SENT VIA DOH-CWB E-PERMITTING PORTAL (#HQ1-9KWP-3TEH4)

2023 WASTEWATER POLLUTION PREVENTION PROGRAM ANNUAL REPORT

KAILUA REGIONAL WASTEWATER TREATMENT PLANT

Prepared by:
THE CITY AND COUNTY OF HONOLULU
DEPARTMENT OF ENVIRONMENTAL SERVICES

3/31/2024

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2023 WASTEWATER POLLUTION PREVENTION PROGRAM ANNUAL REPORT

KAILUA REGIONAL WASTEWATER TREATMENT PLANT

A. FLOW

The average monthly influent flow entering the treatment plant during the 2023 calendar year ranged between 9.5774 MGD and 12.5475MGD. The average monthly effluent flow discharged to the outfall during the 2023 calendar year ranged between 10.3333 MGD and 13.6644 MGD. The highest average monthly influent flow occurred during the month of April 2023 and the lowest average monthly influent flow was recorded during the month of June 2023. The average monthly flows recorded during the 2023 calendar year are shown in Figure A-1 in the Appendix and in the tabular summary below.

2023 Average Monthly Flow

Month	Influent (MGD)	Effluent (MGD)
January	10.4478	11.5834
February	11.5218	12.8179
March	10.5695	11.8143
April	12.5475	13.6644
May	11.0323	11.7410
June	9.5774	10.3333
July	9.6068	10.4776
August	9.8359	10.6791
September	9.7259	10.6188
October	9.7287	10.4524
November	11.2485	11.7023
December	11.8506	12.5234

B. FIVE-DAY BIOCHEMICAL OXYGEN DEMAND (BOD_5) LOADING

The average monthly influent BOD_5 concentration recorded during the 2023 calendar year ranged between 135 mg/L and 156 mg/L. The maximum average weekly influent BOD_5 concentration during the 2023 calendar year ranged between 144 mg/L and 173 mg/L.

The average monthly effluent BOD_5 concentration during the 2023 calendar year ranged between 17 mg/L and 25 mg/L. The maximum average weekly effluent BOD_5 concentration during the 2023 calendar year ranged between 18 mg/L and 29 mg/L. BOD_5 effluent concentrations for the 2023 calendar year were below the average monthly and average weekly discharge limitations of 30 mg/L and 45 mg/L, respectively.

The average monthly effluent BOD_5 loading during the 2023 calendar year ranged between 1502 lbs/day and 2326 lbs/day. The maximum average weekly effluent BOD_5 loading ranged between 1600 lbs/day and 2717 lbs/day.

Throughout the 2023 calendar year, the Kailua Regional WWTP (KRWWTP) maintained compliance with the NPDES permit BOD_5 average monthly and average weekly loading limitations of 3,816 lbs/day and 5,723 lbs/day, respectively.

The average monthly BOD_5 percent removal rates during the 2023 calendar year ranged between 82% and 88% and complied with the minimum 85% BOD_5 removal rate in 9 out of the 12 calendar months.

Tabular summaries of the respective 2023 calendar year monthly BOD_5 concentrations, loadings, and percent removals are listed below. Figures B-1 through B-4 in the Appendix are the charts of the influent BOD_5 concentrations, effluent BOD_5 concentrations, BOD_5 removal rates and effluent BOD_5 loading trends, respectively.

2023 Average Monthly BOD_5 Concentrations

Month	Inf. BOD Conc. (mg/L)	Eff. BOD Conc. (mg/L)
January	146	24
February	142	17
March	145	18
April	148	17
May	149	18
June	156	23
July	149	17
August	139	20
September	139	25
October	137	24
November	135	21
December	140	19

2023 Maximum Average Weekly BOD_5 Concentrations

Month	Inf. BOD Conc. (mg/L)	Eff. BOD Conc. (mg/L)
January	155	27
February	146	21
March	157	18
April	159	19
May	162	25
June	165	27
July	173	18
August	150	22
September	147	29
October	144	29
November	154	23
December	157	20

2023 Average Monthly BOD_5 Loading

Month	Eff. BOD Loading (lbs/day)
January	2,326
February	1,900
March	1,736
April	1,860
May	1,681
June	1,962
July	1,502
August	1,755
September	2,210
October	2,070
November	2,055
December	1,989

2023 Maximum Average Weekly BOD_5 Loading

Month	Eff. BOD Loading (lbs/day)
January	2,520
February	2,542
March	1,891
April	2,308
May	2,194
June	2,344
July	1,600
August	1,920
September	2,557
October	2,493
November	2,717
December	2,434

2023 Average Monthly BOD_5 Percent Removal

Month	% Removal
January	84
February	88
March	88
April	88
May	88
June	85
July	88
August	86
September	82
October	83
November	85
December	86

C. TOTAL SUSPENDED SOLIDS (TSS) LOADING

The average monthly influent Total Suspended Solids (TSS) concentration for the 2023 calendar year ranged between 143 mg/L and 185 mg/L. The maximum average weekly influent TSS concentration during the 2023 calendar year ranged between 159 mg/L and 240 mg/L.

The average monthly effluent TSS concentration for the 2023 calendar year ranged between 7 mg/L and 15 mg/L. The maximum average weekly effluent TSS concentration during the 2023 calendar year ranged between 8 mg/L and 18 mg/L. TSS effluent

concentrations for the 2023 calendar year were below the average monthly and average weekly discharge limitations of 30 mg/L and 45 mg/L, respectively.

For the 2023 calendar year, the average monthly effluent TSS loading ranged between 653 lbs/day and 1458 lbs/day and the maximum average weekly TSS loading during the 2023 calendar year ranged between 757 lbs/day and 2623 lbs/day.

Throughout the 2023 calendar year, the KRWWTP maintained compliance with the NPDES permit TSS average monthly and average weekly loading limitations of 3,816 lbs/day and 5,723 lbs/day, respectively.

The average monthly TSS percent removal rates during the 2023 calendar year ranged between 91% and 96% and complied with the minimum TSS removal rate of 85%.

Tabular summaries of the respective 2023 calendar year monthly TSS concentrations, loadings, and percent removals are listed below. Figures C-1 through C-4 in the Appendix are the charts of the influent TSS concentrations, effluent TSS concentrations, TSS removal rates and effluent TSS loading trends, respectively.

