. The report shall include, at a minimum, an evaluation of critical parameters including the following:

- a. Flow;
- b. BOD₅ loading;
- c. TSS loading;
- d. Toxic pollutants or impacts of septic wastes;
- e. Growth potential of the service area;
- f. Impact of new regulations;
- g. Bypasses and overflows;
- h. Effectiveness and condition of the collection system; and
- i. Treatment capacity based on additional information.

F. PRETREATMENT REQUIREMENTS

1. The Permittee shall develop a countywide program during this permit term that complies with the requirements below. The Permittee shall submit a complete pretreatment program with the renewal application 360 days before the expiration date of the permit.

- a. Chapter 1 – Organization and Multi-jurisdiction Implementation

This chapter would describe the overall program structure as well as contain descriptions of the treatment plants, collection systems, reclaim systems and the service area including political boundaries. (This chapter also should describe the changes in the treatment plant configurations expected in order to comply with the Cease-and-Desist Order regarding nitrates and chlorination byproducts.)

- b. Chapter 2 – Legal Authority

This chapter would contain a revised sewer use ordinance and all multi-jurisdictional agreements. The sewer use ordinance would necessarily be submitted as a final draft ready for adoption and implementation pending approval of the local limits by either EPA or the State Agency.

- c. Chapter 3 – Local Limits

This chapter would contain the technical basis for the local limits. This would include the analyses necessary to determine the maximum headworks loadings for both wastewater treatment plants and the maximum pollutant levels protective of the collection system, as well as the method of allocating allowable loadings to the users, a schedule of public hearings and outreach, and the ordinance adoption procedures. (This chapter must contain a survey quantifying the copper sources, both domestic and non-domestic, and an overall control strategy for minimizing copper loadings into the wastewater treatment plants.) The local limits can be numerical concentrations, loading limits, prohibitions or control strategies.

- d. Chapter 4 – Identification of Non-domestic Users

This chapter would contain the procedures used in the initial industrial user survey as well as the procedures to be used for on-going updates. This chapter would also include the current inventory of industrial users, by non-domestic sewer connection, and of the zero-discharging categorical industrial users who comply with their Federal standards by not discharging process wastewaters.

The inventory must indicate the following for each industrial user and zero-discharging categorical industrial user:

- (1) Whether it qualifies as a significant industrial user (SIU);
- (2) The average and peak flow rates;
- (3) The SIC code;
- (4) The pretreatment-in-place; and
- (5) The local permit status.

e. Chapter 5 – Permits and Fact Sheets

This chapter would describe the permitting procedures and include a fact sheet and final draft permit for each SIU to be issued upon approval of the local limits and revised ordinance by either EPA or the State Agency. The fact sheets must indicate the following for each SIU and zero-discharging categorical industrial user:

- (1) The industry name, address, owner or plant manager;
- (2) The permit expiration date (not to exceed five years in duration);
- (3) A description of the facility including the products made or services provided, building names, the process in each building, and when current operations began;
- (4) The identification of each sewer connection;
- (5) A description of the contributing waste streams that comprise each identified non-domestic discharge into the sewers;
- (6) The pretreatment-in-place for each identified non-domestic discharge to the sewers;
- (7) The classification by Federal point source category and the reasons justifying this classification;
- (8) The applicable Federal categorical pretreatment standards (adjusted if necessary to account for dilution), supporting production data (if necessary), and the compliance sampling point(s) where the standards apply;
- (9) The pollutants of concern and the compliance sampling point(s) where the local limits apply;

- (10) A site map indicating the locations of all compliance sampling point(s), sewer connections, and sewer laterals;
- (11) The sampling frequency by regulated pollutant for each compliance sampling point, and the supporting statistical rationale, to ensure that the sampling is representative of the wastewater discharge variability over the reporting period; and
- (12) The sampling protocol by regulated pollutant for each compliance sampling point to ensure that the samples collected to determine compliance with Federal standards are representative of the sampling day's discharge.

f. Chapter 6 – Compliance Monitoring

This chapter would describe the industrial user self-monitoring program and municipality's oversight monitoring program. The compliance monitoring program must ensure that all sampling is representative over the reporting period and that each sample collected to determine compliance with Federal standards is representative of the sampling day's discharge. The compliance monitoring program must also set analytical detection limits that are sufficiently below Federal standards and local limits to allow the determination of non-compliance.

g. Chapter 7 – Enforcement

This chapter would establish the enforcement response plan to be used to address, at a minimum, each of the following types of violations:

- (1) Isolated and chronic violations of permit effluent limits;
- (2) Violations of permit effluent limits that result in any adverse impacts upon the treatment works such as pass-through, interference, sludge contamination, sewer line degradation, explosive or inflammability risks, or worker health and safety risks;
- (3) Failure to self-monitor or report;
- (4) The bypassing of pretreatment necessary to comply with permit effluent limits;
- (5) Dilution as a substitute for treatment necessary to comply with Federal categorical pretreatment standards;
- (6) The bypassing of compliance sampling or the tampering with sampling equipment;

(7) Willful or negligent violations.

h. Chapter 8 – Resources

This chapter would cover the budget, staffing and equipment needs of the pretreatment program.

i. Chapter 9 – Public Participation and Confidentiality

This chapter would describe the administrative procedures required under 40 CFR 403.8(f)(1)(vii) and 403.8(f)(2)(viii).

2. Beginning from the effective date of this permit, the Permittee shall submit quarterly development reports that outline the actions that have been completed in preparing for submission of the written description of the Pretreatment Program. The quarterly reports shall be submitted in accordance with Part I.2 of this permit.
3. Within 60 calendar days after receiving approval of its ordinance and local limits, the Permittee shall adopt and implement its ordinance.
4. Within 180 calendar days after receiving approval of its ordinance and local limits, the Permittee shall issue all pending permits to its SIUs.
5. The Permittee shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR 403, including any subsequent regulatory revisions. Where 40 CFR 403 or subsequent revisions place mandatory actions upon the Permittee as Control Authority but do not specify a timetable for completion of the actions, the Permittee shall complete the actions within six (6) months from the effective date of this permit or the effective date of the 40 CFR 403 revisions, whichever comes later. For violations of pretreatment requirements, the Permittee shall be subject to enforcement actions, penalties, fines, and other remedies by the EPA or other appropriate parties, as provided in the CWA. The DOH and EPA may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements, as provided in the CWA.
6. The Permittee shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d), and 402(b) of the CWA with timely, appropriate, and effective enforcement actions. The Permittee shall cause non-domestic users subject to the federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new non-domestic user, upon commencement of the discharge.

7. The Permittee shall perform the pretreatment functions as required in 40 CFR 403 including, but not limited to:
 - a. Implement the necessary legal authorities to fully implement the pretreatment regulations as provided in 40 CFR 403.8(f)(1);
 - b. Enforce the national pretreatment standards for prohibited discharges and categorical standards as provided in 40 CFR 403.5 and 403.6, respectively;
 - c. Implement the pragmatic functions as provided in 40 CFR 403.8(f)(2); and
 - d. Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3).

8. The Permittee shall submit annually to the DOH and EPA a report describing its pretreatment activities over the previous year. In the event that the Permittee is not in compliance with any conditions or requirements of this permit, then the Permittee shall also include the reasons for noncompliance and state how and when the Permittee shall comply with such conditions and requirements. This annual report shall cover operations from January 1st through December 31st and is due on the last business day of March of the following year. The report shall contain, but not be limited to, the following information:
 - a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the facility's influent and effluent for those pollutants the EPA has identified under Section 307(a) of the Clean Water Act which are known or suspected to be discharged by nondomestic users. This will consist of wastewater sampling and analysis in accordance with the minimum frequency of analysis stated in Part A of this permit. The Permittee is not required to sample and analyze for asbestos. Sludge monitoring is covered under Part G of this permit. The Permittee shall also provide any influent or effluent monitoring data for nonpriority pollutants which the Permittee believes may be causing or contributing to interference or pass through. Sampling and analysis shall be performed with the techniques prescribed in 40 CFR 136;
 - b. A discussion of upset, interference, or pass-through incidents, if any, at the treatment plant which the Permittee knows or suspects were caused by non-domestic users of the collection system. The discussion shall include the reasons why the incidents occurred, the corrective actions taken, and, if known, the name and address of the nondomestic user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent interference or pass through;

- c. An updated list of the Permittee's SIUs including their names and addresses, and a list of deletions, additions, and SIU name changes keyed to the previously submitted list. The Permittee shall provide a brief explanation for each change. The list shall identify the SIUs subject to federal categorical standards by specifying which set(s) of standards are applicable to the SIU. The list shall also indicate which SIUs are subject to local limitations;
- d. The Permittee shall characterize the compliance status of each SIU by providing a list or table which includes the following information:
 - (1) Name of the SIU;
 - (2) Category, if subject to federal categorical standards;
 - (3) The type of wastewater treatment or control processes in place;
 - (4) The number of samples taken by the Permittee during the year;
 - (5) The number of samples taken by the SIU during the year;
 - (6) For a SIU subject to discharge requirements for total toxic organics, whether all required certifications were provided;
 - (7) A list of the standards violated during the year. Identify whether the violations were for categorical standards or local limits;
 - (8) Whether the facility is in significant non-compliance as defined in 40 CFR 403.8(f)(2)(vii) at any time during the year; and
 - (9) Summary of enforcement or other actions taken during the year to return the SIU to compliance. Describe the type of action, final compliance date, and the amount of fines and penalties collected, if any. Describe any proposed actions for bringing the SIU into compliance.
- e. A brief description of any programs the Permittee implements to reduce pollutants from non-domestic users that are not classified as SIUs;
- f. A brief description of any significant changes in operating the pretreatment program which differ from the previous year including, but not limited to, changes concerning the program's administrative structure, local limits, monitoring program or monitoring frequencies, legal authority, enforcement policy, funding levels, or staffing levels;
- g. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases; and,

- h. A summary of activities to involve and inform the public of the program including a copy of the newspaper notice, if any, required by 40 CFR 403.8(f)(2)(viii).
- i. Annual reports required in Part F shall be submitted to the following agencies:
 - (1) DOH in accordance with Part I.2.f of this permit using the Electronic Signature CWB Compliance Submittal Form for Individual NPDES Permits and Notice of General Permit Coverages (NGPCs). This form is accessible through the e-Permitting Portal website at:
<https://eha.cloud.doh.hawaii.gov/epermit>.
 - (2) Regional Pretreatment Coordinator (WTR-2-3)
Environmental Protection Agency, Region 9
R9Pretreatment@epa.gov

G. SLUDGE/BIOSOLIDS REQUIREMENTS

1. Sludge Use/Disposal Requirements

a. General Conditions and Requirements

(1) Acceptable Sludge Use/Disposal Practices

- (a) The Permittee shall dispose of all sludge generated at the facility at a municipal solid waste landfill, at a sludge surface disposal site, by land application, or by transferring the sludge to another party for further treatment, use, or disposal in accordance with all applicable portions of 40 CFR 257, 258, 503 and HAR Chapters 11-58.1 and 11-62.**
- (b) Storage of sludge for over two (2) years from the time it is generated shall be considered to be surface disposal. The storage site shall meet all the requirements of a surface disposal site under 40 CFR 503 Subpart C and HAR Chapters 11-58.1 and 11-62. If the Permittee desires to store sludge for longer periods of time prior to final disposal, the Permittee shall submit a written request to the EPA Regional Sludge Coordinator and DOH containing the information required under 40 CFR 503.20(b).**
- (c) The Permittee shall dispose of sludge containing more than 50 mg/kg of PCBs in accordance with 40 CFR 761.**
- (d) If the Permittee desires to dispose of sludge using a method not listed above, the Permittee shall submit a request for permit modification to EPA Regional Sludge Coordinator and DOH 180 calendar days prior to the commencement of the alternate disposal practice.**

(2) Duty to Mitigate

- (a) The Permittee shall be responsible for ensuring the following:**
 - (i) All sludge produced at its facility is used/disposed of in accordance with 40 CFR 257, 258, 503, and HAR Chapters 11-58.1 and 11-62, whether the Permittee uses/disposes of the sludge itself or transfers it to another party for further treatment, use, or disposal.**

- (ii) Subsequent preparers, applicers, or disposers of the sludge are informed of the requirements under 40 CFR 257, 258, 503, and HAR Chapters 11-58.1 and 11-62.
 - (iii) Sludge is not allowed to enter State waters, or to contaminate an underground drinking water source.
 - (iv) Sludge treatment, storage, use, and disposal do not create a public nuisance.
 - (v) Haulers who ship non-Class A sludge off-site for additional treatment, use, or disposal take all necessary measures to keep sludge contained.
- (b) The Permittee shall take all reasonable steps to prevent or minimize any sludge use or disposal which has a likelihood of adversely affecting human health or the environment.
- (3) Other Conditions
- (a) The DOH may promptly modify or revoke and reissue this permit to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the Act, or adopted under HRS Chapter 342D, or HAR Chapter 11-62, if the standard is more stringent than the standard in this permit or covers a pollutant or practice not covered in this permit.
 - (b) The sludge requirements in this part are supplemental to the other conditions of this permit. In the event of a conflict, those requirements more protective of the environment shall apply.
 - (c) The requirements in 40 CFR 503 are enforceable by the EPA independently of being included in this permit.

b. Sludge Limitations and Monitoring Requirements

- (1) Sludge shall be limited and monitored by the Permittee as specified below:
 - (a) Sludge Disposed of in Municipal Solid Waste Landfills

Monitoring Parameter/Test Procedures	Limitation	Monitoring Frequency
Paint Filter Test (EPA Method 9095B)	No "Free Liquids" ¹	1/Year
Toxicity Characteristic Leaching Procedure (TCLP) Test ²	2	1/Year

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Monitoring Parameter/Test Procedures	Limitation	Monitoring Frequency
Priority Pollutants ³	N/A	1/Year ⁴

N/A - Not Applicable

- ¹ "Free Liquids" as defined in EPA Method 9095B.
- ² The parameters to be tested by the TCLP test and their limitations are specified in 40 CFR 261.24, Table 1 - Maximum Concentration of Contaminants for the Toxicity Characteristic.
- ³ Priority pollutants are listed under Section 307(a) of the Act.
- ⁴ The Permittee shall test for priority pollutants more frequently if required under the pretreatment program.

(b) Sludge Disposed of in Surface Disposal Sites (Sludge-only Landfill or Disposal on Land Not for the Purpose of Improving Plant Growth)

Parameter	Limitation (Mg/kg)							Monitoring Frequency
	0<25 m	25<50 m	50<75 m	75<100 m	100<125 m	125<150 m	> 150 m	
Arsenic ¹	30	34	39	46	53	62	73	²
Chromium ¹	200	220	260	300	360	450	600	²
Nickel ¹	210	240	270	320	390	420	420	²
TCLP Test ³	³							1/Year
Priority Pollutants ⁴	N/A							1/Year ⁵

m - Meter

N/A - Not Applicable

- ¹ The Permittee shall monitor for this parameter only if sludge is disposed of in a unit with no liner and leachate system. Limitations are based on the distance (meters) from the active sludge unit boundary to the nearest property line.
- ² Monitoring frequency shall be determined by the following table:

Annual Production, Dry Weight (Metric Tons/Year)	Monitoring Frequency
0 - 290	1/Year (November)
290 - 1,500	1/Quarter (Feb/May/Aug/Dec)
1,500 - 15,000	6/Year (Feb/Apr/Jun/Aug/Oct/Dec)
>15,000	1/Month

- ³ The parameters to be tested by the TCLP test and their limitations are specified in 40 CFR 261.24, Table 1 - Maximum Concentration of Contaminants for the Toxicity Characteristic.
- ⁴ Priority pollutants are listed under Section 307(a) of the Act.
- ⁵ The Permittee shall test for priority pollutants more frequently if required under the pretreatment program.

- (c) Sludge that is Land-Applied (Added to Soil for the Purpose of Improving Plant Growth)

The Permittee shall obtain and comply with the Wastewater Management Individual Permit, issued by the DOH, Wastewater Branch.

- (2) The Permittee shall develop a representative sampling plan for monitoring toxics reduction, including the number and location of sampling points.
- (a) If sludge generated at the facility is land applied or disposed at a surface disposal site, the sampling plan shall also include pathogens and vector attraction reduction monitoring.
- (b) If pathogen reduction is determined by time and temperature, the plan shall be designed to determine temperatures throughout the batch being treated.
- (c) If windrow composting is used, temperature shall be measured at least once for each 150 feet of windrow and include measurements at depths of 12 to 24 inches below the surface.

c. Requirements for Sludge Disposed of in Municipal Solid Waste Landfill

- (1) The Permittee shall dispose sludge in municipal solid waste landfills that meet the requirements of 40 CFR 258 and HAR, Chapter 11-58.1.
- (2) Sludge shall not contain "free liquids" as defined by EPA Method 9095B (Paint Filter Liquids Test).

d. Requirements for Sludge Disposed of in Surface Disposal Sites (Sludge-only Landfill or Disposal on Land Not for the Purpose of Improving Plant Growth)

- (1) Sludge that is disposed of in a sludge-only landfill shall meet the general requirements, pollutant limits (for surface disposal sites without liners and leachate systems), management practices, and operational standards in 40 CFR 503 Subpart C and additional pollutant limits requested by the DOH.
- (2) The Permittee shall have a qualified groundwater scientist develop a groundwater monitoring program for the surface disposal site or certify that the placement of sludge on the site will not cause aquifer contamination.

e. Requirements for Sludge that is Land-Applied (Added to Soil for the Purpose of Improving Plant Growth)

The Permittee shall obtain and comply with the Wastewater Management Individual Permit, issued by the DOH, Wastewater Branch.

f. Notification Requirements

- (1) If sludge other than exceptional quality sludge is shipped to another state or to Indian lands, the Permittee shall notify the permitting authorities in the receiving state or Indian land (the EPA Regional Office for that area and the State or Indian authorities) 60 calendar days prior to shipment.
- (2) The Permittee shall notify the EPA Regional Sludge Coordinator and the DOH of any non-compliance that may seriously endanger public health or the environment within 24 hours after becoming aware of the non-compliance. A written non-compliance report shall be submitted, postmarked, or faxed within five (5) working days after the Permittee becomes aware of the non-compliance.
- (3) The Permittee shall report all other instances of non-compliance not reported under Part G.1.f.(2) at the time discharge monitoring reports are submitted as required by Part I.2 of this permit.

g. Annual Report

By February 19th of each year, the Permittee shall submit an annual report on sludge management activities during the previous calendar year to the EPA Regional Sludge Coordinator and the DOH. The report shall provide the following information:

- (1) Total amount of sludge generated that year and a breakdown of the usage/disposal methods employed (in dry weight, metric tons).
- (2) Results of all monitoring required by Part G.1.b.
- (3) If sludge was disposed in a municipal solid waste landfill, then the Permittee shall include the following certification statement:

"I certify under the penalty of law, that the paint filter test and toxicity characteristic leaching procedure test requirements have been met, and that vector attraction reduction requirements have been met by the municipal solid waste landfill. This determination has been made under my direction and supervision in accordance with the system designed to assure

that qualified personnel properly gather and evaluate the information used to determine that the necessary requirements have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."

- (4) If sludge was disposed in a surface disposal site, the following information shall be included:
 - (a) Requirements specified in 40 CFR 503.27.
 - (b) Name and mailing address of surface disposal operator if different from Permittee.
 - (c) Location (street address and latitude and longitude) of surface disposal site.
 - (d) Results of groundwater monitoring, or a copy of a certification by a groundwater scientist (including the scientist's name, title, and phone number) that the placement of sludge at the surface disposal site will not cause aquifer contamination.
- (5) If sludge was land-applied, the following information shall be included:
 - (a) Requirements specified in 40 CFR 503.17(a) for all facilities preparing sludge for land application or reference to that facility's report, if submitted to EPA separately.
 - (b) Names and addresses of all facilities receiving the non-exceptional quality sludge, including land appliers and those facilities providing further treatment/blending prior to land application.
 - (c) Location of land application sites of non-exceptional quality sludge (street address, latitude and longitude) and sizes of parcels.
 - (d) Crops grown, agronomic rate for the crops grown, and certification by the land appliers of non-exceptional quality sludge that the sludge was applied at a rate not exceeding the agronomic rate determined for each crop.
 - (e) Copies of other certification statements by land appliers of non-exceptional quality sludge.
- (6) If sludge was stored, the following information shall also be included:
 - (a) Age of stored sludge.

- (b) Name and mailing address of operator of storage site if different from Permittee.
- (c) Location of stored sludge (street address, latitude and longitude).
- (7) If sludge was disposed using other methods, descriptions of the methods employed and the locations (street address, latitude and longitude) of the usage/disposal sites shall be included.
- (8) Annual reports shall be submitted to DOH in accordance with Part I.2.f of this permit using the Electronic Signature CWB Compliance Submittal Form for Individual NPDES Permits and Notice of General Permit Coverages (NGPCs). This form is accessible through the e-Permitting Portal website at: <https://eha.cloud.doh.hawaii.gov/epermit>.
- (9) A copy of the Annual report shall be submitted to:
 - (a) The EPA using EPA's NPDES Electronic Reporting Tool ("NeT") for biosolids (see <https://cdx.epa.gov/>), which went into effect December 21, 2016, unless otherwise specified by the DOH; and
 - (b) The DOH, Wastewater Branch (WWB) at the following email address:

Wastewater Sludge Program Manager
Wastewater Branch
DOH.WWB@doh.hawaii.gov.

2. Requirements for Receiving Sludge

a. Approval

Upon written request by the Permittee and approval by the DOH, the Permittee may pump sludge hauled from the Permittee's other wastewater treatment plants directly to the facility's anaerobic digesters through a sludge receiving station. The sludge receiving station shall be equipped to record the source and amount of sludge pumped to the digesters.

b. Reporting

The Permittee shall submit a monthly log reporting the sources and amounts of the sludge pumped into the digester during the calendar month. The log shall be submitted with the monthly DMRs.

c. Retraction

The DOH reserves the right to retract the approval should the facility's treatment design capacity be exceeded, the effluent discharge monitoring results be in non-compliance with this permit, or the DOH deems necessary.

H. ANTIDegradation STUDY REQUIREMENTS

Within four (4) years of the effective date of this permit, the Permittee shall submit an antidegradation study that meets the requirements specified in the *Hawaii Antidegradation Implementation Procedures for National Pollutant Discharge Elimination System (NPDES) Permits and Section 401 Water Quality Certifications (WQC)*.

1. Impact Assessment

The Permittee shall conduct an assessment of the impact of the discharge on the receiving water consistent with Section 3.4.1 and 3.4.2 of the *Hawaii Antidegradation Implementation Procedures for National Pollutant Discharge Elimination System (NPDES) Permits and Section 401 Water Quality Certifications (WQC)* (Antidegradation Procedures manual). The Permittee shall submit an Impact Assessment Report to the DOH within four (4) years of the effective date of this permit. The report shall include a pollutant-by-pollutant analysis for all pollutants of concern that are reasonably expected to be present in the regulated discharge. The report shall include:

- a. A baseline water quality determination consistent with Section 3.4.2.1 of the Antidegradation Procedures manual.
- b. An assessment to determine the level of water quality degradation caused by the discharge activity consistent with Section 3.4.2.2 of the Antidegradation Procedures manual.
- c. The Permittee must complete an alternatives analysis as specified in subpart b of this section and a Socioeconomic Analysis consistent with Section 5 of the Antidegradation Procedures manual. The Socioeconomic Analysis shall determine if the discharge activity's impact on water quality is necessary to accommodate important social or economic development in the area. The Socioeconomic Analysis shall include an analysis of the social and economic importance of the activity associated with the discharge. The Permittee must document any social and economic benefits/costs associated with the discharge. Up-to-date and accurate data must be used for the analysis, and any estimates of job gains/losses, housing impacts, impacts on human health, etc., be summarized completely and be based on defensible estimates. The Permittee shall use the Social and Economic Importance Worksheet in Appendix C of the Antidegradation Procedures manual to document how the discharge affects the social, economic, and environmental factors listed below.
 - (1) Creating, expanding or maintaining employment;
 - (2) Reducing the unemployment rate;

- (3) Increasing median household income;
- (4) Reducing the number of households below the poverty line;
- (5) Increasing needed housing supply;
- (6) Increasing the community tax base;
- (7) Providing necessary public services;
- (8) Correcting a public health, safety, or environmental problem; and
- (9) Improving quality of life for residents of the area.

2. Alternatives Analysis

The Permittee shall conduct an alternatives analysis to identify and evaluate cost-effective and reasonable alternatives to achieve water quality criteria and minimize or prevent degradation of the receiving water. The Permittee shall submit an Alternatives Analysis Report to the DOH within four (4) years of the effective date of this permit for review and approval. The report shall include:

- a. A description of the treatment plant, treatment plant process, and discharge conditions.
- b. An assessment of the level of receiving water quality degradation caused by the current discharge from the facility for all pollutants of concern. The assessment shall account for effluent pollutant concentrations and loading, fate and transport processes, available assimilative capacity, and available dilution and mixing characteristics.
- c. An identification of less degrading and non-degrading alternatives to the current discharge from the facility. Alternatives shall include, but are not limited to:
 - (1) Upgraded treatment.
 - (2) Alternative effluent disposal (e.g., land application, direct discharge via an outfall diffuser).
 - (3) Water reuse and associated recycled water storage.
 - (4) A combination of alternatives (e.g., upgrades to improve nutrient removal and water reuse).

- d. The anticipated change in receiving water quality associated with each alternative for all pollutants of concern as compared to the current discharge from the Facility.
- e. An assessment of costs for each alternative to determine whether the alternative is cost-effective and reasonable. The Permittee shall conduct the cost assessment in accordance with the procedures described in Sections 4.2, 4.4, and 4.5 and Appendix B of the Alternatives of the *Hawaii Antidegradation Implementation Procedures for National Pollutant Discharge Elimination System (NPDES) Permits and Section 401 Water Quality Certifications (WQC)*. Alternatively, the Permittee may perform a knee-of-the-curve analysis as described in Section 3.4.3 of EPA's [Combined Sewer Overflows Guidance for Long-Term Control Plan](#) (EPA 832-B-95-002). The cost assessment may be prepared by a licensed professional engineer, accountant, economist, or other professional qualified in the field, but must be submitted under a professional engineer seal. The Permittee shall document all sources and rationale for data and assumptions used for the cost assessment.
- f. An assessment of the environmental impacts for each alternative. At minimum, this assessment should consider:
 - (1) Impacts to groundwater.
 - (2) Potential to generate secondary water quality impacts (e.g., stormwater, hydrology).
 - (3) System or technology reliability and the potential for upsets or accidents.
 - (4) Non-water quality environmental impacts (e.g., odor, noise, energy consumption, air emissions, solid waste generation).
- g. An assessment of technical, legal, and local considerations of each alternative.
- h. Identification of the Permittee's preferred alternative(s). The Permittee shall demonstrate that the preferred alternative is cost-effective and reasonable, will fully maintain and protect existing uses in the receiving water, and will achieve the highest statutory and regulatory requirements.

Upon review of the Permittee's Alternatives Analysis Report, the DOH may require analysis of additional alternatives, submission of additional information, and/or implementation of an alternative other than the Permittee's preferred alternative.

3. Implementation Schedule

The Permittee shall develop a schedule for implementing the Permittee's preferred alternative (or other alternative, as required by the DOH) as soon as possible. The Permittee shall submit the implementation schedule to the DOH with the permit renewal application, at least 360 days prior to the permit expiration date for review and approval. The implementation schedule shall include milestones for obtaining funding, design/planning, construction, and any other necessary implementation steps. The time between milestone dates shall be no greater than 12 months. At a minimum, funding to begin implementation (design and buildout) of the selected alternative shall be initiated within six (6) years of permit effective date (first year of a renewed permit).

I. REPORTING REQUIREMENTS

1. Effluent and Receiving Water Monitoring Programs

- a. Within 180 calendar days after the effective date of this permit, the Permittee shall submit an Effluent Monitoring Program and a Receiving Water Monitoring Program documenting that the analytical methods to be used are sufficiently sensitive. The Effluent Monitoring Program shall comply with Part A of this permit and be submitted to the DOH. The Receiving Water Monitoring Program shall comply with Part D of this permit and be submitted to the DOH.
- b. The Program(s) shall include at a minimum, but not be limited to the following:
- (1) Sampling location map;
 - (2) Sample holding time;
 - (3) Preservation techniques;
 - (4) Test method and method detection level;
 - (5) Quality control measures; and
 - (6) Rationale for monitoring locations.

The DOH reserves the right to require the Permittee to revise the Program(s), as appropriate, pursuant toward compliance with the terms and conditions of this permit.

- c. Monitoring shall be conducted according to test procedures approved under 40 CFR 136 with detection limits low enough to measure the compliance with Part A of this permit. For cases where the discharge limitation is below the Minimum Level (ML) of the appropriate test procedure, the compliance shall be based upon the ML of the method.

If a test method has not been promulgated for a particular constituent, the Permittee may use any suitable method for measuring the level of the constituent in the discharge provided the Permittee submit a description of the method or a reference to a published method.

- d. Start of Monitoring Schedule

Unless otherwise specified and as applicable, from the effective date of this permit, the Permittee shall commence required monitoring in accordance with the following schedule:

- Daily – Begin sampling the next calendar day;

- Weekly and bi-weekly – Begin sampling the first complete calendar week;
- Monthly and bi-monthly – Begin sampling the first complete calendar month;
- Quarterly – Begin sampling the first complete calendar quarter;
- Semi-annual with permit effective date between January 1st and June 30th – Begin sampling July 1st;
- Semi-annual with permit effective date between July 1st and December 31st – Begin sampling the next calendar year;
- Annual with permit effective date between January 1st and September 30th – Begin sampling this calendar year; and
- Annual with permit effective date between October 1st and December 31st – Begin sampling the next calendar year.

2. Transmittal and Monitoring Results Reporting Requirements

a. Certification of Transmittals

Submit all information in accordance with HAR Section 11-55-07(b), with the following certification statement by an appropriate signatory:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.”

b. Include “NPDES Permit No. HI 0021848” on each transmittal.

Failure to provide the assigned permit number for this facility on future correspondence or transmittals may be a basis for delay of the processing of the document(s).

c. Reporting of Discharge and Monitoring Results

- (1) All wastewater monitoring, and biosolids/sludge monitoring, sample preservation, and analyses shall be performed as described in the most recent edition of 40 CFR 136, unless otherwise specified in this permit. All receiving water monitoring, sample preservation, and analyses shall be performed as specified in this permit.**
- (2) In accordance with 40 CFR 122.45(c), effluent analyses for metals shall be reported as total recoverable.**
- (3) Monitoring results shall be reported on a Discharge Monitoring Report (DMR) form (EPA No. 3320-1). Monitoring results shall be reported using NetDMR found via EPA's NPDES Electronic Tool found at <https://cdx.epa.gov>. The results of all monitoring required by this permit shall be submitted in a format which allows direct comparison with the limitations in Part A and other requirements of this permit.**
- (4) For the purposes of reporting, the Permittee shall use the reporting threshold equivalent to the laboratory's method detection limit (MDL) and must utilize a standard calibration where the lowest standard point is equal to or less than the concentration of the ML.**
 - (a) The Permittee shall report sample results and calculations at or above the laboratory's ML on DMRs as the measured concentration or calculation.**
 - (b) The Permittee shall report sample results and calculations below the laboratory's MDL as NODI(B) on the DMR. NODI(B) means that the concentration of the pollutant in a sample is not detected.**
 - (c) The Permittee shall report sample results and calculations between the ML and MDL as NODI(Q). NODI(Q) means that the concentration of the pollutant in a sample is detected by not quantified.**
 - (d) For purposes of calculating averages, zero shall be assigned for values less than the MDL and the numeric value of the MDL shall be assigned for values between the MDL and the ML. The resulting average value must be compared to the effluent limitation or the ML, whichever is greater, in assessing compliance.**

- (e) For purposes of calculated geometric means, $0.25 \times \text{MDL}$ shall be assigned for values less than the MDL and the numeric value of the MDL shall be assigned for values between the MDL and the ML. The resulting geometric mean must be compared to the effluent limitation or the ML, whichever is greater, in assessing compliance.
- (f) When NODI(Q) or NODI(B) is reported for a parameter, the laboratory's numeric ML and MDL for that parameter shall also be noted on the DMR or on an attachment.

- (5) Should there be no discharges during the monitoring period, the DMR form shall so state.
- (6) All receiving water data shall be submitted annually to EPA's Storage and Retrieval Data Warehouse (STORET) in accordance with Water Quality Exchange (WQX) specifications (or equivalent data base/submission guidelines, as directed by the EPA).

d. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant at location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified in 40 CFR 136, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. The increased frequency shall also be indicated.

e. Submittal of Monitoring Results Using NetDMR

The Permittee shall submit DMRs required under this permit electronically using NetDMR. NetDMR is accessed from: <https://cdx.epa.gov/>.

DMRs shall be submitted electronically no later than the 28th day of the month following the completed reporting period. Once a Permittee begins submitting DMRs using NetDMR, it will no longer be required to submit hard copies of DMRs to the DOH, unless otherwise requested by the DOH.

f. Schedule of Submission

The Permittee shall submit reports to the DOH as specified below.

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Report	Reporting Period	Report Due Date	Submittal Process
Monthly Discharge Monitoring Report	1/Month	28 th day of the month following completed reporting period	Online NetDMR
Quarterly Discharge Monitoring Report	1/Quarter	28 th day of the month following completed reporting period	Online NetDMR
Annual Discharge Monitoring Report	1/Year	28 th day of the month following completed reporting period	Online NetDMR
Nearshore Water Quality Monitoring	1/Month	28 th day of the month following completed reporting period	Online NetDMR
Monthly Seep Water Quality Monitoring	1/Month	28 th day of the month following completed reporting period	Online NetDMR
Quarterly Seep Water Quality Monitoring	1/Quarter	28 th day of the month following completed reporting period	Online NetDMR
Effluent Monitoring Program	1/Permit Term	180 days after permit effective date	Online e-Permitting Portal
Receiving Water Monitoring Program	1/Permit Term	180 days after permit effective date	Online e-Permitting Portal
Initial Investigation TRE Workplan	1/Permit Term	90 days after permit effective date	Online e-Permitting Portal
Annual Receiving Water Monitoring Report	1/Year	Last business day of March of each year	Online e-Permitting Portal
Wastewater Pollution Prevention Program Annual Report	1/Year	Last business day of March of each year	Online e-Permitting Portal
Pretreatment Program Development Quarterly Report	4/Year	Last business day of March, June, September, and December of each year	Online e-Permitting Portal
Pretreatment Program	1/Permit Term	With the renewal application 360 days before the expiration date	Online e-Permitting Portal
Annual Pretreatment Report	1/Year	Last business day of March of each year	CWB: Online e-Permitting Portal EPA: e-mail
Sludge/Biosolids Annual Report	1/Year	February 19 th of each year	CWB: Online e-Permitting Portal EPA: e-mail WWB: e-mail

Report	Reporting Period	Report Due Date	Submittal Process
Antidegradation Study	1/Permit Term	4 years after permit effective date	Online e-Permitting Portal

Signed copies of monitoring and all other reports required by this permit, except those described in Part I.3 of this permit, shall be submitted to the DOH at the following addresses unless otherwise specified:

Department of Health
Environmental Management Division
Clean Water Branch
2827 Waimano Home Road, Room 225
Pearl City, HI 96782

All reports, notifications, and updates to information on file shall be submitted through the DOH e-Permitting Portal using the Electronic Signature CWB Compliance Submittal Form for Individual NPDES Permits and NGPCs or as specified by DOH. This form is accessible through the e-Permitting Portal website at: <https://eha-cloud.doh.hawaii.gov/epermit>. If not already registered, you will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool to locate the form. Follow the instructions to complete and submit this form. The certifying person or authorized representative shall complete the Electronic Subscriber Agreement prior to submitting this form.

Duplicate copies of the annual pretreatment and sludge reports shall be submitted to the Regional Administrator and DOH Wastewater Branch as specified in Parts F and G of this permit, respectively.

3. Reporting of Noncompliance, Unanticipated Bypass, Upset, or Sewage Spill
 - a. In case of conflict between the conditions stated here in Part I.3 and those in the "Standard NPDES Permit Conditions" (Version 16), the more stringent conditions shall apply.
 - b. Immediate Reporting
 - (1) For the purposes of this section, "immediately" means the time the Permittee's authorized personnel becomes aware of the circumstances, but no later than 24 hours after the event.

- (2) The Permittee or its duly authorized representative (40 CFR 122.22) shall immediately orally report the following:
- (a) Any noncompliance or discharge which may endanger public health or the environment;
 - (b) Any discharge at a location not authorized in the permit;
 - (c) Any discharge of any wastewater not identified in the application filed for the NPDES permit;
 - (d) Any unanticipated bypass;
 - (e) Any upset; and
 - (f) Violation of a discharge limitation specified in Part A of this permit.

(3) Oral Reporting

During regular hours (7:45 a.m. to 4:30 p.m., Monday – Friday, excluding State holidays), the Permittee or its duly authorized representative shall make oral reports to the DOH-CWB at (808) 586-4309. Outside of regular office hours, the Permittee or its duly authorized representative shall make oral reports to the Hawaii State Hospital Operator at (808) 247-2191. Voicemails do not constitute an oral report.

(4) Written Reporting

- (a) A written submission shall also be provided within five (5) calendar days of the time the Permittee becomes aware of the circumstances. The written submission shall contain:
 - (i) A description of the noncompliance and its cause;
 - (ii) The period of noncompliance, including exact dates and times;
 - (iii) State waters impacted by the noncompliance;
 - (iv) If the noncompliance has not been corrected, the anticipated time it is expected to continue; and
 - (v) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

- (b) The DOH may waive the written report on a case-by-case basis if the oral report has been received within 24 hours of the noncompliance or when the Permittee's authorized personnel becomes aware of the noncompliance.

c. Other Non-Compliance

The Permittee shall report all other instances of noncompliance not reported under Part I.3.b at the time DMRs are submitted as required by Part I.2 of this permit. The noncompliance reports shall contain the information requested in Part I.3.b.(4) of this permit.

J. ADDITIONAL CONDITIONS

1. Response to Unanticipated Bypass, Upset, Exceedance of the Daily Maximum Limitation for Enterococcus, or Sewage Spill

a. Notification to the Press

- (1) In the event of an unanticipated bypass, upset, exceedance of the daily maximum limitation for enterococcus, or sewage spill contributing to a discharge of 1,000 gallons or more to State waters, whether in a single event or a series of events on consecutive days, the Permittee shall notify the press at the time the Permittee's authorized personnel becomes aware of the circumstances, but no later than 24 hours after the event.
- (2) Notification shall be made to the Associated Press news wire services, major statewide and island newspapers, major Hawaii televisions news stations, the DOH Communications Office on Oahu, and, if applicable, the respective neighbor island District Health Office.
- (3) Notification to the press shall include:
 - (a) A description of the noncompliance and its cause;
 - (b) The period of the noncompliance, including exact dates and times;
 - (c) State waters impacted by the noncompliance;
 - (d) If the noncompliance is ongoing, the anticipated time it is expected to continue; and
 - (e) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

b. Disinfection and Clean Up of Unauthorized Discharges of Sewage or Other Pollutants

- (1) Unauthorized discharges of sewage or other pollutants shall be disinfected prior to being discharged if sufficient disinfection contact time is available. Best judgment should be used in determining the amount of chlorine added to the discharge if chlorine is used as a disinfectant. The Permittee shall comply with the total residual chlorine discharge limitation as specified in Part A.1 of this permit or in the HAR Chapter 11-55, whichever is more stringent.

- (2) Wastewater spilled onto the ground shall be disinfected if the wastewater remains ponded on the ground for any sufficient length of time or if the discharge continues for any significant duration. Contaminated grounds shall be cleaned of all debris and standing wastewater.
- (3) Unauthorized discharges of pollutants shall be cleaned to the greatest extent practicable.

c. Public Warnings

- (1) The Permittee shall immediately post "Warning Signs" in the areas or near waters likely to be affected by the discharge or spill to ground and where public access is possible.
- (2) The DOH shall determine if the number and location of the posted "Warning Signs" are sufficient. The DOH may require the Permittee to post additional "Warnings Signs" as needed and may assist in removal of the signs. The Permittee shall not remove signs until authorized by the DOH.
- (3) Warning signs must minimally be 8.5 inches by 11 inches in size with legible font and list a contact phone number for the Permittee, nature of the discharge, and an advisory of what areas or waters should be avoided.
- (4) The Permittee shall email a map indicating where warning signs were posted within 24 hours of posting to cleanwaterbranch@doh.hawaii.gov. The Permittee is responsible for ensuring warning signs are intact for the duration of the event.

d. Public Access

When or where standing wastewater cannot be removed from the ground, public access shall be limited by barricades or other means.

e. Sampling and Monitoring at the Facility

- (1) For discharges of domestic or municipal wastewater greater than 1,000 gallons through its authorized outfall(s) when an unanticipated bypass, upset, or exceedance of the enterococcus daily maximum limitation is occurring, the Permittee shall conduct daily bacteria (Enterococcus and Clostridium perfringens) sampling of the effluent at the effluent compliance monitoring location or a location within the Facility that is representative of the discharge or noncompliance.

- (2) The DOH shall determine if the monitoring location is adequate and may require revised or additional sampling or monitoring locations.
 - (3) The DOH may require sampling and monitoring of additional parameters on a case-by-case basis.
 - (4) For other unauthorized or noncompliant discharges of pollutants, the DOH may require sampling and monitoring of parameters related to the discharge on a case-by-case basis.
 - (5) Sampling and monitoring shall continue until notification to stop is received from the DOH.
- f. **Sampling and Monitoring of Surface Waters**
- (1) The Permittee shall conduct daily bacteria (Enterococcus and Clostridium perfringens) sampling of surface waters for:
 - (a) Sewage spill discharges into State waters greater than 100 gallons;
 - (b) Discharges greater than 1,000 gallons into State waters during an unanticipated bypass, upset, or exceedance of the enterococcus daily maximum limitation; or
 - (c) During any noncompliance or discharge which may endanger public health or the environment.
 - (2) Sampling shall occur as soon as possible in the area of the receiving water affected by the discharge.
 - (3) The results shall be submitted to the DOH immediately after the Permittee received the bacteriological report.
 - (4) Monitoring shall continue until notification to stop is received from the DOH.
 - (5) For other unauthorized or noncompliant discharges of pollutants, the DOH may require sampling and monitoring of parameters related to the discharge on a case-by-case basis.
 - (6) The Permittee shall email a map of sampling and monitoring locations to cleanwaterbranch@doh.hawaii.gov. The DOH shall determine if the monitoring location(s) is adequate and may require revised or additional sampling or monitoring locations.

(7) The DOH may increase, change, reduce, or eliminate the sampling response.

2. Special Conditions Applicable to Publicly Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the DOH of the following [40 CFR 122.42(b)]:

- a. Any new introduction of pollutants into the POTW from an indirect source that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants [40 CFR 122.42(b)(1)].
- b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of this permit [40 CFR 122.42(b)(2)].
- c. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW [40 CFR 122.42(b)(3)].

3. Remedy or Penalty

Nothing in this permit waives any remedy or penalty applicable under HRS Chapter 342D.

4. Wastewater Treatment Facility Personnel

Wastewater treatment facilities subject to this permit shall be supervised and operated by persons possessing certificates of appropriate grade, as determined by the DOH. If such personnel are not available to staff the wastewater treatment facilities, a program to promote such certification shall be developed and enacted by the Permittee. Activities of this program shall be reported in the Annual Wastewater Pollution Prevention Program Report in Part E of this permit.

5. Alternate Power Source

The Permittee shall maintain in good working order a sufficient alternate power source for operating the wastewater treatment and disposal facilities. All equipment shall be located to minimize failure due to moisture, liquid spray, flooding, and other physical phenomena. The alternate power source shall be designed to permit inspection and maintenance and shall provide for periodic testing. If such alternate power source is not in existence, the Permittee shall halt, reduce, or otherwise control all discharges upon the reduction, loss, or failure of the primary source of power.

6. Waste Load Allocation (WLA) Implementation and Monitoring Plan

The Permittee shall develop and submit a Facility-specific Waste Load Allocation (WLA) implementation and monitoring plan to the DOH within one (1) year of notification of the EPA approval date of a Total Maximum Daily Load, which specifies WLAs applicable to the Permittee's discharge.

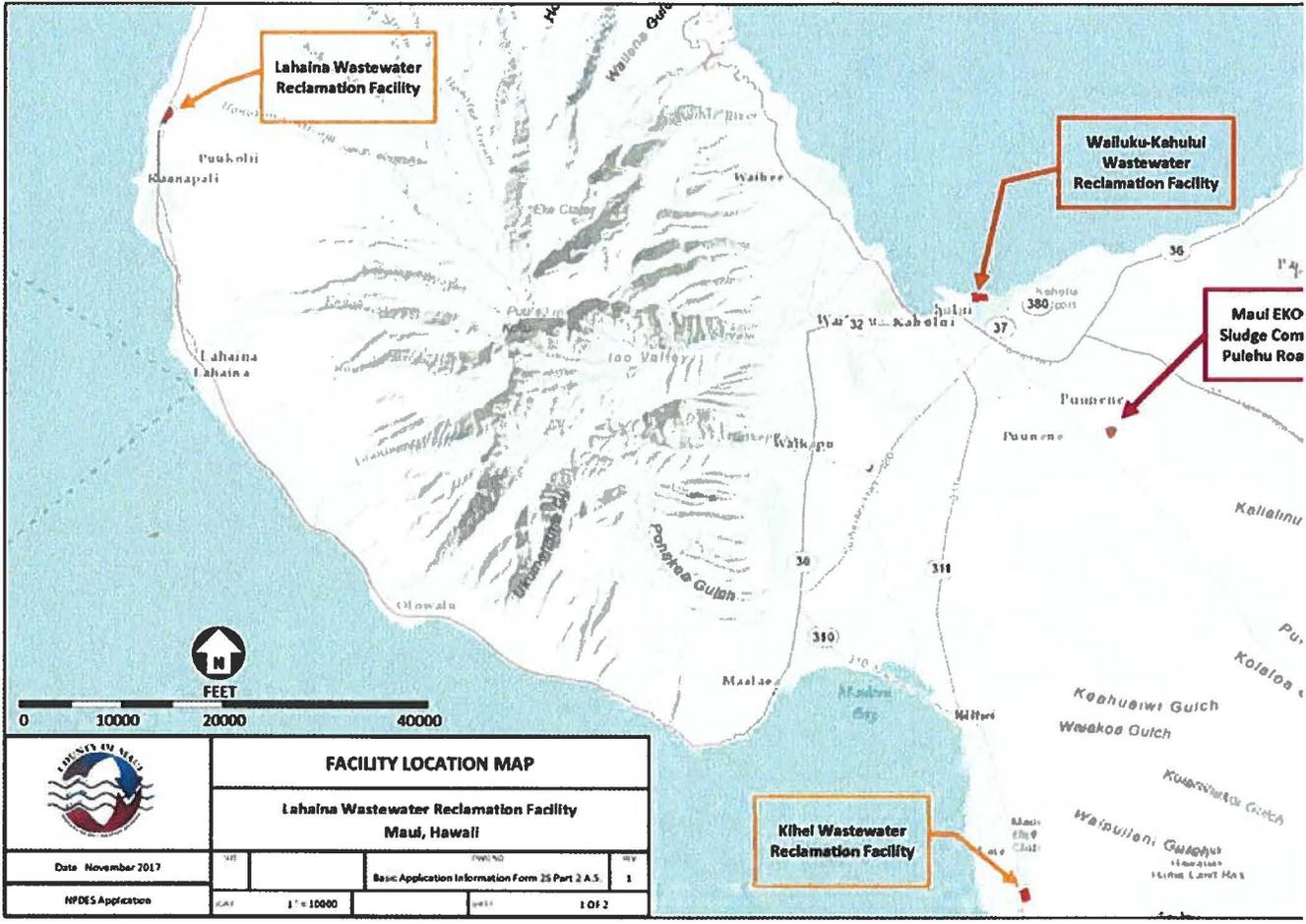
7. Permit Reopener

This permit may be reopened and modified, in accordance with NPDES regulations at 40 CFR 122 and 124, as necessary, to include additional conditions or limitations based on newly available information.

K. Facility Location Map, Receiving Water Seep Location Map, and Facility Process Flow Diagram

(See Figures 1, 2, and 3)

04001PSS.25b



A.5. Topographic Map. Provide a topographic map or maps (or other appropriate map(s) if a topographic map is unavailable) that show the following information. Map(s) should include the area one mile beyond all property boundaries of the facility.

- a. Location of all sewage sludge management facilities, including locations where sewage sludge is stored, treated, or disposed

Figure 1 – Facility Location Map

PUBLIC HEARING PERMIT
April 17, 2025

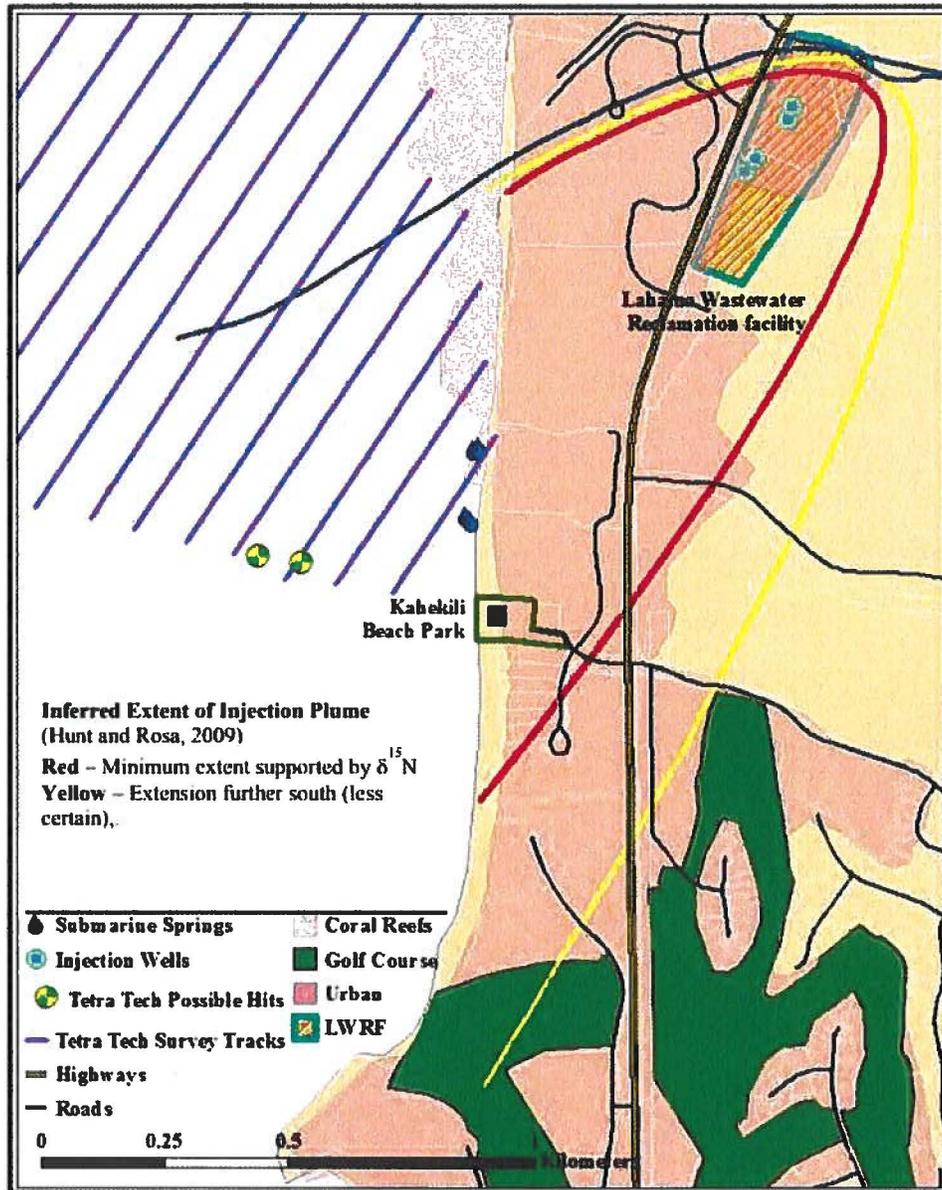


Figure 2 – Receiving Water Seep Location Map

**Lahaina Wastewater Reclamation Facility
2013 Plant Upgrade**

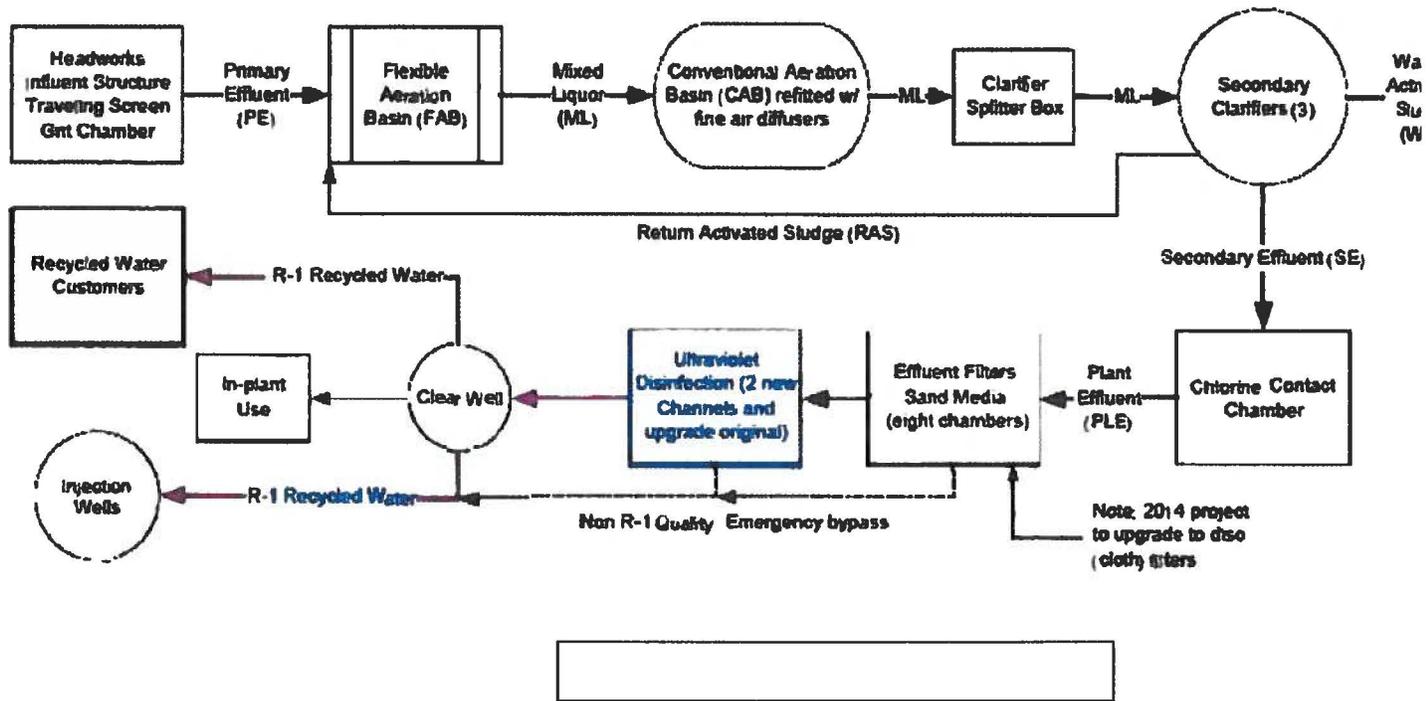


Figure 3 – Facility Process Flow Diagram

APPENDIX 1 -- HAWAII NPDES POLLUTANT LIST (JULY 29, 2021, VERSION 1)

The list below includes 84 potential chemical pollutants which may trigger the development of a Water Quality Based Effluent Limit (WQBEL). The list of potential pollutants is based on chemicals which have numeric standards set forth in Hawaii Administrative Rules (HAR), Title 11, Chapter 54 Water Quality Standards (WQS) dated October 22, 2021, and accepted NPDES test methods established in 40 CFR 136. The pollutants listed below are required to be analyzed using methods defined in 40 CFR 136.

The list was developed by reviewing 40 CFR 423, Appendix A, priority pollutants, and cross referencing the list with potential pollutants found in HAR Chapter 11-54.

Any potential pollutant with a numeric Hawaii WQS was listed. Potential pollutants without numeric Hawaii WQS were removed. All potential pollutants were referenced with their corresponding Chemical Abstracts Service (CAS) numbers to specify the pollutant to be monitored. To facilitate NPDES reporting, the applicable Integrated Compliance Information System (ICIS) parameter codes for each pollutant required to be monitored was added to the list. ICIS parameter codes are likely to be used by dischargers and the regulatory agency for coding into the national Discharge Monitoring Report (DMR) database.

There were two (2) potential pollutants listed in HAR Chapter 11-54 which were removed from the list below as the two (2) pollutants are not currently assigned specific ICIS parameter codes. The two (2) pollutants are 2,3,5,6-Tetrachlorophenol and Hexachlorocyclohexane (HCH) Technical. These pollutants may be added to the list in the future if ICIS parameter codes are created. Bis(chloromethyl) ether was removed from the list below as it has a short half-life in ambient water. The two (2) potential pollutants will be added to a revised version of this Appendix when ICIS parameter codes are provided to the State of Hawaii.

Further, nine (9) other pollutants specified in HAR Chapter 11-54 were not included in the list below as they are specified using their broad family names and they are not chemical specific. The nine (9) pollutants include Dichlorobenzenes, Dichloropropanes, Dinitrotoluenes, Endosulfan, Nitrophenols, Nitrosamines, Polychlorinated Biphenyls (PCBs), Polynuclear Aromatic Hydrocarbons (PAHs), and Tetrachloroethanes. Given that the nine (9) pollutants are organic compounds, specific isomers of the pollutants which have both ICIS parameter codes and specific numeric criteria are included in the list below.

Potential pollutants listed below shall be monitored and reported as required as directed by applicable NPDES permits.

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Pollutant Name	CAS No.	ICIS Parameter Code	Sample Type
1,1,1-Trichloroethane	71-55-6	34506	Grab
1,1,2-Trichloroethane	79-00-5	34511	Grab
1,1,2,2-Tetrachloroethane	79-34-5	34516	Grab
1,2-Dichloroethane	107-06-2	81680	Grab
1,2-Diphenylhydrazine	122-66-7	34346	24-Hr Composite or Grab
1,2,4,5-Tetrachlorobenzene	95-94-3	77734	24-Hr Composite or Grab
1,3-Dichloropropene	542-75-6	77163	Grab
2-Chlorophenol	95-57-8	34586	24-Hr Composite or Grab
2-Methyl-4,6-Dinitrophenol	534-52-1	03615	24-Hr Composite or Grab
2,3,7,8-TCDD (Dioxin)	1746-01-6	34675	24-Hr Composite or Grab
2,4-Dichlorophenol	120-83-2	34601	24-Hr Composite or Grab
2,4-Dimethylphenol	105-67-9	34606	24-Hr Composite or Grab
2,4,6-Trichlorophenol	88-06-2	34621	24-Hr Composite or Grab
3,3'-Dichlorobenzidine	91-94-1	34631	24-Hr Composite or Grab
Acenaphthene	83-32-9	34205	24-Hr Composite or Grab
Acrolein	107-02-8	34210	Grab
Acrylonitrile	107-13-1	34215	Grab
Aldrin	309-00-2	39330	24-Hr Composite or Grab
alpha-Hexachlorocyclohexane (HCH)	319-84-6	39336	24-Hr Composite or Grab
Aluminum	7429-90-5	01104	24-Hr Composite or Grab
Antimony	7440-36-0	01268	24-Hr Composite or Grab
Arsenic	7440-38-2	00978	24-Hr Composite or Grab
Benzene	71-43-2	34030	Grab
Benzidine	92-87-5	39120	24-Hr Composite or Grab
Beryllium	7440-41-7	00998	24-Hr Composite or Grab
beta-Hexachlorocyclohexane (HCH)	319-85-7	39338	24-Hr Composite or Grab
Bis(2-chloro-1-Methylethyl) ether	108-60-1	34275	24-Hr Composite or Grab
Bis(2-chloroethyl) ether	111-44-4	34273	24-Hr Composite or Grab
Bis(2-ethylhexyl) phthalate	117-81-7	39100	24-Hr Composite or Grab
Cadmium	7440-43-9	01113	24-Hr Composite or Grab
Carbon tetrachloride	56-23-5	32102	Grab
Chlordane	57-74-9	39350	24-Hr Composite or Grab
Chlorine	7782-50-5	50060	Grab
Chloroform	67-66-3	32106	Grab
Chlorpyrifos	2921-88-2	38933	24-Hr Composite or Grab
Chromium (VI)	18540-29-9	01032	24-Hr Composite or Grab
Copper	7440-50-8	01119	24-Hr Composite or Grab
Cyanide	57-12-5	00720	24-Hr Composite or Grab
Demeton	8065-48-3	39560	24-Hr Composite or Grab
Di-n-butyl phthalate	84-74-2	39110	24-Hr Composite or Grab
Dieldrin	60-57-1	39380	24-Hr Composite or Grab
Diethyl phthalate	84-66-2	34336	24-Hr Composite or Grab
Dimethyl phthalate	131-11-3	34341	24-Hr Composite or Grab
Endrin	72-20-8	39390	24-Hr Composite or Grab
Ethylbenzene	100-41-4	34371	Grab
Fluoranthene	206-44-0	34376	24-Hr Composite or Grab
gamma-Hexachlorocyclohexane (HCH) (Lindane)	58-89-9	39344	24-Hr Composite or Grab
Guthion	86-50-0	39580	24-Hr Composite or Grab

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Pollutant Name	CAS No.	ICIS Parameter Code	Sample Type
Heptachlor	76-44-8	39410	24-Hr Composite or Grab
Hexachlorobenzene	118-74-1	39700	24-Hr Composite or Grab
Hexachlorobutadiene	87-68-3	34391	24-Hr Composite or Grab
Hexachlorocyclopentadiene	77-47-4	34386	24-Hr Composite or Grab
Hexachloroethane	67-72-1	34396	24-Hr Composite or Grab
Isophorone	78-59-1	34408	24-Hr Composite or Grab
Lead	7439-92-1	01114	24-Hr Composite or Grab
Malathion	121-75-5	39530	24-Hr Composite or Grab
Mercury	7439-97-6	71901	24-Hr Composite or Grab
Methoxychlor	72-43-5	39480	24-Hr Composite or Grab
Mirex	2385-85-5	39755	24-Hr Composite or Grab
N-Nitrosodimethylamine	62-75-9	34438	24-Hr Composite or Grab
N-Nitrosodiphenylamine	86-30-6	34433	24-Hr Composite or Grab
Naphthalene	91-20-3	34696	24-Hr Composite or Grab
Nickel	7440-02-0	01074	24-Hr Composite or Grab
Nitrobenzene	98-95-3	34447	24-Hr Composite or Grab
Nitrosodibutylamine	924-16-3	78207	24-Hr Composite or Grab
Nitrosodiethylamine	55-18-5	78200	24-Hr Composite or Grab
Nitrosopyrrolidine	930-55-2	78206	24-Hr Composite or Grab
p,p'-Dichlorodiphenyldichloroethane (DDD)	72-54-8	39310	24-Hr Composite or Grab
p,p'-Dichlorodiphenyltrichloroethane (DDT)	50-29-3	39300	24-Hr Composite or Grab
Parathion	56-38-2	39540	24-Hr Composite or Grab
Pentachlorobenzene	608-93-5	77793	24-Hr Composite or Grab
Pentachloroethane	76-01-7	81501	24-Hr Composite or Grab
Pentachlorophenol	87-86-5	39032	24-Hr Composite or Grab
Phenol	108-95-2	34694	24-Hr Composite or Grab
Selenium	7782-49-2	00981	24-Hr Composite or Grab
Silver	7440-22-4	01079	24-Hr Composite or Grab
Tetrachloroethylene	127-18-4	78389	Grab
Thallium	7440-28-0	00982	24-Hr Composite or Grab
Toluene	108-88-3	34010	Grab
Toxaphene	8001-35-2	39400	24-Hr Composite or Grab
Tributyltin (TBT)**	1461-22-9	03824	24-Hr Composite or Grab
Trichloroethylene	79-01-6	39180	Grab
Vinyl chloride	75-01-4	39175	Grab
Zinc	7440-66-6	01094	24-Hr Composite or Grab

*The EPA recognizes the listed PCBs, as they are identified by the EPA Priority Pollutants List per 40 CFR 423, Appendix A, as acceptable representatives of the chemical group Polychlorinated Biphenyls.

**Per the publication EPA 822-R-03-031, certain anions of tributyltin do not contribute to toxicity. Toxicity data for tributyltin chloride were used in the derivation of aquatic life criteria.

JOSH GREEN, M.D.
GOVERNOR OF HAWAII
KE KIA'ĀINA O KA MOKU'ĀINA 'O HAWAII



KENNETH S. FINK, MD, MGA, MPH
DIRECTOR OF HEALTH
KA LUNA HO'ŌKELE

STATE OF HAWAII
DEPARTMENT OF HEALTH
KA 'ŌIHANA OLAKINO
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

04001PSS.25c
DATE: April 7, 2025
NPDES PERMIT NO. HI 0021848

RATIONALE: APPLICATION FOR ISSUANCE OF NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TREATED WASTEWATER EFFLUENT TO THE PACIFIC OCEAN, STATE WATERS AND WATERS OF THE UNITED STATES VIA GROUNDWATER INJECTION WELLS

PERMITTEE: COUNTY OF MAUI,
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

FACILITY: LAHAINA WASTEWATER RECLAMATION FACILITY (WWRF)

FACILITY MAILING ADDRESS

County of Maui
Department of Environmental
Management
Lahaina WWRF
200 South High Street
Wailuku, Hawaii 96793
Contact: Shayne Agawa
Director
Phone No: (808) 270-8230

PERMITTEE MAILING ADDRESS

County of Maui
Department of Environmental
Management
Lahaina WWRF
200 South High Street
Wailuku, Hawaii 96793
Contact: Shayne Agawa
Director
Phone No: (808) 270-8230

FACILITY STREET ADDRESS

County of Maui
Lahaina WWRF
3300 Honoapiilani Highway
Lahaina, Hawaii 96761-9413

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This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of the draft permit. The draft permit has undergone stylistic changes to match other NPDES permits that the CWB is currently issuing and modifications resulting from the public hearing. See the end of this fact sheet for a summary of the modifications resulting from the public hearing.

A. Permit Information

The following table summarizes administrative information related to the Lahaina Wastewater Reclamation Facility (hereinafter, "Lahaina WWRF" or "Facility").

Table F-1. Facility Information

Permittee	County of Maui
Name of Facility	Lahaina WWRF
Facility Address	3300 Honoapiilani Highway Lahaina, Hawaii 96761
Facility Contact, Title, and Phone	Eugene Callnan, Assistant WWRF Operator, (808) 661-8460
Authorized Person to Sign and Submit Reports	Shayne Agawa, Director of Environmental Management, (808) 270-8230
Mailing Address	200 South High Street Wailuku, Hawaii 96793
Billing Address	Same as Mailing Address
Type of Facility	Publicly Owned Treatment Works (POTW)
Industrial Storm Water	Yes, Covered under Industrial Storm Water General Permit (File # HIR90G748)
Pretreatment Program	Required
Recycling Requirements	Not Applicable
Facility Design Flow	9.0 million gallons per day (MGD)
Receiving Waters	Pacific Ocean at West Maui Coast – Near Shore Waters to 60 Feet from Honolulu to Lahaina
Receiving Water Type	Marine
Receiving Water Classification	Class A Dry Open Coastal Waters (HAR Section 11-54-06(b)(2)(B))

1. NPDES Permit No. HI 0021848 for the Lahaina WWRF is a new NPDES permit. The Permittee applied for an NPDES permit on November 30, 2017. The Facility's use of underground injection wells for wastewater disposal is authorized under Department of Health (DOH) Underground Injection Control (UIC) Permit No. UM-1357 (Federal UIC Permit No. HI596001).
2. The Director of Health (hereinafter "Director") proposes to issue a NPDES permit to discharge to the waters of the State until five (5) years after effective date and has included in the proposed permit those terms and conditions which are necessary to carry out the provisions of the Federal Water Pollution Control

Act (P.L. 92-500), Federal Clean Water Act (CWA) of 1988 (P.L. 95-217) and Chapter 342D, Hawaii Revised Statutes (HRS).

3. An NPDES Permit is applicable for this subsurface discharge due to the discharge's functional equivalence to a direct discharge to surface waters as described in the DOH report, Lahaina Wastewater Reclamation Facility National Pollutant Discharge Elimination System Permit Development Supplemental Report (Attached as Exhibit A). Note that references to direct discharges within this Fact Sheet are in reference to discharges from NPDES facilities where the effluent enters a surface water directly from a pipe without expected transformation, degradation or other processes that may occur when subsurface discharges transits through intervening media (e.g. subsurface structure, groundwater, anoxic conditions, etc.). DOH has used the term "direct discharge" within this Fact Sheet as it best conveys the intended meaning for the general public, although it is inconsistent with the traditional definition used within the NPDES program of a discharge to a publicly owned treatment works.
4. For the purposes of compliance monitoring (e.g. sampling, monitoring, reporting, ICIS coding, etc.), with numeric "end-of-pipe" discharge limitations, final effluent is considered discharged through Effluent Monitoring Location (EML), Serial No. 001, instead of a traditional "Outfall". This draft permit proposes using a single monitoring location upstream of the four (4) injection wells but downstream of any treatment which would change effluent quality prior to disposal via the UIC permit Injection Wells 001-004.

B. Facility Setting

1. Facility Operation and Location

The Permittee owns and operates the Facility, a POTW located approximately three (3) miles north of the Town of Lahaina and 0.5 miles from the Pacific Ocean coastline at 3300 Honoapiilani Highway in the Ka'anapali District of West Maui, Hawaii. The Facility serves a population of approximately 40,000 in the City of West Maui (50 percent permanent residents, 50 percent transient residents), and the collection system covers approximately 11 miles of coastline on the Island of Maui. Influent to the Facility is primarily from residential and commercial sources. The Facility utilizes two treatment trains, operated in parallel, with a combined average dry-weather flow capacity of 9.0 MGD to treat municipal wastewater.

Infrastructure at the Facility includes four (4) Class V¹ UIC wells used for disposal of tertiary-treated recycled water. Approximately 4 MGD of wastewater

¹ Class V wells are used to inject non-hazardous fluids into or above underground sources of drinking water. For more information, see EPA's Class V Wells website at <https://www.epa.gov/uic/class-v-wells-injection-non-hazardous-fluids-or-above-underground-sources-drinking-water>.

at the Facility is tertiary-treated to the DOH's "R-1" recycled water quality level². Treated wastewater is then either sold to customers for irrigation use or injected into the UIC wells for disposal. Approximately 3 to 5 MGD of tertiary-treated wastewater is injected into UIC wells and then transports approximately 200 feet underground into a groundwater aquifer. The maximum injection well flowrate from 2014 to 2021 was greater than 8 MGD. In 2020, the average daily flow at the Facility was 4.1 MGD, and the average daily reuse was 1.5 MGD, representing a reuse rate of approximately 37 percent of the total effluent. Since 2016, the annual rate of reuse has ranged from 450 and 550 million gallons.

Since 1986, the UIC wells at the Facility have been permitted by the DOH under UIC Permit No. UM-1357, issued pursuant to HRS, Chapters 91 and 340E, and HAR, Chapters 11-23 and 11-54. The UIC wells have also been permitted by the EPA since 1995 under UIC Permit No. HI596001, issued pursuant to the SDWA.

Wastewater Treatment Process

Prior to construction of the Facility, the primary techniques utilized for wastewater disposal in the Lahaina area included cesspool disposal, secondary treatment with land disposal, and discharge through a 16-inch ocean outfall extending approximately 1,500 feet offshore of the Mala Wharf at a depth of 40 feet. The majority of wastewater was collected via sewer in the Town of Lahaina and disposed of, untreated, at the Ala Moana Sewage Pump Station. In order to mitigate marine pollution caused by these disposal methods, the County began construction of the centralized municipal wastewater treatment system in 1975.

The current Facility consists of two (2) parallel wastewater treatment plants. The initial 3.2 MGD treatment plant and associated trunk sewer were constructed in 1975 at a cost of approximately \$70 million. The first UIC wells (Wells 1 and 2), were constructed in 1980. In 1985, the Facility underwent an \$18 million expansion to increase treatment capacity to 6.7 MGD. The expansion included construction of the second treatment plant and UIC Wells 3 and 4. The Facility underwent another expansion in 1995, increasing treatment capacity to 9.0 MGD at a cost of \$24 million. The ultraviolet (UV) disinfection system was expanded to the peak treatment capacity of 9.0 MGD in 2014.

The Facility utilizes primary, secondary, and tertiary wastewater treatment processes through two (2) treatment trains (main treatment train and alternate treatment train) which can run in parallel through secondary clarification before recombining upstream of the sand and disk filters and UV treatment system. The main treatment train includes bar screens, grit chamber, aeration basins

²"R-1 water" is defined as recycled water that has been oxidized, filtered, and disinfected to meet the corresponding standards set in Title 11, Chapter 62 of the Hawaii Administrative Rules (HAR 11-62). <https://health.hawaii.gov/oppdp/files/2015/06/11-62-Wastewater-Systems.pdf>

[four (4) flexible aeration basins and one (1) conventional aeration basin], three (3) secondary clarifiers, chlorine contact basins, sand and disk filters, and ultraviolet light (UV) disinfection units. The average dry-weather flow capacity of the main treatment train is 6.8 MGD. Flow from the headworks may be split to the alternate treatment train, which consists of an aeration basin, four (4) secondary clarifiers, and chlorine contact basin. Effluent from the alternate treatment train is then directed to sand and disk filters in the main treatment train and UV disinfection. The average dry-weather flow capacity of the alternate treatment train is 3.2 MGD. The alternate treatment train is currently not in service but is available for future use should influent flowrate increase above main treatment train capacity.

Biosolids screened during the treatment process are sent to a sludge tank and circulation pump then to a centrifuge with added polymer. Biosolids are currently trucked off-site for landfill disposal after mixing with green waste.

All influent to the Facility is treated to R-1 quality. For disposal, a portion of the effluent is discharged to an irrigation system, with the remaining volume being discharged to the four (4) UIC wells at the locations described in Table F-2 below. Prior to 2014, UIC Wells 3 and 4 were mainly used for injection of tertiary-treated effluent; however, UIC Well 2 is currently the most utilized well for effluent injection.

Table F-2. Facility UIC Well Information

UIC Well No.	1	2	3	4
Latitude:	20°56'45.94"N	20°56'45.15"N	20°56'42.31"N	20°56'41.56"N
Longitude:	156°41'12.37"W	156°41'12.62"W	156°41'15.12"W	156°41'15.70"W
Elevation:				
Ground Surface	30 Feet	30 Feet	25 Feet	26 Feet
Bottom of Well	-170 Feet	-150 Feet	-200 Feet	-229 Feet
Total Depth of Well Below Ground Surface	200 Feet	180 Feet	225 Feet	255 Feet
Solid Casing:				
Diameter	20 Inches	20 Inches	20 Inches	20 Inches
Stick Up	3 Feet	3 Feet	3 Feet	3 Feet
Total Length	88 Feet	88 Feet	108 Feet	108 Feet
Material	Steel	Steel	Steel	Steel
Perforated Casing:				
Diameter	14 Inches		---	14 Inches
Perforation	Slotted	---	---	Slotted
Stick Up	---	---	---	---
Total Length	115 Feet	---	---	115 Feet
	Steel	---	---	Steel

UIC Well No.	1	2	3	4
Material		---		
Open Hole:				
Diameter	---	20 Inches	18 Inches	---
Total Length	---	95 Feet	120 Feet	---
Annular Backfill:				
Capping	Concrete	Concrete	Concrete	Concrete
Solid Casing	Cement	Cement	Cement	Cement
Separation	Unknown	Unknown	Unknown	Unknown
Perforated Casing	---	---	---	---
Open Hole	None	None	None	None

Recycled Water

In 1978, the County of Maui Reservoir was constructed at an altitude of approximately 730 feet above the Facility, along with a recycled water pipeline and pump, to deliver recycled water for agricultural irrigation use to sugar cane and pineapple farms in the area. Recycled water was fed to the fields via gravity and a constructed agricultural ditch. The pipeline is currently offline due to lack of demand for recycled water, and the pumps are no longer in working condition; however recycled water can currently be pumped to an altitude of 300 feet. In 1997, the Kaanapali recycled water pipeline and associated pump were constructed to reuse treated effluent from the Facility for golf course and landscape irrigation at the Kaanapali Resort.

The Facility currently has \$41 million in recycled water infrastructure, which has an annual operating cost of \$1 million. From 2010 and 2021, the annual average operating costs for the recycled water program was \$3 million. The program earned an annual average of \$612,000 in revenue, with 80 percent of the program subsidized by sewer fees. In fiscal year 2021, 1.4 billion gallons of effluent from the Facility was recycled.

Discharge Location and Receiving Water

Effluent from the Facility that is not reused through the recycled water program is injected into groundwater through the four (4) on-site UIC wells (Table F-2). EML Serial No. 001 must be established upstream of the UIC wells but downstream of any treatment and allow for representative sampling of final effluent before injection in the Facility's UIC wells. After all treatment units, effluent flows through a manifold that directs the flow into wells designated for use. The manifold allows control over distribution to the injection wells. The EML Serial No. 001, is located before the effluent distribution manifold and effluent samples collected at this Effluent Monitoring Point will be representative of effluent that is discharged into the injection wells.

Dye tracer studies were conducted in 1994 and 2011-2013 to determine whether the injected effluent maintains a significant hydrological connection to the Pacific Ocean, a water of the United States.

In 2011, the University of Hawaii began the *Lahaina Groundwater Tracer Study – Lahaina, Maui, Hawaii* (Glenn et al., 2013³; dye tracer study) on behalf of the DOH, EPA, and the United States Army Engineer Research and Development Center (ERDC). The dye tracer study demonstrated that effluent from UIC Wells 3 and 4 at the Facility was migrating from the groundwater aquifer to which it was injected, through to subsurface, and discharging to nearby coastal waters in the Pacific Ocean.

The study concluded that effluent from the UIC wells flowed into a diffuse groundwater inflow zone and seeps that are evident along the coastline to the southwest of the Facility. Flow from these seeps is referred to as submarine groundwater discharge (SGD), and are divided into two (2) groups, the South Seep Group (SSG) and North Seep Group (NSG). The SSG and NSG are located at North Kaanapali Beach, approximately 0.85 kilometers (0.5 miles) to the southwest of the Facility, and between 3 to 25 meters from the shoreline (Figure F-1; Glenn et al., 2013).

³ Glenn, C.R., Whittier, R.B., Dailer, M.L., Dulaiova, H., El-Kadi, A.I., Fackrell, J., Kelly, J.L., Waters, C.A., and J. Sevadjian, 2013. *Lahaina Groundwater Tracer Study – Lahaina, Maui, Hawaii*, Final Report, prepared for the State of Hawaii Department of Health, the U.S. Environmental Protection Agency, and the U.S. Army Engineer Research and Development Center. <https://archive.epa.gov/region9/water/archive/web/pdf/lahaina-gw-tracer-study-final-report-june-2013.pdf>

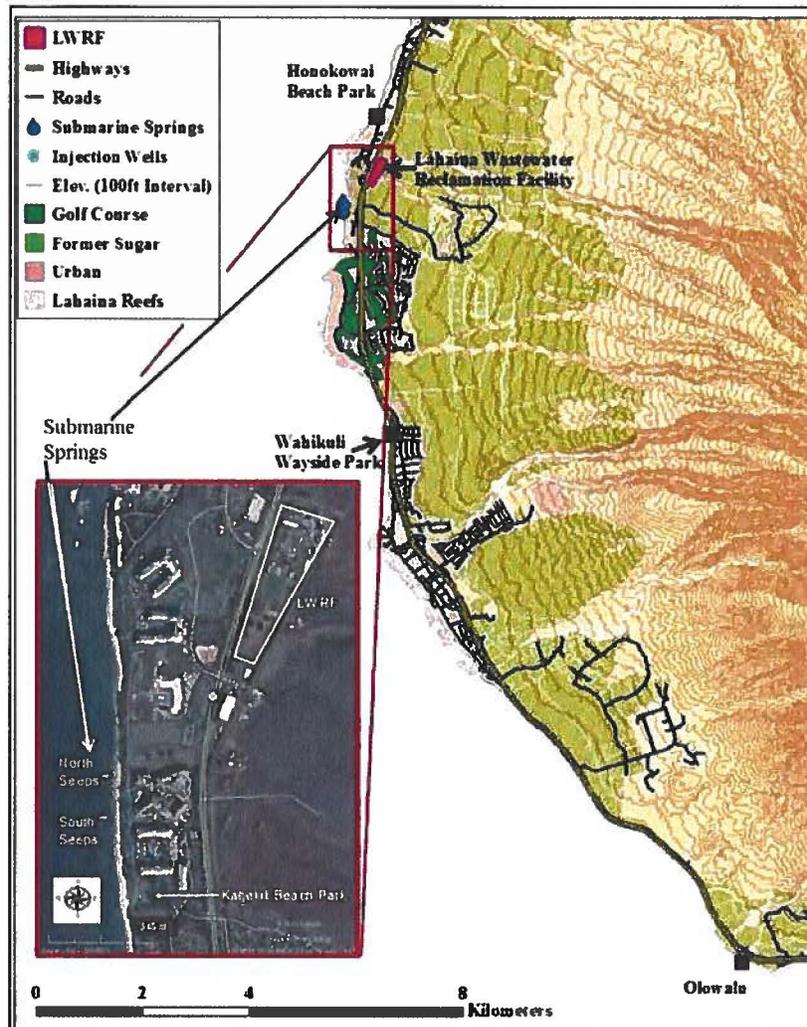


Figure F-1. Facility, SSG, and NSG Location Map (from 2013 Lahaina Groundwater Tracer Study)

The SSG is comprised of 106 seeps within a total area of 500 square meters (m^2), and the NSG is comprised of 183 seeps within a total area of 1,800 m^2 . The average size of an individual seep is 5.4 square centimeters (cm^2).

The spacing between the UIC wells at the Facility is such that there is significant interference between the injection flow fields. UIC Wells 3 and 4 inject effluent and are located between UIC Well 2 and the seeps where the dye tracer emergence was monitored. Therefore, the dominant flow from UIC Wells 3 and 4 may displace the injected effluent from UIC Well 2 around the UIC Wells 3 and 4 flow fields. Figure F-2 (Glenn et al., 2013) below shows the results of computer simulations using the United States Geological Survey (USGS)

groundwater flow model MODFLOW and the particle tracking model MODPATH, which show particle tracks created by injection into UIC Wells 2, 3, and 4. The model output indicates that with simultaneous injection into these three wells, as is the current operation at the Facility, the injectate from UIC Well 2 is displaced from a pathway to the submarine springs. This model shows that the injectate from UIC Well 2 is diverted to the east around the simulated barrier before taking a northwesterly path to the ocean.