2023 Average Monthly TSS Concentration

Month	Inf. TSS Conc. (mg/L)	Eff. TSS Conc. (mg/L)
January	172	15
February	150	11
March	167	8
April	147	10
May	157	7
June	173	10
July	185	12
August	175	8
September	164	13
October	143	13
November	147	14
December	158	12

2023 Maximum Average Weekly TSS Concentration

Month	Inf. TSS Conc. (mg/L)	Eff. TSS Conc. (mg/L)
January	201	15
February	165	14
March	182	8
April	159	14
May	189	9
June	206	11
July	240	16
August	215	8
September	186	14
October	160	14
November	166	18
December	185	14

2023 Average Monthly TSS Loading

Month	Eff. TSS Loading (lbs/day)
January	1,458
February	1,186
March	786
April	1,285
May	653
June	846
July	1,069
August	694
September	1,109
October	1,152
November	1,412
December	1,273

2023 Maximum Average Weekly TSS Loading

Month	Eff. TSS Loading (lbs/day)
January	1,739
February	1,609
March	869
April	2,623
May	781
June	933
July	1,374
August	757
September	1,238
October	1,213
November	2,249
December	1,584

2023 Average Monthly TSS Percent Removal

Month	% Removal
January	91
February	93
March	95
April	93
May	96
June	94
July	93
August	96
September	92
October	91
November	91
December	92

D. TOXIC POLLUTANTS OR IMPACTS OF SEPTIC WASTES

I. Remaining Pollutants

Table D-1 in the Appendix shows the results of the annual monitoring performed in October 2023 on the effluent for remaining pollutants listed in Appendix 1 of the KRWWTP NPDES permit.

II. Whole Effluent Toxicity Test

The KRWWTP NPDES permit requires the City and County of Honolulu (CCH) to conduct chronic toxicity testing using one of the three test species (*Tripneustes gratilla*, *Ceriodaphnia dubia*, and *Atherinops affinis*) each calendar month such that each species is tested once per quarter. The test methods for the three species are summarized in the table below. Each test is subject to a determination of "Pass" or "Fail" from a single effluent concentration test at an IWC of 0.22 percent.

Whole Effluent Toxicity Test Species & Methods

Test Species	Test Method
Tripneustes gratilla	Hawaiian Collector Urchin, *Tripneustes gratilla* (Hawa'e) Fertilization Test Method (EPA/600/R-12/022)
Ceriodaphnia dubia	Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/821/R-02/013)
Atherinops affinis	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)

The test results are evaluated using a statistical approach, Test of Significant Toxicity (TST), described in National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document (EPA 833-R-10-003, 2010). A failed test triggers a requirement for accelerated monitoring and implementation of the Initial Investigation Toxicity Reduction Evaluation (IITRE) Work Plan if necessary. The Permittee may also initiate a Toxicity Identification Evaluation (TIE) in accordance with EPA guidance documents.

All the WET tests conducted in the 2023 calendar year resulted in "Pass". See Table D-2 in the Appendix for a summary of the 2023 WET results.

E. GROWTH POTENTIAL OF THE SERVICE AREA

The KRWWTP services an area between Kahalu'u and Kailua (See Figure E-1 in the Appendix). Population growth rate is affected by many factors including the local economy, policies, and approved developments in the area. The socioeconomic projections, in five year intervals, that were developed by the Department of Planning and Permitting show population growth in the Koolaupoko area to 2035 (see Figure E-2).

F. IMPACT OF NEW REGULATIONS

Chapter 11-55 of the Hawaii Administrative Rules ("HAR"), entitled "Water Pollution Control," was amended on January 15, 2022. In part, this amendment increased the number of days to submit a permit reapplication prior to its expiration date from 180 days to 360 days. Consequently, the KRWWTP NPDES permit renewal application due date will now be May 5, 2024.

G. BYPASSES AND OVERFLOWS

I. Bypasses

There were no bypasses during the 2023 calendar year.

II. In-plant Spills/Overflows

See Table F-1 for a summary of the in-plant spills/overflows during the 2023 calendar year. During the 2023 calendar year, there was one in-plant spill.

H. EFFECTIVENESS AND CONDITION OF THE FACILITY'S COLLECTION SYSTEM

I. The KRWWTP collection system is located on the northeast side of the Island of Oahu. It services the Kaneohe-Kahaluu, Ahuimanu, Kaneohe, and Kailua basins.

II. Collection System Spills:

There was one collection system spill in the Kailua tributary, as detailed in Table F-2.

CCH has various programs and approaches to evaluate the condition and effectiveness of its collection system including gravity main cleaning, maintenance and chemical root control. CCH also conducts closed-circuit television (CCTV) inspection and condition assessment of its assets. This data is analyzed to identify, prioritize and execute necessary repair, rehabilitation and capital improvement work.

I. TREATMENT CAPACITY BASED ON ADDITIONAL INFORMATION

The original design capacity of the KRWWTP is 15.25 MGD. However, the hydraulic capacity is estimated to be 45 MGD during short duration (storm) peak flow events with Kaneohe-Kailua Tunnel in operation.