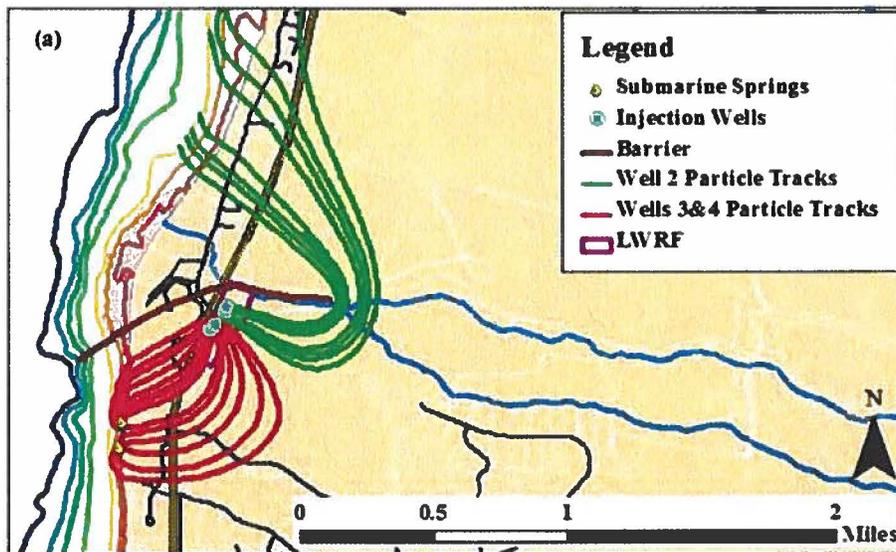


Figure F-2. Flow of Simulated Particles from UIC Wells 2, 3, and 4 Injectate

The dye tracer study demonstrated that it is possible to trace the flow of effluent from Wells 3 and 4 to nearby coastal waters and estimated that up to 64 percent of effluent from these wells discharged to the Pacific Ocean between 3 months and four years after injection into the wells. The resulting plume was observed to cover an area over 167 acres in size.

The dye tracer study also indicated that the average travel time for the tracer dye to flow from the UIC wells to the monitoring locations (SSG and NSG) was approximately 14 to 16 months. After the tracer dye was injected into Wells 3 and 4, it arrived at the coastal submarine spring sites in a minimum travel time of 84 days; the peak breakthrough curve at SSG and NSG occurred 9 and 10 months after the tracer dye injection, respectively. The average travel time to both monitoring locations exceeded one year (approximately 450 days). The study also noted that the tracer dye continues to be detected at the seep monitoring locations over two years after injection in the UIC wells.

In the absence of any injection, travel time would decrease to 50 days based on the average groundwater-flow velocity at the Facility.

According to the results from the dye tracer study, at the time of dye breakthrough curve completion, 64 percent of the dye-traced effluent had been recovered at the spring areas. Therefore, at a steady state, 64 percent of the treated effluent injected into the UIC wells discharges into nearshore ocean waters at the sampling locations. Based on these results, it can be assumed that over time, effluent from the Facility will reach the coastal waters.

Figure 1 of the draft permit provides a map showing the location of the Facility and related reservoirs. Figure 2 of the draft permit provides a map of the seep locations identified in the dye tracer study. Figure 3 of the draft permit provides a Facility treatment process schematic.

2. Receiving Water Classification

The Pacific Ocean off the West Maui Coast – Near Shore Waters to 60 Feet from Honolulu to Lahaina (Waterbody ID HIW00060) is designated as a “Class A Dry Open Coastal Waters” under HAR Section 11-54-06(b)(2)(B). Protected beneficial uses of Class A waters include recreation, aesthetic enjoyment, and the protection and propagation of fish, shellfish, and wildlife.

Effluent from the Facility is discharged to groundwater via four (4) on-site injection wells authorized under DOH UIC Permit No. UM-1357 (Federal UIC Permit No. HI596001). All four (4) wells are located seaward of the UIC line as defined in HAR Section 11-23-03. As such, groundwater at the UIC Well locations as well as treated wastewater discharges from the Facility, is not classified as a source of drinking water and is within an exempted aquifer at HAR Section 11-23-03. As discussed above, the effluent injected into the UIC Wells eventually surface in the nearshore surface waters identified above.

3. Ocean Discharge Criteria

The Director has considered the Ocean Discharge Criteria, established pursuant to Section 403(c) of the CWA for the discharge of pollutants into the territorial sea, the waters of the contiguous zone, or the oceans. The United States Environmental Protection Agency (EPA) has promulgated regulations for Ocean Discharge Criteria in Title 40 of the Code of Federal Regulations (CFR) 125, Subpart M. The Director has determined that the discharge will not cause unreasonable degradation to the marine environment. Based on current information, the Director proposes to issue the draft permit.

4. Impaired Water Bodies on CWA 303(d) List

CWA section 303(d) requires states to identify specific water bodies where water quality standards (WQSs) are not expected to be met after implementation of technology-based effluent limitations on point sources.

On June 1, 2022, the EPA approved the 2022 State of Hawaii Water Quality Monitoring and Assessment Report, which includes the 2022 303(d) List of Impaired Water Bodies in the State of Hawaii.

West Maui Coast – Near Shore Waters to 60 Feet from Honolua to Lahaina is listed as an impaired waterbody for total nitrogen, total phosphorus, nitrate plus nitrite nitrogen, turbidity, and total suspended solids (TSS) on the 2022 303(d) list. Currently, this section of the West Maui coastal waters is reported as a Category 5 waterbody. At present, no Total Maximum Daily Loads (TMDLs) have been established for this waterbody.

5. Summary of Existing Effluent Results

All results in the following tables were provided in the NPDES application, dated November 30, 2017.

Table F-3. Reported pH Values

Parameter	Units	Maximum Daily Value
pH (minimum)	Standard units	6.24
pH (maximum)	Standard units	7.00

Table F-4. Other Reported Values

Pollutant	Units	Maximum Daily Discharge	Average Daily Discharge	Number of Samples
Biochemical Oxygen Demand (BOD ₅)	mg/L	10.00	4.43	12
Fecal Coliform	MPN	1,600.00	1.43	365
Total Suspended Solids	mg/L	7.00	2.50	12
Ammonia Nitrogen	mg/L	2.60	0.46	12
Total Residual Chlorine	µg/L	0.77	0.17	11
Dissolved Oxygen	mg/L	10.19	7.26	11

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Pollutant	Units	Maximum Daily Discharge	Average Daily Discharge	Number of Samples
Total Kjeldahl Nitrogen	mg/L	3.80	2.17	12
Nitrate + Nitrite Nitrogen	mg/L	5.41	3.35	12
Oil and Grease	mg/L	0	0.00	10
Total Phosphorus	mg/L	1.10	0.49	12
Total Dissolved Solids	mg/L	12,300.00	2,244.00	10
Arsenic *	mg/L	0.061	0.0198	4
	gm/d	745.84	241.48	
Chromium *	mg/L	0.008	0.0033	4
	gm/d	97.81	39.74	
Copper *	mg/L	0.16	0.0110	4
	gm/d	195.6	134.5	
Mercury *	mg/L	0.0001	0.0000	4
	gm/d	-	-	
Nickel *	mg/L	0.001	0.0005	4
	gm/d	12.23	6.113	
Selenium *	mg/L	0.003	0.0013	4
	gm/d	36.68	15.28	
Zinc *	mg/L	0.027	0.0435	4
	gm/d	330.1	284.3	
Cyanide *	mg/L	0.030	0.0143	3
	gm/d	366.8	175.3	
Total Phenolic Compounds *	mg/L	0.008	0.0030	3
	gm/d	97.81	32.61	
Bromoform *	mg/L	0.86	0.410	4
	gm/d	10.51	4.982	
Chlorodibromo-Methane *	mg/L	1.44	0.360	4
	gm/d	17.61	4.402	
Chloroform *	mg/L	0.36	0.090	4
	gm/d	4.402	1.100	
Dichlorobromo-Methane *	mg/L	2.08	0.970	3
	gm/d	25.43	11.86	
4-Nitrophenol *	mg/L	10.41	2.603	4
	gm/d	127.28	31.82	

mg/L – milligrams per liter

MPN – most probable number

µg/L – micrograms per liter

* – Parameter analysis result above method detection level. All other parameters listed on EPA Form 3510-2A not detected.

6. Compliance Summary

Not applicable.

7. Planned Changes

The Permittee is currently constructing a 1.5 MGD equalization basin at the Facility. The basin is intended to stabilize the effluent flow rate from the Facility to address issues with the UV disinfection system during peak flows. Once complete, excess effluent will flow to the equalization basin where it will remain until the flow rate decreases. The Permittee is also planning to address infiltration from private laterals.

The Permittee has also planned for future expansion of the recycled water program at the Facility. From 2021 to 2022, the Permittee implemented a \$13.5 million upgrade on the Honokowai Reservoir, located at an altitude of 300 feet above the Facility location. In 2022, the Permittee invested \$10.5 million for Phase I of the R-1 Process Expansion, an expansion of the reuse program for the Kaanapali Golf Course. In 2023, the Permittee plans to implement the \$7 million Kaanapali Resort expansion and \$1 million Honoapiilani lateral line installation. The Honokowai R-1 expansion will continue in 2025 with a \$5 million investment. Phase II of the R-1 Process Expansion is planned to begin in 2027 with a \$12 million upgrade to the County of Maui Reservoir, EPS, and force main. The siphon and agricultural ditch from the reservoir will undergo a \$9 million to \$9.5 million upgrade/renovation in 2028 to provide recycled water to the three (3) landowners along the ditch, which is not considered a water of the United States. The average daily recycled water usage is projected to increase to 2.2 MGD, with a maximum daily reuse of 2.85 MGD, by fiscal year 2026. This will represent an average reuse rate of 56 percent and a maximum reuse rate of 72 percent. The average daily influent flow rate is projected to remain the same through 2026.

Figure F-3 below shows the individual locations of active, future, and potential future recycled water users.

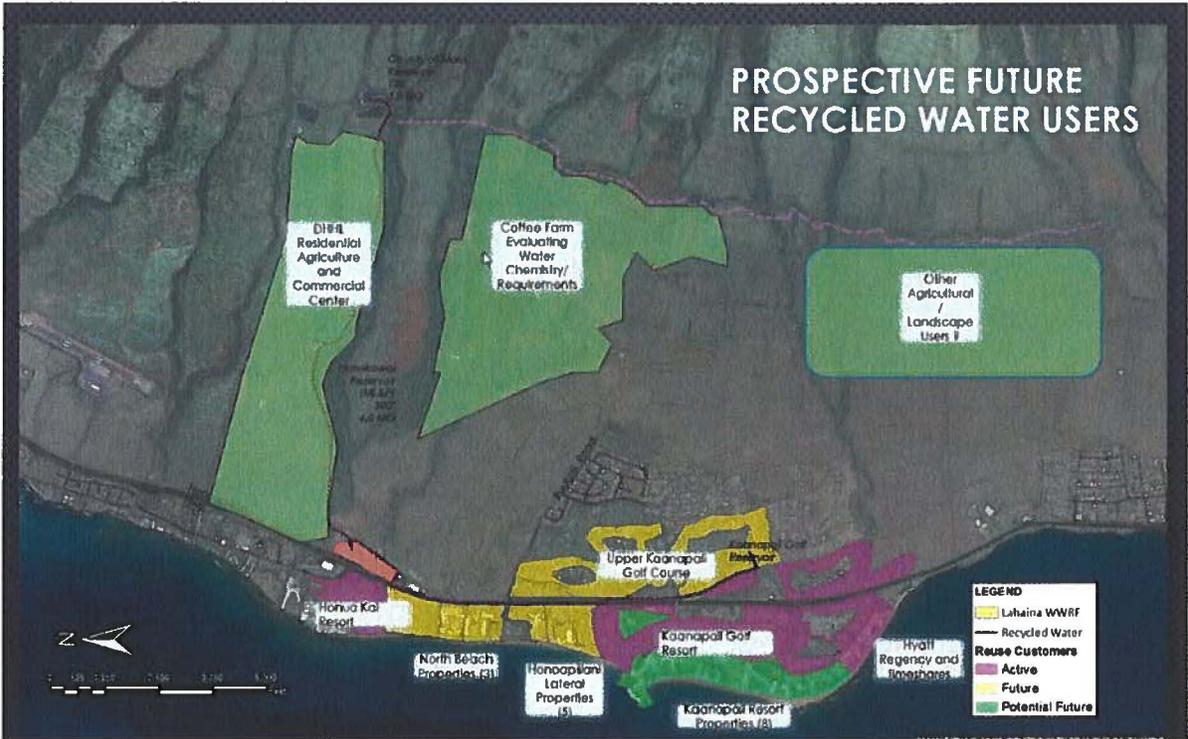


Figure F-3. Location of Active, Future, and Prospective Future Recycled Water Users for the Facility

8. Regulatory History

The Facility was previously operated under the DOH UIC Permit No. UM-1357 (Federal UIC Permit No. HI596001). The initial UIC permit was issued by the DOH in 1985 under the State UIC well program. In 1996, EPA notified the DOH that a federal UIC permit would be required for the Facility, which would require the Facility to blend effluent in order to meet more stringent nitrogen effluent limitations. In the late 1990s, EPA and the DOH filed two (2) lawsuits against the Permittee, Civil Nos. 98-00622 SOM and 99-0064 (3), alleging violations of federal and State law. In 1999, the Permittee entered into a Consent Decree with EPA and the DOH. The Consent Decree was filed November 8, 1999, in U.S. District Court pursuant to the CWA, and required the Permittee to develop and implement an asset management program and central maintenance program for the Facility.

In 2012, four (4) non-profit corporations, the Hawaii Wildlife Fund, Surfrider Foundation, Sierra Club-Maui Group, and West Maui Preservation Association, represented by Earthjustice, filed a complaint against the Permittee in the United States District Court for the Central District of Hawaii (District Court) alleging failure to obtain the appropriate NPDES permit for the Facility, and polluting waters of the United States in violation of the CWA. The plaintiffs argued that the UIC wells at the Facility were actually point sources, as supported by the results of a 2013 dye tracer study. In addition, the Permittee conceded that wastewater injected into Wells 1 and 2 also eventually entered the Pacific Ocean. According to the Permittee's expert, flow of UIC well effluent from the Facility to ocean waters equals approximately 3,456 gallons per meter of coastline per day, or approximately one gallon of every seven gallons of groundwater entering the ocean waters. The District Court granted the plaintiff's motion for partial summary judgement on May 30, 2014; and reaffirmed this finding on January 23, 2015, while also denying the defendant's motion for partial summary judgement (*Hawai'i Wildlife Fund et al., v. County of Maui*, 2015⁴).

Following the District Court denial of the Permittee's motion for certification for an interlocutory appeal and stay of the proceedings, the Permittee appealed to the United States Court of Appeals for the Ninth Circuit (Ninth Circuit) in 2017. On February 1, 2018, as amended on March 30, 2018, the Ninth Circuit affirmed the District Court's summary judgement rulings (*Hawai'i Wildlife Fund, et al., v. County of Maui*, 2018^{5,6}). The Ninth Circuit concluded that the UIC wells at the

⁴ *Hawai'i Wildlife Fund, et al., v. County of Maui*, Civil No. 12-00198 (2015). https://www.govinfo.gov/content/pkg/USCOURTS-hid-1_12-cv-00198/pdf/USCOURTS-hid-1_12-cv-00198-2.pdf

⁵ *Hawai'i Wildlife Fund, et al., v. County of Maui*, No. 15-17447 (2018). <https://www.govinfo.gov/content/pkg/USCOURTS-ca9-15-17447/pdf/USCOURTS-ca9-15-17447-0.pdf>

⁶ *Hawai'i Wildlife Fund, et al., v. County of Maui*, No. 15-17447 Amendment (2018). <https://www.govinfo.gov/content/pkg/USCOURTS-ca9-15-17447/pdf/USCOURTS-ca9-15-17447-1.pdf>

Facility constitute a point source, and that the CWA does not require a point source itself convey pollutants directly to navigable waters. The Ninth Circuit also concluded the Permittee was liable since the pollutants from the Facility effluent were “fairly traceable” from the point source to a navigable water such that the discharge was the “functional equivalent” of a discharge into the navigable water, and the pollutant levels reaching navigable water were more than “*de minimis*”. The amended finding further denied the Permittee’s petition for rehearing en banc (review of judgement).

A certiorari review of the case was granted by the United States Supreme Court (Supreme Court), and arguments were heard in November 2019. On April 23, 2020, the Supreme Court issued their decision (*County of Maui, Hawaii v. Hawai’i Wildlife Fund et al.*, 2020⁷), holding that an NPDES permit is required for discharges of pollutants from a point source that reach navigable waters after travelling through groundwater if that discharge is a “functional equivalent of a direct discharge from the point source into navigable waters”. The ruling stated that some of the factors that may prove relevant in determining whether a discharge is the “functional equivalent” of a direct discharge are:

- a. Transit time;
- b. Distance traveled;
- c. The nature of the material through which the pollutant travels;
- d. The extent to which the pollutant is diluted or chemically changed as it travels;
- e. The amount of pollutant entering the navigable waters relative to the amount of pollutant that leaves the point source;
- f. The manner by or area in which the pollutant enters the navigable waters; and
- g. The degree to which the pollutant has maintained its specific identity.

On July 26, 2021, the District Court case was amended (*Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021⁸), granting a summary judgement motion filed by the plaintiffs and denying a summary judgement motion filed by the defendants. The amended finding concluded that, in light of all the facts and evidence, the Permittee was required to obtain an NPDES permit under the CWA consistent with the analysis established by the Supreme Court. The District Court based this finding on information submitted by both parties regarding the relevant factors for determining “functional equivalent of a direct discharge”.

⁷ *County of Maui, Hawaii v. Hawaii Wildlife Fund et al.*, No. 18-260, 590 U.S. ____ (2020).
https://www.supremecourt.gov/opinions/19pdf/18-260_jifl.pdf

⁸ *Hawai’i Wildlife Fund, et al., v. County of Maui*, Civil No. 12-00198; Amended order granting plaintiff’s motion for summary judgement; Amended order denying defendant’s motion for summary judgement (2021).
https://www.govinfo.gov/content/pkg/USCOURTS-hid-1_12-cv-00198/pdf/USCOURTS-hid-1_12-cv-00198-8.pdf

The Permittee's District Court motion for reconsideration of the amended judgement was denied on October 20, 2021.

C. Applicable Plans, Policies, and Regulations

1. Hawaii Administrative Rules, Chapter 11-54

On November 12, 1982, HAR, Title 11, Department of Health, Chapter 54 became effective (hereinafter HAR Chapter 11-54). HAR Chapter 11-54 was amended and compiled on October 6, 1984; April 14, 1988; January 18, 1990; October 29, 1992; April 17, 2000; October 2, 2004; June 15, 2009; October 21, 2012; December 6, 2013; November 15, 2014; and the most recent amendment was on October 22, 2021. HAR Chapter 11-54 establishes beneficial uses and classifications of state waters, the state antidegradation policy, zones of mixing standards, and water quality criteria that are applicable to coastal waters of the Pacific Ocean.

Requirements of the draft permit implement HAR Chapter 11-54.

2. Hawaii Administrative Rules, Chapter 11-55

On November 27, 1981, HAR, Title 11, Department of Health, Chapter 55 became effective (hereinafter HAR Chapter 11-55). HAR Chapter 11-55 was amended and compiled on October 29, 1992; September 23, 1996; September 22, 1997; January 6, 2001; November 7, 2002; August 1, 2005; October 22, 2007; June 15, 2009; October 21, 2012; December 6, 2013; November 15, 2014; July 13, 2018; February 9, 2019; October 22, 2021; January 15, 2022; June 26, 2023; and the most recent amendment was on January 29, 2024. HAR Chapter 11-55 establishes standard permit conditions and requirements for NPDES permits issued in Hawaii.

Requirements of the draft permit implement HAR Chapter 11-55.

3. Hawaii Implementation Plan for Toxic Pollutants and Nutrients

The Hawaii Implementation Plan for Toxic Pollutants and Nutrients in National Pollutant Discharge Elimination System Permit Process (HIP) is a draft DOH document that establishes procedures for DOH staff in the implementation of the WQSs and procedures found in HAR Chapters 11-54 and 11-55 related to the NPDES permit process.

Guidance contained in the HIP was used to determine effluent limitations in the permit.

4. Title 40 Code of Federal Regulations (40 CFR)

Federal NPDES permitting requirements are contained in 40 CFR, which is titled *Protection of the Environment*. Many of the requirements contained in the applicable 40 CFR sections are also adopted as State rules.

Requirements of the permit are in accordance with federal NPDES permitting requirements contained in 40 CFR.

D. Rationale for Effluent Limitations and Discharge Specifications

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the Waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. NPDES regulations establish two (2) principal bases for effluent limitations. At 40 CFR 122.44(a), permits are required to include applicable TBELs and standards; and at 40 CFR 122.44(d), permits are required to include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. When both TBELs and WQBELs for a parameter exist, then the more protective effluent limitation is selected.

When numeric water quality objectives have not been established, but a discharge has the reasonable potential to cause or contribute to an excursion above a narrative criterion, WQBELs may be established using one (1) or more of three (3) methods described at 40 CFR 122.44(d) – 1) WQBELs may be established using a calculated water quality criterion derived from a proposed state criterion or an explicit state policy or regulation interpreting its narrative criterion; 2) WQBELs may be established on a case-by-case basis using EPA criteria guidance published under CWA Section 304(a); or 3) WQBELs may be established using an indicator parameter for the pollutant of concern. As stated in 40 CFR 123.25, States are not precluded from omitting or modifying any provisions to impose more stringent requirements. Specifically, HAR 11-55-19(a)(4) allows for more stringent limitations necessary to ensure water quality and treatment standards are met.

For POTWs, 40 CFR 122.45(b)(1) provides for effluent limitations being calculated based on design flow.

1. Applicable Water Quality Standards (WQs)

The beneficial uses and WQs that apply to the receiving waters for this discharge are from HAR Chapter 11-54.

a. HAR Chapter 11-54

HAR Chapter 11-54 Appendix E specifies numeric aquatic life standards for 57 toxic pollutants and human health standards for 112 toxic pollutants, as well as narrative standards for toxicity. Effluent limitations and provisions in the permit are based on available information to implement these standards.

b. WQSs

As specified in HAR Chapter 11-54, saltwater standards apply when the dissolved inorganic ion concentration is above 0.5 parts per thousand. Additionally, human health WQSs (where established) were also used in the reasonable potential analysis (RPA) to protect human health. Where both saltwater or freshwater standards and human health standards are available for a particular pollutant, the more stringent of the two will be used in the RPA.

Section 122.45(c) of 40 CFR requires effluent limitations for metals to be expressed as total recoverable metal. Since WQSs for metals are expressed in the dissolved form in HAR Chapter 11-54, factors or translators must be used to convert metal concentrations from dissolved to total recoverable. Default EPA conversion factors were used to convert the applicable dissolved criteria to total recoverable where applicable.

c. Receiving Water Hardness

HAR Chapter 11-54, contains water quality criteria for six (6) metals that vary as a function of hardness in freshwater. A lower hardness will result in a lower freshwater WQS. The metals with hardness dependent standards include cadmium, copper, lead, nickel, silver, and zinc. Ambient hardness values are used to calculate freshwater WQSs that are hardness dependent.

2. Technology-Based Effluent Limitations (TBELs)

a. Scope and Authority

Section 301(b) of the CWA and implementation of federal permit regulations at 40 CFR 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable WQSs. The discharge authorized by this permit must meet applicable minimum federal technology-based requirements. The federal regulations and related point source category applicable to the Facility are listed in Table F-5 below.

Table F-5. List of Federal Technology-Based Point Source Categories and Applicability

40 CFR Citation	Point Source Category Description	Applicable to Facility?
133	Secondary Treatment Regulation	Yes
405	Dairy Products Processing	No
406	Grain Mills	No
407	Canned and Preserved Fruits and Vegetables Processing	No
408	Canned and Preserved Seafood Processing	No
409	Sugar Processing	No
410	Textile Mills	No
411	Cement Manufacturing	No
412	Concentrated Animal Feeding Operations (CAFO)	No
413	Electroplating	No
414	Organic Chemicals, Plastics, and Synthetic Fibers	No
415	Inorganic Chemicals Manufacturing	No
417	Soap and Detergent Manufacturing	No
418	Fertilizer Manufacturing	No
419	Petroleum Refining	No
420	Iron and Steel Manufacturing	No
421	Nonferrous Metals Manufacturing	No
422	Phosphate Manufacturing	No
423	Steam Electric Power Generating	No
424	Ferroalloy Manufacturing	No
425	Leather Tanning and Finishing	No
426	Glass Manufacturing	No
427	Asbestos Manufacturing	No
428	Rubber Manufacturing	No
429	Timber Products Processing	No
430	The Pulp, Paper, and Paperboard	No
432	Meat and Poultry Products	No
433	Metal Finishing	No
434	Coal Mining	No
435	Oil and Gas Extraction	No
436	Mineral Mining and Processing	No
437	The Centralized Waste Treatment	No
438	Metal Products and Machinery	No
439	Pharmaceutical Manufacturing	No
440	Ore Mining and Dressing	No
441	Dental Office	No
442	Transportation Equipment Cleaning	No
443	Paving and Roofing Materials (Tars and Asphalt)	No
444	Waste Combustors	No

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40 CFR Citation	Point Source Category Description	Applicable to Facility?
445	Landfills	No
446	Paint Formulating	No
447	Ink Formulating	No
449	Airport Deicing	No
450	Construction and Development	No
451	Concentrated Aquatic Animal Production	No
454	Gum and Wood Chemicals Manufacturing	No
455	Pesticide Chemicals	No
457	Explosives Manufacturing	No
458	Carbon Black Manufacturing	No
459	Photographic	No
460	Hospital	No
461	Battery Manufacturing	No
463	Plastics Molding and Forming	No
464	Metal Molding and Casting	No
465	Coil Coating	No
466	Porcelain Enameling	No
467	Aluminum Forming	No
468	Copper Forming	No
469	Electrical and Electronic Components	No
471	Nonferrous Metals Forming and Metal Powders	No

The discharge authorized in the draft permit must meet minimum federal technology-based requirements based on secondary treatment standards at 40 CFR 133.

The 1972 CWA required Publicly Owned Treatment Works (POTWs) to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment", that all POTWs were required to meet by July 1, 1977. More specifically, Section 301(b)(1)(B) of the CWA requires that the EPA develop secondary treatment standards for POTWs as defined in Section 304(d)(1) of the CWA. Based on this statutory requirement, the EPA developed secondary treatment regulations, which are specified in 40 CFR 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of BOD₅, TSS, and pH.

An important aspect of municipal wastewater is that it is amenable to biological treatment. The biological treatment component of a municipal treatment plant is termed secondary treatment and is usually preceded by simple settling (primary treatment). In response to the CWA requirements,

the EPA evaluated performance data for POTWs practicing secondary treatment and established performance standards based on its evaluation. Secondary treatment standards, therefore, are defined by the limitations provided in Table F-6 below.

Table F-6. Federal Secondary Treatment Standards

Parameter	Units	30-Day Average	7-Day Average
BOD ₅ ¹	mg/L	30	45
TSS ¹	mg/L	30	45
pH	standard units	6.0 – 9.0 (instantaneous)	

¹ The 30-day average percent removal shall not be less than 85 percent.

Federal regulations at 40 CFR 125.3(a)(1) require TBELs for POTWs to be placed in NPDES permits based on secondary treatment standards or equivalent to secondary treatment standards.

b. Applicable TBELs

At 40 CFR 133 in the Secondary Treatment Regulations, EPA has established the minimum required level of effluent quality attainable by secondary treatment shown in Table F-7 below. The standards in Table F-7 are applicable to the Facility and therefore established in the draft permit as TBELs.

Table F-7. Applicable TBELs

Parameter	Units	30-Day Average	7-Day Average
BOD ₅ ¹	mg/L	30	45
TSS ¹	mg/L	30	45
pH	standard units	6.0 – 9.0	

¹ The 30-day average percent removal shall not be less than 85 percent.

c. Mass-based TBELs

HAR Section 11-55-20 requires that daily quantitative limitations by weight be established where possible. Additionally, 40 CFR 122.45(f)(1) specifies that all pollutants limited in permits shall have limitations expressed in terms of mass. Thus, in addition to concentration-based effluent limitations, mass-based effluent limitations [in pounds per day (lbs/day)] have been established for BOD₅ and TSS based on the following formula:

$$\text{lbs/day} = 8.34 \times \text{Concentration (mg/L)} \times \text{Flow (MGD)}$$

For POTWs, 40 CFR 122.45(b)(1) provides for effluent limitations being calculated based on design flow. The design flow for the Facility is 9 MGD.

40 CFR 122.45(f)(1)(i) provides an exception to the requirement for mass limits for pollutants which cannot be appropriately expressed by mass. Due to the nature of certain pollutants, mass-based effluent limitations are impractical to establish (e.g., temperature, pH, salinity, turbidity, toxicity). For example, pH is the measure of how chemically acidic or basic the subject liquid is and cannot be expressed in terms of mass. As such, mass based effluent limitations are not required to be established when reasonable potential exists if it is impractical to establish a mass-based effluent limitation due to the nature of the pollutant.

3. Water Quality-Based Effluent Limitations (WQBELs)

a. Scope and Authority

NPDES Regulations at 40 CFR 122.44(d) require permits to include WQBELs for pollutants, including toxicity, that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an exceedance of a WQS, including numeric and narrative objectives within a standard (reasonable potential). As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for all pollutants *“which the Director determines are or may be discharged at a level that will cause, have reasonable potential to cause, or contribute to an excursion above any state water quality standard.”*

The process for determining reasonable potential and calculating WQBELs, when necessary, is intended to protect the receiving waters as specified in HAR Chapter 11-54. When WQBELs are necessary to protect the receiving waters, DOH has followed the requirements of HAR Chapter 11-54, the HIP, and other applicable State and federal guidance policies to determine WQBELs in the draft permit.

Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established in accordance with the requirements of 40 CFR 122.44(d)(1)(vi), using (1) EPA criteria guidance under CWA Section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state’s narrative criterion, supplemented with other relevant information.

b. Determining the Need for WQBELs

NPDES regulations at 40 CFR 122.44(d) require effluent limitations to control all pollutants which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State WQS. Assessing whether a pollutant has reasonable potential is the fundamental step in determining if a WQBEL is required. Using the methods prescribed in the HIP, information provided with the permit renewal applications and public testimony was analyzed to determine if the discharge demonstrates reasonable potential.

c. Reasonable Potential Analysis (RPA) Qualitative Methodology

If sufficient effluent data is not available to perform a quantitative RPA, or the permit writer has other information to determine if a WQBEL may be required, a qualitative RPA may be conducted.

Other information that may be used in conducting a qualitative RPA includes the facility type, the discharge type, lack of dilution, history of compliance problems, potential toxic impact of discharge, fish tissue data, water quality and beneficial uses of the receiving water, CWA Section 303(d) listings, and the presence of endangered or threatened species or critical habitat.

If the receiving water is impaired and a TMDL has been developed with a wasteload allocation (WLA) applicable to the facility, reasonable potential exists, and an effluent limit must be implemented consistent with the requirements of the TMDL.

Due to the lack of recent representative effluent data, and the type of discharge being domestic wastewater, the DOH conducted qualitative RPAs for toxic pollutants at HAR Chapter 11-54 Appendix E, pH, enterococcus, ammonia nitrogen, total nitrogen, total phosphorus, and turbidity.

(1) HAR Chapter 11-54 Appendix E Pollutants

An RPA is used to determine if a specified discharge demonstrates reasonable potential to exceed the applicable WQSs. Typically, direct surface water discharges which utilize quantitative RPAs for toxic pollutants with numeric WQSs, specified in HAR Section 11-54-4, use evaluation methods based on the EPA's *Technical Support Document for Water Quality-Based Toxics Control* (the TSD, EPA/505/2-90-001, 1991). This method combines knowledge of effluent variability as estimated by a coefficient of variation with the uncertainty due to a limited number of data to project an estimated maximum receiving water concentration as a result of the effluent. The estimated receiving water

concentration is calculated as the upper bound of the expected lognormal distribution of effluent concentrations at a high confidence level. The projected maximum receiving water concentration, after consideration of dilution (where applicable), is then compared to the most stringent applicable WQS in HAR Chapter 11-54, to determine if the pollutant has reasonable potential. The projected maximum receiving water concentration has reasonable potential if it cannot be demonstrated with a high confidence level that the upper bound of the lognormal distribution of effluent concentrations is below the receiving water standards. However, the TSD method for conducting RPAs was developed for application to direct discharges and the corresponding procedures make assumptions related to data variability, a predictable maximum effluent quality, conservative nature of the pollutants, immediate discharge to the receiving water, known dilution, consistent pollutant speciation (i.e. a lack of transformation of a given pollutant during transport/discharge), and possible impacts on the designated uses of the receiving water. For subsurface discharges, many of these assumptions and related procedures may not be appropriate and additional considerations or deviation from traditional TSD approaches are necessary for performing any future quantitative RPAs.

At present, the subsurface discharges from the Facility to the receiving water has no recognized receiving water Zone of Mixing (ZOM) nor is there an accepted available dilution associated with possible mixing of the effluent in the subsurface environment. Further, the relationship between pollutants discharged to the groundwater injection wells and the characteristics of the effluent that is discharged into the Pacific Ocean is not fully understood nor chemically characterized. Therefore, a typical quantitative RPA was not able to be conducted for toxic pollutants for the draft permit issuance. Where the TSD approach was infeasible due to the unique nature of the discharge through groundwater, qualitative RPA procedures were considered.

As stated above, due to the wide variety of pollutants that could be present, and the proven presence of various pollutants within these types of discharges from these activities, the DOH has determined that there is reasonable potential for the discharges from the Facility to contribute to or cause an exceedance of the WQSs for the toxic pollutants at HAR Chapter 11-54 Appendix E. Further, this permit established a whole effluent toxicity limit without dilution that is anticipated to be protective of water quality from unidentified pollutants and the synergistic impacts of toxic pollutants within the effluent.

(2) pH

Federal regulations at 40 CFR 125.3(a)(1) require TBELs for POTWs to be placed in NPDES permits based on secondary treatment standards or equivalent to secondary treatment standards. The secondary treatment standards include pH to be limit is 6.0 to 9.0 standard units.

Specific pH criteria for the receiving water stated at HAR 11-54-6(b)(3) states, "Shall not deviate more than 0.5 units from a value of 8.1, except at coastal locations where and when freshwater from stream, storm drain, or groundwater discharge may depress the pH to a minimum level of 7.0." The WQBEL would be 7.6 to 8.6 standard units.

Where there is both a TBEL and WQBEL for a pollutant, the most protective effluent limitation is established as the final effluent limitation. The permit contains a WQBEL based on the water quality standards of 7.6 to 8.6 standards units.

(3) Total Nitrogen, Total Phosphorus, Turbidity, Total Suspended Solids

West Maui Coast – Near Shore Waters to 60 Feet from Honolua to Lahaina is listed as an impaired waterbody for total nitrogen, total phosphorus, nitrate plus nitrite nitrogen, turbidity, and total suspended solids (TSS) on the 2022 303(d) list. At present, no Total Maximum Daily Loads (TMDLs) have been established for this waterbody.

RPA and monitoring requirements for nitrate plus nitrite nitrogen are not included in the draft permit and are unnecessary. Nitrate plus nitrite nitrogen is a constituent of the total nitrogen series. Since various forms of nitrogen change in the receiving water, total nitrogen is the most appropriate characterization of water quality.

Specific criteria for the receiving water are stated at HAR 11-54-6(b)(3). There is no TSS criteria for the receiving water, but it is regulated as a TBEL.

(4) Ammonia Nitrogen

Ammonia nitrogen is one of the common pollutants in wastewater. It consumes dissolved oxygen in water and causes eutrophication in water bodies and is an important control indicator in wastewater treatment. Ammonia nitrogen has a wide range of sources, mainly originating from industrial, agricultural, and municipal wastewater discharges.

(5) Enterococcus

The discharge consists of treated sewage which may contain pathogens at elevated concentrations if not properly disinfected, sufficient to impact human health or the beneficial uses of the receiving water. To ensure the protection of human health, the DOH determines that the effluent has reasonable potential to cause or contribute to an exceedance of State WQSs.

As discussed in Part B.1 of this Fact Sheet, the effluent discharged by the Facility is comprised of municipal wastewater. Due to the wide variety of pollutants that could be present, and the proven presence of various pollutants within these types of discharges from these activities, the DOH has determined that there is reasonable potential for the discharges from the Facility to contribute to or cause an exceedance of the WQSs for the toxic pollutants at HAR Chapter 11-54 Appendix E, as well as the applicable WQSs for pH, total nitrogen, total phosphorus, turbidity, total suspended solids, ammonia nitrogen, and enterococcus. Due to this determination, WQBELs for these pollutants, which have numeric criteria in the WQSs, have been established in the draft permit as discussed in Part D.3.e.(3) of this Fact Sheet.

d. Summarized RPA Results

Following the procedures set above, Table F-8 below summarizes the results of the qualitative RPA.

Table F-8. Summary of RPA Results

Parameter	RPA Results
HAR Chapter 11-54 Appendix E Pollutants	RP*
pH	RP*
Total Nitrogen	RP*
Total Phosphorus	RP*
Turbidity	RP*
Total Suspended Solids	RP*
Ammonia Nitrogen	RP*
Enterococcus	RP*

* - Based on determination of the qualitative analyses discussed in Part D.3.c of this Fact Sheet.

e. WQBEL Calculation

(1) WQBEL Calculations for HAR Chapter 11-54 Appendix E Pollutants

Specific pollutant limits may be calculated for both the protection of aquatic life and human health.

(a) **WQBELs Based on Aquatic Life Standards**

The HIP categorizes a discharge from a facility into one of four categories: 1) marine discharges through submerged outfalls; 2) discharges without submerged outfalls; 3) discharges to streams; or 4) high-rate discharges. Once a discharge has been categorized, effluent limitations for pollutants with reasonable potential can be calculated, as described below.

- (i) For marine discharges through submerged outfalls, the daily maximum effluent limitation shall be the product of the chronic criteria and the minimum dilution factor. Effluent limitations shall be applied as 30-day averages for non-carcinogens, equal to the product of the applicable criteria and the minimum dilution factor. Effluent limitations shall be applied as annual averages for carcinogens, equal to the product of the applicable criteria and the average dilution factor;
- (ii) For discharges without submerged outfalls, the daily maximum effluent limitation shall be the acute criteria. Effluent limitations shall be applied as 30-day averages for non-carcinogens, equal to the product of the applicable criteria and the minimum dilution factor. Effluent limitations shall be applied as annual averages for carcinogens, equal to the product of the applicable criteria and the average dilution factor;
- (iii) For discharges to streams, the daily maximum effluent limitation shall be the most stringent of the acute criteria, and the product of the chronic criteria and dilution. Effluent limitations shall be applied as 30-day averages for non-carcinogens, equal to the product of the applicable criteria and the minimum dilution factor. Effluent limitations shall be applied as annual averages for carcinogens, equal to the product of the applicable criteria and the average dilution factor; and
- (iv) For high rate outfalls, the maximum limit for a pollutant is equal to the product of the acute criteria and the minimum dilution factor.

(b) WQBELs Based on Human Health Standards

The HIP specifies that the criteria for fish consumption are based upon the bioaccumulation of toxics in aquatic organisms followed by consumption by humans. Limits based on the fish consumption criteria should be applied as 30-day averages for non-carcinogens and annual averages for carcinogens.

(2) WQBEL Calculations for HAR Section 11-54-6 Pollutants

In order to implement the criteria for nutrients, the DOH evaluates compliance on a calendar year. To be protective of the geometric mean criteria, the WQBEL must ensure that the geometric mean for the pollutant within the receiving water does not exceed the applicable criteria. If dilution is available, compliance with the criteria must be achieved at the edge of the ZOM on an annual basis. If dilution is not available, compliance with the criteria must be achieved at the point of discharge.

If reasonable potential exists and dilution is available, an annual geometric mean effluent limitation is established based on the product of the criteria and the average dilution at the edge of the ZOM. Where dilution is not available, the criteria is applied directly at the end-of-pipe. An annual geometric mean limitation is anticipated to be protective of water quality since the nutrient criteria are biological, and ecological response variables are known to lag and be impacted by loading over extended periods of time as opposed to day-to-day fluctuations.

To address concerns of short-term loading to the receiving water (e.g., intermittent discharges) that may ultimately contribute to exceedances of the annual geometric mean limit, a single sample maximum limit may also be established based on the product of the applicable percentile criteria and the average dilution at the edge of the ZOM. Where dilution is not available, the criteria is applied directly at the end-of-pipe. The criteria used for establishing the single sample maximum limit is determined based on the anticipated frequency of discharge. For continuous discharges, or discharges anticipated to occur greater than 10 percent of the time, the 10th percentile criteria is used to calculate the single sample maximum limit. For discharges of storm water, or discharges otherwise anticipated to occur equal to or less than 10 percent of the time, the 2nd percentile criteria is used to calculate the single sample maximum limit.

(3) Calculation of Pollutant-Specific WQBELs

The qualitative RPA indicated that all 132 toxic pollutants with salt water and/or human health criteria at HAR Chapter 11-54 Appendix E have reasonable potential to cause or contribute to an excursion above State WQs. In addition, the qualitative RPA indicated that pH, total nitrogen, total phosphorus, turbidity, total suspended solids, ammonia nitrogen, and enterococcus also have reasonable potential to cause or contribute to an excursion above the applicable State WQs.

Therefore, the draft permit establishes WQBELs for all HAR Chapter 11-54 Appendix E pollutants, pH, enterococcus, ammonia nitrogen, total nitrogen, total phosphorus, and turbidity as discussed in detail below.

(a) HAR Chapter 11-54 Appendix E Pollutants

HAR Chapter 11-54 Appendix E includes the WQs for 71 pollutants classified as non-carcinogens, and 61 pollutants classified as carcinogens. As discussed in Part D.3.c.(1) of this Fact Sheet, the DOH determined that the discharge from the Facility has the reasonable potential to cause or contribute to an exceedance of the applicable criteria for all HAR Chapter 11-54 Appendix E pollutants. Therefore, WQBELs are established for these pollutants in the draft permit as discussed below.