APPENDIX

Figure A-1
2023 Monthly Average Flow

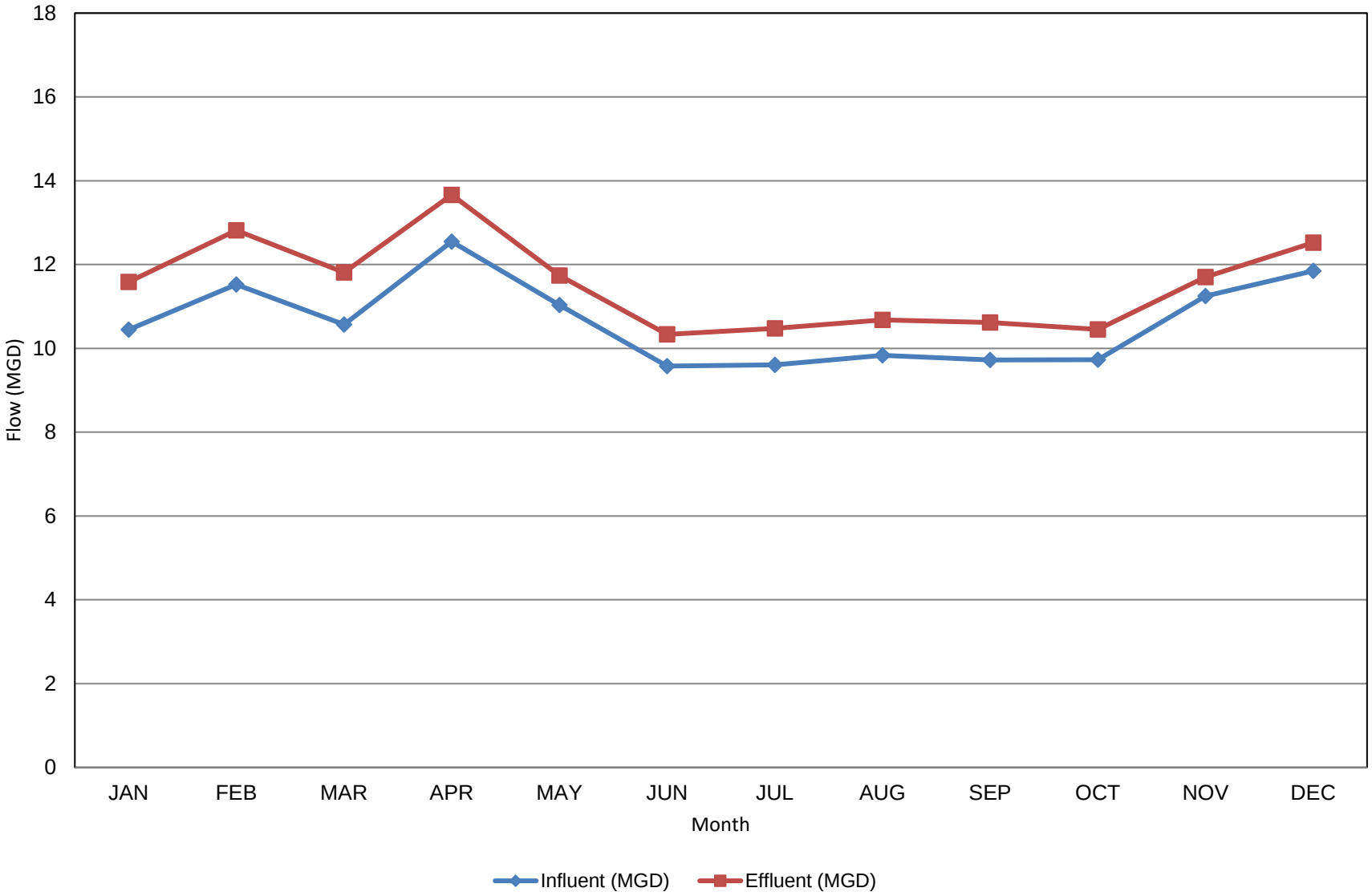


Figure B-1
2023 Influent BOD_5 Concentration

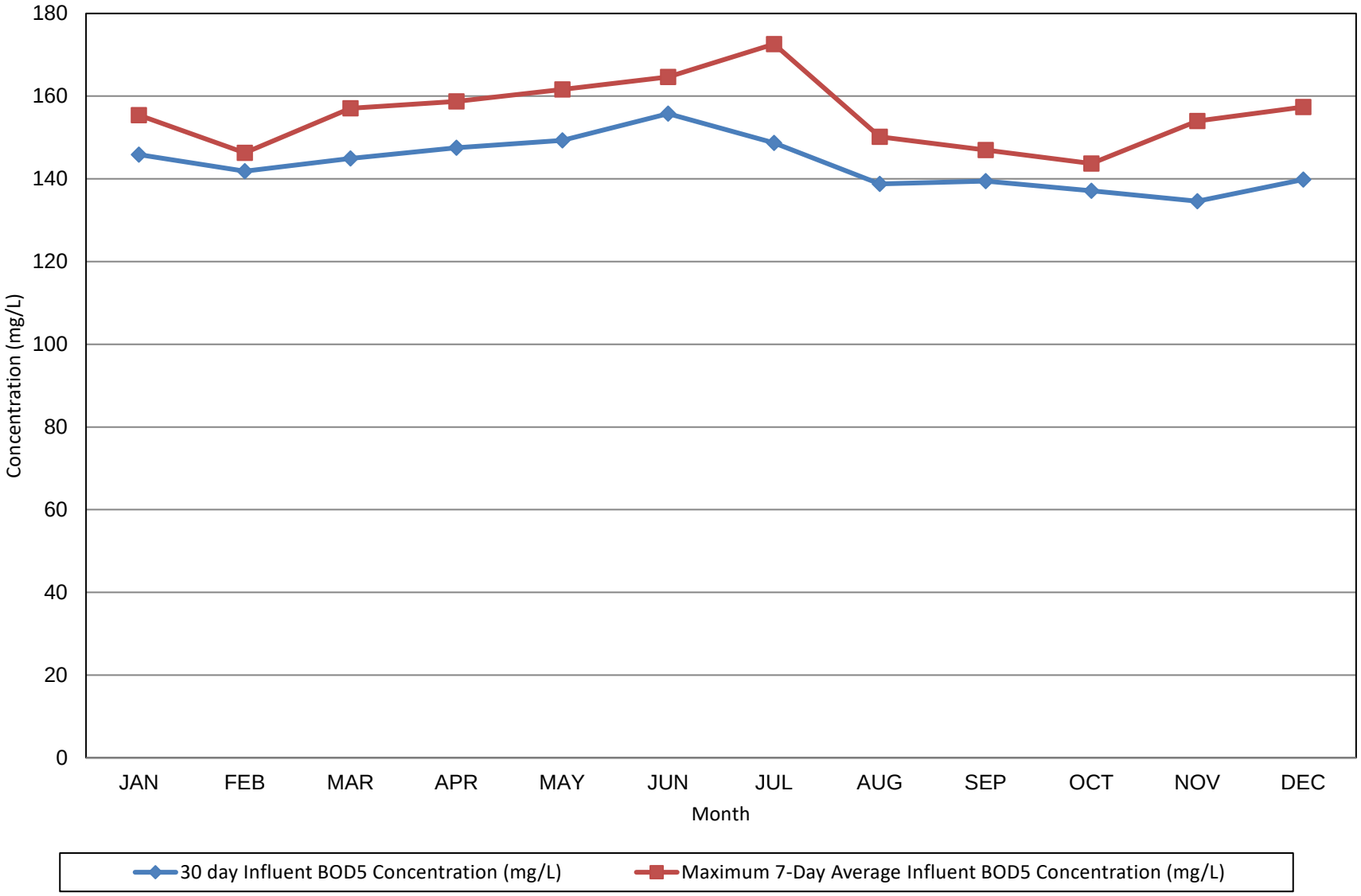


Figure B-2