Dilution has not been granted to the Facility; therefore, the applicable criteria are established as the WQBELs with compliance required at the EML. As stated in Part D.3.e.(1)(a)(ii) of this Fact Sheet, for discharges without submerged outfalls, the acute criterion is established as a daily maximum WQBEL for all pollutants. In addition, 30-day average WQBELs for non-carcinogens and annual average WQBELs for carcinogens are established based on the applicable human health criteria.

Therefore, WQBELs for HAR Chapter 11-54 Appendix E pollutants are established in the draft permit for EML Serial No. 001 as daily maximums, monthly averages, and/or annual averages. For the daily maximum WQBELs, the DOH considered both the applicable acute and chronic aquatic life criteria and established the most stringent as the WQBEL. The DOH considered both the chronic and acute criteria due to the lack of mixing from the non-submerged outfalls, and the nature and flow rate of the discharge providing the potential for large volumes of pollutants to be discharged over a short period of time. For the monthly average and annual average WQBELs, a monthly average WQBEL was established for non-

carcinogen pollutants with applicable human health criteria, and an annual average WQBEL was established for carcinogen pollutants with applicable human health criteria. If the daily maximum WQBEL was more stringent than the monthly average or annual average WQBEL for a pollutant, only a daily maximum WQBEL was established. The final WQBELs established in the draft permit for HAR Chapter 11-54 Appendix E pollutants are listed in Appendix 1 of this Fact Sheet.

(b) pH

HAR Section 11-54-6 establishes WQSs applicable to marine waters for specific pollutants, including pH. Specific pH criteria for the receiving water stated at HAR 11-54-6(b)(3) states, "Shall not deviate more than 0.5 units from a value of 8.1, except at coastal locations where and when freshwater from stream, storm drain, or groundwater discharge may depress the pH to a minimum level of 7.0." The WQBEL would be 7.6 to 8.6 standard units.

As discussed in Part D.3.c.(2) of this Fact Sheet, the DOH determined that the discharge from the Facility has the reasonable potential to cause or contribute to an exceedance of the applicable criteria for pH. Therefore, the draft permit establishes WQBELs for pH of 7.6 to 8.6 standard units at EML Serial No. 001 to ensure that the effluent does not cause or contribute to an exceedance of the WQSs. Dilution has not been granted to the Facility; therefore, the applicable criteria are established as the WQBELs with compliance required at the end-of-pipe.

(c) Total Nitrogen, Ammonia Nitrogen, Total Phosphorus, Turbidity, Total Suspended Solids

HAR Section 11-54-6 establishes WQSs applicable to marine waters for specific pollutants, including ammonia nitrogen, total nitrogen, total phosphorus, and turbidity. Table F-9 below lists the water quality criteria for these pollutants that are applicable to the receiving waters. These criteria are established as geometric means and not-to-exceed percentiles.

Table F-9. Water Quality Criteria for Dry Open Coastal Waters at HAR Section 11-54-6(b)(3)

Parameter	Geometric Mean	Value not to exceed more than 10% of the time	Value not to exceed more than 2% of the time
Total Nitrogen (µg/L)	110.00	180.00	250.00
Ammonia Nitrogen (µg/L)	2.00	5.00	9.00
Total Phosphorus (µg/L)	16.00	30.00	45.00
Turbidity (NTU)	0.20	0.50	1.00

µg/L – Micrograms per Liter
 NTU – Nephelometric Turbidity Units

As discussed in Parts D.3.c.(3) and (4) of this Fact Sheet, the DOH determined that the discharge from the Facility has the reasonable potential to cause or contribute to an exceedance of the applicable criteria for ammonia nitrogen, total nitrogen, total phosphorus, and turbidity. Therefore, WQBELs are established for these pollutants in the draft permit as discussed below.

Dilution has not been granted to the Facility; therefore, the applicable criteria are established as the WQBELs with compliance required at EML Serial No. 001. As stated in Part D.3.e.(2) of this Fact Sheet, annual geometric mean WQBELs are established for long-term loading, while single sample maximum WQBELs can also be established for short-term loading. In cases where dilution has not been granted, the geometric mean criteria is established as the annual geometric mean WQBEL, and the criteria used for establishing the single sample maximum WQBEL is determined based on the anticipated frequency of discharge. For continuous discharges, or discharges anticipated to occur greater than 10 percent of the time, the 10th percentile criteria is established as the single sample maximum WQBEL. For discharges of storm water, or discharges otherwise anticipated to occur equal to or less than 10 percent of the time, the 2nd percentile criteria is established as the single sample maximum WQBEL.

The discharge to the injection wells is continuous. Therefore, the WQBELs established in the draft permit for ammonia nitrogen, total nitrogen, total phosphorus, and turbidity, listed in Table F-10 below, are based on the geometric mean and 10th percentile criteria applicable to dry open coastal waters at HAR Section 11-54-6(b)(3).

Table F-10. WQBELs for Total Nitrogen, Ammonia Nitrogen, Total Phosphorus, and Turbidity at EML Serial No. 001

Parameter	Annual Geometric Mean	Single Sample Maximum
Total Nitrogen (µg/L)	110.00	180.00
Ammonia Nitrogen (µg/L)	2.00	5.00
Total Phosphorus (µg/L)	16.00	30.00
Turbidity (NTU)	0.20	0.50

µg/L – Micrograms per Liter
 NTU – Nephelometric Turbidity Units

(d) Enterococcus

HAR Section 11-54-8 establishes recreational criteria for all State waters that are designed to protect the public from exposure to harmful levels of pathogens while participating in water-contact activities. HAR Section 11-54-8(b) specifies that enterococcus content shall not exceed a geometric mean of 35 colony forming units per 100 milliliters (CFU/100mL) over any 30-day interval. HAR Section 11-54-8(c) specifies that a statistical threshold value (STV) of 130 CFU/100mL shall be used for enterococcus. The STV shall not be exceeded by more than 10 percent of samples taken within the same 30-day interval in which the geometric mean is calculated. The DOH's current implementation procedures for compliance with the enterococcus WQSs is to establish a monthly geometric mean effluent limitation equal to the geometric mean WQS of 35 CFU/100 mL multiplied by the average dilution at the edge of the ZID (if dilution is granted). A daily maximum effluent limitation equal to the STV WQS of 130 CFU/100 mL multiplied by the minimum initial dilution at the edge of the ZID (if dilution is granted) shall also be established.

As discussed in Part D.3.(c)(5) of this Fact Sheet, the DOH determined that the discharge from the Facility has the reasonable potential to cause or contribute to an exceedance of the applicable criteria for enterococcus. Therefore, the draft permit establishes WQBELs for enterococcus of 35 CFU/100 mL as a monthly geometric mean, and 130 CFU/100 mL as a daily maximum at EML Serial No. 001. Dilution has not been granted to the Facility; therefore, the applicable criteria are established as the WQBELs with compliance required at the end-of-pipe.

f. Mass-Based WQBELs

HAR Section 11-55-20 requires that daily quantitative limitations by weight be established where possible. Additionally, 40 CFR 122.45(f)(1) specifies that all pollutants limited in permits shall have limitations expressed in terms of mass [in pounds-per-day (lbs/day)] based on the following formula:

$$\text{lbs/day} = 8.34 \times \text{Concentration (mg/L)} \times \text{Flow (MGD)}$$

40 CFR 122.45(b)(1) states in the case of POTWs, permit effluent limitations shall be calculated based on design flow. 40 CFR 122.45(f)(1)(i) provides an exception to the requirement for mass limits for pollutants which cannot be appropriately expressed by mass. Due to the nature of certain pollutants, mass-based effluent limitations are impractical to establish (e.g., temperature, pH, salinity, turbidity, toxicity). For example, pH is the measure of how chemically acidic or basic the subject liquid is and cannot be expressed in terms of mass. As such, mass-based effluent limitations are not required to be established when reasonable potential exists if it is impractical to establish a mass-based effluent limitation due to the nature of the pollutant.

g. Final WQBELs

Final limits for EML Serial No. 001, including final WQBELs, are specified in Appendix 1 of this Fact Sheet.

4. Whole Effluent Toxicity (WET)

Reasonable potential for WET has been determined for EML Serial No. 001 due to the nature of the discharge (municipal treated wastewater). WET limitations protect receiving water quality from the aggregated toxic effect of a mixture of pollutants in an effluent. WET tests measure the degree of response of exposed aquatic test organisms to an effluent or receiving water. The WET approach allows for protection of the narrative criterion specified in HAR, Section 11-54-4(c)(2), while implementing Hawaii's numeric WQS for toxicity. There are two (2) types of WET tests – acute and chronic. An acute toxicity test is conducted over a short period of time and measures mortality. A chronic toxicity test is generally conducted over a longer period of time and may measure mortality, reproduction, or growth.

The draft permit establishes a chronic WET effluent limitation at EML Serial No. 001 for *Ceriodaphnia dubia*, *Pimephales promelas*, and *Raphidocelis subcapitata* (formerly known as *Selenastrum capricornutum*). The use of these freshwater species is favorable in this particular situation over the current marine species, *Tripneustes gratilla*, despite the final receiving water being

marine. The discharge from the Facility is freshwater and would require the use of added salt to conduct tests with a marine species, however *T. gratilla* has demonstrated intolerance for this procedure and would produce unreliable data. While a marine species is generally preferable for discharges to marine receiving waters, given the limitations of *T. gratilla*, freshwater species are anticipated to have adequate sensitivity to elevated pollutant levels to detect pollutants at toxic levels or aggregated toxic effects that are relatively analogous for pollutant categories for marine species. Further, the discharge is occurring through subsurface wells to fresh or brackish groundwater, prior to surfacing in the marine receiving water.

In order to improve WET analysis, DOH has implemented EPA's Test of Significant Toxicity Approach (TST) for WET effluent limitations within the State.

As previously discussed, reasonable potential for WET has been determined for EML Serial No. 001 and an effluent limitation must be established in accordance with 40 CFR 122.44(d)(1). Further, a WET effluent limitation and monitoring are necessary to ensure compliance with applicable WQS in HAR, Section 11-54-4(c)(2).

The proposed WET limitation and monitoring requirements for a discharge which is submerged are incorporated into the draft permit in accordance with the EPA *National Policy on Water Quality-Based Permit Limits for Toxic Pollutants* issued on March 9, 1984 (49 FR 9016); HAR, Section 11-54-4(c)(2)(B); and EPA's *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, 2010).

Consistent with HAR, Section 11-54-4(c)(2)(B), the draft permit establishes the chronic toxicity effluent limitation based on the TST hypothesis testing approach. The TST approach was designed to statistically compare a test species response to the in-stream waste concentration (IWC) and a control. For continuous discharges through submerged outfalls, HAR, Section 11-54-4(c)(3)(A)(i) requires the no observed effect concentration (NOEC), expressed as a percent of effluent concentration, to not be less than 100 divided by the minimum dilution. **Because dilution is currently unknown for this discharge, dilution was not applied in this method. The IWC (discussed below) shall be equal to the effluent quality.**

The following equation is used to calculate the IWC where dilution is granted (EML Serial No. 001):

$$\begin{aligned} \text{IWC} &= 100/\text{critical dilution factor} \\ &= 100/1 \\ &= 100\% \end{aligned}$$

For any one chronic toxicity test, the chronic WET permit limit that must be met is rejection of the null hypothesis (Ho):

$$\text{IWC (percent effluent) mean response} \leq 0.75 \times \text{Control mean response.}$$

A test result that rejects this null hypothesis is reported as "Pass". A test result that does not reject this null hypothesis is reported as "Fail".

The acute and chronic biological effect levels (effect levels of 20% and 25%, respectively, or b values of 0.80 and 0.75, respectively) incorporated into the TST define EPA's unacceptable risks to aquatic organisms and substantially decrease the uncertainties associated with the results obtained from EPA's traditionally used statistical endpoints for WET. Furthermore, the TST reduces the need for multiple test concentrations which, in turn, reduces laboratory costs for dischargers while improving data interpretation. A significant improvement offered by the TST approach over traditional hypothesis testing is the inclusion of an acceptable false negative rate. While calculating a range of percent minimum significant differences (PMSDs) provides an indirect measure of power for the traditional hypothesis testing approach, setting appropriate levels for β and α using the TST approach establishes explicit test power and provides motivation to decrease within test variability which significantly reduces the risk of under reporting toxic events (U.S. EPA 2010⁹).

Taken together, these refinements simplify toxicity analyses, provide dischargers with the positive incentive to generate high quality data, and afford effective protection to aquatic life.

A WET effluent limitation based on the TST hypothesis testing approach is protective of the WQS for toxicity contained in HAR, Section 11-54-4(c)(2)(B) and is not considered to be less stringent. Use of the TST approach is consistent with the requirements of State and federal anti-backsliding regulations.

⁹ U.S. Environmental Protection Agency. 2010. *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document*. EPA 833-R-10-003. Washington, DC: Office of Wastewater Management.

Effluent dilution water and control water shall be receiving water or lab water, as described in the test methods manual *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136, 1995). If the dilution water is different from test organism culture water, then a second control using culture water shall also be used.

Under the draft permit, the Permittee will be required to conduct WET testing on these three (3) species: *Pimephales promelas*, *Ceriodaphnia dubia*, and *Raphidocelis subcapitata* (formerly known as *Selenastrum capricornutum*) in accordance with appropriate test methods, rotating the test species month by month such that each test species is tested once every quarter.

5. Summary of Final Effluent Limitations

Final effluent limitations are based on WQBELs. Final effluent limitations for revised permits must follow anti-backsliding requirements to ensure that the most stringent limitation is applied to the revised permit, unless a less stringent effluent limitation is justified under any exceptions under the anti-backsliding requirements specified in Part D.6 of this Fact Sheet. Since this is the first NPDES permit issuance for this Facility, anti-backsliding requirements are satisfied.

A summary of final effluent limitations is specified in Appendix 1 of this Fact Sheet.

6. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations based on case-by-case BPJ or state WQSs that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA Sections 402(o) or 303(d)(4). 40 CFR 122.44(l)(1) prohibits backsliding from other types of effluent limitations, standards, and conditions unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under 40 CFR 122.62.

a. CWA Sections 402(o)(1) and 303(d)(4)

CWA Section 402(o)(1) prohibits the relaxation of effluent limitations based on state WQSs except in compliance with Section 303(d)(4) of the CWA. CWA Section 303(d)(4) provides two exceptions to allow for less stringent effluent limitations in a reissued permit: paragraph (A) which applies to

nonattainment (i.e., impaired) waters and paragraph (B) which applies to attainment waters.

(1) CWA Section 303(d)(4)(A)

For impaired waters where the applicable WQS has not yet been attained, any effluent limitation based on a TMDL or other WLA may be revised only if 1) the cumulative effect of all such revised effluent limitations based on such TMDL or WLA will assure the attainment of such WQS, or 2) the designated use which is not being attained is removed in accordance with regulations established under CWA Part 303.

(2) CWA Section 303(d)(4)(B)

For waters where the quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable WQSs (i.e., attainment waters), any effluent limitation based on a TMDL or other WLA established under CWA Part 303, or any WQS established under CWA Part 303, or any other permitting standard may be revised only if such revision is subject to and consistent with the antidegradation policy established under CWA Part 303.

b. 40 CFR 122.44(l)

Section 122.44(l)(1) of 40 CFR allows backsliding where the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under 40 CFR 122.62.

c. CWA Section 402(o)(2) and 40 CFR 122.44(l)(2)

CWA Section 402(o)(2) allows for relaxation of effluent limitations based on case-by-case BPJ or state WQSs where one of several exceptions apply. For case-by-case BPJ limitations, 40 CFR 122.44(l)(2) provides the same exceptions.

(1) CWA Section 402(o)(2)(A) and 40 CFR 122.44(l)(2)(i)(A)

Material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation.

(2) CWA Section 402(o)(2)(B)(i) and 40 CFR 122.44(l)(2)(i)(B)(1)

Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance. Per CWA Section 402(o)(2), this exception does not apply to any revised WLAs or any alternative grounds for translating WQSs into effluent limitations, except where the cumulative effect of such revised allocations results in a decrease in the amount of pollutants discharged into the concerned waters, and such revised allocations are not the result of a discharger eliminating or substantially reducing its discharge of pollutants due to complying with the requirements of this chapter or for reasons otherwise unrelated to water quality. This exception is not applicable if the previous permit limits were WQBELs.

(3) CWB Section 402(o)(2)(B)(ii) and 40 CFR 122.44(l)(2)(i)(B)(2)

The Director determines that technical mistakes or mistaken interpretations of law were made in issuing the permit. Note that this exception applies only to relaxation of effluent limitations based on case-by-case BPJ.

(4) CWA Section 402(o)(2)(C) and 40 CFR 122.44(l)(2)(i)(C)

A less stringent effluent limitation is necessary because of events over which the Permittee has no control and for which there is no reasonable available remedy.

(5) CWA Section 402(o)(2)(D) and 40 CFR 122.44(l)(2)(i)(D)

The Permittee has received a permit modification under CWA Sections 301(c), 301(g), 301(h), 301(i), 301(k), 301(n), or 316(a). Note that this exception applies only to relaxation of effluent limitations based on case-by-case BPJ.

(6) CWA Section 402(o)(2)(E) and 40 CFR 122.44(l)(2)(i)(E)

The Permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the review, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by

effluent guidelines in effect at the time of permit renewal, reissuance, or modification).

Since this is a new permit issuance, the effluent limitations and monitoring requirements established in the draft permit are consistent with State and federal anti-backsliding regulations.

7. Satisfaction of Antidegradation Policy Requirements

The DOH established the State antidegradation policy in HAR Section 11-54-1.1 which incorporates the federal antidegradation policy at 40 CFR 131.12. HAR Section 11-54-1.1 requires that the existing quality of waters be maintained unless degradation is justified based on specific findings demonstrating that allowing lower water quality is necessary to accommodate economic or social development in the area in which the waters are located.

Although this is the first NPDES permit issued for the discharges from the Facility, the discharges have been occurring for decades. The draft permit does not allow an increased discharge of pollutants beyond existing (pre-permit) conditions. The draft permit also includes stringent, end-of-pipe effluent limitations for the toxic pollutants listed at HAR Chapter 11-54 Appendix E, pH, enterococcus, ammonia nitrogen, total nitrogen, total phosphorus, and turbidity. The DOH expects that compliance with these effluent limitations will ensure that the impact on existing water quality will be minimal and will provide for the level of water quality necessary to maintain and protect existing uses of the receiving water.

E. Rationale for Receiving Water Requirements

1. Basic Water Quality Criteria Applicable to the Facility

- a. The discharge shall not cause a violation of any WQS for receiving waters adopted by the DOH, as required by the Water Quality Act of 1987 (P.L. 100-4) and regulations adopted thereunder. The DOH adopted WQSs specific for open coastal waters in HAR, Chapter 11-54. The draft permit incorporates receiving water limitations and requirements to ensure the Facility does not exceed applicable WQSs.
- b. The Pacific Ocean West Maui Coast – Near Shore Waters to 60 Feet Honolua to Lahaina is designated as “Class A Dry Open Coastal Waters.” As such, the discharge from the Facility shall not interfere with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife and allows recreational

activities in and on the water. The draft permit incorporates receiving water limitations for the protection of the beneficial uses of the Pacific Ocean.

The Permittee is required to comply with the HAR, Chapter 11-54, Basic Water Quality Criteria of which has been incorporated as part of the draft permit under Section 1 of the DOH Standard NPDES Permit Conditions (Version 16).

2. Recreational Criteria for All State Waters

- a. Enterococcus content shall not exceed a geometric mean of 35 colony forming units per 100 milliliters over any 30-day interval.
- b. A Statistical Threshold Value (STV) of 130 per 100 milliliters shall be used for enterococcus. The STV shall not be exceeded by more than ten percent of samples taken within the same 30-day interval in which the geometric mean is calculated.
- c. State waters in which enterococcus content does not exceed the standard shall not be lowered in quality.
- d. Raw or inadequately treated sewage, sewage for which the degree of treatment is unknown, or other pollutants of public health significance, as determined by the director of health, shall not be present in natural public swimming, bathing, or wading areas. Warning signs shall be posted at locations where human sewage has been identified as temporarily contributing to the enterococcus count.

Note that STV concepts are applicable to the receiving water values. For the purpose of discharge quality control, the STV allowance of a receiving water exceeding the value no more than 10% of the time was replaced with a "Single Sample Max" to ensure that the receiving water quality was protected by preventing discharges that would create an impaired water quality status.

F. Rationale for Monitoring and Reporting Requirements

Section 122.41(j) of 40 CFR specifies monitoring requirements applicable to all NPDES permits. HAR Section 11-55-28 establishes monitoring requirements applicable to NPDES permits within the State of Hawaii. Section 122.48 of 40 CFR and HAR Sections 11-55-29 and 11-55-30 require that all NPDES permits specify requirements for recording and reporting monitoring results. The principal purposes of a monitoring program are to:

- Document compliance with waste discharge requirements and prohibitions established by the DOH;

- Facilitate self-policing by the Permittee in the prevention and abatement of pollution arising from waste discharge;
- Develop or assist in the development of limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards; and
- Prepare water and wastewater quality inventories.

40 CFR 122.41(j)(4) requires all NPDES monitoring to be conducted according to test procedures approved under 40 CFR 136 unless another method is required under 40 CFR subchapters N or O. 40 CFR 136 identifies the proper laboratory procedures to be used in analyzing industrial wastewater (including the volume of wastewater necessary to perform the test and proper techniques to preserve the sample's integrity). However, with certain exceptions, 40 CFR 136 does not specifically designate the method to be used in obtaining samples of the wastewater.

Hawaii's NPDES permits require grab samples for parameters to be analyzed that are likely to change with storage or by compositing such as dissolved gases, total residual chlorine, cyanide, total phenol, volatile organic compounds, soluble sulfide, oil and grease, microbiological parameters, organics, pH, temperature, turbidity, salinity, total nitrogen, ammonia nitrogen, and total phosphorus. Grab samples are required for sampling of pollutants which may adhere to the sample container or tubing such as fats, oil, and grease. Grab samples are also required when it is desired to characterize water quality at a particular time and to provide information about minimum and maximum concentrations.

Hawaii's NPDES permits require composite samples for all other parameters to be analyzed, such as WET and certain toxics. Composite samples are also required when determining average concentrations and to determine mass per unit time loading.

1. Influent Monitoring

Influent monitoring is required to determine the effectiveness of pretreatment and non-industrial source control programs, to assess the performance of treatment facilities, and to evaluate compliance with effluent limitations. The influent water monitoring requirements are specified in Part A of the draft permit.

2. Effluent Monitoring – EML Serial No. 001

The following monitoring requirements are applicable at EML Serial No. 001.

- a. Monitoring requirements for flow have been established to calculate pollutant loading and to determine compliance with mass-based effluent limitations.
- b. Monitoring requirements for BOD₅ and TSS have been established to determine compliance with TBELs.
- c. Monitoring requirements for pH, enterococcus, total nitrogen, ammonia nitrogen, total phosphorus, turbidity, and HAR Chapter 11-54 Appendix E pollutants have been established to determine compliance with WQBELs.

3. Whole Effluent Toxicity Monitoring

Monthly whole effluent toxicity testing is required for chronic toxicity to determine compliance with chronic toxicity effluent limitations as specified in Parts A.1 and B of the draft permit. The Permittee shall conduct chronic toxicity testing by rotating the three test species month-by-month such that each test species is tested once every quarter.

4. Receiving Water Quality Monitoring Requirements

a. Nearshore Bacterial and Visual Water Quality Monitoring

The draft permit requires the Permittee to establish five (5) nearshore monitoring stations representing the North and South Seep Groups south of Kahekili Beach Park and adjacent to Honokowai Point (as identified in the 2013 Lahaina Tracer Study). Two (2) monitoring stations shall be within the North Seep Group, two (2) monitoring stations shall be within the South Seep Group, and one (1) monitoring station shall be centrally located between the two (2) groups of seeps. The locations shall be monitored at a frequency of five (5) days per month in order to calculate a geometric mean for correlative analyses between nearshore bacterial water quality and final effluent quality. If the nearshore bacterial water quality fails to correlate with final effluent quality, continued nearshore bacterial and visual water quality monitoring may not be necessary. Monitoring locations were based on the 2013 Lahaina Groundwater Tracer Study and the identification and descriptions of the North and South Seep Groups described in the study. This requirement is included in the initial permit due to a lack of bacterial (i.e. enterococcus) receiving water data. The end of pipe final effluent limit is established to ensure the Facility does not discharge levels of undisinfected effluent that degrades water quality with respect to pathogens.

b. Seep Water Quality Monitoring

The draft permit requires the Permittee to establish four (4) seep monitoring stations consistent with those established under Section F.4.a. above and two (2) control stations, one (1) located north of the North Seep Group and the other located south of the South Seep Group to allow for correlative analysis between effluent injected into UICs and final discharge quality after dilution and/or other impacts from subsurface transport. As with the Nearshore Bacterial and Visual Water Quality Monitoring requirement, the Seep Water Quality Monitoring locations are meant to represent the water quality from the seeps analogous to those measured for the 2013 Lahaina Groundwater Tracer Study. The collection of this data may be used for future RPA and potential development of additional WQBELs. The intent of the seep monitoring is to characterize the quality of the seep water prior to mixing with surface water. Samples shall be taken consistently with the methodology used in the technical documents (e.g. Lahaina Groundwater Study, date?). Seep sampling shall be conducted to be representative of seep quality prior to mixing with the receiving water. Specifics of sampling methodology shall be reviewed by the DOH in the Seep Water Quality Monitoring plan required to be submitted per Part I of the permit.

G. Rationale for Provisions

1. Standard Provisions

The Permittee is required to comply with DOH Standard NPDES Permit conditions, which are included as part of the draft permit.

2. Monitoring and Reporting Requirements

The Permittee shall comply with all monitoring and reporting requirements included in the draft permit and in the DOH Standard NPDES Permit Conditions.

3. Special Provisions

a. Reopener Provisions

The draft permit may be reopened for modification in accordance with the requirements set forth at 40 CFR 122 and 124, to include appropriate conditions or limitations based on newly available information, or to implement any new State water quality criteria that are approved by the EPA.

b. Special Studies and Additional Monitoring Requirements

Toxicity Reduction Requirement. The draft permit requires the Permittee to submit an Initial Investigation Toxicity Reduction Evaluation (TRE) workplan to the Director and EPA which shall describe steps which the Permittee intends to follow if toxicity is detected. This requirement is discussed in detail in Part B.5 of the draft permit.

4. Special Provisions for Municipal Facilities

a. Pretreatment Requirements

The federal CWA Section 307(b) and federal regulations at 40 CFR Part 403 require POTWs to develop industrial pretreatment programs. Pretreatment programs are necessary to prevent the introduction of pollutants which will interfere with treatment plant operations or sludge disposal and prevent pass-through of pollutants that exceed water quality objectives, standards or permit limitations.

Per 40 CFR 403.8(a), any POTW (or any combination of POTWs operated by the same authority) with a total design flow greater than 5 MGD and receiving wastes from industrial users are required to establish a pretreatment program. Additionally, DOH may require that a POTW with a design flow of 5 MGD or less develop a pretreatment program if necessary to prevent interference with the POTW or pass-through. The Applicant operates multiple POTWs whose combined design flows exceed 5 MGD. The NPDES application indicates they have a pretreatment program but didn't indicate any industrial users. The permit requires the Applicant to develop and implement an approved pretreatment program.

Pretreatment requirements are imposed in this permit pursuant to CWA Sections 307(b), (c), (d), and 402(b), 40 CFR 125, 40 CFR 403, and in HAR, Section 11-55-24.

The draft permit includes requirements to develop a pretreatment program in accordance with the federal and State pretreatment regulations. The pretreatment requirements established in the draft permit are consistent with NPDES permits issued to other Hawaii POTWs. A countywide pretreatment program is required as the County of Maui is the regional wastewater authority and wastewater from multiple parts of the county may be transported countywide and disposed of into the County's sanitary sewer system (i.e. liquid waste haulers).

b. Biosolids Requirements

The use and disposal of biosolids is regulated under federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR 503, 257, and 258, and HAR, Chapter 11-62. The biosolids requirements in the draft permit are in accordance with 40 CFR 257, 258, and 503; HAR, Chapter 11-62; and are consistent with NPDES permits issued to other Hawaii POTWs.

5. Other Special Provisions

- a. **Wastewater Pollution Prevention Program.** The draft permit requires the Permittee to submit a wastewater pollution control plan by March 31 each year. This provision is established to allow DOH to ensure that the Permittee is operating the Facility correctly and attaining maximum treatment of pollutants discharged by considering all aspects of the wastewater treatment system. This provision is included in Part E of the draft permit.
- b. Wastewater treatment facilities subject to the draft permit shall be supervised and operated by persons possessing certificates of appropriate grade, as determined by the DOH. If such personnel are not available to staff the wastewater treatment facilities, a program to promote such certification shall be developed and enacted by the Permittee. This provision is included in the draft permit to assure that the Facility is being operated correctly by personnel trained in proper operation and maintenance and is included in Part J.4 of the draft permit.
- c. The Permittee shall maintain in good working order a sufficient alternate power source for operating the wastewater treatment and disposal facilities. This provision is established to ensure that if a power failure occurs, the Facility is well equipped to maintain treatment operations until power resumes. If an alternate power source is not in existence, the draft permit requires the Permittee to halt, reduce, or otherwise control all discharges upon the reduction, loss, or failure of the primary source of power. This provision is included in Part J.5 of the draft permit.

H. Public Participation

In accordance with HAR, Sections 11-55-09(b) and 11-55-09(d), a public notice soliciting comments regarding the proposed permit issuance was published in *The Maui News* on June 30, 2023. Comments were accepted until September 13, 2023, due to the Maui wildfire. Many of the comments requested a public hearing on the proposed permit. Processing of the permit was suspended to provide the citizens and the County of Maui a chance to recover. A notice of the public hearing was published in *The Maui News* on August 29, 2024. The public hearing was held on Tuesday, October 1, 2024.

I. Revisions to the Draft Permit Following the Public Hearing

The draft permit has undergone stylistic changes to match other NPDES permits that the CWB is currently issuing and modifications resulting from the public hearing. Below is a summary of the substantive changes made as a result of the public hearing.

Original Condition	Current Condition	Justification
BOD ₅ and TSS performance based limits	BOD ₅ and TSS TBELs	40 CFR 125.3(a)(1), 133.102
BOD ₅ and TSS mass-based limits based on performance flow	BOD ₅ and TSS mass-based limits based on design flow	40 CFR 122.45(b)(1)
pH effluent limitation 6.0-9.0	pH effluent limitation 7.6-8.6	40 CFR 122.44(d)
Total Nitrogen and Total Phosphorus performance based mass limits	Total Nitrogen and Total Phosphorus WQBEL for mass	40 CFR 122.44(d), 122.45(b)(1), 122.45(f), HIP
Ammonia Nitrogen monitor only	Ammonia Nitrogen concentration effluent limitation	40 CFR 122.44(d), HIP
HAR 11-54 Appendix E toxic parameters monitor only	HAR 11-54 Appendix E effluent limitations	40 CFR 122.44(d)
Part H. Special Study Requirements	Part H. Antidegradation Study Requirements	All studies, except Antidegradation, were removed due to Applicant comments

Because of the significant changes made from the previously proposed June 30, 2023 Public Notice Permit and August 29, 2024 Public Hearing Permit, the DOH is proposing to offer the April 17, 2025 Public Hearing Permit for public review and comment in response to comments received on the previous permit versions.

Appendix 1 – Summary of Effluent Limitations

Table F-11. Summary of Final Effluent Limitations – BOD₅ and TSS

Parameter	Units	Proposed Effluent Limitations ¹		
		Average Monthly	Average Weekly	Maximum Daily
Flow ²	MGD	2	2	9.0
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C) ²	mg/L	30	45	2
	lbs/day	2251.8 ⁴	3377.7 ⁴	2
	% Removal	The average monthly percent removal shall not be less than 85 percent.		
Total Suspended Solids (TSS) ²	mg/L	30	45	2
	lbs/day	2251.8 ⁴	3377.7 ⁴	2
	% Removal	The average monthly percent removal shall not be less than 85 percent.		

MGD – Million Gallons per Day
mg/L – Milligrams per Liter
lbs/day – Pounds per Day

- 1 Compliance with mass-based effluent limitations shall be determined using the following formula:

$$\text{lbs/day} = 8.34 * \text{concentration (mg/L)} * \text{flow (MGD)}$$
- 2 The Permittee shall monitor and report the test results.
- 3 Both influent and effluent flows shall be measured, as specified in Part A.2 of the permit.
- 4 The mass emission rates for discharge limitations for BOD₅ and TSS are based on a design flow of 9.0 MGD.
- 5 Both influent and effluent samples shall be taken, as specified in Parts A.2 and A.3 of the permit.

Table F-12. Summary of Final Effluent Limitations and Monitoring – All Other Pollutants

Parameter	Units	Proposed Effluent Limitations ¹			Monitoring Requirements	
		Average Annual	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
pH ²	standard units	Not less than 7.6 and not greater than 8.6			5/Week	Grab
Chronic Toxicity <i>Pimephales promelas</i> ³	Pass/Fail	--	--	Pass ⁴	1/Quarter	24-Hour Composite
Chronic Toxicity <i>Ceriodaphnia dubia</i> ³	Pass/Fail	--	--	Pass ⁴	1/Quarter	24-Hour Composite
Chronic Toxicity <i>Raphidocelis subcapitata</i> (formerly known as <i>Selenastrum capricornutum</i>) ³	Pass/Fail	--	--	Pass ⁴	1/Quarter	24-Hour Composite
Fecal Coliform	CFU/100 mL	--	5.2 ⁵	200	1/Day	Grab
Enterococcus ⁶	CFU/100 mL	--	35 ⁵	130 ⁷	5/Month ⁸	Grab
Total Nitrogen	µg/L	9	9	9	1/Month	

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Parameter	Units	Proposed Effluent Limitations ¹			Monitoring Requirements	
		Average Annual	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
	lbs/day	8.25 ^{10,11}	9	13.51 ^{7,11}		Grab or Composite
Ammonia Nitrogen	µg/L	2.00 ¹⁰	9	5.00 ⁷	1/Month	Grab or Composite
Total Phosphorus	µg/L	9	9	9	1/Month	Grab or Composite
	lbs/day	1.20 ^{10,11}	9	2.25 ^{7,11}		
Temperature	°C	--	8	--	1/Week	Grab
Turbidity	NTU	--	8	8	1/Month	Grab
Acenaphthene	µg/L	--	90	320	1/Year	12
Acrolein	µg/L	--	--	18	1/Year	12
Acrylonitrile	µg/L	7.0	--	--	1/Year	12
Aldrin	µg/L	0.0000077	--	1.3	1/Year	12
Anthracene	µg/L	--	400	--	1/Year	12
Benzo(a)Anthracene	µg/L	0.0013	--	--	1/Year	12
Dibenzo(a,h)Anthracene	µg/L	0.00013	--	--	1/Year	12
Antimony ¹³	µg/L	--	640	--	1/Year	12
Arsenic ¹³	µg/L	0.14	--	36	1/Year	12
Benzene	µg/L	16	--	1,700	1/Year	12
Benzidine	µg/L	0.011	--	--	1/Year	12
Beryllium ¹³	µg/L	--	0.038	--	1/Year	12
Bromoform	µg/L	120	--	--	1/Year	12
Butylbenzyl Phthalate	µg/L	0.10	--	--	1/Year	12
Cadmium ¹³	µg/L	--	--	9.4	1/Year	12
Carbon Tetrachloride	µg/L	5.0	--	16,000	1/Year	12
Chlordane	µg/L	0.00032	--	0.0040	1/Year	12
Chlorine	µg/L	--	--	7.5	1/Year	12
Chlorobenzene	µg/L	--	800	--	1/Year	12
Chlorodibromomethane	µg/L	21	--	--	1/Year	12
Bis(2-Chloroethyl) Ether	µg/L	2.2	--	--	1/Year	12
Chloroform	µg/L	--	2,000	--	1/Year	12
Bis(Chloromethyl) Ether	µg/L	0.017	--	--	1/Year	12
2-Chloronaphthalene	µg/L	--	1,000	--	1/Year	12
2-Chlorophenol	µg/L	--	800	--	1/Year	12
3-Methyl-4-Chlorophenol	µg/L	--	2,000	--	1/Year	12
Chlorpyrifos	µg/L	--	--	0.0056	1/Year	12
Chromium (VI) ¹³	µg/L	--	--	50	1/Year	12
Chrysene	µg/L	0.13	--	--	1/Year	12
Copper ¹³	µg/L	--	--	3.5	1/Year	12
Cyanide	µg/L	--	--	1.0	1/Year	12
Demeton	µg/L	--	--	0.10	1/Year	12
Di-n-Butyl Phthalate	µg/L	--	30	--	1/Year	12
Dichlorobenzenes	µg/L	--	--	660	1/Year	12
1,2-Dichlorobenzene	µg/L	--	3,000	--	1/Year	12
1,3-Dichlorobenzene	µg/L	--	10	--	1/Year	12
1,4-Dichlorobenzene	µg/L	--	900	--	1/Year	12
3,3'-Dichlorobenzidine	µg/L	0.15	--	--	1/Year	12
Dichlorobromomethane	µg/L	27	--	--	1/Year	12
DDD	µg/L	0.00012	--	1.2	1/Year	12

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Parameter	Units	Proposed Effluent Limitations ¹			Monitoring Requirements	
		Average Annual	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
DDE	µg/L	0.000018	--	--	1/Year	12
DDT	µg/L	0.000030	--	0.0010	1/Year	12
1,2-Dichloroethane	µg/L	650	--	38,000	1/Year	12
1,1-Dichloroethylene	µg/L	--	20,000	--	1/Year	12
Trans-1,2-Dichloroethylene	µg/L	--	4,000	--	1/Year	12
2,4-Dichlorophenol	µg/L	--	60	--	1/Year	12
Chlorophenoxy Herbicide (2,4-D)	µg/L	--	12,000	--	1/Year	12
Dichloropropanes	µg/L	--	--	3,400	1/Year	12
1,2-Dichloropropane	µg/L	31	--	--	1/Year	12
1,3-Dichloropropene	µg/L	12	--	260	1/Year	12
Dieldrin	µg/L	0.0000012	--	0.0019	1/Year	12
Diethyl Phthalate	µg/L	--	600	--	1/Year	12
Dimethyl Phthalate	µg/L	--	2,000	--	1/Year	12
2,4-Dimethylphenol	µg/L	--	3,000	--	1/Year	12
Dinitrophenols	µg/L	--	1,000	--	1/Year	12
2,4-Dinitrophenol	µg/L	--	300	--	1/Year	12
2-Methyl-4,6-Dinitrophenol	µg/L	--	30	--	1/Year	12
Dinitrotoluenes	µg/L	--	--	200	1/Year	12
2,4-Dinitrotoluene	µg/L	1.7	--	--	1/Year	12
1,2-Diphenylhydrazine	µg/L	0.20	--	--	1/Year	12
Endosulfan	µg/L	--	--	0.0087	1/Year	12
alpha-Endosulfan	µg/L	--	30	--	1/Year	12
beta-Endosulfan	µg/L	--	40	--	1/Year	12
Endosulfan Sulfate	µg/L	--	40	--	1/Year	12
Endrin	µg/L	--	--	0.0023	1/Year	12
Endrin Aldehyde	µg/L	--	1.0	--	1/Year	12
Ethylbenzene	µg/L	--	130	140	1/Year	12
Bis(2-Ethylhexyl) Phthalate	µg/L	0.37	--	--	1/Year	12
Fluoranthene	µg/L	--	--	13	1/Year	12
Benzo(b)fluoranthene	µg/L	0.0013	--	--	1/Year	12
Benzo(k)fluoranthene	µg/L	0.013	--	--	1/Year	12
Fluorene	µg/L	--	70	--	1/Year	12
Guthion	µg/L	--	--	0.010	1/Year	12
Heptachlor	µg/L	0.0000059	--	0.0036	1/Year	12
Heptachlor Epoxide	µg/L	0.000032	--	--	1/Year	12
Hexachlorobenzene	µg/L	0.000079	--	--	1/Year	12
Hexachlorobutadiene	µg/L	0.010	--	11	1/Year	12
Hexachlorocyclohexane - technical	µg/L	0.010	--	--	1/Year	12
Hexachlorocyclohexane-alpha	µg/L	0.00039	--	--	1/Year	12
Hexachlorocyclohexane-beta	µg/L	0.014	--	--	1/Year	12
Hexachlorocyclohexane-gamma	µg/L	--	--	0.16	1/Year	12
Hexachlorocyclopentadiene	µg/L	--	--	2.0	1/Year	12
Hexachloroethane	µg/L	0.10	--	310	1/Year	12

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Parameter	Units	Proposed Effluent Limitations ¹			Monitoring Requirements	
		Average Annual	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Isophorone	µg/L	1,800	--	4,300	1/Year	12
Lead ¹³	µg/L	--	--	5.9	1/Year	12
Malathion	µg/L	--	--	0.10	1/Year	12
Mercury ¹³	µg/L	--	--	0.029	1/Year	12
Methoxychlor	µg/L	--	0.020	0.030	1/Year	12
Methyl Bromide	µg/L	--	10,000	--	1/Year	12
Methylene Chloride	µg/L	1,000	--	--	1/Year	12
Bis(2-Chloro-1-methylethyl) Ether	µg/L	--	4,000	--	1/Year	12
Methylmercury	µg/L	--	0.30	--	1/Year	12
Mirex	µg/L	--	--	0.0010	1/Year	12
Naphthalene	µg/L	--	--	780	1/Year	12
Nickel ¹³	µg/L	--	--	8.4	1/Year	12
Nitrobenzene	µg/L	--	600	2,200	1/Year	12
Nitrophenols	µg/L	--	--	1,600	1/Year	12
Nitrosamines	µg/L	1.2	--	--	1/Year	12
Nitrosodibutylamine	µg/L	0.22	--	--	1/Year	12
Nitrosodiethylamine	µg/L	1.2	--	--	1/Year	12
N-Nitrosodimethylamine	µg/L	3.0	--	--	1/Year	12
N-Nitrosodiphenylamine	µg/L	6.0	--	--	1/Year	12
N-Nitrosodi-n-Propylamine	µg/L	0.51	--	--	1/Year	12
Nitrosopyrrolidine	µg/L	34	--	--	1/Year	12
Pentachlorobenzene	µg/L	--	0.10	--	1/Year	12
Pentachloroethane	µg/L	--	--	130	1/Year	12
Pentachlorophenol	µg/L	0.040	--	13	1/Year	12
Phenol	µg/L	--	--	170	1/Year	12
Polychlorinated Biphenyls (PCBs)	µg/L	0.000064	--	0.030	1/Year	12
Pyrene	µg/L	--	30	--	1/Year	12
Benzo(a)Pyrene	µg/L	0.00013	--	--	1/Year	12
Indeno(1,2,3-cd) Pyrene	µg/L	0.0013	--	--	1/Year	12
Selenium ¹³	µg/L	--	--	71	1/Year	12
Silver ¹³	µg/L	--	--	2.7	1/Year	12
1,2,4,5-Tetrachlorobenzene	µg/L	--	0.030	--	1/Year	12
2,3,7,8-TCDD (Dioxin)	µg/L	0.0000000051	--	--	1/Year	12
1,1,2,2-Tetrachloroethane	µg/L	3.0	--	3,000	1/Year	12
Tetrachloroethylene	µg/L	29	--	145	1/Year	12
2,3,5,6-Tetrachlorophenol	µg/L	--	--	440	1/Year	12
Thallium ¹³	µg/L	--	0.47	710	1/Year	12
Toluene	µg/L	--	520	2,100	1/Year	12
Toxaphene	µg/L	--	--	0.00020	1/Year	12
Tributyltin	µg/L	--	--	0.010	1/Year	12
1,2,4-Trichlorobenzene	µg/L	0.076	--	--	1/Year	12
1,1,1-Trichloroethane	µg/L	--	--	10,400	1/Year	12
1,1,2-Trichloroethane	µg/L	8.9	--	--	1/Year	12
Trichloroethylene	µg/L	7.0	--	700	1/Year	12
2,4,5-Trichlorophenol	µg/L	--	600	--	1/Year	12
2,4,6-Trichlorophenol	µg/L	2.8	--	--	1/Year	12

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Parameter	Units	Proposed Effluent Limitations ¹			Monitoring Requirements	
		Average Annual	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Chlorophenoxy Herbicide (2,4,5-TP)	µg/L	--	400	--	1/Year	12
Vinyl Chloride	µg/L	1.6	--	--	1/Year	12
Zinc ¹³	µg/L	--	--	91	1/Year	12

- ¹ Compliance with mass-based effluent limitations shall be determined using the following formula:

$$\text{lbs/day} = 8.34 * \text{concentration (mg/L)} * \text{flow (MGD)}$$
- ² Both influent and effluent samples shall be taken, as specified in Part A.2 and A.3. of the permit.
- ³ The Permittee shall test one species of the three (3) chronic test species (*P. promelas*, *C. dubia*, and *R. subcapitata*) each calendar month such that each species is tested at least once per quarter.
- ⁴ "Pass", as described in Part B.3 of the permit.
- ⁵ Effluent limitation expressed as a monthly geometric mean.
- ⁶ Enterococci samples shall be analyzed using Method 1600, *Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl-β-D-Glucoside Agar(mEI)* (EPA 821-R-09-016) or the most current EPA approved method specified in 40 CFR 136.
- ⁷ Effluent limitation expressed as single sample maximum and compliance shall be determined as each individual sample result shall not exceed this maximum value.
- ⁸ Samples shall be collected five days per month where samples are equally spaced at six-day intervals or unequally spaced at five-, six-, seven-, or eight-day intervals, provided that the total period covered is between 25 and 30 days. Enterococcus results shall be reported as a geometric mean and as the single sample maximum.
- ⁹ The Permittee shall monitor and report the parameter analytical test results.
- ¹⁰ Effluent limitation expressed as an annual geometric mean.
- ¹¹ The mass emission rates for discharge limitations for Total Nitrogen and Total Phosphorus are based on a design flow of 9.0 MGD.
- ¹² Sample type shall be as indicated in Appendix 1.
- ¹³ Effluent analyses for metals shall be reported as total recoverable.