2023 Effluent BOD_5 Concentration

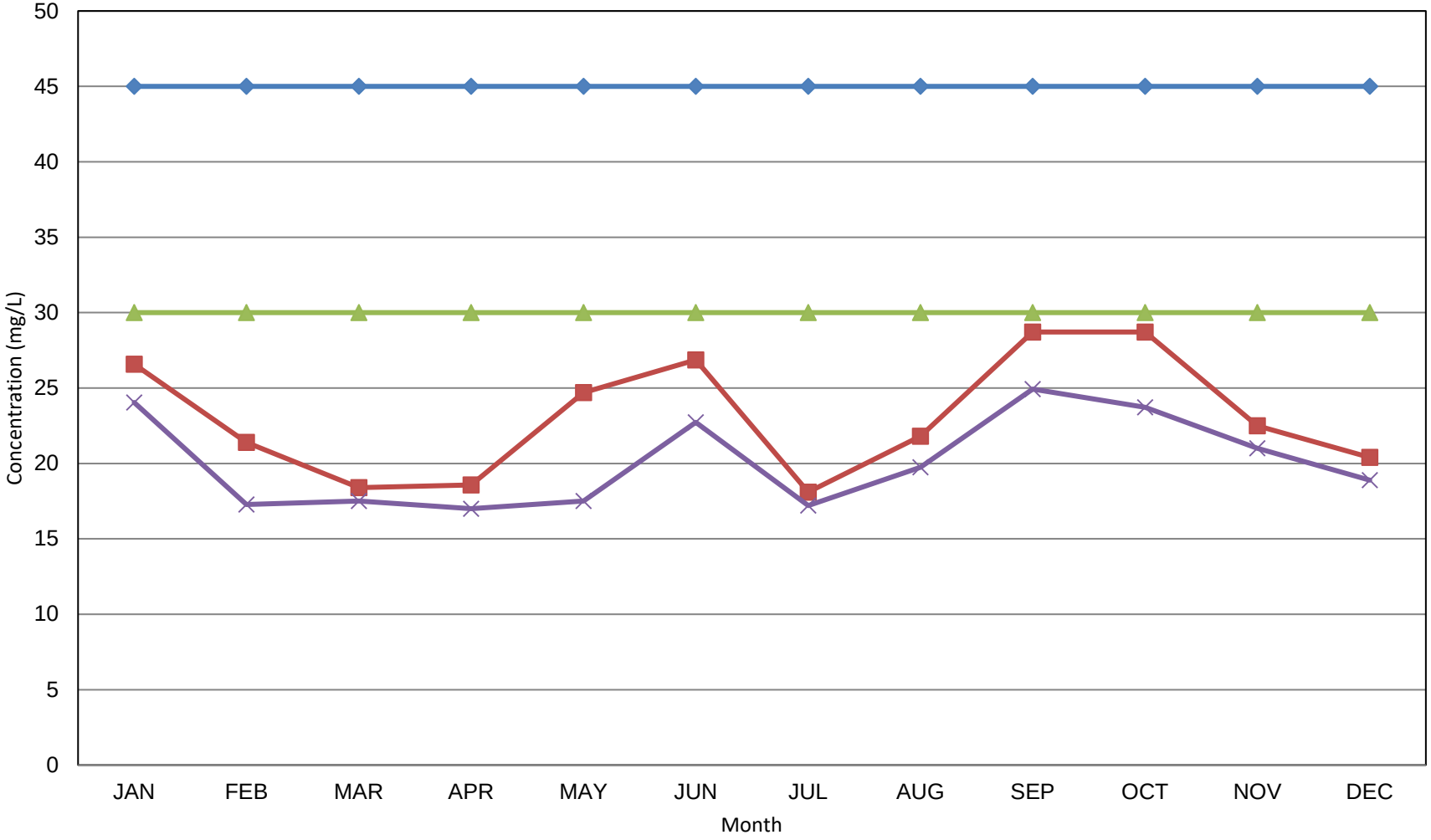


Figure B-3
2023 Monthly Average BOD_5 Removal Rates

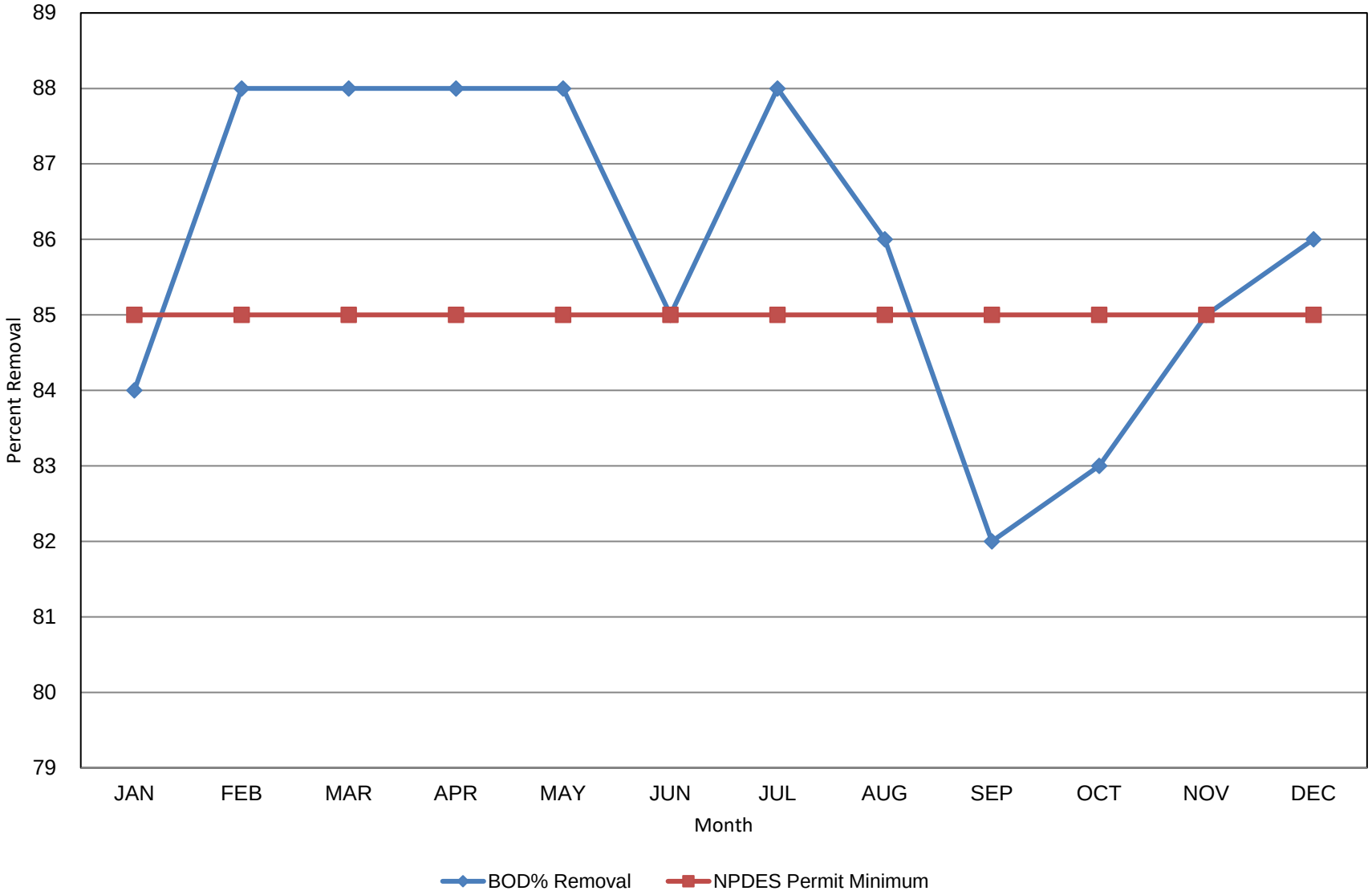


Figure B-4
2023 Effluent BOD_5 MER (lbs/day)

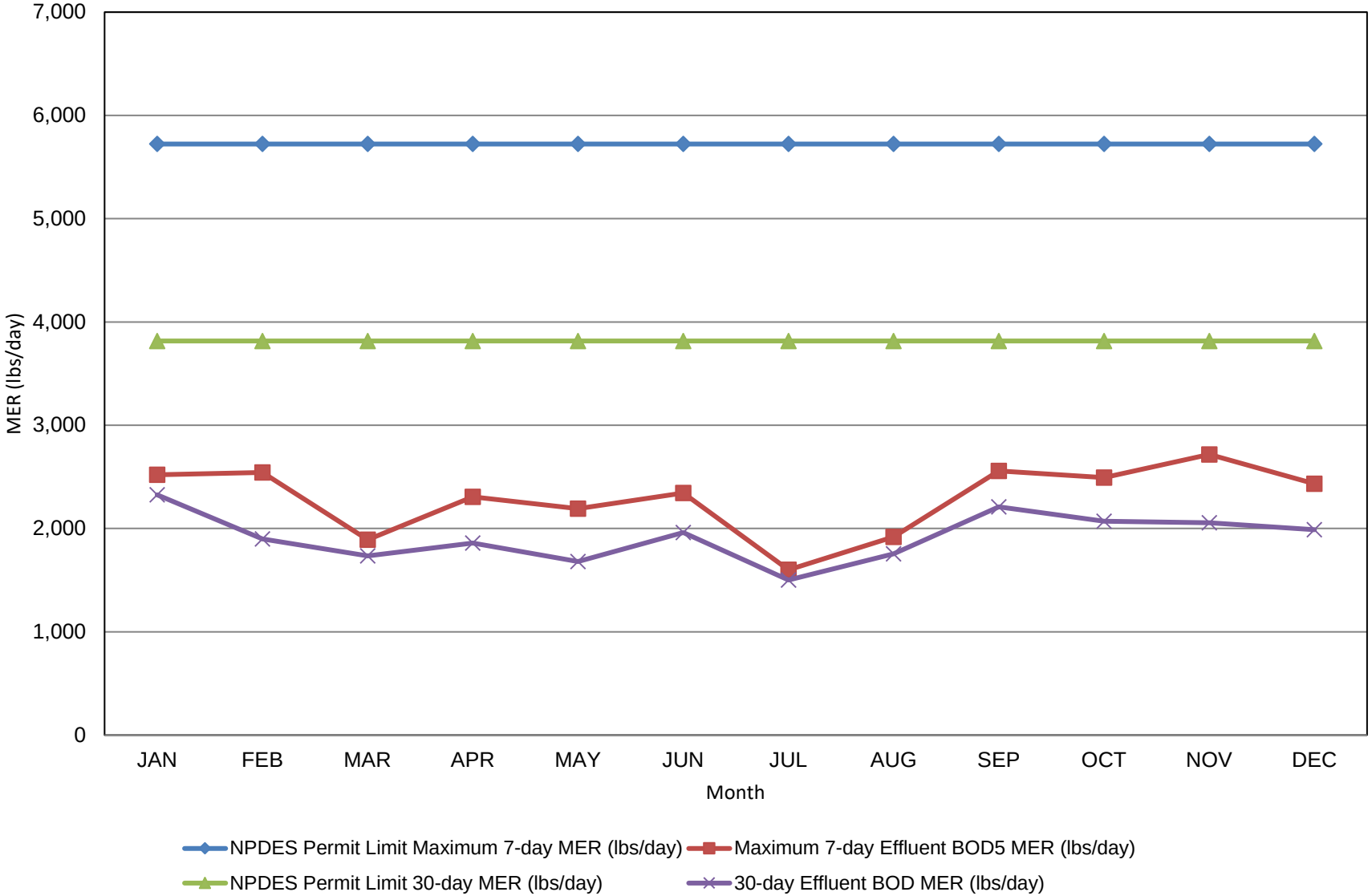


Figure C-1
2023 Influent TSS Concentration

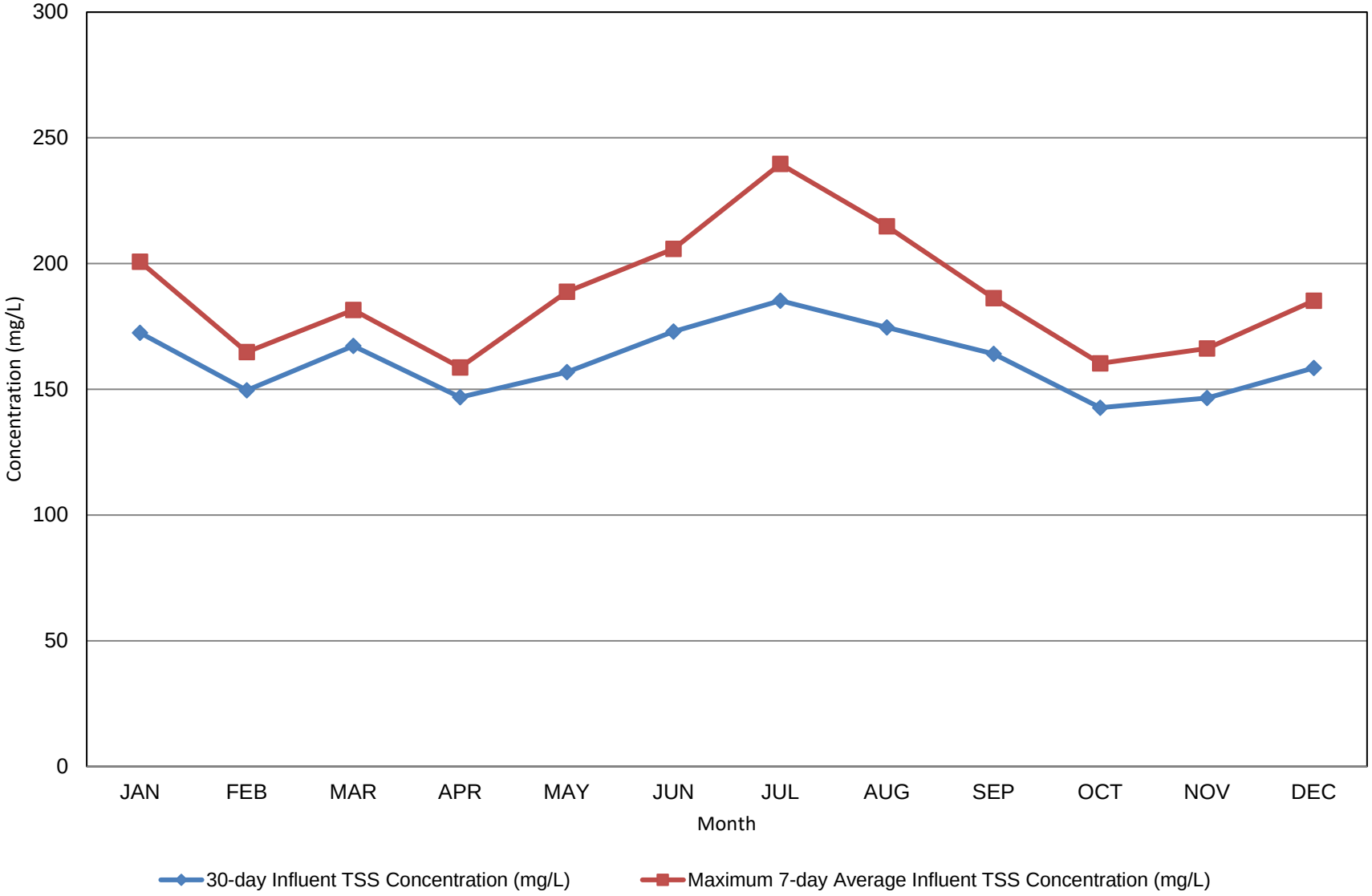


Figure C-2
2023 Effluent TSS Concentration