JOSH GREEN, M.D.
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KE KIA'ĀINA O KA MOKU'ĀINA 'O HAWAII



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File:

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**LAHAINA WASTEWATER RECLAMATION FACILITY NATIONAL
POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT DEVELOPMENT
SUPPLEMENTAL REPORT**

February 21, 2023

This report was developed by the Department of Health, Clean Water Branch, and PG Environmental, Technical Contractor to the Department of Health. This report reflects the historical, technical, and regulatory considerations used during the drafting of the NPDES permit for the Lahaina Wastewater Reclamation Facility. This report includes findings from the site visit conducted on September 15, 2021.

Reviewed by: _____
Mr. Darryl Lum, Acting Program Manager

Date: _____

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1. INTRODUCTION

1.1 Regulatory Authority

The federal Clean Water Act (CWA) was enacted in 1972 [33 United States Code (USC) §§ 1251 et seq.] with the purpose of regulating discharges of pollutants entering waters of the United States (navigable waters or WOTUS). Section 402 of the CWA established the National Pollutant Discharge Elimination System (NPDES) program, which requires point sources to obtain a permit that limits the type and quantity of pollutants allowed to be discharged from the source. Since 1974, the State of Hawaii has been authorized by the United States Environmental Protection Agency (EPA) to administer NPDES program requirements within the State. The Hawaii Department of Health (HDOH) has legal authority to control Water Pollution through statutory powers and administrative rules [Hawaii Revised Statutes (HRS), Chapter 342D]. State laws provide legal authority to the HDOH for permitting, administration, and enforcement related to water pollution. The State has administrative rules addressing specific pollutant sources including wastewater systems [Hawaii Administrative Rules Title 11, Chapter 62 (HAR, Chapter 11-62)], wastewater disposal through injection wells (HAR, Chapter 11-23), wastewater disposal to surface waters (HAR, Chapter 11-55) and preservation of surface water quality through the establishment and implementation of water quality standards (WQSS) (HAR, Chapter 11-54).

The federal Safe Drinking Water Act (SDWA) was enacted in 1974 (42 USC § 300f et seq.) to protect the quality of drinking water in the United States. The SDWA focuses on all waters actually or potentially designated for drinking use, whether from above ground or underground sources. This includes underground sources of drinking water (USDWs) from the placement of fluids below ground through underground injection control (UIC) wells. State and federal UIC regulations at HAR, Chapter 11-23 and Parts 144 through 148 of Title 40 of the Code of Federal Regulations (40 CFR) regulate the construction, operation, and closure/plugging of UIC wells.

1.2 Facility Description and Discharge Information

The Lahaina Wastewater Reclamation Facility (hereinafter Lahaina WWRF or Facility) is a publicly-owned treatment works (POTW) located at 3300 Honoapiilani Highway in the Kaanapali District of West Maui, Hawaii, approximately 3 miles north of the Town of Lahaina and 0.5 miles from the Pacific Ocean coastline. The Facility is owned and operated by the County of Maui (hereinafter County or Permittee) through the Department of Environmental Management, Wastewater Reclamation Division; and serves a population of approximately 40,000 in the City of West Maui (50 percent permanent residents, 50 percent transient residents). Since 1986, the UIC wells at the Facility have been permitted by the HDOH under UIC Permit No. UM-1357, issued pursuant to HRS, Chapters 91 and 340E, and HAR, Chapters 11-23 and 11-54. The UIC wells have also been permitted by the EPA since 1995 under UIC Permit No. HI50710003, issued pursuant to the SDWA.

The Facility's sewage collection system covers approximately 11 miles of coastline on the Island of Maui. Influent to the Facility is primarily from residential and commercial sources.

Approximately 4 million gallons per day (MGD) of wastewater is tertiary-treated at the Facility to the HDOH's "R-1" recycled water quality level¹. Treated wastewater is then either sold to customers for irrigation use or injected into the permitted UIC wells for disposal. The UIC wells are considered Class V² UIC wells and are subject to the regulations cited above.

On average, 3 to 5 MGD of tertiary-treated wastewater is injected approximately 200 feet underground into a groundwater aquifer through the UIC wells. However, the maximum injection well flowrate from 2014 to 2021 was greater than 8 MGD. In 2020, the average daily flow at the Facility was 4.1 MGD, and the average daily reuse was 1.5 MGD, representing a reuse rate of approximately 37 percent of the total effluent. Since 2016, the annual rate of reuse has ranged from 450 to 550 million gallons.

A site visit was conducted at the Facility on September 15, 2021, to confirm operations of the wastewater treatment system and observe the known impacted nearshore surface waters that act as indirect receiving waters for the discharge.

Wastewater Treatment and Disposal

The Facility utilizes primary, secondary, and tertiary wastewater treatment processes through two parallel treatment trains (main treatment train and alternate treatment train). The main treatment train includes bar screens, a grit chamber, aeration basins (four flexible aeration basins and one conventional aeration basin), three secondary clarifiers, chlorine contact basins, sand and disk filters, and ultraviolet light (UV) disinfection units. The average dry-weather flow capacity of the main treatment train is 6.8 MGD. Flow from the headworks may be split to the alternate treatment train, which consists of an aeration basin, four secondary clarifiers, and a chlorine contact basin. Effluent from the alternate treatment train is then directed to the sand and disk filters in the main treatment train and UV disinfection. The average dry-weather flow capacity of the alternate treatment train is 3.2 MGD. The alternate treatment train is currently not in service but is available for future use should influent flowrate increase above main treatment train capacity. All effluent from the Facility is treated to R-1 quality.

Biosolids screened during the treatment process are sent to a sludge tank and circulation pump then to a centrifuge with added polymer. Biosolids are currently trucked off-site for landfill disposal after mixing with green waste.

¹ "R-1 water" is defined as recycled water that has been oxidized, filtered, and disinfected to meet the corresponding standards set in Title 11, Chapter 62 of the Hawaii Administrative Rules (HAR, Chapter 11-62). <https://health.hawaii.gov/opppd/files/2015/06/11-62-Wastewater-Systems.pdf>

² Class V wells are used to inject non-hazardous fluids into or above underground sources of drinking water. For more information, see EPA's Class V Wells website at <https://www.epa.gov/uic/class-v-wells-injection-non-hazardous-fluids-or-above-underground-sources-drinking-water>.

Prior to 2014, UIC Wells 3 and 4 were mainly used for injection of tertiary-treated effluent; however, UIC Well 2 is currently the most utilized well for effluent injection.

Table 1. Lahaina WWRF UIC Well Information

UIC Well No.	1	2	3	4
Latitude:	20°56'45.15" N	20°56'45.15" N	20°56'42.31" N	20°56'41.56" N
Longitude:	156°41'12.37" W	156°41'12.62" W	156°41'15.12" W	156°41'15.70" W
Elevation:				
Ground Surface	30 Feet	30 Feet	25 Feet	26 Feet
Bottom of Well	-170 Feet	-150 Feet	-200 Feet	-229 Feet
Total Depth of Well Below Ground Surface	200 Feet	180 Feet	225 Feet	255 Feet
Solid Casing:				
Diameter	20 Inches	20 Inches	20 Inches	20 Inches
Stick Up	3 Feet	3 Feet	3 Feet	3 Feet
Total Length	88 Feet	88 Feet	108 Feet	108 Feet
Material	Steel	Steel	Steel	Steel
Perforated Casing:				
Diameter	14 Inches	---	---	14 Inches
Perforation	Slotted	---	---	Slotted
Stick Up	---	---	---	---
Total Length	115 Feet	---	---	115 Feet
Material	Steel	---	---	Steel
Open Hole:				
Diameter	---	20 Inches	18 Inches	---
Total Length	---	95 Feet	120 Feet	---
Annular Backfill:				
Capping	Concrete	Concrete	Concrete	Concrete
Solid Casing Separation	Cement	Cement	Cement	Cement
Perforated Casing	Unknown	Unknown	Unknown	Unknown
Open Hole	---	---	---	---
	None	None	None	None

Recycled Water

In 1978, the County of Maui Reservoir was constructed at an altitude of approximately 730 feet above the Facility, along with a recycled water pipeline and pump, in order to deliver recycled water for agricultural irrigation use at sugar cane and pineapple farms in the area. Recycled water was fed to the fields via gravity and a constructed agricultural ditch. The pipeline is currently offline due to lack of demand for recycled water, and the pumps are no longer in working condition; however recycled water can currently be pumped to an agricultural reservoir at an altitude of 300 feet. In 1997, the Kaanapali recycled water pipeline and associated pump were constructed to reuse treated effluent from the Facility for golf course

and landscape irrigation at the Kaanapali Resort. The Kaanapali Resort's golf course is the major user of the recycled water produced by the Facility.

The Facility currently has \$41 million in recycled water infrastructure, which has an annual operating cost of \$1 million. From 2010 and 2021, the annual average operating costs for the recycled water program was \$3 million. The program earned an annual average of \$612,000 in revenue, with 80 percent of the program subsidized by sewer fees. In fiscal year 2021, 1.4 billion gallons of effluent from the Facility was recycled.

Planned Changes

The Permittee is currently constructing a 1.5 MGD equalization basin at the Facility. The basin is intended to stabilize the effluent flow rate from the Facility to address issues with the UV disinfection system during peak flows. Once complete, excess effluent will flow to the equalization basin where it will remain until the flow rate decreases. The Permittee is also planning to address infiltration from private laterals.

The Permittee has also planned for future expansion of the recycled water program at the Facility. From 2021 to 2022, the Permittee is implementing a \$13.5 million upgrade on the Honokowai Reservoir, located at an altitude of 300 feet above the Facility location. In 2022, the Permittee is investing \$10.5 million for Phase I of the R-1 Process Expansion, an expansion of the reuse program for the Kaanapali Golf Course. In 2023, the Permittee plans to implement the \$7 million Kaanapali Resort expansion and \$1 million Honoapiilani lateral line installation. The Honokowai R-1 expansion will continue in 2025 with a \$5 million investment. Phase II of the R-1 Process Expansion is planned to begin in 2027 with a \$12 million upgrade to the County of Maui Reservoir, Effluent Pump Station, and force main. The siphon and agricultural ditch from the reservoir will undergo a \$9 million to \$9.5 million upgrade/renovation in 2028 to provide recycled water to the three landowners along the agricultural irrigation conveyance, which is not considered a WOTUS or State water. The average daily recycled water usage is projected to increase to 2.2 MGD, with a maximum daily reuse of 2.85 MGD, by fiscal year 2026. This will represent an average reuse rate of 56 percent and a maximum reuse rate of 72 percent. The average daily influent flow rate is projected to remain the same through 2026.

Figure 1 below shows the individual locations of active, future, and potential future recycled water users.



Figure 1. Location of Active, Future, and Prospective Future Recycled Water Users for Lahaina WWRF

Discharge Location and Receiving Water

Effluent from the Facility that is not used through the recycled water program or is otherwise unsuitable for reuse is injected to groundwater through the four on-site UIC wells. In 2013, the University of Hawaii conducted the *Lahaina Groundwater Tracer Study – Lahaina, Maui, Hawaii* (Glenn et al., 2013³; dye tracer study) on behalf of the HDOH, the EPA, and the United States Army Engineer Research and Development Center (ERDC). The dye tracer study demonstrated that effluent from UIC Wells 3 and 4 at the Facility was migrating from the groundwater aquifer to which it was injected, through to subsurface, and discharging to nearshore waters in and around Kaanapali.

The study found that effluent injected into the UIC wells mix with groundwater and surface nearshore water through a diffuse groundwater inflow zone and seeps that are evident along the coastline to the southwest of the Facility. Discharges from these seeps are referred to as submarine groundwater discharge (SGD), and are divided into two groups, the South Seep Group (SSG) and North Seep Group (NSG). The SSG and NSG are located at North Kaanapali

³ Glenn, C.R., Whittier, R.B., Dailer, M.L., Dulaiova, H., El-Kadi, A.I., Fackrell, J., Kelly, J.L., Waters, C.A., and J. Sevadjian, 2013. *Lahaina Groundwater Tracer Study – Lahaina, Maui, Hawaii*, Final Report, prepared for the State of Hawaii Department of Health, the U.S. Environmental Protection Agency, and the U.S. Army Engineer Research and Development Center. <https://archive.epa.gov/region9/water/archive/web/pdf/Lahaina-gw-tracer-study-final-report-june-2013.pdf>

Beach, approximately 0.85 kilometers (0.5 miles) to the southwest of the Facility, and between 3 to 25 meters from the shoreline (Figure 2; Glenn et al., 2013).

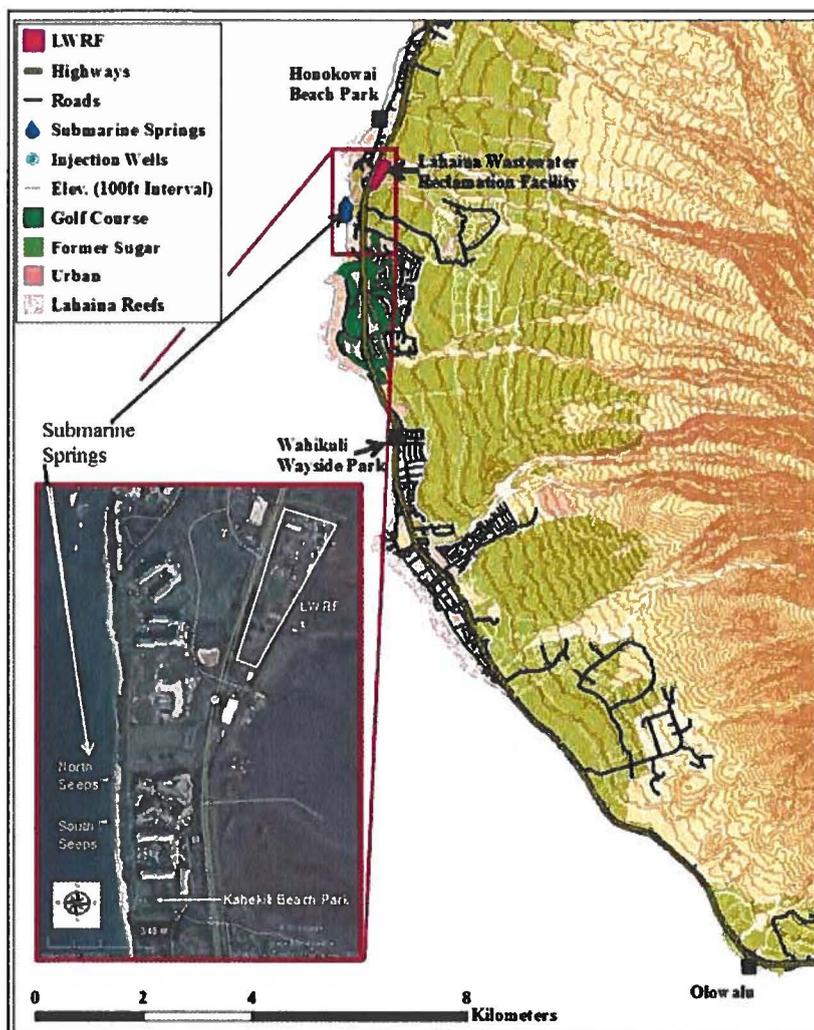


Figure 2. Facility, SSG, and NSG Location Map

The SSG is comprised of 106 seeps within a total area of 500 square meters (m²), and the NSG is comprised of 183 seeps within a total area of 1,800 m². The average size of an individual seep is 5.4 square centimeters (cm²).

Based on groundwater flow modelling, it's believed that the locations and configurations of the UIC wells themselves impact how effluent injected into the wells flow to the ocean. That is to say that depending on which combination of UIC wells are used for effluent disposal, the majority of the effluent injected could flow to either the north or south of the Facility. The groundwater models suggest that the location of the UIC wells at the Facility (relative to each other and the groundwater seeps) causes significant interference between the injection flow fields, with flow from one UIC well potentially being displaced when encountering the flow field of another UIC well prior to reaching nearshore waters. UIC Wells 3 and 4 inject effluent and are located between UIC Well 2 and the seeps where the dye tracer emergence was monitored.

Therefore, the dominant flow from UIC Wells 3 and 4 may displace the injected effluent from UIC Well 2 around the UIC Wells 3 and 4 flow fields. Figure 3 (Glenn et al., 2013) below shows the results of computer simulations using the United States Geological Survey (USGS) groundwater flow model MODFLOW and the particle tracking model MODPATH, which show particle tracks created by injection into UIC Wells 2, 3, and 4. The model output indicates that with simultaneous injection into these three wells, as is the current operation at the Facility, the injectate from UIC Well 2 is displaced from the pathway to the SSG and NSG seeps. This model shows that the injectate from UIC Well 2 is diverted to the east around the simulated barrier before taking a northwesterly path to the ocean.

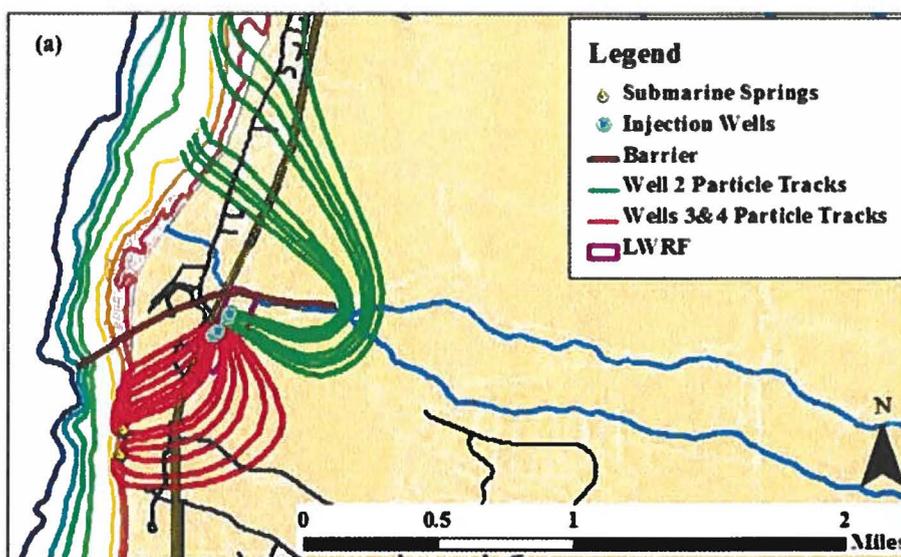


Figure 3. Flow of Simulated Particles from UIC Wells 2, 3, and 4 Injectate

The dye tracer study demonstrated that it is possible to trace the discharge from Wells 3 and 4 to nearby coastal waters and estimated that up to 64 percent of effluent from these wells discharged to the Pacific Ocean between 3 months and four years after injection into the wells. The resulting plume was observed to cover an area over 167 acres in size.

The dye tracer study also indicated that the average travel time for the tracer dye to flow from the UIC wells to the monitoring locations (SSG and NSG) was approximately 14 to 16 months. After the tracer dye was injected into Wells 3 and 4, it arrived at the coastal submarine spring sites in a minimum travel time of 84 days; the peak break-through curve (BTC) at SSG and NSG occurred 9 and 10 months after the tracer dye injection, respectively. The average travel time to both monitoring locations exceeded one year (approximately 450 days). The study also noted that the tracer dye continues to be detected at the seep monitoring locations over two years after injection in the UIC wells.

In the absence of any injection, travel time would decrease to 50 days based on the average groundwater-flow velocity at the Facility.

According to the results from the dye tracer study, at the time of dye BTC completion, 64 percent of the dye-traced-effluent had been recovered at the spring areas. Therefore, at a

steady state, it is estimated that at least 64 percent of the treated effluent injected into the UIC wells discharges into nearshore ocean waters. The receiving water, the Pacific Ocean, is classified by the HDOH as Class A Marine Waters under HAR, Section 11-54-6(b)(2)(B). The uses to be protected are all uses compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters. These waters shall not act as receiving waters for any discharges which have not received the best degree of treatment or control compatible with the criteria established for this class.

1.3 Regulatory History and Legal Proceedings

The Facility was authorized to discharge treated wastewater effluent through injection wells under UIC Permit No. UM-1357 (Federal UIC Permit No. HI596001). The initial UIC permit was issued by the HDOH in 1985 under the State UIC well program. In 1996, the EPA notified the HDOH that a federal UIC permit would be required for the Facility, which would require the Facility to blend effluent in order to meet more stringent nitrogen effluent limitations. In the late 1990s, the EPA and the HDOH filed two lawsuits against the Permittee, Civil Nos. 98- 00622 SOM and 99-0064 (3), alleging violations of federal and State law. In 1999, the Permittee entered into a Consent Decree with the EPA and the HDOH. The Consent Decree was filed November 8, 1999, in U.S. District Court pursuant to the CWA, and required the Permittee to develop and implement an asset management program and central maintenance program for the Facility. The Consent Decree was closed circa 2010 upon an evaluation by the EPA and the HDOH that all terms were satisfactorily met.

In 2012, four non-profit corporations, the Hawaii Wildlife Fund, Surfrider Foundation, Sierra Club-Maui Group, and West Maui Preservation Association, represented by Earthjustice, filed a complaint against the County of Maui in the United States District Court for the District of Hawaii (District Court) alleging failure to obtain the appropriate NPDES permit for the Facility, and polluting WOTUS in violation of the CWA. The plaintiffs argued that the UIC wells at the Facility were point sources to be regulated under the NPDES program, which was later supported by the results of a 2013 dye tracer study. In addition, the County conceded that wastewater injected into Wells 1 and 2 eventually enter the Pacific Ocean. According to the County's expert, flow of UIC well effluent from the Facility to ocean waters equals approximately 3,456 gallons per meter of coastline per day, or approximately one gallon of every seven gallons of groundwater entering the ocean waters. The District Court granted the plaintiff's motion for partial summary judgement on the County's liability under the CWA for discharges into UIC Wells 1 and 2 at the Facility on May 30, 2014, and reaffirmed this finding on January 23, 2015, while also denying the defendant's motion for partial summary judgement (*Hawai'i Wildlife Fund et al., v. County of Maui*, 2015⁴).

Following the District Court denial of the County's motion for certification for an interlocutory appeal and stay of the proceedings, the County appealed to the United States Court of Appeals for the Ninth Circuit (Ninth Circuit) in 2017. On February 1, 2018, as amended on March 30, 2018, the Ninth Circuit affirmed the District Court's summary judgement rulings (*Hawai'i*

⁴ *Hawai'i Wildlife Fund, et al., v. County of Maui*, Civil No. 12-00198 (2015).

https://www.govinfo.gov/content/pkg/USCOURTS-hid-1_12-cv-00198/pdf/USCOURTS-hid-1_12-cv-00198-2.pdf

Wildlife Fund, et al., v. County of Maui, 2018^{5,6}). The Ninth Circuit concluded that the UIC wells at the Facility constitute a point source, and that the CWA does not require that a point source itself convey pollutants directly to navigable waters. The Ninth Circuit also concluded the County was liable since the pollutants from the Facility effluent were “fairly traceable” from the point source to a navigable water such that the discharge was the “functional equivalent” of a discharge into the navigable water, and the pollutant levels reaching navigable water were more than “*de minimis*”. The amended decision denied the County’s petition for rehearing en banc (review of judgement).

A certiorari review of the case was granted by the United States Supreme Court (Supreme Court), and arguments were heard in November 2019. On April 23, 2020, the Supreme Court issued their decision (*County of Maui, Hawaii v. Hawai’i Wildlife Fund et al.*, 2020⁷), holding that an NPDES permit is required for discharges of pollutants from a point source that reaches navigable waters after travelling through groundwater if that discharge is a “functional equivalent of a direct discharge from the point source into navigable waters”. The ruling established that in determining whether a pollutant source is subject to regulation under the NPDES program, multiple factors must be considered. The courts stated that there can be many potentially relevant factors to determine if there is a “functional equivalent” to a direct discharge which would subject a Facility to regulation by the NPDES program and identified seven of these:

1. Transit time;
2. Distance traveled;
3. The nature of the material through which the pollutant travels;
4. The extent to which the pollutant is diluted or chemically changed as it travels;
5. The amount of pollutant entering the navigable waters relative to the amount of pollutant that leaves the point source;
6. The manner by or area in which the pollutant enters the navigable waters; and
7. The degree to which the pollutant has maintained its specific identity.

On July 15, 2021, the District Court issued an initial decision on remand of the case. On July 26, 2021, the District Court amended the decision (*Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021b⁸), granting a summary judgement motion filed by the plaintiffs and denying a summary judgement motion filed by the defendants. Because District Court was ruling on competing motions for summary judgment, rather than the presentation of evidence at trial, the Court noted that it was viewing all facts in the light most favorable to the County of Maui and drawing

⁵ *Hawai’i Wildlife Fund, et al., v. County of Maui*, No. 15-17447 (2018).

<https://www.govinfo.gov/content/pkg/USCOURTS-ca9-15-17447/pdf/USCOURTS-ca9-15-17447-0.pdf>

⁶ *Hawai’i Wildlife Fund, et al., v. County of Maui*, No. 15-17447 Amendment (2018).

<https://www.govinfo.gov/content/pkg/USCOURTS-ca9-15-17447/pdf/USCOURTS-ca9-15-17447-1.pdf>

⁷ *County of Maui, Hawaii v. Hawaii Wildlife Fund et al.*, No. 18-260, 590 U.S. ____ (2020).

https://www.supremecourt.gov/opinions/19pdf/18-260_jifl.pdf

⁸ *Hawai’i Wildlife Fund, et al., v. County of Maui*, Civil No. 12-00198; Amended order granting plaintiff’s motion for summary judgement; Amended order denying defendant’s motion for summary judgement (2021b).

https://www.govinfo.gov/content/pkg/USCOURTS-hid-1_12-cv-00198/pdf/USCOURTS-hid-1_12-cv-00198-8.pdf

all reasonable inferences in favor of the County. The amended decision concluded that, in light of the evidence presented, the County was required to obtain an NPDES permit under the CWA consistent with the analysis established by the Supreme Court. The District Court based this decision on information submitted by both parties regarding the seven factors identified by the Supreme Court for determining “functional equivalent of a direct discharge”. The County’s motion for reconsideration of the amended judgement was denied on October 20, 2021.

2. FUNCTIONAL EQUIVALENCE ANALYSIS

In Hawaii, State waters include all waters, whether groundwater or surface waters. NPDES permits are issued by the HDOH to protect surface water quality and the beneficial uses provided by the oceans, streams, wetlands and other surface waters. HDOH UIC permits are issued by the HDOH program to protect the quality of Hawaii’s underground sources of water from contamination related to the injection well activity. These two separate regulatory permitting programs have historically been implemented as programs independent of one another, not considering the inherent connection of groundwater and surface water in a holistic hydrologic system. While this separation is convenient for programmatic purposes, the HDOH recognizes the hydrologic connection between groundwater and surface waters and the necessity to consider such connections when discharges to groundwaters via injection wells measurably impact the quality of surface waters.

The Supreme Court has made it clear that in certain situations, a discharge that reaches surface waters through groundwater may be subject to a federal CWA NPDES permit. The Court’s opinion emphasized that the purpose of the CWA, which establishes the NPDES program, is to “restore and maintain the...integrity of the Nation’s waters”. The opinion concluded that the statutory provisions require an NPDES permit if the addition of the pollutants through groundwater is the “functional equivalent” of a direct discharge from a point source into navigable waters.

To determine whether a discharge to a groundwater is subject to an NPDES permit, the Supreme Court recognized that case-specific analysis is required to determine if the discharge falls within the statutory reaches intended by Congress. In its opinion, the Supreme Court warned of regulatory interpretations that are too extreme in either direction (See *County of Maui, Hawaii v. Hawai’i Wildlife Fund et al.*, 2020 id., 140 S. Ct. at 1476–77): it is outside of Congress’ intentions to adopt an overly broad stance that requires permitting for all pollutant discharges that are “fairly traceable” or to have an excessively narrow interpretation that fails to capture point sources that have a measurable impact on navigable waters because of technicalities in how it arrives there.

The Supreme Court’s opinion focuses on how the statutory language applies to a pollutant that leaves a point source and travels through groundwater before reaching navigable waters. The Court determined that an NPDES permit is required if the pollutant’s addition and transport through groundwater is a “functional equivalent” of a direct discharge from the point source to navigable waters. The Supreme Court also stated that *multiple* factors may prove relevant to determining whether a particular discharge is the functional equivalent of a direct discharge into navigable waters, and that those factors may be more or less important depending on the

situation. The opinion identified seven (7) potentially relevant factors: (1) transit time; (2) distance traveled, (3) the nature of the material through which the pollutant travels; (4) the extent to which the pollutant is diluted or chemically changed as it travels; (5) the amount of pollutant entering the navigable waters relative to the amount of the pollutant that leaves the point source; (6) the manner by or area in which the pollutant enters the navigable waters; and (7) the degree to which the pollution (at that point) has maintained its specific identity. The Court also states that additional guidance may also come through administrative guidance, statutory objectives, and future court cases.

Hawaii's statutory objectives are aligned with those of the CWA, but also take on State-specific mandates to protect water quality. HRS, Chapter 342D states that it is the duty of the Director (of the Department of Health) to prevent, control and abate water pollution in the State and may control all management practices for domestic sewage, sewage sludge, and recycled water, whether or not the practices cause water pollution. HRS, Section 342D-50 goes on to say that no person shall discharge any water pollutant into state waters, or cause or allow any water pollutant to enter state waters except in compliance with this chapter, rules adopted pursuant to this chapter, or a permit or variance issued by the director. HAR, Chapter 11-55, Water Pollution Control, articulates that it is the policy of the State to conserve State waters, protect, maintain and improve the quality of State waters for drinking water supply, and food processing; growth, support and propagation of shellfish, fish and other desirable species of marine and aquatic life; for oceanographic research; the conservation of coral reefs and wilderness areas; and for domestic, agricultural, industrial, and other legitimate uses.

While HAR Chapter 11-54 states that the water quality criteria does not apply to groundwater, it provides the exception for the Director, in their discretion, to take appropriate actions when they believe that the discharge of pollutants to the ground or groundwater has adversely affected, is adversely affecting, or will adversely affect the quality of any State water. As such, in Hawaii, statutory duties and powers of the State authorize the HDOH to issue an NPDES permit to control the discharge of pollutants to groundwaters when they adversely affect the quality of any other State water.

NPDES permits are designed to protect receiving water quality by assessing the nature and constituents of a wastewater discharge and requiring compliance with both technology-based effluent limitations and water quality-based effluent limitations (WQBELs), or both. Two key assumptions of the NPDES permitting scheme are that the quantity and quality of pollutants emitted by a facility correlates to the quantity and quality of pollutants in the receiving water *and* that practices at the facility control the pollutants discharged into receiving waters. These concepts of correlation and control are not technically difficult to define for traditional direct discharges. There is no question as to whether a pollutant measured at the "end of pipe" (prior to contact with the receiving water) is the same (correlates) as the pollutant immediately entering the receiving water. Also, there is no question that in direct discharges, the regulated facility has absolute control over quantity and quality entering into the receiving from the "end of pipe" discharge. However, in the case of subsurface discharges which pass through groundwater or other mediums (e.g., geologic substrate), there is a possibility that the quantity or quality of a pollutant leaving the facility changes before it reaches the receiving surface

water. Further, there is a possibility that the Facility does not in fact have control over the quantity or quality of pollutants observed in surface waters even though it does have control of the quantity and quality of the pollutants that leave the Facility, given the possibility of mixing with other sources or changing in the subsurface environment.

Being that the purpose of the CWA is to restore and maintain the integrity of the Nation's surface waters, and the policy of the State of Hawaii is to conserve State waters and protect, maintain and improve the quality of State waters for various purposes related to human and environmental health, the determination of functional equivalence may depend upon a variety of factors, but ultimately is tied to the purpose of protecting, maintaining, or improving surface water quality.

Factors evaluated to determine functional equivalence include the seven identified by the Supreme Court, but must be interpreted within the broader context of the applicable statutes and intended purposes. The following analyses to determine whether the evidence associated with the discharges from the Lahaina WWRF are the "functional equivalent" of a direct discharge within the context of the federal CWA and applicable State laws.

This section provides the analysis for each of the seven factors for determining functional equivalence for the Lahaina WWRF as outlined by the Supreme Court in *County of Maui, Hawaii v. Hawai'i Wildlife Fund et al.*, 2020, and provides the rationale for issuance of an NPDES permit to control pollution from the Lahaina WWRF. Note: the District Court considered the volume of wastewater injected, a factor not listed by the Supreme Court, however it was not essential to the court's determination.

2.1 Factor 1: Transit Time

When determining whether a discharge from a point source to a navigable water is the "functional equivalent" of a direct discharge, transit time (See *County of Maui, Hawaii v. Hawai'i Wildlife Fund et al.*, 2020 id., 140 S. Ct. at 1476–77) is a significant consideration, as transit time only exists when connectivity has already been established.

With transit time, practicality may have some bearing on an upper limit to disqualify a subsurface discharge from being functionally equivalent to a direct discharge. If transit times are so long that connectivity between a surface water and point source cannot be reasonably observed, then one would have to conclude that the subsurface discharge is not functionally equivalent. However, when connectivity *is* reasonably observable, a long transit time alone should not be decisive in determining functional equivalence.

2013 Dye Tracer Study

Understanding pollutant transport and travel time through a subsurface zone was crucial to assessing groundwater quality and evaluating the necessity of NPDES compliance. Multiple researchers indicated that pollutant travel time might be primarily governed by heterogeneity and variability in hydraulic conductivity and gradient and the variability of transport pathway lengths, making it challenging to assess the pollutant travel time in the subsurface zone

accurately. A tracer is often used to determine to pollute travel time in the saturated and unsaturated zones as well as groundwater pathways for assessing groundwater quality.

In 2013, the University of Hawaii conducted a dye tracer study (Glenn et al., 2013) on behalf of the DOH, the EPA, and the ERDC. The dye tracer study demonstrated that effluent from the Lahaina WWRF UIC Wells 3 and 4 was moving from the groundwater aquifer to nearby coastal waters, which are a WOTUS and State water.

As previously stated, the study found that effluent from the UIC wells discharged to a diffuse groundwater inflow zone and seeps that are evident along the coastline to the southwest of the Facility. These submarine groundwater discharges (SGD) are divided into two groups, the SSG and the NSG. The SSG and NSG are located at North Kaanapali Beach, approximately 0.85 kilometers (0.5 miles) to the southwest of the Facility, and between 3 to 25 meters from the shoreline (Figure 4; Glenn et al., 2013). The SSG is comprised of 106 seeps within a total area of 500 m², and the NSG is comprised of 183 seeps within a total area of 1,800 m². The average size of an individual seep is 5.4 cm².

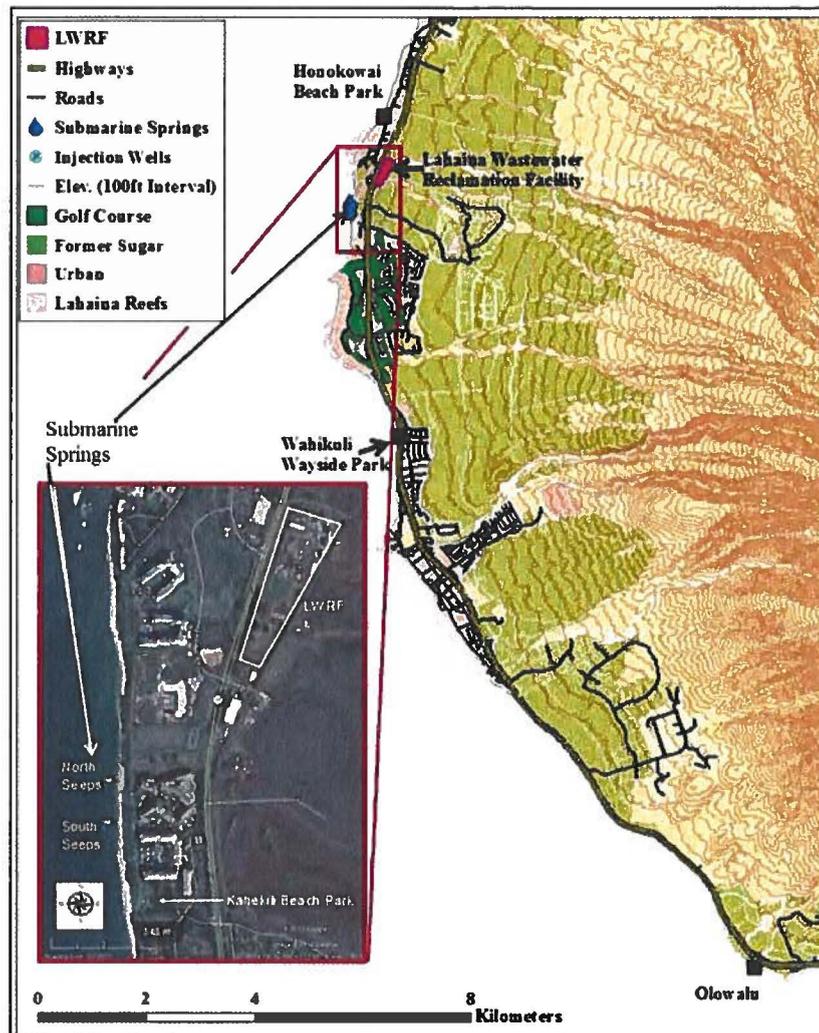


Figure 4. Facility, SSG, and NSG Location Map

The study also indicated that the average travel time for the tracer dye to flow from the UIC wells to the monitoring locations (SSG and NSG) was approximately 14 to 16 months. After the tracer dye was injected into Wells 3 and 4, it arrived at the coastal submarine spring sites in a minimum travel time of 84 days; the peak BTC at SSG and NSG occurred 9 and 10 months after the tracer dye injection, respectively. The average travel time to both monitoring locations exceeded one year (approximately 450 days). The study also noted that the tracer dye continued to be detected at the seep monitoring locations over two years after injection in the UIC wells. In the absence of any injection, travel time of the dye would decrease to 50 days based on the average groundwater-flow velocity at the Facility.

According to the results from the study, at the time of dye BTC completion, 64 percent of the dye-traced-effluent had been recovered at the spring areas. Therefore, at a steady state, 64 percent of the treated effluent injected into the UIC wells discharges into nearshore ocean

waters. Based on these results, it can be assumed that a significant amount of treated effluent from the Facility has reached the receiving water.

The travel time estimated for the dye tracer in this study might be considered analogous to the transit time of pollutants of concern present in the treated effluent, if the pollutants from the treated discharge are not chemically changed, degraded, or absorbed into the minerals or soil particles. However, due to natural processes, pollutants of concern from the Facility will have varying fate and transport mechanisms, as well as mobility and retention times in the subsurface zone, that may affect their travel time in the vadose zone.

Toxicological properties of heavy metals are characterized by the persistence of metal (long half-life), soil residence time (>1,000 years), chronic and sub-lethal effects of the metal, bioaccumulation, biomagnification, teratogenic, and carcinogenic properties of the metal (Manzetti et al., 2014⁹; Selvi et al., 2019¹⁰). Pollutants of concern in the Facility effluent mostly consist of heavy metals that are stable, and have significantly long half-lives in the soil system. According to Limura et al. (1977)¹¹, half-lives of zinc, copper, and lead are 70 to 510 years, 310 to 1,500 years, and 740 to 5,900 years. Bowen et al. (1979)¹² estimated residence times in the range of 500-1,000 years for mercury and 1,000-3,000 years for copper, nickel, lead, and zinc under temperate climatic conditions (Bakshi et al., 2018¹³). Most of the “priority” chloro-organics have degradation half-lives in water, soil, and sediment measured in years, but with shorter degradation half-lives in the atmosphere. Polymers such as polyethylene or PVC also react very slowly, as do certain silicones. Along with the long retention time in the hydrological system, some of the pollutants of concern are highly mobile in subsurface hydrological system.

In the dye tracer study, all chemicals were assigned a mobility category based on their EPA groundwater mobility ranking value (for liquid, non-karst). Values were obtained from Appendix A of EPA’s Superfund Chemical Data Matrix (SCDM) methodology. Chemical mobility was ranked as:

⁹ Manzetti, S., van der Spoel, E.R. and van der Spoel, D. 2014. Chemical properties, environmental fate, and degradation of seven classes of pollutants. *Chemical research in toxicology*, 27(5):713-737.
<https://pubs.acs.org/doi/abs/10.1021/tx500014w>

¹⁰ Selvi, A., Rajasekar, A., Theerthagiri, J., Ananthaselvam, A., Sathishkumar, K., Madhavan, J. and Rahman, P.K. 2019. Integrated remediation processes toward heavy metal removal/recovery from various environments-a review. *Frontiers in Environmental Science*, 7:66.
<https://www.frontiersin.org/articles/10.3389/fenvs.2019.00066/full>

¹¹ Iimura, K., Ito, H., Chino, H., Morishita, M. and Hirta, H. 1977. Behavior of pollutant heavy metals in soil plant system. Proc. Inst. Sem. SEFMIA, Tokyo. 357.

¹² Bowen, H. J. M. 1979. *Environmental Chemistry of the Elements*. Academic Press, New York.
<https://www.worldcat.org/title/environmental-chemistry-of-the-elements/oclc/5264186>

¹³ Bakshi, S., Banik, C., and He, Z. (2018). The impact of heavy metal contamination on soil health.
https://www.researchgate.net/publication/326894899_The_impact_of_heavy_metal_contamination_on_soil_health

- Pollutants with high mobility (EPA mobility ranking of 1.0): Ammonia, Arsenic, Bromodichloromethane, Chloroform, Cyanide, Selenium;
- Pollutants with medium mobility (EPA mobility ranking of 0.01), Barium, Chromium, Copper, Mercury (elemental), Nickel, Phenols, Vanadium, Zinc; and
- Pollutants with low mobility (EPA mobility ranking of <0.01)

As certain toxic pollutants are highly stable and mobile in the soil matrix (i.e., copper, mercury, nickel), and have longer retention times, it can be assumed that those pollutants will persist in the soil along the flow path to the receiving water due to their high mobility. Other pollutants may readily degrade along the flow path. Assuming that 64 percent of treated effluent reaches the receiving water, it can be assumed that pollutants discharged from the Facility have a similar travel time as the dye tracer and can consistently reach surface waters within 15 months of UIC well injection.

District Court Decision

In May 2021, the District Court issued an Order based on the decision of the Supreme Court (See “Order Regarding County Motions for Summary Judgement”, *Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021a¹⁴). As part of the Order, the parties involved were required to submit responses to questions regarding each of the seven factors demonstrating “functional equivalence”. The District Court issued this requirement to assist in deciding the original motions for summary judgement submitted by each party (*Hawai’i Wildlife Fund et al., v. County of Maui*, 2015) based on the decision of the Supreme Court. For factor one, the District Court asked the parties to answer the following questions:

- What is the minimum documented time (in days) for treated wastewater to move from Lahaina WWRF Wells 3 and 4 to the Pacific Ocean?
- How long does it take before more than half of the treated wastewater injected into Lahaina WWRF Wells 3 and 4 on a particular day reaches the Pacific Ocean?
- What is the minimum time that it takes for treated wastewater to move from Lahaina WWRF Wells 1 and 2 to the Pacific Ocean?
- How long does it take before more than half of the treated wastewater injected into Lahaina WWRF Wells 1 and 2 on a particular day reaches the Pacific Ocean?
- Jean E. Moran, Ph.D., opines that the time required for effluent from Wells 1 and 2 to reach the nearshore ocean is similar to that from Wells 3 and 4. See Decl. of Jean E. Moran, Ph.D., ECF No. 432-22, PageID # 10561. Is there anything in the record indicating that this opinion is correct or incorrect?

In the July 26, 2021, amended District Court decision (*Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021b), the court concluded that, consistent with the analysis established by the

¹⁴ *Hawai’i Wildlife Fund, et al., v. County of Maui*, Civil No. 12-00198 (2021a).

https://www.govinfo.gov/content/pkg/USCOURTS-hid-1_12-cv-00198/pdf/USCOURTS-hid-1_12-cv-00198-6.pdf

Supreme Court and in light of all the evidence, the County was required to obtain an NPDES permit under the CWA. The District Court based this finding, in part, on the information submitted by both parties. In regard to factor one, the District Court concluded that the evidence did support the need for an NPDES permit, stating the following:

“According to the 2013 Tracer Dye Study, dye placed into Wells 3 and 4 of the Lahaina WWRF reached the north seep in the nearshore ocean waters in as little as 84 days, with peak concentration of the dye occurring 9 to 10 months after placement in the wells. Half of the dye measured at the seeps entered the ocean within 300 days. The average (mean) time it took for the wastewater to travel from the wells to the ocean was 14 to 16 months. With respect to transit time, this case falls between the seconds or minutes it might take pollutants to reach the ocean from a pipe ending a few yards from the ocean and the many years pollutants might take to travel through 50 miles of groundwater to the ocean. Even in the latter situation, the Supreme Court did not categorically rule out the need for an NPDES permit, saying only that permitting requirements “likely do not apply.” 140 S. Ct. at 1476.

This court has previously characterized the 2013 Tracer Dye Study as “indisputably demonstrat[ing] the relatively rapid flow of significant quantities of pollutant from the Lahaina WWRF to the ocean.” 24 F. Supp. 3d at 1003. This court still believes that the transit time favors a determination that the County must get an NPDES permit.

The County’s argues that 84 days is a lot longer than the 90 to 108 minutes that wastewater would take to travel the half-mile in a hypothetical pipe running in a straight line from the Lahaina WWRF to the ocean. But this court does not view that hypothetical pipe as any kind of lodestar. It is instead just one of an immense number of examples one could imagine for transporting wastewater half a mile.

One could imagine dozens of tanker trucks like those used for transporting gasoline arriving at the Lahaina WWRF and being filled in a continuous rotation with wastewater before driving to the shoreline, dumping their cargo into the ocean, and returning to the Lahaina WWRF to be refilled. With such an example, the time to fill the tanks, drive to the ocean, empty the tanks, and repeatedly refill them might become a baseline. Alternatively, one could imagine creating an enormous concrete reservoir into which wastewater flowed, only to be emptied and transported to the ocean by trucks when the reservoir was filled, which could take weeks or months. It makes no sense to this court to use the single example selected by the County as some kind of absolute measuring point, especially when changing the dimensions of the hypothetical pipe could easily alter travel times.

Indeed, the Supreme Court knew that it was dealing with pollutants traveling through groundwater, not through a pipe. The very nature of groundwater means that the pollutants will not reach the ocean in a matter of minutes. Had the Court intended to say that anything taking more than 90 minutes or a day or a week or a month was exempt from the NPDES

permitting requirement, it could easily have said that. Instead, the Court recognized examples at the extremes of a few seconds or minutes to many years. Because the Supreme Court knew it was dealing with movement through groundwater, it makes sense to assume that the Court expected the parties to be dealing with transport time measured in months. Notably, the Supreme Court set its extreme at “many years,” not at “many months,” and not even at one year or two years.

The County’s 90-minute transit time refers to when wastewater first reached the ocean through a hypothetical pipe. See Lekven Decl., ECF No. 440-6, PageID # (indicating that dye from a hypothetical pipe would be expected to start emerging from that pipe after 90 minutes). If this court similarly looks at when the wastewater, traveling through groundwater, first reaches the seeps, the court has a time of 84 days. Peak concentrations of the dye take longer (9 to 10 months), and the average (mean) time is 14 to 16 months. Although the wastewater measured at the seeps accounts for a very small amount of the total amount of wastewater released by the Lahaina WWRF, the parties have agreed that all of the wastewater discharged from the wells makes its way to the Pacific Ocean. Some of it may take longer than the wastewater observed at the seeps, but some of it may take shorter.

There is no dispute that much of it enters the ocean through diffuse flow rather than by flowing or dripping through seeps, which are holes in rocks. It is impossible to track each finger of water percolating through groundwater or sand or dirt. Indeed, if a party could not prevail without establishing the transit time for every trickle of liquid through groundwater, then no challenge involving groundwater could ever be successful. In fashioning a test, the Supreme Court was most assuredly not saying that groundwater cases were per se unwinnable. To the contrary, the Supreme Court must have thought that a groundwater case might require a permit. In complaining that Plaintiffs have not tracked all of the wastewater through groundwater, the County is setting up an insurmountable barrier that would nullify the application of the Clean Water Act’s permit requirement in all groundwater cases.

This court has clearly in mind the concept that any genuine issue of material fact should be left for trial rather than resolved on a summary judgment motion. But with respect to the time aspect of the Supreme Court test, trial could not shed more light on the subject. There will be no proof beyond what is already in the record about the time it takes for wastewater not observed at the seeps to reach the ocean. Instead, the court will be faced with the certainty that all of the wastewater discharged into groundwater from the wells eventually reaches the ocean, some of it by 84 days, some of it within 9 to 10 months, some of it within shorter or longer periods, much of it through diffuse flow that cannot be precisely measured. Even if this court doubles the longest time measured at the seeps and assumes that some of the wastewater took that doubled time to reach the ocean, this court is still far from the extreme of “many years.” Considering that this case involves what the Supreme Court knew would be transport through the uneven course of groundwater, this court concludes that the time factor weighs in favor of requiring an NPDES permit.”

Analysis

Connectivity and transit time were established through the dye tracer study. Disposal of soluble chemicals with properties similar to dye into the UIC wells (e.g., dye) likely take approximately three months to over a year to surface in nearshore waters. Given that the dye discharged into the UIC wells is later observed in nearshore waters during the study period, it is reasonable to conclude that pollutants with similar properties to the dye will discharge into surface waters in a similar manner, physically and temporally. The results of the dye tracer study support the conclusion that the Facility maintains an influence on the quality of the receiving water through its discharge into the UIC wells.

2.2 Factor 2: Distance Travelled

When determining whether a discharge from a point source to a navigable water is the “functional equivalent” of a direct discharge, distance traveled must also be considered (See *County of Maui, Hawaii v. Hawai’i Wildlife Fund et al.*, 2020 id., 140 S. Ct. at 1476–77). Much like with transit time, distance alone cannot be a governing factor in whether a subsurface discharge is found to be functionally equivalent to a direct discharge for NPDES purposes. Rather, distance traveled may have a significant impact on whether a facility may be subject to an NPDES permit within the context of how the pollutant changes in quantity or quality as it passes through various media from the point of disposal to the emergence in the receiving waters. With a greater distance travelled, there exists a higher potential for the pollutant to be transformed, degraded, or absorbed to the point where the addition of the pollutant in the receiving water may be insignificant or indistinguishable from other sources.

2013 Dye Tracer Study

In 2013, the University of Hawaii conducted dye tracer study (Glenn et al., 2013) on behalf of the HDOH, the EPA, and the ERDC. The dye tracer study showed it possible to trace the discharge from the Lahaina WWRF UIC Wells 3 and 4 to nearby coastal waters.

As previously stated, the study found that effluent from the UIC wells discharged to a diffuse groundwater inflow zone and seeps that are evident along the coastline to the southwest of the Facility. These SGD discharges are divided into two groups, the SSG and the NSG. The SSG and NSG are located at North Kaanapali Beach, approximately 0.85 kilometers (0.5 miles) to the southwest of the Facility and within 3 to 25 meters from the shoreline. The SSG is comprised of 106 seeps within a total area of 500 m², and the NSG is comprised of 183 seeps within a total area of 1,800 m². The average size of an individual seep is 5.4 cm².

The spacing between the UIC Wells at the Facility is such that there is significant interference between the injection flow fields. Wells 3 and 4 inject effluent and are located between Well 2 and the seeps where the dye tracer emergence was monitored. Therefore, the dominant flow from Wells 3 and 4 may displace the injected effluent from Well 2 around the Well 3 and 4 flow fields. This circumstance would likely result in the injected effluent from Well 2 not taking a flow path directly towards the submarine springs, but in an alternate direction. Figure 5 (Glenn

et al., 2013) shows the results of computer simulations using the USGS groundwater flow model MODFLOW and the particle tracking model MODPATH, which show particle tracks created by injection into Wells 2, 3, and 4. The model output indicates that with simultaneous injection into these three wells, as is the current operation at the Facility, the injectate from Well 2 is displaced from a pathway to the submarine springs. This model shows that the injectate from Well 2 is diverted to the east around the simulated barrier before taking a northwesterly path to the ocean.

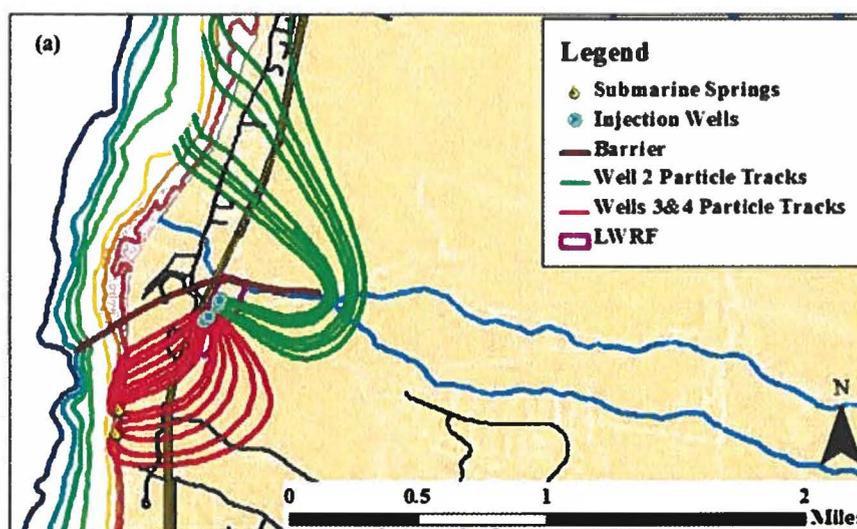


Figure 5. The tracks that simulated particle take when the majority of the treated wastewater is injected into Wells 3 and 4. The particle tracks of the Well 2 injectate (shown in green) are displaced inland and to the north by the injectate from Wells 3 and 4 (shown in red)

At Lahaina, instead of moving towards the shoreline, the effluent plume diverted to the southwest, possibly by a buried valley fill from an ancestral stream course. Effluent injected deep into the volcanic-rock aquifer should rise buoyantly and enter overlying sediments beneath the narrow coastal plain. From there, effluent may flow preferentially through permeable limestone, gravel, and sand layers, and this may also help guide effluent to the southwest.

Although the effluent plume took an oblique pathway instead of a direct path to reach the seep, this is not a significant travel distance for a highly mobile pollutant.

District Court Decision

In May 2021, the District Court issued an Order based on the decision of the Supreme Court (See “Order Regarding County Motions for Summary Judgement”, *Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021a). As part of the Order, the parties involved were required to submit responses to questions regarding each of the seven factors demonstrating “functional equivalence”. The District Court issued this requirement to assist in deciding the original motions for summary judgement submitted by each party (*Hawai’i Wildlife Fund et al., v.*

County of Maui, 2015) based on the decision of the Supreme Court. For factor six, the District Court asked the parties to answer the following questions:

- What is the minimum distance that treated wastewater flows from Lahaina WWRF Wells 1, 2, 3, and 4 to the Pacific Ocean?
- What percentage of treated wastewater from the Lahaina WWRF flows the minimum distance to reach the Pacific Ocean?
- What is the approximate distance traveled by at least half of the wastewater flowing from Lahaina WWRF Wells 1, 2, 3, and 4 to the Pacific Ocean?
- What percentage of treated wastewater from the Lahaina WWRF emerges from submarine springs at the North and South Group Seeps?
- Is there any dispute that more than half of the effluent from Wells 3 and 4 emerges at the seeps (even if there is a dispute about how much more than half)?
- What percentage of treated wastewater from the Lahaina WWRF emerges as diffuse flow in the North and South Group Seep areas?
- What percentage of treated wastewater from the Lahaina WWRF emerges within 1/2 mile of the North and South Group Seep areas?
- What percentage of treated wastewater from the Lahaina WWRF emerges within 3/4 mile (straight line) of the Lahaina WWRF? The percentage should include any percentage listed in the response to the previous question.
- What percentage of treated wastewater from the Lahaina WWRF emerges within 1 mile (straight line) of the Lahaina WWRF?
- What percentage of treated wastewater from the Lahaina WWRF emerges within 1.5 miles (straight line) of the Lahaina WWRF?
- What percentage of treated wastewater from the Lahaina WWRF emerges within 2 miles (straight line) of the Lahaina WWRF?

In the July 26, 2021, amended decision (*Hawai'i Wildlife Fund, et al., v. County of Maui*, 2021b) the District Court concluded that, in light of all the facts and evidence, the County was required to obtain an NPDES permit under the CWA consistent with the analysis established by the Supreme Court. The District Court based this finding, in part, on the information submitted by both parties. In regard to factor two, the District Court concluded the following:

"It is undisputed that the Lahaina WWRF wells are located one-half mile or less from the Pacific Ocean. The distance the wastewater flows from the Lahaina WWRF to the ocean cannot be measured with precision. The wastewater may move vertically and horizontally through the aquifer, rather than in a straight path to the sea. Plaintiffs' expert says the distance the wastewater travels does not exceed 1.5 miles. See Decl. of Jean E. Moran, Ph.D., ECF No. 432-22, PageID # 10566. The County's expert, on the other hand, says the wastewater travels from the Lahaina WWRF to the ocean a minimum distance ranging from 0.3 to 1.3 miles. See Geosync Consultants Expert Report, ECF No. 432-29, PageID #s 10781, 10786. Another of the County's

experts opines that wastewater being discharged into the ocean as diffuse flow may “occur anywhere along the west-Maui coast.” List Decl., ECF No. 440-2, PageID # 11064. Plaintiffs and the County’s experts are fairly close to each other in terms of the minimum distance the wastewater travels, but there is no consensus on the maximum distance it travels. While there is a question of fact as to the maximum distance the wastewater travels, the undisputed minimum distance range (0.3 to 1.3 miles) does not come close to the Supreme Court’s reference to the 50-mile extreme. See 140 S. Ct. at 1476.

The County argues that because most of the wastewater is being discharged into the ocean as diffuse flow, this court cannot discern the exact distance that most of the wastewater is traveling. This court agrees that a precise measurement is impossible because, with diffuse flow, it is not even clear where the wastewater is entering the ocean. The 2013 Tracer Dye Study concluded that over 90 percent of the discharge within the two seep groups was occurring as diffuse flow. See ECF No. 432-24, PageID # 10602. While the County argues that the evidence does not demonstrate exactly where the diffuse flow occurs, it concedes that diffuse flow occurs north and south of Kahekili beach and deeper offshore. See ECF No. 439-1, PageID #s 11048- 49. We therefore know a little about where that diffuse flow entered the sea. In any event, we can tell where the monitored seeps are located in the nearshore waters about a half a mile from the Lahaina WWRF. See 2013 Tracer Dye Study, Figure 4-1 (Location and arrangement of monitoring points), ECF No. 432-24, PageID # 10699.

Additionally, Plaintiffs argue that the increase in nearshore water temperature and algal $\delta^{15}N$ concentration is indicative of diffuse flow near the monitored vents, although Defendants contend that other causes are at play. Viewing disputed facts in the light most favorable to the County while considering Plaintiffs’ motion, this court, in examining the distance involved, disregards Plaintiffs’ reasoning on the causes of higher temperatures and nitrogen isotope concentration. What the court does not disregard is the evidence that the wastewater travels a minimum distance of between 0.3 and 1.5 miles to the sea. Even if the average distance were double the high end of that minimum (i.e., three miles), this case would be far from the Supreme Court’s 50-mile example. Indeed, if the average distance were triple that high end, that distance would still be less than a tenth of the 50-mile extreme.

It is hard to see how trial would lead to a more precise figure. Certainly, the parties have not suggested how a trial might yield better data. This court concludes that the available data indicates that, even with diffuse flow, the wastewater likely travels a relatively short distance through groundwater. Such a distance weighs in favor of requiring an NPDES permit.”

Analysis

When examining distance travelled, it is important to consider how the distance affects the quantity or quality of the pollutants discharged. The distance travelled by the effluent disposed of through the Lahaina WWRF’s UIC wells is not excessive, and it is not sufficient to reduce, transform or degrade the quantity or quality of the pollutants to undetectable levels.

Additionally, while there is no available method to determine the distance diffuse flow travels prior to discharge, the District Court pointed out that the actual distance between the Facility and the seeps is far less than the 50-mile example cited by the Supreme Court.

The Lahaina WWRF is in close proximity to the coast and modelling suggests relatively direct pathways from the UIC wells to the ocean. It is reasonable to conclude that distance travelled does not fundamentally change the fact that pollutants in wastewater disposed by the Facility enter nearshore waters at levels that necessitate control under the NPDES program.

2.3 Factor 3: The nature of the material through which the pollutant travels

The third factor to consider when determining whether a discharge from a point source to a navigable water is the “functional equivalent” of a direct discharge is the nature of the material through which the pollutant travels (See *County of Maui, Hawaii v. Hawai'i Wildlife Fund et al.*, 2020 id., 140 S. Ct. at 1476–77). As with transit time and distance travelled, the nature of material through which pollutants travel cannot be considered in isolation. The chemical or biological reactions that could change the quantity and quality of the pollutants as they travel through different material are affected by factors such as time, temperature and pressure, biological metabolization, among other factors. These potential chemical considerations are further addressed as considerations under Factor 4 (below). In evaluating how the nature of the material the effluent passed through affects the determination of functional equivalence, the geologic structure and composition of the area between the UIC wells and nearshore waters were considered, and how this geology impacts quantity or quality of the effluent during transport.

2013 Dye Tracer Study

In 2013, the University of Hawaii conducted dye tracer study (Glenn et al., 2013) on behalf of the HDOH, the EPA, and the ERDC. The dye tracer study demonstrated that effluent from the Lahaina WWRF UIC Wells 3 and 4 was discharging from the groundwater aquifer to which it was injected to nearby coastal waters, a WOTUS. Effluent was reaching the coastal waters through a diffuse groundwater inflow zone and seeps that are evident along the coastline to the southwest of the Facility (SGD discharges). Hydrological characteristics of the groundwater aquifer have a significant impact on the pollutant travel pattern, specifically travel time, velocity, and pathway. To evaluate whether the Facility discharge has the potential to reach the seep within a considerable amount of time, it is important to first characterize the aquifer properties through which the pollutant travels.

The Facility is located on the northwestern extent of the West Maui Volcano. The major geological feature of the study site consists of a central caldera and two main rift zones that comprise 1) the mostly shield-stage Wailuku Basalt, 2) the postshield-stage Honolulu Volcanics, and 3) the rejuvenated-stage Lahaina Volcanics, a minor unit of the West Maui Volcano. Wailuku Basalts are comprised of shield building stage lavas of the West Maui Volcano, which are generally thin-bedded lava flows. They are characterized by high permeability and storage

capacity, and comprise the main aquifers for groundwater withdrawal. The majority of groundwater flow occurs at the interface between lava flows (interflow boundaries), which commonly consist of clinker zones. These clinker zones give this path a hydraulic conductivity similar to that of clean gravels. The next geologic unit is the sediments, which are comprised of a combination of alluvial material, shoreline deposits, and fossil and modern reef materials. The fine grains of the alluvial sediments and the lithified reef material give this unit a relatively low bulk hydraulic conductivity. However, preferential flow paths in sedimentary deposits can result in locally high hydraulic conductivity values.

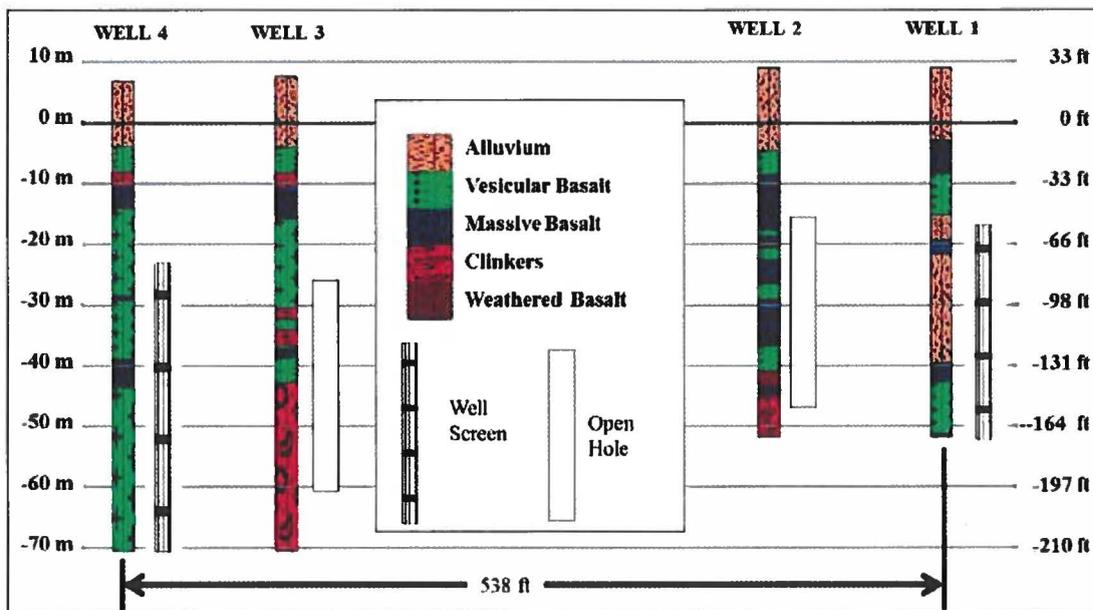


Figure 6. Borehole stratigraphy for the Lahaina WWRF UIC wells developed from the drillers' logs

Figure 6 (Glenn et al., 2013) shows the geology of the boreholes drilled to install the UIC wells at the Facility, along with the screened or open interval of the wells. This borehole stratigraphy indicates that effluent flowing from the UIC wells to the groundwater aquifer travels mostly through a vesicular basalt and massive basalt layer that has a high hydraulic conductivity. In Wells 2 and 3, there are some clinker zones within the water discharge area/screen/open hole through which water flows relatively freely. The remaining flow is routed through vesicular basalt layers.

Drilling logs for the UIC wells indicate that sedimentary deposits extend below the potentiometric surface. Preferential flow paths in the aquifer have also resulted in well-defined submarine springs. In addition to preferential flow point discharges, a diffuse discharge may also be present over a larger area.

tracer) transport. Previous reports cited in the study list probable values for effective porosity (i.e., porosity that contributes to groundwater flow) for basaltic rocks on Hawaii and elsewhere as ranging between 0.05 and 0.10. Low porosity values may be associated with massive features, including dense flows, a'a cores, dikes, and thick lava flows, while high values may be associated with fractures and a'a clinker zones. Additional reports cited in the study used 0.15 as the effective porosity value (including only hydraulically interconnected pore spaces), and an estimated average effective porosity of the volcanic rocks on Hawaii of 0.15. Assuming an effective porosity of 0.15 indicates that 15 percent of the void spaces will be connected, and effluent might flow freely through the subsurface system. Decreasing porosity generally translates to decreased permeability, and hence pollutant migration will be reduced.

Hydraulic conductivity is a quantitative measure of the capacity of a rock to transmit water. To accurately predict pollutant transport through the subsurface system, a precise estimation of hydraulic conductivity is crucial. It should be noted that effluent from the Facility is discharging from the UIC wells through a screen opening at the basaltic rock layer, followed by transportation through rocky substrate. Hydraulic conductivity of rocks depends on the permeability and properties of the fluid in the rock. Permeability describes the ease with which fluid can move through rock. Hydraulic conductivities (K) of the igneous and sedimentary rocks on West Maui are highly variable and distributed heterogeneously. Regional K values, estimated from specific capacity values of aquifers, range between 250 ft/d to 4,100 ft/d. Though high and low conductivity volcanic aquifers may alternate over several feet in depth, the volcanic aquifers on Maui are generally regarded as one unconfined system. This is because highly permeable structures, such as clinker zones and vertical fractures, have been commonly observed in all lava flows, both in outcrops and rock cores.

The water transport characteristics of the various aquifer materials vary significantly along the flow path. The hydraulic conductivity of the dike-intruded lavas in Hawaii is estimated to range from 1 to 500 ft/d. The low end of this estimate would be more representative of the West Maui Volcano due to the high density of dikes in the inland high-water body. In a groundwater model of the Lahaina District (Gingerich and Engott, 2012)¹⁵, a longitudinal horizontal hydraulic conductivity of 1,800 ft/d, a transverse hydraulic conductivity of 590 ft/d, and a vertical hydraulic conductivity of 17 ft/d were assigned for the Wailuku Basalts in the Lahaina area. In general, the vertical hydraulic conductivity of the dike-free lava flows may be tens to hundreds of times less than the horizontal hydraulic conductivity. The regional horizontal hydraulic conductivity of the dike-free volcanic rocks generally ranges from hundreds to thousands of feet per day. Figure 8, from Gingerich and Engott (2012) indicates that the hydraulic conductivity is high in the study area.

¹⁵ Gingerich, S.B. and Engott, J.A. 2012. Groundwater availability in the Lahaina District, west Maui, Hawai'i: U.S. Geological Survey Scientific Investigations Report 2012-5010. <https://pubs.usgs.gov/sir/2012/5010/sir2012-5010.pdf>

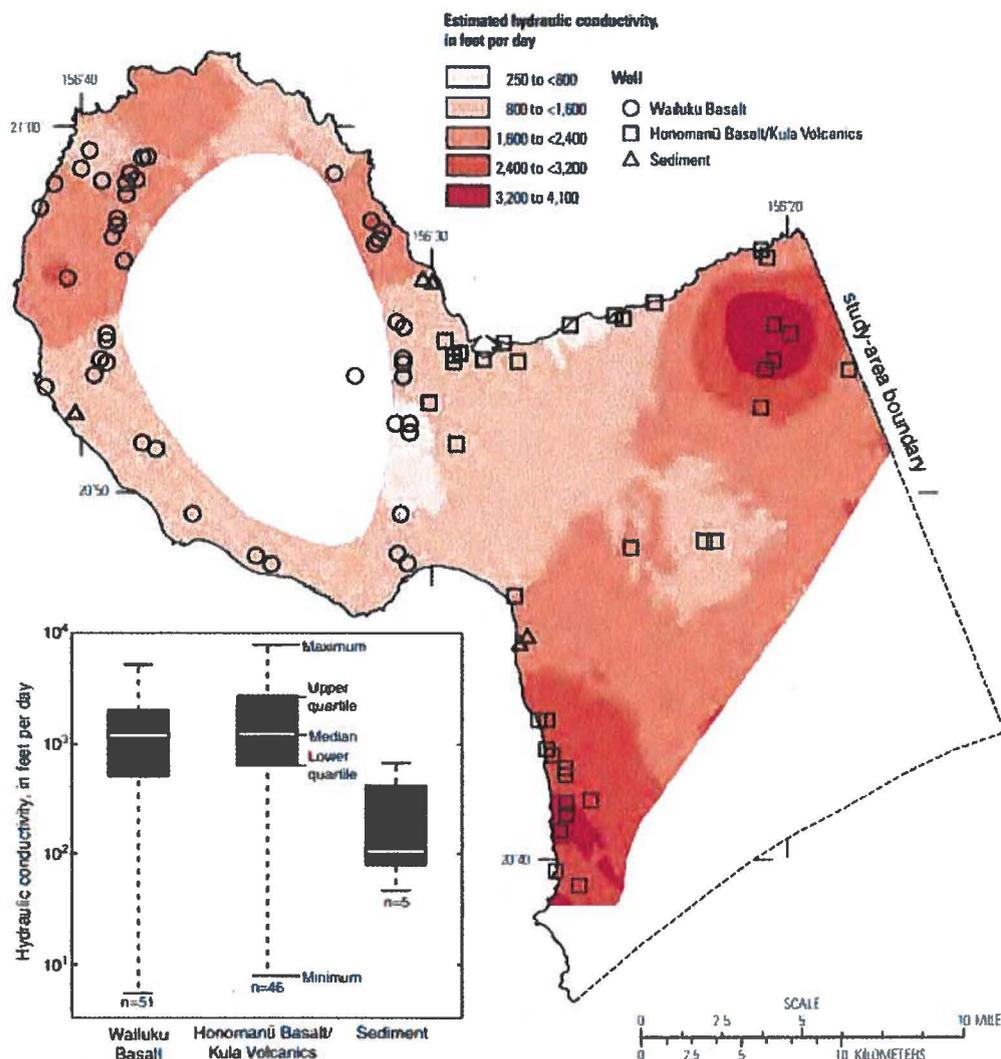


Figure 8. Distribution of regional aquifer hydraulic conductivity in central and west Maui, Hawaii

The higher hydraulic conductivity of the basalts in the Lahaina area indicates the high water transportation capability of the aquifer. Considering the fairly short distance between the UIC wells and seeps, mobile pollutants have a higher potential to travel to the seeps through the aquifer system. The dye tracer study concluded that the heterogeneity of unconsolidated formations results in a relatively small area of an aquifer cross-section carrying most of the water, and therefore solutes migrate more rapidly than expected. Considering the high porosity and specific conductivity of the layer, subsurface water may flow freely once discharged. However, low-permeability alluvium sediments (commonly referred to as caprock) are present in varying thicknesses along the effluent flow path in the study area. These caprocks may provide for potential sorption of pollutants, reduce the concentration of the dye tracer to below the minimum detection limit (MDL). Compared to the thickness of the high permeability

basaltic layer, the effect of the alluvium layer thickness on pollutant travel through this layer is insignificant.

District Court Decision

In May 2021, the District Court issued an Order based on the decision of the Supreme Court (See “Order Regarding County Motions for Summary Judgement”, *Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021a). As part of the Order, the parties involved were required to submit responses to questions regarding each of the seven factors for determining “functional equivalence”. The District Court issued this requirement to assist in deciding the original motions for summary judgement submitted by each party (*Hawai’i Wildlife Fund et al., v. County of Maui*, 2015) based on the decision of the Supreme Court. For factor three, the District Court asked the parties to answer the following question:

- What is the nature of the material through which the treated wastewater travels from the Lahaina WWRF to the Pacific Ocean?

In the July 26, 2021, amended decision (*Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021b), the District Court concluded that, in light of all the facts and evidence, the County was required to obtain an NPDES permit under the CWA consistent with the analysis established by the Supreme Court. The District Court based this finding, in part, on information submitted by both parties regarding the seven factors. However, in regard to factor three, drawing all inferences in favor of the County’s position that the injection was not the functional equivalent of a direct discharge, the District Court concluded that the lack of evidence regarding this factor, did not support the need for an NPDES permit, stating the following:

“Once placed in the wells, the wastewater travels approximately 200 feet underground into a shallow groundwater aquifer beneath the facility. Kraft, a County expert, says this aquifer is “a diverse assemblage of volcanic rock below the freshwater aquifer lens.” He says that the wastewater in the aquifer encounters saline and brackish water at depths of 88 to 258 feet.¹⁶ See Kraft Decl., ECF No. 440-3, PageID # 11080-81. The treated wastewater mixes with groundwater and then flows horizontally and vertically into the ocean through the porous aquifer. See Kraft Decl., ECF No. 440-3, PageID # 11081-82; ECF No. 44027, PageID # 11212. In short, unlike water flowing through a pipe, the wastewater is mixing with other waters and is flowing through rock and other substances. The nature-of-material factor appears to favor a determination that an NPDES permit is not necessary in this case, for reasons also discussed in connection with the next factor.”

¹⁶ “Schoolchildren in Hawaii have long been taught about the freshwater lenses that are the sources of Hawaii’s drinking water. This senior judge can still recall learning in elementary school about such lenses and about the filtering of the water through volcanic rock.”

Analysis

There was no available data to determine the extent to which the pollutants in the effluent were affected by the surrounding materials during underground transport from the Facility to the receiving water. The July 26, 2021, District Court ruling noted the effluent not only commingles with groundwater, but also flows through rock, sediment, and other substances. Drawing all inferences in favor of the County, the court determined that the lack of evidence regarding this factor did not support a finding of functional equivalence. If future data supports that the effluent is interacting with a physical matrix in a such a way that there is a correlation between the discharge a receiving water quality, a finding of functional equivalence may be warranted.

As discussed above, the effluent flows through permeable and non-permeable materials, which may affect speciation of a variety of pollutants. While at this time it cannot be determined to what extent speciation changes will occur during transport, future data may make it possible to know and quantify the final form of the pollutant that reaches surface waters and therefore may contribute to the exceedance of a WQS. If the impact of specific pollutants on the surface water can be correlated with the pollutants in the injectate, then the discharge may be considered functionally equivalent to a direct discharge and effectively controlled via an NPDES permit, as the correlation between the quality and quantity of the pollutants in the discharge before and after passage through the intervening medium (subsurface geology) will be known.

2.4 Factor 4: The extent to which the pollutant is diluted or chemically changed as it travels

The fourth factor to consider when determining whether a discharge from a point source to a navigable water is the “functional equivalent” of a direct discharge is the extent to which the pollutant is diluted or chemically changed as it travels to surface waters (See *County of Maui, Hawaii v. Hawai’i Wildlife Fund et al.*, 2020 id., 140 S. Ct. at 1476–77). This factor acts like a summation for potential chemical changes made due to transit time, distance traveled and contact with different substrates. Chemical composition is the major way both quantity and quality of pollutants discharged into receiving waters are measured. Thus, the extent to which a pollutant from the Facility is diluted or chemically altered (e.g., attenuates, degrades or transforms to other chemical species) as it is conveyed from the UIC wells to the nearshore waters is highly relevant to considering whether a subsurface discharge is a functional equivalent to a direct discharge, and ultimately if NPDES effluent limits are appropriate.

2013 Dye Tracer Study

In 2013, the University of Hawaii conducted dye tracer study (Glenn et al., 2013) on behalf of the HDOH, the EPA, and the ERDC. The dye tracer study demonstrated that effluent from the Lahaina WWRF UIC Wells 3 and 4 was discharging from the groundwater aquifer to which it was injected to nearby coastal waters, a WOTUS. As previously stated, the study found that effluent from the UIC wells discharged to a diffuse groundwater inflow zone and seeps that are evident

along the coastline to the southwest of the Facility. These SGD discharges are divided into two groups, the SSG and the NSG. The SSG and NSG are located at North Kaanapali Beach, approximately 0.85 kilometers (0.5 miles) to the southwest of the Facility and between 3 to 25 meters from the shoreline. The SSG is comprised of 106 seeps within a total area of 500 m², and the NSG is comprised of 183 seeps within a total area of 1,800 m². The average size of an individual seep is 5.4 cm².