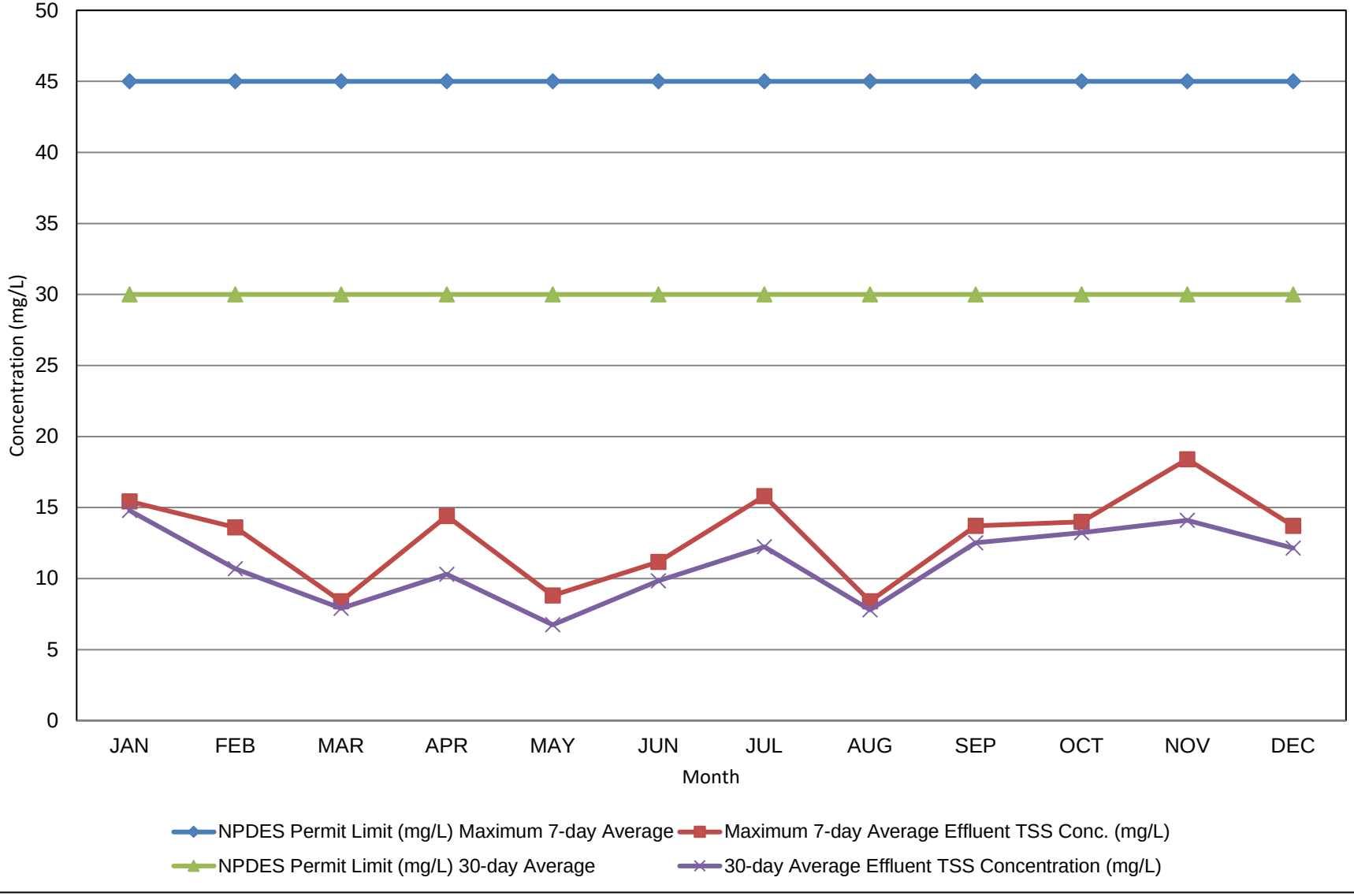


Figure C-3
2023 Monthly Average TSS Removal Rates

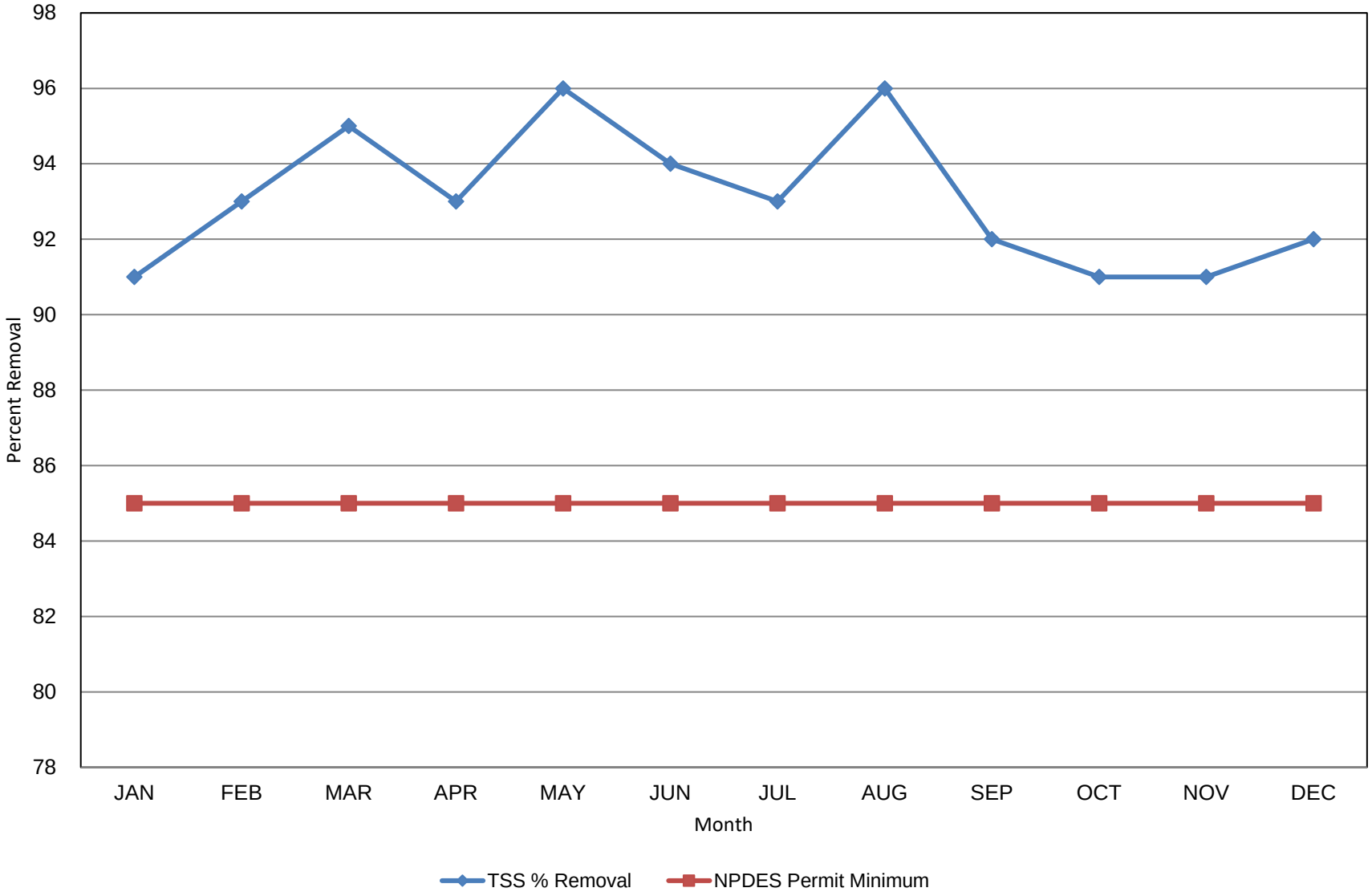


Figure C-4
2023 Effluent TSS MER (lbs/day)