The pollutants of concern considered to be represented by the dye are nutrients (i.e., nitrogen and phosphorus). Nutrients alter speciation when travelling through natural subsurface layers. In the environment, pollutants travel through multiple exposure pathways, including migration through soil to underlying groundwater aquifers. Pollutant migration through the unsaturated zone to the water table generally reduces the soil leachate concentration by attenuation processes such as adsorption and degradation. Groundwater transport in the saturated zone further reduces concentrations through attenuation and dilution. The reduction in pollutant concentration can be expressed succinctly in a Dilution-Attenuation Factor (DAF). A DAF is defined as the ratio of initial soil leachate concentration to the receptor point concentration. The lowest possible DAF value is one (DAF=1). A value of DAF=1 means that there is zero dilution or attenuation; the concentration at the receptor point is the same as that in the soil leachate. High values of DAF correspond to a high degree of dilution and attenuation. For any specific site, the DAF depends on the interaction of multiple site-specific factors, including physical and biochemical processes. The DAF also depends on the nature of the pollutant itself (i.e., whether or not the chemical degrades or sorbs¹⁷). As a result, it is impossible to predict DAF values without the aid of an accurate computer fate and transport simulation model. These models demonstrate the migration of a pollutant through the subsurface, while accounting for the relevant mechanisms and processes that affect the receptor concentration. In the absence of a proper groundwater model, an estimate of the approximate groundwater DAF applicable to the treated effluent from the Facility traveling through the subsurface system cannot be made. The study cited a previous report¹⁸ that used a tracer to identify where and how treated municipal effluent from the Facility discharges to the nearshore marine environment. For the report, samples were collected from Lahaina WWRF treated wastewater, submarine springs, nearshore marine waters, groundwater, and terrestrial surface water in the vicinity of treated wastewater injection sites in Lahaina and Kihei, Maui. The geochemistry of samples reflected dilution of effluent by ambient groundwater and seawater, natural attenuation of nutrients in the aquifer (e.g., denitrification, sorption, or mineralization of phosphorus), and biologic uptake of nutrients in ocean waters.

District Court Decision

¹⁷ "Sorb" means to be taken up and held through adsorption, absorption, or a combination of the two processes.

¹⁸ Hunt, C.D., Jr., and Rosa, S.N. 2009. A multitracer approach to detecting wastewater plumes from municipal injection wells in near shore marine waters at Kihei and Lahaina, Maui, Hawaii, U.S. Geological Survey Scientific Investigations Report 2009-5253, 166p. <https://pubs.usgs.gov/sir/2009/5253/sir2009-5253.pdf>

In May 2021, the District Court issued an Order based on the decision of the Supreme Court (See “Order Regarding County Motions for Summary Judgement”, *Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021a). As part of the Order, the parties involved were required to submit responses to questions regarding each of the seven factors demonstrating “functional equivalence”. The District Court issued this requirement to assist in deciding the original motions for summary judgement submitted by each party (*Hawai’i Wildlife Fund et al., v. County of Maui*, 2015) based on the decision of the Supreme Court. For factor four, the District Court asked the parties to answer the following questions:

- To what extent has the treated wastewater been diluted as it travels from the Lahaina WWRF to the Pacific Ocean?
- Leaving aside any chemical change occurring at the injection wells themselves (e.g., by treatment at the wells), to what extent has the treated wastewater been chemically changed as it travels from the Lahaina WWRF to the Pacific Ocean? What is the nature of the change?

In the July 26, 2021, amended decision (*Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021b), the District Court concluded that, in light of all the evidence, the County was required to obtain an NPDES permit under the CWA consistent with the analysis established by the Supreme Court. The District Court based this finding, in part, on information submitted by both parties regarding the seven factors. However, in regard to factor four, drawing all inferences in favor of the County’s position that the injection was not the functional equivalent of a direct discharge, the District Court concluded that the lack of evidence regarding this factor, did not support the need for an NPDES permit, stating the following:

“There is no dispute that wastewater that is put into the wells at the Lahaina WWRF “undergoes attenuation mechanisms such as dispersion, mixing, dilution, and chemical transformation.” See Kraft Decl., ECF No. 440-3, PageID #s 11079, 11082; Paytan Decl., ECF No. 432-32, PageID #s 10855-56 (recognizing that the wastewater undergoes “partial transformation along the flow-oath in the groundwater”). Wastewater combines with saline, brackish, and fresh groundwater. It then goes through and interacts with porous volcanic rock, leading to “injectate that emerge[s] at the seeps [that is] significantly mixed, diluted, chemically altered, and geochemically transformed.” Decl. of Ryan Fimmen, Ph.D., ECF No. 440-5, PageID # 11106. “Microbial processes such as denitrification ultimately result in the removal of an average of 86% of total nitrogen.” Decl. of Ryan Fimmen, Ph.D., ECF No. 440-5, PageID # 11106; Paytan Expert Report, ECF No. 440-40, PageID # 11259 (noting that average nitrogen removal was 86 percent, but with a range from 30 percent to 90 percent). It may be that some of the denitrification occurs at the plant. See Paytan Decl., ECF No. 432-32, PageID # 10834. Lekven, the County’s expert, opines that 31 pounds of nitrogen per day (over 11,000 pounds per year) are actually released into the ocean at the north and south seep groups, a significant reduction from what would be expected without the filtering mechanism. See Lekven Decl., ECF No. 440-6, PageID # 11125. Even if much of the pollutant has been diluted or otherwise removed, a

significant amount of pollutant nevertheless enters the ocean. This court, however, draws all inferences in the County's favor in considering Plaintiff's motion for summary judgment and therefore views the significant reduction as indicating that this factor weighs in the County's favor (i.e., against requiring an NPDES permit)."

Analysis

There is no available data from which to determine the extent to which the individual pollutants in the effluent are affected by the surrounding materials during underground transport from the Facility to the receiving water on a pollutant by pollutant basis. The July 26, 2021, District Court ruling noted the effluent not only commingles with groundwater, but also flows through rock, sediment, and other substances and has interactions with such media. As discussed above, the effluent flows through permeable and non-permeable materials, which may affect speciation of a variety of pollutants. Since it cannot be determined with existing data what extent filtration, speciation, degradation or dilution will occur during transport, it is unknown whether the final form or concentration of the pollutant may contribute to the exceedance of a WQS for specific pollutants. However, given that dye was in fact observed, any potential chemical changes or dilution likely are not on such a scale where all potential pollutants are diminished to undetectable levels. Full dismissal of the subsurface discharge not being functionally equivalent of a direct discharge for all pollutants is not appropriate.

2.5 Factor 5: The amount of pollutant entering the navigable waters relative to the amount of the pollutant that leaves the point source

The fifth factor to consider when determining whether a discharge from a point source to a navigable water is the "functional equivalent" of a direct discharge is the amount of pollutant entering the navigable waters relative to the amount of the pollutant that leaves the point source (See *County of Maui, Hawaii v. Hawai'i Wildlife Fund et al.*, 2020 id., 140 S. Ct. at 1476–77). Much like Factor 4, the quantity of the pollutant leaving the Facility relative to what reaches receiving waters is a summation of multiple separate factors such as time, distance, substrate, chemical interaction, dilution, etc. In direct discharges, in most cases, where pollutants are discharged through pipes, the amount of a pollutant leaving a point source is the same as the amount entering into the surface water.

However, it is not required that all of a pollutant leaving a point source reach a receiving water for the discharge to be regulated under the NPDES program (e.g., temperature). If the amount of a pollutant that reaches surface water is more than de minimis, then this factor should weigh in favor of treating the discharge as functionally equivalent.

2013 Dye Tracer Study

In 2013, the University of Hawaii conducted a dye tracer study (Glenn et al., 2013) on behalf of the HDOH, the EPA, and the ERDC. The dye tracer study demonstrated that effluent from the Lahaina WWRF UIC Wells 3 and 4 was discharging from the groundwater aquifer to which it was injected to nearby coastal waters, a WOTUS. Effluent was reaching the coastal waters through a

diffuse groundwater inflow zone and seeps that are evident along the coastline to the southwest of the Facility (SGD discharges).

The study estimated that up to 64 percent of the dye tracer injected at Wells 3 and 4 was fully recovered at the submarine spring area once the dye tracer breakthrough curve reached completion. This was interpreted as representing that 64 percent of the treated effluent injected into the UIC wells at the Facility currently discharges from the submarine spring areas along the coastline. Assuming the pollutant is not absorbed by other materials, nor chemically changed during groundwater commingling and travel from well to seep, pollutant concentration at the seep discharge could be at least 64 percent of the initial concentration of the pollutant at the well injection site. The study also concluded that 68 percent of the total SGD at the submarine springs and surrounding areas consists of injectate from Wells 3 and 4. This is a significant volume of treated effluent and may have the potential to cause an exceedance of WQsSs applicable to the receiving waters at the site of discharge.

While calculating the effluent recovery rate, the study analysis assumed that the percent recovery of effluent is representative of the percent recovery of dye tracer that is injected with the effluent. The analysis also assumed that there is no interaction between the dye tracers and the aquifer media. However, under natural environmental conditions, some pollutants in effluent may not react like a conservative tracer dye. While a conservative tracer dye may travel through a groundwater aquifer without any physical or chemical reaction to the aquifer materials (i.e., groundwater, sediment, etc.), pollutants in effluent may be transformed to another species after such a physical or chemical reaction.

District Court Decision

In May 2021, the District Court issued an Order based on the decision of the Supreme Court (See “Order Regarding County Motions for Summary Judgement”, *Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021a). As part of the Order, the parties involved were required to submit responses to questions regarding each of the seven factors regarding “functional equivalence”. The District Court issued this requirement to assist in deciding the original motions for summary judgement submitted by each party (*Hawai’i Wildlife Fund et al., v. County of Maui*, 2015) based on the decision of the Supreme Court. For factor five, the District Court asked the parties to answer the following questions:

- What is the amount of treated wastewater entering the Pacific Ocean relative to the amount of treated wastewater leaving the Lahaina WWRF?
- What is the minimum number of gallons of treated wastewater from the Lahaina WWRF that emerges every day in the nearshore water in and around the North and South Seep groups?

In the July 26, 2021, amended decision (*Hawai’i Wildlife Fund, et al., v. County of Maui*, 2021b), the District Court concluded that, in light of all the facts and evidence, the County was required

to obtain an NPDES permit under the CWA consistent with the analysis established by the Supreme Court. The District Court based this finding, in part, on information submitted by both parties regarding the seven factors. In regard to factor five, the District Court concluded that the evidence did support the need for an NPDES permit, stating the following:

“There is no dispute that 100 percent of the wastewater from the Lahaina WWRF is discharged somewhere in the Pacific Ocean. The 2013 Tracer Dye Study measured only 2 percent or less of the wastewater discharged at the monitors at the seeps. But of course, the rest of the wastewater does reach the ocean. Notwithstanding any dilution or chemical change in the wastewater as it travels through groundwater, no party has suggested that the wastewater thereby rids itself of all pollutants. That is, the resulting wastewater indisputably remains polluted, even if, as the County argues, it ends up being less polluted, and all of the wastewater goes into the ocean. This factor therefore weighs in favor of requiring an NPDES permit.”

Analysis

There is no accepted threshold for the percentage of a discharged pollutant that eventually reaches a surface water that supports a finding of functional equivalence. If the discharge does not substantively change the quantity and quality of discharge and originates at the identified point source, then the finding supports regulation under NPDES. The July 26, 2021, District Court ruling concluded that despite any dilution or change to the pollutants as the wastewater travels through groundwater, the pollutants present in the wastewater undoubtedly reach the receiving water, and supported a finding of functional equivalence.

2.6 Factor 6: The manner by or the area in which the pollutant enters the navigable waters

The sixth factor to consider when determining whether a discharge from a point source to a navigable water is the “functional equivalent” of a direct discharge is the manner by or the area in which the pollutant enters the navigable waters (See *County of Maui, Hawaii v. Hawaii Wildlife Fund et al.*, 2020 id., 140 S. Ct. at 1476–77). If the wastewater discharge from the Facility becomes so diffuse as it move subsurface that there is no correlation between changes in the discharge (quantity or quality) at the point source and impacts to the receiving waters, the subsurface discharge does not demonstrate a functional equivalence to a direct discharge and an NPDES permit would be ineffective at controlling the discharge such that there is protection of the receiving water quality.

2013 Dye Tracer Study

In 2013, the University of Hawaii conducted dye tracer study (Glenn et al., 2013) on behalf of the HDOH, the EPA, and the ERDC. The dye tracer study demonstrated that effluent from the Lahaina WWRF UIC Wells 3 and 4 was discharging from the groundwater aquifer to which it was injected to nearby coastal waters, a WOTUS.

As previously stated, the study found that effluent from the UIC wells discharged to a diffuse groundwater inflow zone and seeps that are evident along the coastline to the southwest of the Facility. These SGD discharges are divided into two groups, the SSG and the NSG. The SSG and NSG are located at North Kaanapali Beach, approximately 0.85 kilometers (0.5 miles) to the southwest of the Facility, and between 3 to 25 meters from the shoreline (Figure 9; Glenn et al., 2013). The SSG is comprised of 106 seeps within a total area of 500 m², and the NSG is comprised of 183 seeps within a total area of 1,800 m². The average size of an individual seep is 5.4 cm².

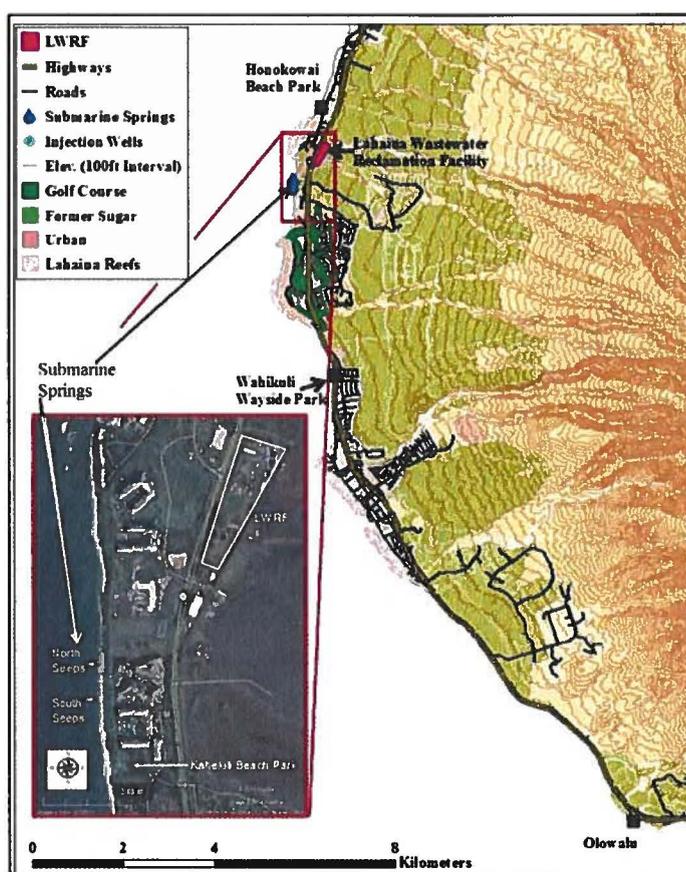


Figure 9. Facility, SSG, and NSG Location Map

Additional findings from the dye tracer study, in combination with radon mass balance measurements, indicated that the groundwater discharge from the springs is less than 10 percent of the total groundwater discharge, with the remaining 90 percent comprised of diffuse groundwater discharge. The majority of the submarine spring samples, which were collected through syringes, revealed detectable concentrations of the dye tracer. The average tracer velocity estimated at NSG and SSG ranged between 1.7 to 2.1 meters per day (m/day) [0.000064 to 0.000079 feet per second (ft/s)], which is significantly lower than the minimum velocity requirement of a fully flowing open sewer pipe (2.0 ft/s).

Once the discharge of effluent through a seep dissipates in ambient ocean waters, the effluent flow receives an initial dilution¹⁹ by mixing with the receiving waters, and the pollutant concentration in the discharged effluent decreases (assuming background concentration of the pollutant in the ambient ocean waters is lower than in the effluent). The rate of dilution is relatively rapid in the first few minutes upon exiting the seep and decreases markedly after momentum and buoyancy are dissipated. Velocity will influence the degree of shear, and therefore mixing that occurs when effluent is discharged. Effluent density will affect the rate of rising and position of the plume in the water column. Velocity may be measured as effluent flow rate (as a daily average), including whether the discharge is continuous or discontinuous (e.g., batch release).

In the case of the Facility, the velocity of flow through each seep must be considered in the absence of a discharge from an orifice to the receiving water. The initial dilution of the effluent flow is significantly influenced by the density and velocity differences compared to receiving water. Considering seep velocity is significantly lower compared to the discharge velocity from a standard sewer open pipe, a much lower initial dilution and less mixing is expected at the ambient receiving waterbody. Therefore, the pollutant concentration may not be reduced to, or discharged at, a level that will not cause exceedances of the surface WQS.

Although springs and seeps funnel large amounts of fresh water and dissolved constituents into a small area, the slow, more diffusive seepage of groundwater that flows out along most shorelines of the world may be volumetrically significant. Considering a significant volume of seep discharge associated with a combined large dispersion area of seeps (i.e., 2,300 m²), and less dilution compared to the standard effluent discharge through the pipe, the seep discharge containing treated effluent may have potential to cause an exceedance of the WQSs applicable to the ocean waters in the vicinity. It is assumed that the initial dilution in the ocean waters is low due to low seep velocity.

In addition to the study estimate that up to 64 percent of effluent from these wells discharges to the Pacific Ocean between 3 months and four years after injection into the wells, the County conceded that wastewater injected into Wells 1 and 2 also eventually entered the Pacific Ocean. According to the County's expert, flow of UIC well effluent from the Facility to ocean waters equals approximately 3,456 gallons per meter of coastline per day, or approximately one gallon of every seven gallons of groundwater entering the ocean waters.

District Court Decision

In May 2021, the District Court issued an Order based on the decision of the Supreme Court (See "Order Regarding County Motions for Summary Judgement", *Hawai'i Wildlife Fund, et al., v. County of Maui*, 2021a). As part of the Order, the parties involved were required to submit responses to questions regarding each of the seven factors demonstrating "functional

¹⁹ "Initial dilution" means the dilution achieved in a plume due to the combined effects of momentum and buoyancy of the fluid discharged from an orifice and due to ambient turbulent mixing in the vicinity of the plume.

equivalence". The District Court issued this requirement to assist in deciding the original motions for summary judgement submitted by each party (*Hawai'i Wildlife Fund et al., v. County of Maui*, 2015) based on the decision of the Supreme Court. For factor six, the District Court asked the parties to describe the manner by or areas in which the treated wastewater from Facility enters the Pacific Ocean.

In the July 26, 2021, amended decision, (*Hawai'i Wildlife Fund, et al., v. County of Maui*, 2021b), the District Court concluded that, in light of all the facts and evidence, the County was required to obtain an NPDES permit under the CWA consistent with the analysis established by the Supreme Court. The District Court based this finding, in part, on information submitted by both parties. In regard to factor six, the District Court concluded that the evidence did support the need for an NPDES permit, stating the following:

"There is no dispute that 100 percent of the wastewater from the Lahaina WWRF is discharged somewhere in the Pacific Ocean. The 2013 Tracer Dye Study measured only 2 percent or less of the wastewater discharged at the monitors at the seeps. But of course, the rest of the wastewater does reach the ocean. Notwithstanding any dilution or chemical change in the wastewater as it travels through groundwater, no party has suggested that the wastewater thereby rids itself of all pollutants. That is, the resulting wastewater indisputably remains polluted, even if, as the County argues, it ends up being less polluted, and all of the wastewater goes into the ocean. This factor therefore weighs in favor of requiring an NPDES permit."

Analysis

The July 26, 2021, District Court ruling provided a rationale on how to interpret this criteria. The District Court considered the wastewater is eventually discharged to the Pacific Ocean, and despite any dilution or chemical change, the wastewater remained polluted, even if it was less polluted than it was at the point of discharge into the injection wells. The Court determined that even if only 2 percent or less of wastewater was traced at the seeps, the manner by which the pollutant was discharged, and the area in which the pollutant entered the surface water were sufficient to support the finding of a functional equivalent.

With the Lahaina WWRF, the manner in which the discharge of polluted wastewater is occurring and reaching a surface water is similar to that of a direct discharge which utilizes a diffuser design insofar as when the effluent enters the surface water, it does so in a diffused manner. In direct discharges, outfall structures are often designed to diffuse point source discharges and allow for mixing. In the case of the Lahaina WWRF, while there is no engineered diffuser, the subsurface discharge and dilution of the effluent with groundwater leads to the effluent entering into surface waters in a diffuse dispersed manner, via discrete seeps and diffuse flow. In both this specific case as well as with direct discharges, while the manner in which the pollutants are discharged impacts its effect on receiving water quality (e.g., concentration), ultimately the quantity and quality of individual pollutants can be attributed and correlated to the source of the discharge (i.e., injection well or other point source).

2.7 Factor 7: The degree to which the pollution (at that point) has maintained its specific identity

The seventh factor to consider when determining whether a discharge from a point source to a navigable water is the “functional equivalent” of a direct discharge is the degree to which the pollution (at that point) has maintained its specific identity (See *County of Maui, Hawaii v. Hawai'i Wildlife Fund et al.*, 2020 id., 140 S. Ct. at 1476–77). That is to say that the wastewater discharged from a point source maintains its identity as a waste product. The District Court found that the wastewater from the injection wells can still be identified when it reaches the receiving waters and contributes pollution to the receiving waters.

2013 Dye Tracer Study

In 2013, the University of Hawaii conducted dye tracer study (Glenn et al., 2013) on behalf of the HDOH, the EPA, and the ERDC. The dye tracer study demonstrated that effluent from the Lahaina WWRF UIC Wells 3 and 4 was discharging from the groundwater aquifer to which it was injected to nearby coastal waters, a WOTUS.

As previously stated, the study found that effluent from the UIC wells discharged to a diffuse groundwater inflow zone and seeps that are evident along the coastline to the southwest of the Facility. These SGD discharges are divided into two groups, the SSG and the NSG. The SSG and NSG are located at North Kaanapali Beach, approximately 0.85 kilometers (0.5 miles) to the southwest of the Facility, and between 3 to 25 meters from the shoreline (Figure 10; Glenn et al., 2013). The SSG is comprised of 106 seeps within a total area of 500 m², and the NSG is comprised of 183 seeps within a total area of 1,800 m². The average size of an individual seep is 5.4 cm².

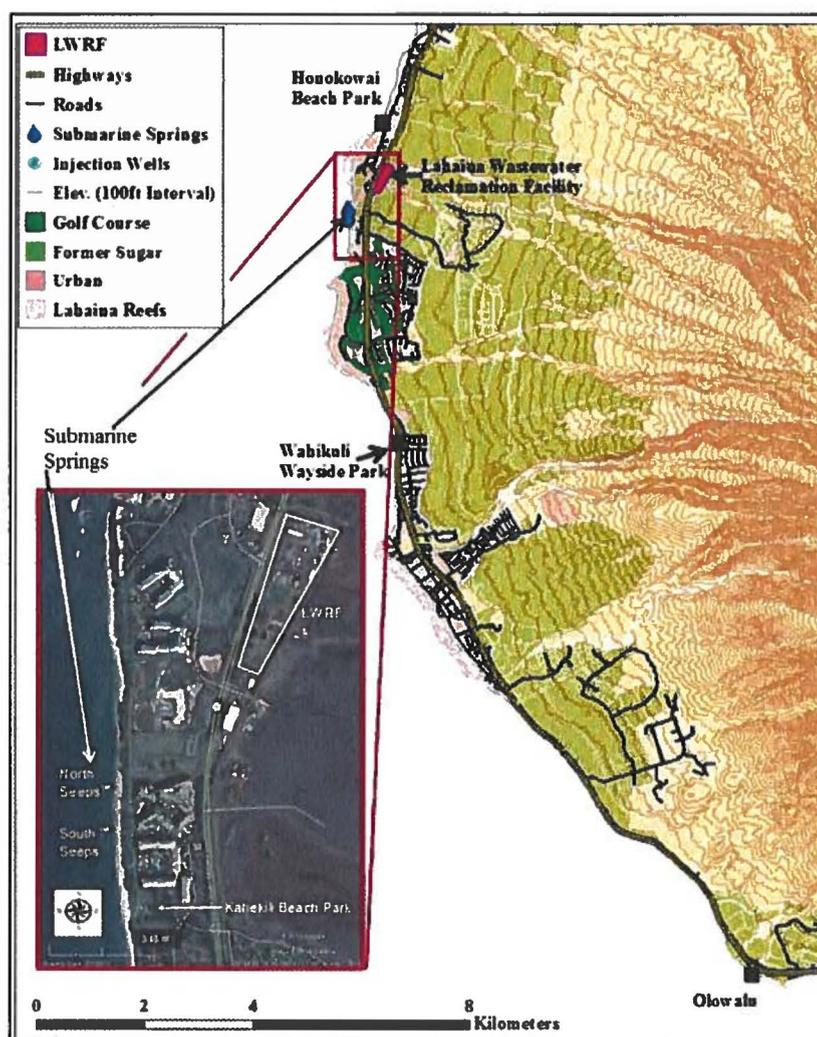


Figure 10. Facility, SSG, and NSG Location Map

Metals that are added to a soil or groundwater system either by injection or leaching will undergo multiple processes such as fixation and adsorption processes, which directly affect the mobility of the metal. Fixation reactions include chemisorption (where the metal forms a covalent bond with a mineral surface), solid state diffusion (irreversible penetration into mineral pore spaces), and precipitation (insoluble solid formation). Of the three, precipitation is the fixation reaction that most significantly impacts the fate and mobility. Adsorption processes also play a significant role in mobility. While fixation and adsorption reactions can be discussed separately in theory, they can be very difficult to measure independently in the field. Changes in soil environmental conditions over time, such as degradation of the organic waste matrix, changes in pH, redox potential, or soil solution composition due to various remediation schemes or natural weathering processes, also may enhance metal mobility (EPA, 1992²⁰).

²⁰ EPA. 1992. Behaviors of metals in soils. EPA/540/S-92/018. https://www.epa.gov/sites/default/files/2015-06/documents/issue_behavior_metals_soil.pdf

The majority of the metals considered as pollutants of concern at the Facility change formation once they leach to the subsurface system from the UIC wells. These metals undergo chemical processes (discussed above) that change the primary form of the metal. For example, arsenic exists as either arsenate or arsenite in the soil system. However, both of the arsenic forms are toxic. In addition to that, arsenic is adsorbed by soil colloids.

Similarly, chromium transforms into chromate ion, which may cause serious health hazards once exposed. Hexavalent chromium is absorbed by groundwater alluvium due to the iron oxides and hydroxides coating the alluvial particles. Hexavalent chromium is highly mobile in soils, and is one of the only metals to be highly mobile in alkaline soils. Copper retains in the soil through exchange and specific adsorption mechanism. Copper, however, has a high affinity for soluble organic ligands, and the formation of these complexes may significantly increase copper mobility in soils (EPA, 1992). Selenium is a relatively mobile pollutant in the soil. Mercury-soil systems involve complex systems, with mercury tending to be immobilized in surficial soil due to its affinity for mineral surfaces and bonding to organic matter. Nickel does not form insoluble precipitates in unpolluted soils, and retention for nickel is, therefore, exclusively through adsorption mechanisms. Nickel will adsorb to clays, iron and manganese oxides, and organic matter and is thus removed from the soil solution. The formation of complexes of nickel with both inorganic and organic ligands will increase nickel mobility in soils. Zinc is readily adsorbed by clay minerals, carbonates, or hydrous oxides and zinc oxide is the most stable phase of zinc.

Compared to metals, volatile toxic pollutants have lower affinities for soil organic carbon. Chloroform is quite persistent under oxic conditions and is not volatilized. Chloroform and other trihalomethanes (THMs) that are not volatilized in near-surface soils or taken up by plants following release are expected to migrate substantial distances through the subsurface, particularly in aquifers containing materials with a low mass fraction of organic carbon. However, bromodichloromethane is expected to adsorb to suspended solids and sediment based upon the estimated hydraulic conductivity, if released in the water.

There are other pollutants of concern that are readily biodegradable and do not retain in their original form in soil. Although phenol is highly mobile in soil and may leach to groundwater, based on its vapor pressure and low absorptivity to the soil, volatilization from dry soil and other surfaces may also occur [Hazardous Substances Data Bank (HSDB), 2002²¹]. Field scale and laboratory microcosm experiments have demonstrated that phenol is readily biodegraded under aerobic conditions in all environmental media, including soil and sediment. Similarly, 4-nitrophenol, which is a potential pollutant of concern in the Facility effluent, may undergo some adsorption to suspended solids and sediment in water. Cyanide added to soil appears to be readily transformed on the redox conditions.

²¹ HSDB. 2003. Phenol (CASRN 108-95-2). PubChem, Specialized Information Services, U.S. National Library of Medicine, Bethesda. <https://pubchem.ncbi.nlm.nih.gov/>

Bacteria and pathogens have less potential to travel and reach the seep, however pathogens tend to become trapped in narrow soil pores or attached to soil surfaces while moving through the unsaturated zone. The percentage of pathogens capable of reaching groundwater is highly site-specific and a function of numerous factors such as the distance between the soil surface and groundwater, the porosity or size and quantity of the pores of the soil, the presence of small channels or macropores in the subsurface, or fractures in the bedrock that allow water to quickly move deep into the subsurface. Bacterial cells are negatively charged biocolloids and, as such, they interact with soil particles (sand, silt, clay minerals, metal oxides). Similarly, oil and grease and total suspended solids tend to adhere to the soil particle and are adsorbed in soil.

Nutrients (i.e., nitrogen and phosphorus compounds) behave differently than metals when leached from UIC wells to the soil system. Nitrogen transport in the subsurface is a complex process, especially when considering the nitrogen inputs from POTWs. Once the liquid portion of the wastewater enters the soil subsurface system, nitrogen species, specifically ammonium and nitrate, are further transformed by nitrification and denitrification. Nitrification is a two-step process by which ammonium is converted first to nitrite then to nitrate via biological oxidation. This particular reaction is important, as it represents the transformation from the relatively immobile nitrogen form (ammonium) to the highly mobile form (nitrate). Nitrate behaves essentially as a conservative solute, with virtually no sorption or retardation processes affecting its movement in the aquifer. It is, however, subject to transformative processes. The transformation nature of the nitrogen compounds in the soil indicates that there is less potential for nitrogen compounds to reach seeps in their original form. However, nitrate is a negatively charged ion that moves freely through most soils. As described by Jury and Nielson (1989)²², movement of the nitrate ion through soil is governed by convection, or mass-flow, with the moving soil solution and by diffusion within the soil solution. The widespread appearance of nitrate in groundwater is a consequence of its high solubility, mobility, and easy displacement by water.

Phosphorus compounds do not behave similarly to nitrogen compounds. Phosphorus is easily retained in soils due to chemical changes and adsorption. Phosphate ions become chemisorbed on the surfaces of iron and aluminum minerals in strongly acid to neutral systems and on calcium minerals in neutral to alkaline systems. As the concentration in the soil solution is raised, there comes the point above which one or more phosphate precipitates may form. In the pH range encountered in septic tank leach fields, for example, hydroxyapatite is the stable calcium phosphate precipitate. However, at relatively high phosphorous concentrations similar to those found in septic tank effluents, dicalcium phosphate or octacalcium phosphate are formed initially, followed by a slow conversion to hydroxyapatite. Therefore, both chemical precipitation, as well as chemisorption, is involved in phosphorus retention in soils.

²² Jury, W.A. and Nielsen, D.R. 1989. Nitrate transport and leaching mechanisms. *Developments in Agricultural and Managed Forest Ecology*, 21:139-157.

<https://www.sciencedirect.com/science/article/abs/pii/B9780444873934500113?via%3Dihub>

Based on the literature review discussed above, it can be concluded that metals persist in the soil environment for a long time, although they go through chemical speciation when released in subsurface system. Metals released from UIC well effluent that travel through soil are not expected to travel and reach the seep in their original formation. However, some of the pollutants of concern transform into a chemical compound once exposed to soil or groundwater that pose a threat to aquatic life or human health. It is also observed that chloroform can reach SGD seeps without substantial chemical formation due to its unique characteristics.

Similar to chloroform, nitrate and nitrogen primarily travel from the UIC wells to seeps without altering specific identity. Geochemical mixing analyses indicate that the submarine spring waters are predominately treated wastewater from the Facility. While in transit to the submarine springs, the effluent undergoes oxic, suboxic, and likely anoxic microbial degradation reactions that consume dissolved oxygen, dissolved nitrate, and organic matter.

The Facility has previously been identified as a major contributor of nutrients to the marine environment, particularly phosphorus. The nitrogen-to-phosphorus (N:P) ratios show that the seeps are enriched in phosphorus relative to nitrogen when compared to other SGD sites. During this time, there is a significant loss of nitrogen due to extensive denitrification and other suboxic to anoxic microbial degradation processes, which are fueled by a sustained supply of organic matter transport within by effluent plume. The release of dissolved phosphorus, on the other hand, is relatively enriched. Moreover, the West Maui Watershed Owner's Manual (NOAA et al., 1997²³) concluded that the UIC wells at the Facility likely contributed about three times the amount of nitrogen, and at least an order of magnitude more phosphorus, to ocean waters than any other source.

It is important to note that, in this particular case, groundwater mostly flows through basaltic rocks rather than any specific type of soil layers such as clay or sand. Pollutants can be transported great distances and at relatively high velocities along discrete channels in the rock, so it is necessary to characterize both the rock matrix and properties of fractures that control or affect pollutant transport and remediation (ITRC, 2017²⁴; NAS, 2020²⁵). As basalts are the most productive aquifers of all volcanic rock types (USGS, 1999²⁶), there is a possibility for pollutants

²³ National Oceanic and Atmospheric Administration (NOAA), Coral Reef Conservation Program, West Maui Watershed Management Advisory Committee, HDOH, EPA. 1997. West Maui watershed owner's manual. <https://repository.library.noaa.gov/view/noaa/8948>

²⁴ Interstate Technology and Regulatory Council (ITRC). 2017. Characterization and Remediation of Fractured Rock. Web-based document FracRx-1. <https://fracturedrx-1.itrcweb.org/>

²⁵ National Academy of Science (NAS). 2020. Characterization, Modeling, Monitoring, and Remediation of Fractured Rock. National Academies Press, Washington, DC. ISBN: 978-0-309-37372-2. <https://nap.nationalacademies.org/catalog/21742/characterization-modeling-monitoring-and-remediation-of-fractured-rock>

²⁶ USGS. 1999. Ground Water Atlas of the United States Introduction and National Summary: Basaltic Rocks and Other Volcanic-Rock Aquifers. https://pubs.usgs.gov/ha/ha730/ch_a/A-text7.html

of concern to travel freely within the aquifer and reach the seeps without absorbing or attaching to a soil colloid.

In Hawaii, considerations of the degree to which the pollution maintained its specific identity are yet to be defined, however, the federal regulations found at 40 CFR 122.44(d)(1) provide some clarification as discharges of pollutants such as wastewater requires effluent limitations for pollutants that, “have reasonable potential to cause, or contribute to an excursion above any State water quality standard...” This clarifies that if pollutants in the wastewater contribute to degradation of water quality, independent if that degradation is specific to the pollutants contained in the wastewater at the point of discharge into the receiving water, a NPDES permit with effluent limitations would be applicable. A common example of this is the discharge of biochemical oxygen demand, which may cause or contribute to exceedances of dissolved oxygen criteria in the receiving water, even though the pollutant in the wastewater is not dissolved oxygen it may have a significant impact on it within the receiving water. Similarly, the use of chlorine to disinfect wastewater will often create byproducts (THMs) in the downstream receiving water. In both these situations, the impacts on the receiving water are not related to the concentration of that pollutant in the receiving water, but its ability to interact with the receiving water characteristics and contribute to exceedances of water quality criteria for other parameters. These types of situations are frequently addressed within NPDES permits, with effluent limits established based on the ability of the wastewater to contribute to an exceedance of water quality criteria.

District Court Decision

In May 2021, the District Court issued an Order based on the decision of the Supreme Court (See “Order Regarding County Motions for Summary Judgement”, *Hawai’i Wildlife Fund, et al., v. County of Maui, 2021a*). As part of the Order, the parties involved were required to submit responses to questions regarding each of the seven factors regarding “functional equivalence”. The District Court issued this requirement to assist in deciding the original motions for summary judgement submitted by each party (*Hawai’i Wildlife Fund et al., v. County of Maui, 2015*) based on the decision of the Supreme Court. For factor seven, the District Court asked the parties to describe the degree to which the treated wastewater from the Facility emerging in the Pacific Ocean maintains its specific identity.

On July 26, 2021, the District Court case was amended (*Hawai’i Wildlife Fund, et al., v. County of Maui, 2021b*), granting the summary judgement motion filed by the plaintiffs and denying the summary judgement motion filed by the defendants. The amended finding concluded that, in light of all the facts and evidence, the County was required to obtain an NPDES permit under the CWA consistent with the analysis established by the Supreme Court. The District Court based this finding, in part, on information submitted by both parties. In regard to factor seven, the District Court concluded that the evidence did support the need for an NPDES permit, stating the following

“As noted above, there is no dispute that the wastewater undergoes some changes as it flows from the Lahaina WWRF to the ocean. The County asserts, for example, that 86 percent of the nitrogen is removed as the wastewater travels to the sea. (As previously noted, some of the denitrification process may occur at the Lahaina WWRF. See Paytan Decl., ECF No. 432-32, PageID # 10834.)

Studies have found “wastewater tracers” in the ocean-- pharmaceuticals, organic waste indicator compounds, and heavy $\delta^{15}\text{N}$, a sewage-derived nitrogen isotope. Tribromomethane, two 15 musk fragrances, a fire retardant, and a plasticizer compound were detected, tending to show the presence of treated wastewater at the submarine springs near the Lahaina WWRF. ECF No. 432-28, PageID # 10776; Figure ES-6, ECF No. 432-24, PageID # 10626; Paytan Decl., 432-32, PageID # 10857. Whether the Lahaina WWRF is the sole source of those substances is unclear; reclaimed water used for irrigation and landscaping near the ocean and surface runoff may contribute chemicals that enter the nearshore waters. See Decl. of Ryan Fimmen, Ph.D., ECF No. 440-5, PageID # 11113. Interpreting the facts in the light most favorable to the County with respect to Plaintiffs’ motion, this court assumes for purposes of deciding Plaintiffs’ motion for summary judgment that the source of the “wastewater tracers” is irrigation using reclaimed water from the Lahaina WWRF that was not discharged from the wells that are the point sources in this case.

But no party has ever contended that the wastewater that reaches the ocean from the wells is devoid of pollutants. The 2013 Tracer Dye Study, whatever challenges the County raises to parts of it, indisputably establishes that the wastewater from the wells can still be identified. Even if the wastewater that reaches the ocean from the wells contains lesser levels of pollutants than at the start of the wastewater’s journey from the wells, that wastewater maintains its specific identity as polluted water emanating from the wells. This factor therefore weighs in favor of requiring an NPDES permit.”

Analysis

The wastewater injected into the UIC wells at the Facility is done so specifically for the purpose of disposing wastewater. This wastewater includes pollutants that may cause or contribute to excursions of water quality criteria in nearshore waters. No available data available suggests that all of the pollutants in the wastewater lose their chemical properties such that the identity of the discharge as wastewater is lost and no longer requires regulation under the NPDES program. As explained in the analysis of some of the other factors, specific pollutants may change, be diluted or otherwise transformed to come extent, while travelling between the Facility’s UIC wells to nearshore waters, but the identity of the wastewater is not lost.

2.8 Functional Equivalence Conclusion

Given the consideration of the factors above, the HDOH concurs that the treated wastewater discharged into the UIC wells at the Lahaina WWRF connects to nearshore surface waters and

that pollutants observed in the surface waters are attributable to the Facility. An examination of the results of the dye tracer study and the characteristics of pollutants in Lahaina WWRF's discharges to the UIC wells indicate that the pollutants' travel through groundwater do not substantively change the quantity or quality of the discharge. As such, the HDOH has determined subsurface discharges from the Lahaina WWRF UIC wells are a functional equivalent to direct discharges to State waters and are subject to regulation under an NPDES permit. Further, none of the factors, particularly when considered together, suggest that reduction of pollutant discharges into the Lahaina WWRF UIC wells will not correlate with the reduction of pollutants in the surface waters. Therefore, the HDOH also concludes that controlling the pollutant discharge at the Lahaina WWRF's UIC wells through regulation under an NPDES permit is appropriate and necessary for protecting surface water quality.

3. SPECIFIC PERMIT CONDITIONS AND RATIONALE

Based on the factors consider in Section 2 of this document, the subsurface discharge of treated wastewater from the Facility to nearshore waters is functionally equivalent to a direct discharge and such, subject to regulation under the Hawaii CWA-derived NPDES permit program.

Discharges from the Facility contribute to pollutant loads within the receiving water, however due to the nature of the discharge through groundwater seeps, the type and magnitude of the impact on the receiving water is not fully quantified. However, the receiving water is impaired for nutrients, and nutrients are present in the discharge from the Facility. As such, discharges from the Facility may be contributing to exceedances of water quality criteria at and around the seep locations. Unlike a typical NPDES permitted facility where the impacts of the facility on the receiving water designated uses can be more easily quantified, this Facility presents technical challenges. Without time consuming and costly studies and evaluations that are not possible to complete prior to the development of an initial NPDES permit, it is not possible to fully understand the extent of shore length discharges from groundwater entering the receiving water, the amount of dilution (if any) exists for the various pollutants, and the fate and transport of many of the pollutants identified in the effluent.

To address the uncertainty introduced by the subsurface nature of the discharges from the Facility and its impact on the receiving water, the proposed permit must establish requirements to cap pollutant loads at existing levels and begin a process to reduce pollutant loading to the receiving water over time. This includes the HDOH establishing performance-based limits for BOD₅, TSS, total phosphorus, total nitrogen, and bacteria. A limit for whole effluent toxicity shall be included to address unidentified toxics and any aggregate effects of these toxic pollutants on aquatic life. Additionally, narrative water quality criteria will be included in the permit to address potential impacts of the discharge on the receiving water.

Due to existing uncertainties quantifying the discharge's impact on the receiving water, conventional methods developed for direct discharges (e.g. EPA's 1991 Technical Support

Document for Water Quality-Based Toxics Control) used to conduct reasonable potential analysis (RPA) for discharges from wastewater treatment plants is not viable at this time. Instead, the proposed permit will include requirements to gather monitoring information over the initial permit term in order to perform RPAs during subsequent permitting efforts. This includes collection of sufficient pollutant data, performing an optional dilution study, and providing an option for the Permittee to conduct a fate and transport analysis of the pollutants of concern.