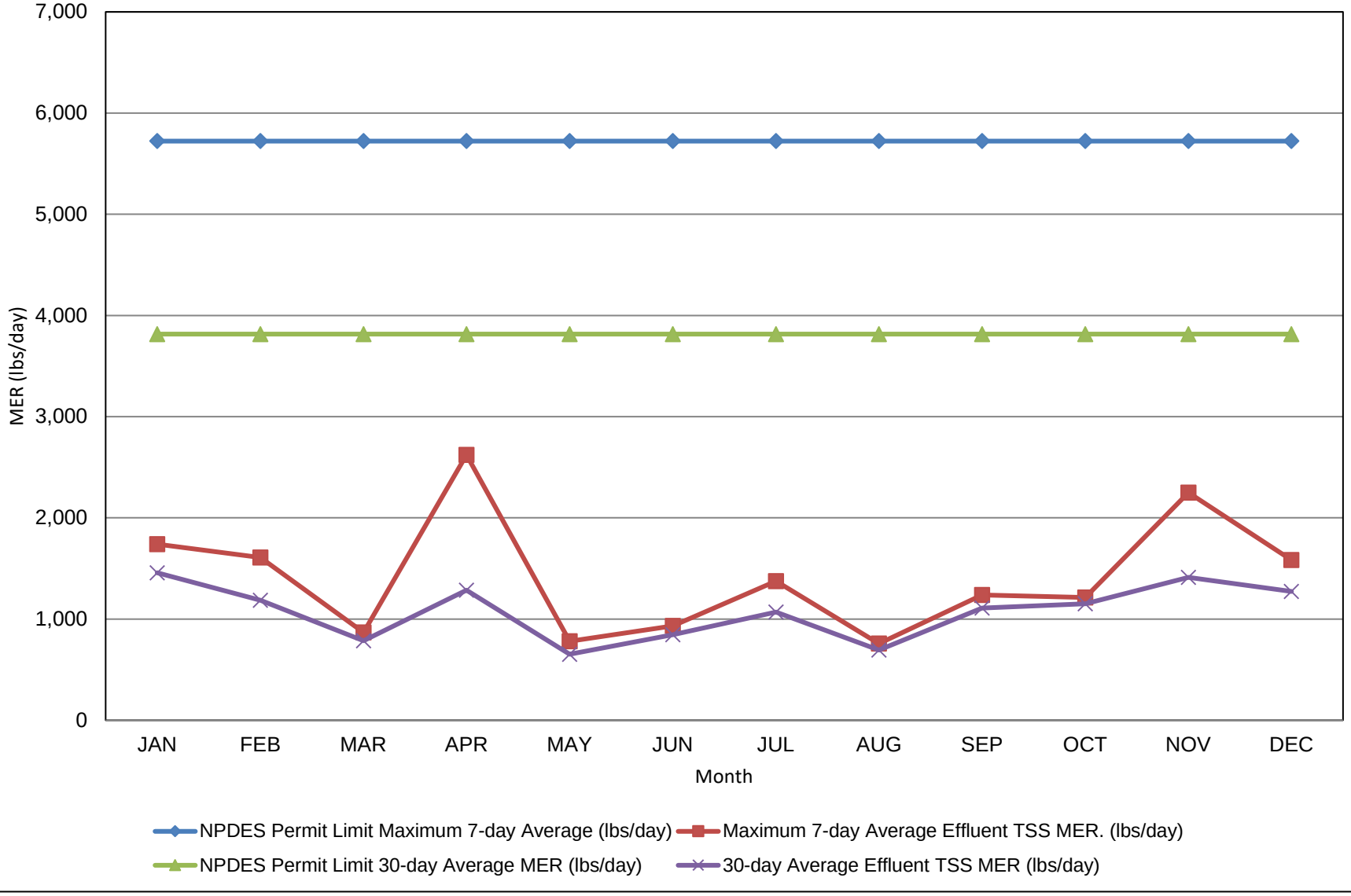


Table D-1

2023 Annual Remaining Pollutants Analysis

Sample Description: KAILUA REGIONAL WWTP

Sampling Date: 10/2/2023 - 10/3/2023 **EPA 624.1 re-sample 10/24/23**

Analyte	Analytical Method	Units	EFFLUENT	Q	EFFLUENT DUPLICATE	Q	ML	MDL	BLANK
Antimony	EPA 200.8	ug/L	1.1	J	1.3	J	2.0	0.293	ND
Arsenic	SM 3113B	ug/L	ND		ND		1.0	0.747	ND
Beryllium	EPA 200.8	ug/L	0.14	J	0.15	J	2.0	0.012	ND
Cadmium	EPA 200.8	ug/L	0.067	J	0.071	J	2.0	0.024	ND
Chromium, Diss. Hexavalent	SM 3500 Cr-B	ug/L	ND		ND		2.0	1.7	ND
Copper	EPA 200.8	ug/L	34.6		31.5		2.0	0.65	ND
Lead	EPA 200.8	ug/L	0.48	J	0.54	J	2.0	0.173	ND
Mercury	SM 3112B	ug/L	ND		ND		0.1	0.0725	ND
Nickel	EPA 200.8	ug/L	4.1		4.2		2.0	0.427	ND
Selenium	SM 3113B	ug/L	ND				2.0	1.47	ND
Silver	EPA 200.8	ug/L	ND		ND		2.0	0.077	ND
Thallium	EPA 200.8	ug/L	ND		ND		2.0	0.041	ND
Zinc	EPA 200.8	ug/L	23.8				10	6.04	ND
Acrolein	EPA 624.1	ug/L	ND		ND		2	50	ND
Acrylonitrile	EPA 624.1	ug/L	ND		ND		0.2	100	ND
Benzene	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Bromodichloromethane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Bromoform	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Bromomethane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Carbon Tetrachloride	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Chlorobenzene	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Chloroethane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
2-Chloroethyl vinyl ether	EPA 624.1	ug/L	ND		ND		10.0	0.01	ND
Chloroform	EPA 624.1	ug/L	ND		0.02	J	5.0	0.01	ND
Chloromethane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Dibromochloromethane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
1,2-Dichlorobenzene	EPA 624.1	ug/L	ND		ND		5.0	0.01	0.03
1,3-Dichlorobenzene	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
1,4-Dichlorobenzene	EPA 624.1	ug/L	ND		ND		5.0	0.01	0.03
1,1-Dichloroethane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
1,2-Dichloroethane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
1,1-Dichloroethene	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
trans-1,2-Dichloroethene	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
1,2-Dichloropropane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
cis-1,3-Dichloropropene	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
trans-1,3-Dichloropropene	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Ethylbenzene	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Methylene Chloride	EPA 624.1	ug/L	0.02	JB	ND		5.0	0.01	0.22
1,1,2,2-Tetrachloroethane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Tetrachloroethene	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Toluene	EPA 624.1	ug/L	0.03	J	0.03	J	5.0	0.01	ND