To reduce further reduce pollutant discharge, the Permittee will be required to maximize water reuse to decrease discharges of wastewater into the groundwater wells. As outlined further in this section this requires a multi-step process over the course of the initial permit.

The remainder of this section provides the rationale for the special conditions and proposed effluent limitations applicable to the Facility to carry out the steps necessary to minimize impacts on the receiving water, collect necessary information to evaluate impacts on the receiving water, and evaluate impacts on the receiving water in the future.

3.1 Special Studies

3.1.1 Nutrient Optimization and Pollution Prevention

The proposed permit requires the Permittee to evaluate and implement options to reduce total nitrogen and total phosphorus discharges from the Facility through treatment optimization and pollution prevention methods. The Permittee must submit the results of the evaluation in a Nutrient Optimization and Pollution Prevention Evaluation Report in the first year of the permit term and implement the Permittee's selected options in the second year of the permit term. Annual progress reports are required to provide updates on the implementation status and effectiveness of the Permittee's optimization and pollution prevention measures on reducing total nitrogen and total phosphorus discharges from the Facility.

For the purposes of the Nutrient Optimization and Pollution Prevention requirements, "optimization" refers to the implementation of new or improved operation and maintenance practices to achieve nutrient removal that do not require major upgrades to the existing treatment system. Optimization can be a cost-effective and efficient approach to reduce nutrient discharges. Options for optimization include, but are not limited to: aeration modifications, process modifications, configuration modifications, chemical modifications, discharge modifications. The permit also requires the Permittee to evaluate side-stream treatment as part of this evaluation. Although it may be more expensive than other optimization measures, side-stream treatment has the potential to significantly reduce total nitrogen and total phosphorus loading from the Facility at a lower cost than other nutrient removal technologies.

"Pollution Prevention" refers to measures that reduce nutrient loading into the Facility.

Depending on the type of source, options for pollution prevention include, but are not limited to, establishing septage and hauled waste receiving requirements, requiring users to develop and implement nutrient management or water conservation plans, and establishing surcharges or local limits for discharges of total nitrogen and/or total phosphorus into the Facility.

Federal regulations at 40 CFR 122.44(k)(4) specify that best management practices (BMPs) may be included in a permit to control or abate the discharge of pollutants when “[t]he practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.” As discussed in the proposed permit’s fact sheet, the HDOH has determined that the discharge from the Facility has reasonable potential to cause or contribute to the water quality criteria for total nitrogen and total nitrogen. Although the HDOH has sufficient information to determine that reasonable potential exists for nutrient pollution and pathogens, additional information is necessary to develop numeric WQBELs that are protective of water quality criteria in the receiving water for other specific pollutants. Until sufficient information is available to develop numeric WQBELs, the permit includes performance-based effluent limitations for total nitrogen, total phosphorus, fecal coliforms, and a water quality standard based effluent limit for enterococcus bacteria. These limits are designed to maintain loading at current levels and prevent degradation of the receiving water. The permit also requires implementation optimization and pollution prevention, which represent BMPs, to further reduce loading from the Facility. The HDOH finds that these BMPs are necessary to control and abate the discharge of total nitrogen and total phosphorus from the Facility to carry out the purposes and intent of the CWA. The HDOH anticipates the development of a data set for use in determining whether additional numeric WQBELs will be established in the next permit term upon availability of the necessary information.

Permit Text:

1. Nutrient Optimization and Pollution Prevention

- a. Nutrient Optimization and Pollution Prevention Evaluation Report.** The Permittee shall evaluate options to reduce total nitrogen and total phosphorus loading from the Facility through optimization and pollution prevention. The Permittee shall submit a Nutrient Optimization and Pollution Prevention Evaluation Report to the DOH within one (1) year after the effective date of this permit for review and approval. The report shall include:
- i. A description of the treatment plant, treatment plant process, and service area.
 - ii. A description of nutrient optimization and pollution prevention measures that have already been implemented at the Facility.

- iii. An evaluation of potential options to reduce total nitrogen and total phosphorus loading from the Facility through optimization²⁷ (including side-stream treatment) that includes:
 - 1. The feasibility of the option. In assessing feasibility, the Permittee must consider what, if any, effect the option would have on the removal of other pollutants (e.g., BOD₅, TSS).
 - 2. The anticipated total nitrogen and total phosphorus removal levels for each option.
 - 3. The beneficial and adverse ancillary impacts of each option (e.g., changes in energy usage, greenhouse gas emissions, or sewage sludge treatment or disposal).
 - 4. The planning level costs of each option.
 - iv. An evaluation of options to reduce total nitrogen and total phosphorus loading into the Facility through pollution prevention that includes:
 - 1. An identification of all industrial, commercial, institutional, and other non-residential sources that discharge total nitrogen and total phosphorus to the Facility.
 - 2. An evaluation of sources with the greatest opportunity for reducing total nitrogen and total phosphorus discharges into the Facility.
 - 3. The feasibility of potential pollution prevention options to reduce total nitrogen and total phosphorus discharges for individual sources or categories of sources.
 - v. The Permittee's selected optimization and pollution prevention measures and the total anticipated total nitrogen and total phosphorus removal levels.
 - vi. A schedule for implementing the selected measures beginning two (2) years after the effective date of this permit.
 - vii. A plan for conducting influent and/or effluent sampling for total nitrogen and total phosphorus to evaluate the effectiveness of the selected optimization and pollution prevention measures.
- b. **Implementation of Selected Measures.** The Permittee shall implement the selected optimization and pollution prevention measures according to the schedule identified in the approved report. The selected measures shall be implemented within two (2) years after the effective date of this permit.
- c. **Annual Progress Reports.** Beginning two (2) years after the effective date of this permit, by March 31st, the Permittee shall submit annual progress reports describing the implementation status of the Permittee's selected optimization

²⁷ See EPA's National Study of Nutrient Removal and Secondary Technologies website for resources on optimizing wastewater treatment plants to achieve nutrient reductions: <https://www.epa.gov/eg/national-study-nutrient-removal-and-secondary-technologies>.

and pollution prevention measures and an analysis of their impacts on influent and effluent total nitrogen and total phosphorus levels for the previous year.

3.1.2 Water Conservation

The permit requires the Permittee to evaluate options to encourage or require water conservation in the service area. The Permittee must submit the results of the evaluation in a Water Conservation Evaluation Report in the second year of the permit term. If the Permittee determines that any options are feasible and will result in equal (or better) effluent quality (i.e., reduced pollutant loads), the Permittee must implement the selected short-term options in the third year of the permit term and submit a Long-Term Conservation Plan in the fourth year. Annual progress reports are required to provide updates on the implementation status and effectiveness of the Permittee's conservation measures on reducing pollutant loading from the Facility.

Water conservation measures have the potential to reduce effluent pollutant loading by reducing wastewater flows into the Facility. Options for encouraging or requiring water conservation measures include, but are not limited to: adjusting water and wastewater rates, public education programs, and incentive programs (e.g., rebates, tax credits) for installation of water-efficient plumbing fixtures.

Permit Text:

1. Water Conservation Impact Studies

- a. Water Conservation Evaluation Report.** The Permittee shall evaluate options to encourage or require water conservation in the service area and their potential impacts on effluent quality. The Permittee shall submit a Water Conservation Evaluation Report to the DOH within two (2) years after the effective date of this permit for review and approval. The report shall include:
 - i.** A description of the treatment plant, treatment plant process, and service area.
 - ii.** A description of water conservation measures that the Permittee has already implemented.
 - iii.** An evaluation of potential options to encourage or require water conservation in the service area that includes:
 1. The feasibility of the option.
 2. The anticipated impact of the option on effluent quality for all pollutants of concern.
 3. The beneficial and adverse ancillary impacts of each option.
 - iv.** If any options are determined to be feasible and will result in equal (or better) effluent quality (i.e., reduced pollutant loads), a schedule for implementing short-term conservation measures beginning three (3) years after the effective date of this permit.

- v. A plan for conducting influent and/or effluent sampling for to evaluate the effectiveness of the selected conservation measures on effluent quality.
- b. **Implementation of Short-Term Conservation Measures.** If any options identified in the Water Conservation Evaluation Report are determined to be feasible and will result in equal (or better) effluent quality (i.e., reduced pollutant loads), the Permittee shall implement the selected short-term conservation measures according to the schedule identified in the approved report. The selected measures shall be implemented beginning three (3) years after the effective date of this permit.
- c. **Long-Term Conservation Plan.** If any options identified in the Water Conservation Evaluation Report are determined to be feasible and will result in equal (or better) effluent quality (i.e., reduced pollutant loads), the Permittee shall submit a Long-Term Conservation Plan to the DOH within four (4) years after the effective date of this permit for review and approval. The Permittee shall implement the selected long-term conservation measures according to the schedule identified in the approved plan.
- d. **Annual Progress Reports.** Beginning three (3) years after the effective date of this permit , the Permittee shall submit annual progress reports describing the implementation status of the Permittee’s short- and long-term conservation measures and an analysis of their impacts on effluent quality for pollutants of concern.

3.1.3 Inflow and Infiltration (I/I)

The permit requires the Permittee to evaluate the impacts of I/I on effluent quality and determine whether reductions in I/I and will result in equal (or better) effluent quality (i.e., reduced pollutant loads). The Permittee must submit the results of the evaluation in a I/I Evaluation Report in the second year of the permit term. If the Permittee determines that reductions in I/I will result in equal (or better) effluent quality (i.e., reduced pollutant loads), the Permittee must develop and implement an I/I Reduction Plan in the third year. Annual progress reports are required to provide updates on the implementation status and effectiveness of the Permittee’s I/I reduction measures on reducing pollutant loading from the Facility.

As collection systems age, groundwater may infiltrate the collection system through defective pipes, pipe joints, connections, or manholes. Additionally, inflows of water other than sanitary wastewater may enter the sewer system from roof and yard drains, cross connections between storm sewers and sanitary sewers, catch basins, and manholes, primarily during wet weather. Excessive I/I has the potential to contribute to increases in pollutant loading to the receiving water, increase chlorides and total dissolved solids levels thereby reducing reusability of the treated effluent, cause overflows or bypasses, and increase the operation and maintenance costs. The permit requires implementation of an I/I Reduction Plan to reduce pollutant loadings

and minimize degradation of the receiving water if the results of the Permittee's evaluation show that reductions in I/I will result in improved effluent quality.

Permit Text:

1. Infiltration and Inflow (I/I)

- a. **I/I Impacts Evaluation Report.** The Permittee shall evaluate the impacts of I/I on effluent quality and determine whether reductions in I/I will result in equal (or better) effluent quality (i.e., reduced pollutant loads). The Permittee shall submit an I/I Impacts Evaluation Report to the DOH within two (2) years after the effective date of this permit for review and approval. The report shall include:
 - i. A description of the collection system.
 - ii. An estimate of current levels of I/I in the collection system.
 - iii. The anticipated impact of I/I reductions on effluent quality for all pollutants of concern.
- b. **I/I Reduction Plan.** If the Permittee determines that reductions in I/I will result in equal (or better) effluent quality (i.e., reduced pollutant loads), the Permittee shall submit an I/I Reduction Plan to the DOH by within three (3) years after the effective date of this permit for review and approval. The plan shall include:
 - i. A hydraulic analysis of the collection system under estimated dry weather and peak wet weather flow conditions.
 - ii. A characterization of the existing collection system using available closed-circuit television (CCTV) data and employing a system for ranking the condition of pipelines that meets the National Association of Sewer Service Companies (NASCO) or other industry-accepted standards.
 - iii. A prioritized list of collection system deficiencies.
 - iv. An implementation schedule for completing short-term and long-term repairs needed to address system deficiencies and reduce I/I.
 - v. The estimated reduction in I/I to be achieved.
 - vi. A plan for collecting information needed to assess the effectiveness of efforts to reduce I/I. The Permittee shall identify areas within the collection system where significant pre-project data is available for comparison with post-project data after repairs have been completed.
- c. **Implementation of I/I Reductions.** Upon approval of the I/I Reduction Plan, the Permittee shall begin implementation of the necessary repairs to address system deficiencies and reduce I/I according to the schedule identified in the approved plan. The Permittee shall maintain a log of completed repairs to the collection system.
- d. **Annual Progress Reports.** Beginning four (4) years after the effective date of this permit, by March 31st, the Permittee shall submit annual progress reports describing the implementation status of activities to address system deficiencies and reduce I/I and an analysis of their impacts on I/I and effluent quality. To

assess the effectiveness of efforts to reduce I/I, the Permittee shall analyze a series of individual storm events to determine the effectiveness of I/I repairs. Flow rate and volume comparisons should be between storms having similar rainfall patterns occurring before and after completion of repairs. This analysis should include several storm events, and at least one before/after pair of light, medium, and heavy intensity rainfalls.

3.1.4 Maximizing Water Reuse

Wastewater discharged by the Facility into the receiving water contains pollutants that may contribute to exceedances of applicable water quality. Discharge volume reduction will proportionally decrease the loading of pollutants to the receiving water. In order to reduce the discharge of pollutants into the receiving water, the Permittee is required to maximum water reuse to the extent practicable. The conditions of the permit require the Permittee to evaluate the existing water reuse system and determine the maximum volume of wastewater expected to be discharged to the groundwater wells over the term of the permit. Further, permit conditions require the Permittee to subsequently meet the identified maximum discharge volumes under normal operating conditions. The Permittee may exceed these maximum discharge volumes if necessary, during periods of routine or event driven maintenance, or other unique circumstances that necessitate the temporary increase of discharge volume.

Permit Text:

1. Water Reuse Maximization

- a. **System Optimization.** Within 120 days after the effective date of this permit, and each year thereafter, the Permittee shall maximize water reuse through their existing distribution system to the extent possible and minimize the volume of effluent discharged through the discharge to the receiving water via groundwater discharges. The Permittee shall submit to the DOH a report by March 31st of each year detailing measures taken during the previous year to maximize water reuse. This report shall include a detailed discussion of the variables that impact water reuse and the extent they impact the Permittee's ability to maximize water reuse, challenges faced throughout the year for maximizing water reuse, and potential solutions to the challenges for future efforts in maximizing water reuse. Additionally, the report shall include a monthly summary of the volume of both the treated wastewater discharged to groundwater wells and distributed for reuse.
- b. **System Characterization.** Within one (1) year of the effective date of this permit, and every year following, the Permittee shall submit a full Water Reuse Characterization Report. This report shall include a characterization of the existing system and known future expansions. At a minimum, this shall include:
 - i. A discussion of the existing infrastructure, treatment process, and service area.

- ii. A discussion planned future expansions, including a description of the expansion, timeframe, and impact on water reuse.
- iii. An evaluation of potential options to expand the water reuse distribution system, including a description of potential customers or other users of recycled water.
- iv. An assessment of the maximum necessary discharge volume to the groundwater wells anticipated for each month over the next five (5) years. This assessment shall consider typical and anticipated operations of the water reuse distribution system. These anticipated flows may be used in future permitting efforts to establish maximum discharge volumes to the Pacific Ocean, allowing for periodic interruptions due to emergencies, maintenance, and other factors.
- v. Subsequent years following the submittal of the first Water Reuse Characterization Report, by March 31st, the Permittee shall provide an assessment of actual groundwater discharge flows verse anticipated flows each month for the prior year and provide the rationale for any flows that are greater than the previously reported anticipated flow.

3.1.5 Long-Term Planning (Part of a required Anti-Degradation requirement)

The permit requires the Permittee to conduct an alternatives analysis to identify and evaluate cost-effective and reasonable alternatives to achieve water quality criteria and minimize or prevent degradation of the receiving water. The Permittee must submit the results of the analysis in an Alternatives Analysis Report in the fourth year of the permit term and an Implementation Schedule with their permit renewal application.

The federal antidegradation policy at 40 CFR 131.12 establishes requirements for maintaining and protecting water quality and requires that state WQSs include an antidegradation policy that is consistent with the federal policy, as well as methods to implement the antidegradation policy. Accordingly, the HDOH has established the General Policy of Water Quality Antidegradation at HAR, Section 11-54-1.1 (State Antidegradation Policy) and the November 2019 Hawaii Antidegradation Implementation Procedures for National Pollutant Discharge Elimination System (NPDES) Permits and Section 401 Water Quality Certifications (WQC) (Antidegradation Implementation Procedures). The State Antidegradation Policy and Antidegradation Implementation Procedures specify requirements for maintaining and protecting water quality and procedures for evaluating activities that may degrade the quality of State waters.

The Antidegradation Implementation Procedures require an antidegradation review be conducted for any activity, including issuance of a new individual NPDES permit, that has the potential to degrade water quality or impact existing uses. Although discharges from the Facility to the receiving water, via direct hydrological connection, have likely occurred since the Facility began disposing treated wastewater to the injection wells, an NPDES permit authorizing the

degradation of receiving water quality has not previously been issued. Therefore, an antidegradation review is warranted to ensure that existing water quality is maintained and protected and that any lowering of high water quality is necessary to accommodate important economic or social development in the area. Although the HDOH would typically require a full antidegradation review prior to issuance of a new NPDES permit, additional time is necessary in this unique scenario to collect the necessary information to quantify the level of degradation and evaluate alternatives to the current discharge, which has not previously been authorized.

Information in the record suggests that the current discharge is causing or contributing to impairments of the receiving water for total nitrogen and total phosphorus and may be lowering water quality for other pollutants of concern. As part of the alternatives analysis, the permit requires the Permittee to assess the current level of degradation to serve as a baseline for evaluating the level of water quality improvement of the assessed alternatives. Section 3.4.2 of the Antidegradation Implementation Procedures includes a methodology for assessing the level of degradation for marine waters; however, the methodology assumes a scenario for a new discharge (i.e., discharge that has not yet commenced) or increased discharge and is not appropriate for assessing the degradation associated with an existing, unpermitted discharge for comparison with other less degrading alternatives. The permit does not specify a methodology for conducting the assessment; however, the Permittee's assessment must consider effluent pollutant concentrations and loading, fate and transport processes, available assimilative capacity, and available dilution and mixing characteristics.

The proposed permit requires the Permittee to perform an alternatives analysis to identify and evaluate cost-effective and reasonable alternatives to achieve water quality criteria and minimize or prevent degradation of the receiving water. The intent of the alternatives analysis is to identify cost-effective and reasonable, less-degrading or non-degrading approaches for reducing discharge-related impacts, so they do not result in significant degradation of the receiving water. Less degrading or non-degrading pollution control alternatives identified and assessed should be reliable, demonstrated processes or practices that can be reasonably expected to result in a defined range of treatment or pollutant removal. If experimental or unproven methods are proposed, the HDOH may request information on previous applications of the method, effectiveness, transferability (if applicable), costs, and other information, as appropriate. At minimum, the Permittee's analysis must consider the following alternatives:

- *Upgraded treatment.* Upgrades to the existing treatment system have the potential to reduce pollutants of concern beyond existing levels. Some treatment technologies may reduce some pollutants of concern, but not others; therefore, the Permittee may need to consider a combination of treatment upgrades to address all pollutants of concern in the discharge.
- *Alternative effluent disposal.* Alternative effluent disposal options have the potential to eliminate or minimize impacts to the receiving water. Land application in an area where groundwater does not have a hydrological connection to surface water would eliminate

the current impacts to the receiving water altogether. Depending on its location and mixing and dilution processes, construction of a dedicated outfall pipe equipped with a diffuser could reduce receiving water impacts by minimizing the size of the discharge plume and concentrating it in a single location (as compared to the diffuse nature of the current discharge, which enters the receiving water through various seeps), and relocating the discharge to an area in the receiving water where there is less potential to impact designated uses and that maximizes available dilution.

- *Water reuse and associated recycled water storage.* Water reuse has the potential to reduce or eliminate impacts to the receiving water. Opportunities for water reuse include irrigation for agriculture or landscaping, municipal water supply, industrial process water supply, indoor uses (e.g., toilet flushing), dust control, groundwater replenishment, or environmental restoration.
- *A combination of alternatives.* A combination of feasible alternatives (e.g., upgrades to improve nutrient removal and water reuse) may be needed to address different pollutants of concern or to further minimize impacts to the receiving water.

For each alternative identified, the permit requires an assessment of the change in receiving water quality, costs, environmental impacts, and other considerations. The assessment of costs should be performed in accordance with Sections 4.2, 4.4, and 4.5 and Appendix B of the Antidegradation Implementation Procedures or a knee-of-the-curve analysis.

Based on this analysis, the Permittee must identify a preferred alternative, or combination of alternatives, and develop a schedule for implementation. The HDOH will review the alternatives analysis and may require the Permittee to perform analysis of additional alternatives, submit additional information, and/or implement an alternative other than the Permittee's preferred alternative. The HDOH intends to establish conditions in the next permit renewal requiring implementation of the preferred alternative(s) necessary to protect and maintain water quality consistent with the state antidegradation policy as soon as possible.

Permit Text:

1. Antidegradation Study Requirements

Within four (4) years of the effective date of this permit, the Permittee shall submit an antidegradation study that meets the requirements specified in the *Hawaii Antidegradation Implementation Procedures for National Pollutant Discharge Elimination System (NPDES) Permits and Section 401 Water Quality Certifications (WQC)*.

- a. Impact Assessment.** The Permittee shall conduct an assessment of the impact of the discharge on the receiving water consistent with Section 3.4.1 and 3.4.2 of the *Hawaii Antidegradation Implementation Procedures for National Pollutant Discharge Elimination System (NPDES) Permits and Section 401 Water Quality Certifications (WQC)* (Antidegradation Procedures manual). The Permittee shall submit an Impact Assessment Report to the DOH within four (4) years of the effective date of this permit. The report shall include a pollutant-by-pollutant

analysis for all pollutants of concern that are reasonably expected to be present in the regulated discharge. The report shall include:

- i. A baseline water quality determination consistent with Section 3.4.2.1 of the Antidegradation Procedures manual.
 - ii. An assessment to determine the level of water quality degradation caused by the discharge activity consistent with Section 3.4.2.2 of the Antidegradation Procedures manual.
 - iii. The Permittee must complete an alternatives analysis as specified in sub-part b of this section and a Socioeconomic Analysis consistent with Section 5 of the Antidegradation Procedures manual. The Socioeconomic Analysis shall determine if the discharge activity's impact on water quality is necessary to accommodate important social or economic development in the area. The Socioeconomic Analysis shall include an analysis of the social and economic importance of the activity associated with the discharge. The Permittee must document any social and economic benefits/costs associated with the discharge. Up-to-date and accurate data must be used for the analysis, and any estimates of job gains/losses, housing impacts, impacts on human health, etc., be summarized completely and be based on defensible estimates. The Permittee shall use the Social and Economic Importance Worksheet in Appendix C of the Antidegradation Procedures manual to document how the discharge affects the social, economic, and environmental factors listed below.
 1. Creating, expanding or maintaining employment;
 2. Reducing the unemployment rate;
 3. Increasing median household income;
 4. Reducing the number of households below the poverty line;
 5. Increasing needed housing supply;
 6. Increasing the community tax base;
 7. Providing necessary public services;
 8. Correcting a public health, safety, or environmental problem; and
 9. Improving quality of life for residents of the area.
- b. Alternatives Analysis.** The Permittee shall conduct an alternatives analysis to identify and evaluate cost-effective and reasonable alternatives to achieve water quality criteria and minimize or prevent degradation of the receiving water. The Permittee shall submit an Alternatives Analysis Report to the DOH within four (4) years of the effective date of this permit for review and approval. The report shall include:
- i. A description of the treatment plant, treatment plant process, and discharge conditions.

- ii. An assessment of the level of receiving water quality degradation caused by the current discharge from the Facility for all pollutants of concern. The assessment shall account for effluent pollutant concentrations and loading, fate and transport processes, available assimilative capacity, and available dilution and mixing characteristics.
- iii. An identification of less degrading and non-degrading alternatives to the current discharge from the Facility. Alternatives shall include, but are not limited to:
 - 1. Upgraded treatment.
 - 2. Alternative effluent disposal (e.g., land application, direct discharge via an outfall diffuser).
 - 3. Water reuse and associated recycled water storage.
 - 4. A combination of alternatives (e.g., upgrades to improve nutrient removal and water reuse).
- iv. The anticipated change in receiving water quality associated with each alternative for all pollutants of concern as compared to the current discharge from the Facility.
- v. An assessment of costs for each alternative to determine whether the alternative is cost-effective and reasonable. The Permittee shall conduct the cost assessment in accordance with the procedures described in Sections 4.2, 4.4, and 4.5 and Appendix B of the Alternatives of the *Hawaii Antidegradation Implementation Procedures for National Pollutant Discharge Elimination System (NPDES) Permits and Section 401 Water Quality Certifications (WQC)*. Alternatively, the Permittee may perform a knee-of-the-curve analysis as described in Section 3.4.3 of EPA's [*Combined Sewer Overflows Guidance for Long-Term Control Plan*](#) (EPA 832-B-95-002). The cost assessment may be prepared by a licensed professional engineer, accountant, economist, or other professional qualified in the field, but must be submitted under a professional engineer seal. The Permittee shall document all sources and rationale for data and assumptions used for the cost assessment.
- vi. An assessment of the environmental impacts for each alternative. At minimum, this assessment should consider:
 - 1. Impacts to groundwater.
 - 2. Potential to generate secondary water quality impacts (e.g., stormwater, hydrology).
 - 3. System or technology reliability and the potential for upsets or accidents.
 - 4. Non-water quality environmental impacts (e.g., odor, noise, energy consumption, air emissions, solid waste generation).

- vii. An assessment of technical, legal, and local considerations of each alternative.
- viii. Identification of the Permittee's preferred alternative(s). The Permittee shall demonstrate that the preferred alternative is cost-effective and reasonable, will fully maintain and protect existing uses in the receiving water, and will achieve the highest statutory and regulatory requirements.

Upon review of the Permittee's Alternatives Analysis Report, the HDOH may require analysis of additional alternatives, submission of additional information, and/or implementation of an alternative other than the Permittee's preferred alternative.

- c. **Implementation Schedule.** The Permittee shall develop a schedule for implementing the Permittee's preferred alternative (or other alternative, as required by the DOH) as soon as possible. The Permittee shall submit the implementation schedule to the DOH with the permit renewal application, at least one (1) year prior to the permit expiration date for review and approval. The implementation schedule shall include milestones for obtaining funding, design/planning, construction, and any other necessary implementation steps. The time between milestone dates shall be no greater than 12 months. At a minimum, funding to begin implementation (design and buildout) of the selected alternative shall be initiated within six (6) years of permit effective date (first year of a renewed permit).

3.2 Proposed Effluent Limitations

Zone of mixing (ZOM) data is not available for the Facility nor appropriate given the nature of the discharge of the current regulatory allowances for ZOMs. However, dilution may be appropriate should the data set be developed. The Permittee has the option to conduct a dilution study to establish available dilution.

Without a full dilution study, the HDOH assumes no dilution allowance. Instead, the proposed permit establishes performance-based effluent limitations for BOD₅, TSS, total nitrogen, total phosphorus, and fecal coliform to minimize the potential for WQS exceedances within the receiving water.

Effluent data for these pollutants was evaluated for the development of performance-based effluent limits between January 2016 and November 20, 2022. As discussed previously, given the subsurface nature of the discharge, the WQBELs themselves were not derived using the method described in Section 3.3.2 of EPA's *Technical Support Document for Water Quality-based Toxic Controls* (EPA/505/2-90-001). The use of these "TSD" procedures for a subsurface discharge are not appropriate because many of the assumptions that fit a traditional discharge model no longer hold true. Additionally, because we cannot rely on standard procedures and there is limited data and information related to how the discharge impacts the receiving water,

performance-based limits have been established until additional information becomes available and can be evaluated.

Performance-based limits were established in most cases using the 95th percentile effluent concentration based on a 99 percent confidence level, a calculated coefficient of variation, the number of total samples collected, and the maximum effluent concentration observed for each pollutant over a specified averaging period. A detailed explanation of the RPA and limitation calculations is provided in Section D of the proposed permit fact sheet. The use of performance-based effluent limitations shall ensure that at a minimum, current water quality is maintained, that the facility will be able to consistently achieve the established limits, and that no backsliding of effluent quality or treatment occurs by the Facility. Once additional data and information is collected that allows DOH to better predict the impact of the discharge on the receiving water, WQBELs will be established considering water quality criteria, dilution, and actual pollutant loading/concentrations into the receiving water. In addition to numeric limits for the pollutants of concern, the proposed permit established whole effluent toxicity that is anticipated to protect aquatic life from unidentified toxic pollutants and aggregate effects of pollutants present in the discharge.

Table 2. Effluent Limitations – Outfall Serial No. 001

Parameter	Units	Proposed Effluent Limitations ¹		
		Average Monthly	Average Weekly	Maximum Daily
Flow	MGD	2	2	2
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	16.5	24.8	2
	lbs/day	564	848	2
	% Removal	The average monthly percent removal shall not be less than 85 percent.		
Total Suspended Solids (TSS)	mg/L	10.2	15.3	2
	lbs/day	349	523	2
	% Removal	The average monthly percent removal shall not be less than 85 percent.		

¹ Compliance with mass-based effluent limitations shall be determined using the following formula:

$$\text{lbs/day} = 8.34 * \text{concentration (mg/L)} * \text{flow (MGD)}$$

² The Permittee shall monitor and report the analytical test results.

Table F-5. Summary of Final Effluent Limitations – All Other Pollutants

Parameter	Units	Proposed Effluent Limitations ¹		
		Average Annual	Average Monthly	Maximum Daily
pH ²	standard units	Not less than 6.0 and not greater than 9.0		
Chronic Toxicity – <i>Pimephales promelas</i> ³	Pass/Fail	--	Pass ⁴	--
Chronic Toxicity <i>Ceriodaphnia dubia</i> ³	Pass/Fail	--	Pass ⁴	--
Chronic Toxicity <i>Selenastrum capricornutum</i> ³	Pass/Fail	--	Pass ⁴	--
Fecal Coliform	CFU/100 mL	--	5.2 ⁵	--
Enterococcus ⁶	CFU/100 mL	--	35 ⁵	130 ⁷
Total Nitrogen	µg/L	8	8	8
	lbs/day	228	8	8

Parameter	Units	Proposed Effluent Limitations ¹		
		Average Annual	Average Monthly	Maximum Daily
Total Phosphorus	µg/L	7	8	8
	lbs/day	93.6	8	8
Temperature	°C	--	8	--
Turbidity	NTU	--	8	8
Total Oil and Grease	mg/L	--	8	8
Total Petroleum Hydrocarbons	mg/L	--	8	8
Remaining Pollutants ⁹	µg/L	--	8	8

- 1 Compliance with mass-based effluent limitations shall be determined using the following formula:

$$\text{lbs/day} = 8.34 * \text{concentration (mg/L)} * \text{flow (MGD)}$$
- 2 Both influent and effluent samples shall be taken, as specified in Part A.2 and A.3. of the permit.
- 3 The Permittee shall test one species of the three (3) chronic test species (*P. promelas*, *C. dubia*, and *S. capricornutum*) each calendar month such that each species is tested at least once per quarter.
- 4 "Pass", as described in section D.2.h of this Fact Sheet.
- 5 Effluent limitation expressed as a monthly geometric mean.
- 6 Enterococci samples shall be analyzed using Method 1600, *Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl-β-D-Glucoside Agar(mEI)* (EPA 821-R-09-016) or the most current EPA approved method specified in 40 CFR 136.
- 7 Effluent limitation expressed as single sample maximum.
- 8 The Permittee shall monitor and report the parameter analytical test results.
- 9 The Permittee shall perform semi-annual monitoring on all remaining pollutants listed in Appendix 1 of this permit, except those already specified in the table above. Effluent analyses for metals shall be reported as total recoverable.

3.3 Future Reasonable Potential Analysis (RPA) Procedures

The purpose of an RPA is to evaluate if pollutants in a discharge cause or contribute to exceedances of applicable water quality criteria. Typical RPA procedures rely on the use of sufficient receiving water and effluent data for each pollutant, and an understanding of the available dilution within the receiving water. Due to the nature of the discharge through groundwater, final pollutant concentrations and available dilution once the wastewater enters the receiving water are unknown. The relationship between pollutants discharge to the groundwater injection wells, and the characteristics of the effluent that is discharged into the Pacific Ocean is not fully understood. Therefore, an RPA was not able to be conducted for toxic pollutants for the draft permit issuance. The permit includes requirements to obtain the necessary information to conduct future reasonable potential analyses to determine what water quality-based effluent limitations must be established. However, due to the unique nature of the discharge through groundwater, alternative RPA procedures must be considered.

To evaluate reasonable potential for future permitting efforts, the permittee is required to monitor effluent and receiving water quality at the seeps. Pollutants that are detected in the receiving water at concentrations above water quality will be compared to the available effluent data. If the pollutant that is exceeding water quality criteria in the receiving water is present in the effluent (or is a known compound or a by-product/derivative of a pollutant in the effluent), reasonable potential to cause or contribute to an exceedance of water quality will be determined, and water quality-based effluent limitations will be required for the discharge.

During this permit term, the permittee will conduct a number of studies that will support the development of appropriate water quality-based effluent limitations. Until a dilution value is determined for the discharge into the Pacific Ocean, a conservative default assumption of 1:1 fate and transport of the pollutant to the receiving water will be assumed and used in calculating the water quality-based effluent limitations. However, if the permittee believes that a 1:1 assumption of pollutant in the effluent vs the pollutant discharged to the receiving water is overly conservative, the permittee may conduct a broad dilution study or fate and transport study for that specific pollutant. HDOH will consider the results of any pollutant fate and transport studies in the development of future water quality-based effluent limitations.

Attachment A: Facility Site Visit Images



Photo 1: Bar Screens (two onsite)



Photo 2: Grit Chamber (two onsite)

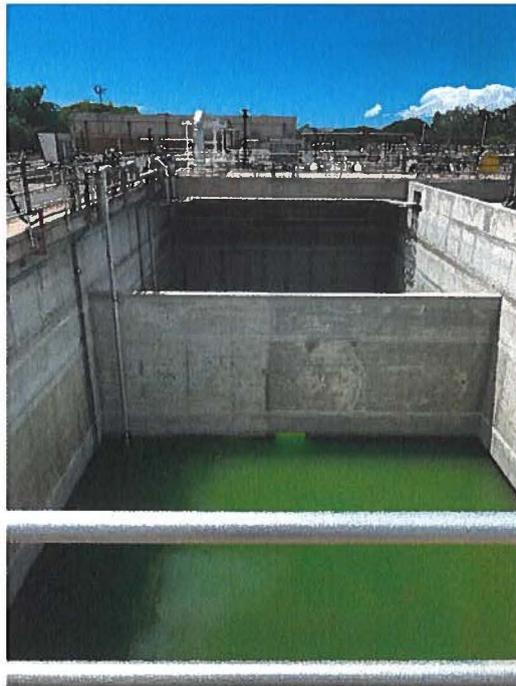


Photo 3: Step Feed Aeration Basin



Photo 4: Flexible Aeration Basin (two trains with oxic and anoxic zones)



Photo 5: Flexible Aeration Basin

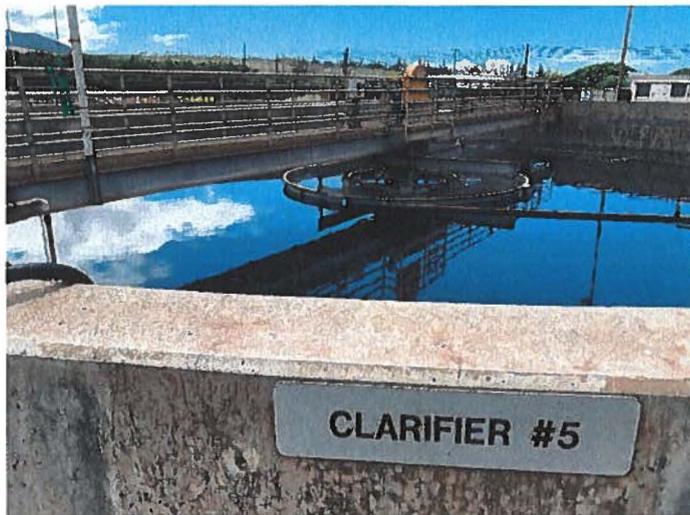


Photo 6: Secondary Clarifiers (four onsite)



Photo 7: Secondary Clarifiers



Photo 8: Secondary Clarifier Weirs

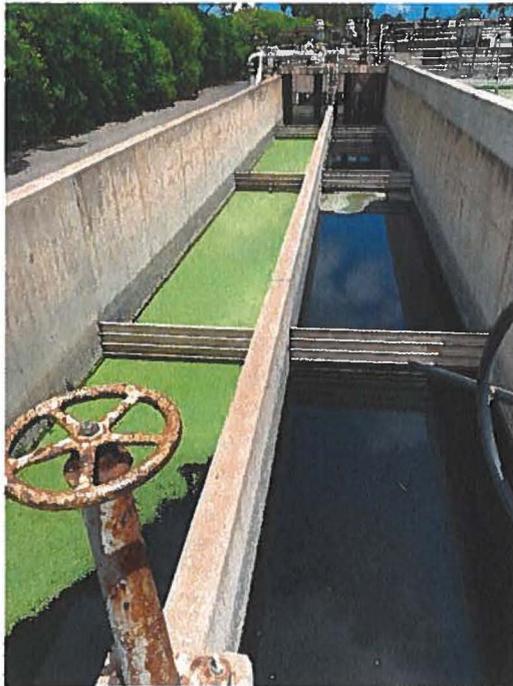


Photo 9: Chlorine Contact Chamber (not currently used)



Photo 10: Effluent Disk Filters (five onsite)



Photo 11: Ultraviolet Light Disinfection Units (three channels with three banks in each channel)



Photo 12: Injection Well No. 1

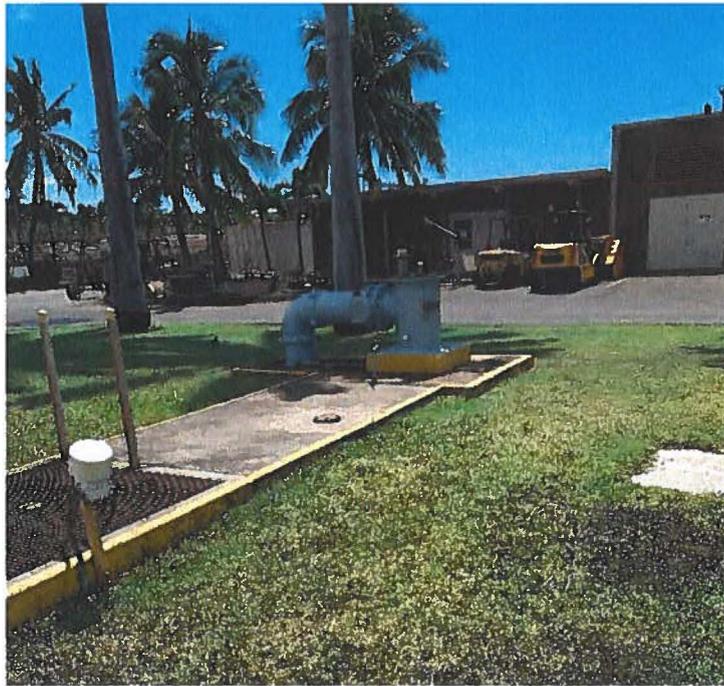


Photo 13: Injection Well No. 2



Photo 14: Injection Well No. 3

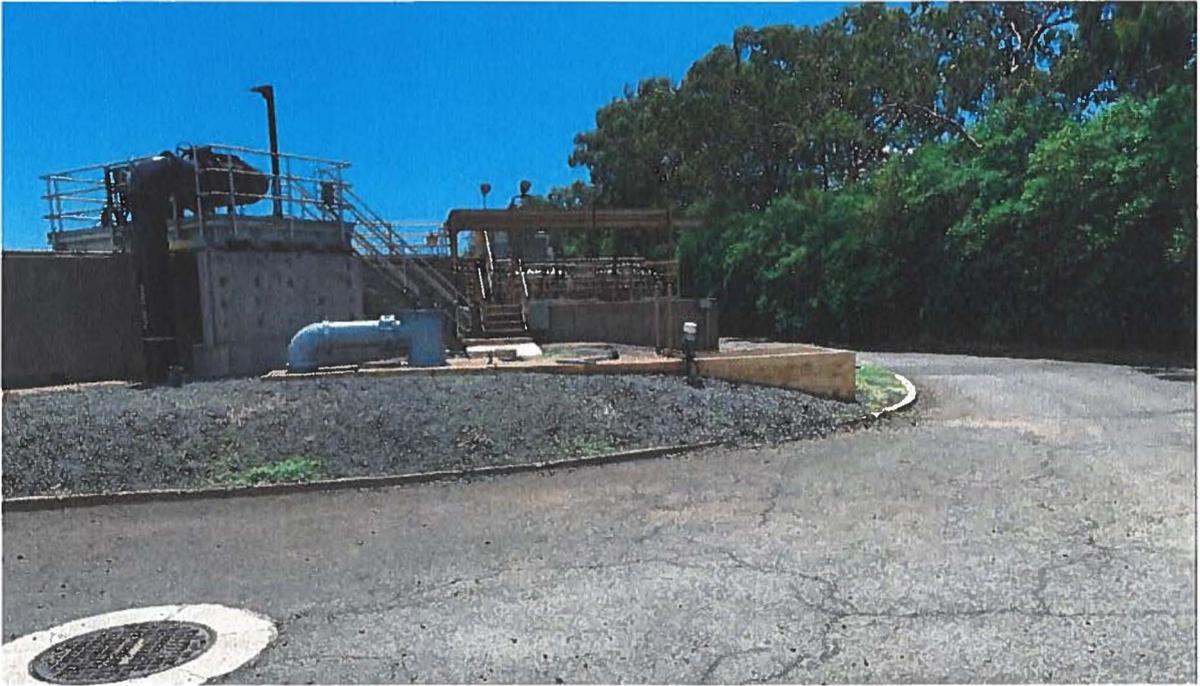


Photo 15: Injection Well No. 4



Photo 16: Solids Centrifuge