1,1,1-Trichloroethane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
1,1,2-Trichloroethane	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Trichloroethene	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Vinyl Chloride	EPA 624.1	ug/L	ND		ND		5.0	0.01	ND
Acenaphthene	EPA 625.1	ug/L	ND		ND		1.0	0.38	ND
Acenaphthylene	EPA 625.1	ug/L	ND		ND		1.0	0.35	ND

Table D-1

2023 Annual Remaining Pollutants Analysis

Anthracene	EPA 625.1	ug/L	ND		ND		1.0	0.41	ND
Benzidine	EPA 625.1	ug/L	ND		ND		10	3.2	ND
Benzo(a)anthracene	EPA 625.1	ug/L	ND		ND		1.0	0.46	ND
Benzo(b)fluoranthene	EPA 625.1	ug/L	ND		ND		1.0	0.5	ND
Benzo(k)fluoranthene	EPA 625.1	ug/L	ND		ND		1.0	0.72	ND
Benzo(g,h,i)perylene	EPA 625.1	ug/L	ND		ND		2.0	0.42	ND
Benzo(a)pyrene	EPA 625.1	ug/L	ND		ND		1.0	0.82	ND
Bis(2-chloroethoxy)methane	EPA 625.1	ug/L	ND		ND		1.0	0.25	ND
Bis(2-chloroethyl)ether	EPA 625.1	ug/L	ND		ND		1.0	0.27	ND
Bis(2-chloroisopropyl)ether	EPA 625.1	ug/L	ND		ND		1.0	0.38	ND
Bis(2-ethylhexyl)phthalate	EPA 625.1	ug/L	ND		ND		5.0	2.3	ND
4-Bromophenyl Phenyl Ether	EPA 625.1	ug/L	ND		ND		1.0	0.36	ND
Butyl Benzyl Phthalate	EPA 625.1	ug/L	ND		ND		1.0	0.49	ND
2-Chloronaphthalene	EPA 625.1	ug/L	ND		ND		1.0	0.45	ND
4-Chlorophenyl Phenyl Ether	EPA 625.1	ug/L	ND		ND		1.0	0.41	ND
Chrysene	EPA 625.1	ug/L	ND		ND		1.0	0.19	ND
Dibenzo(a,h)anthracene	EPA 625.1	ug/L	ND		ND		2.0	0.6	ND
3,3-Dichlorobenzidine	EPA 625.1	ug/L	ND		ND		5.0	2.5	ND
Diethyl Phthalate	EPA 625.1	ug/L	ND		ND		1.0	0.35	ND
Dimethyl Phthalate	EPA 625.1	ug/L	ND		ND		1.0	0.18	ND
2,4-Dinitrotoluene	EPA 625.1	ug/L	ND		ND		1.0	0.46	ND
2,6-Dinitrotoluene	EPA 625.1	ug/L	ND		ND		1.0	0.27	ND
Di-n-Butyl Phthalate	EPA 625.1	ug/L	ND		ND		1.0	0.3	ND
Di-n-Octyl Phthalate	EPA 625.1	ug/L	ND		ND		1.0	0.46	ND
1,2-Diphenylhydrazine	EPA 625.1	ug/L	ND		ND		1.0	0.3	ND
Fluoranthene	EPA 625.1	ug/L	ND		ND		1.0	0.35	ND
Fluorene	EPA 625.1	ug/L	ND		ND		1.0	0.35	ND
Hexachlorobenzene	EPA 625.1	ug/L	ND		ND		1.0	0.49	ND
Hexachlorobutadiene	EPA 625.1	ug/L	ND		ND		1.0	0.47	ND
Hexachlorocyclopentadiene	EPA 625.1	ug/L	ND		ND		5.0	1.5	ND
Hexachloroethane	EPA 625.1	ug/L	ND		ND		1.0	0.5	ND
Indeno(1,2,3-cd)pyrene	EPA 625.1	ug/L	ND		ND		2.0	0.66	ND
Isophorone	EPA 625.1	ug/L	ND		ND		1.0	0.21	ND
Naphthalene	EPA 625.1	ug/L	ND		ND		1.0	0.49	ND
Nitrobenzene	EPA 625.1	ug/L	ND		ND		1.0	0.36	ND
N-Nitrosodimethylamine	EPA 625.1	ug/L	ND		ND		1.0	0.5	ND
N-Nitrosodiphenylamine	EPA 625.1	ug/L	ND		ND		1.0	0.19	ND
N-Nitrosodi-n-propylamine	EPA 625.1	ug/L	ND		ND		1.0	0.26	ND
Phenanthrene	EPA 625.1	ug/L	ND		ND		1.0	0.32	ND
Pyrene	EPA 625.1	ug/L	ND		ND		1.0	0.25	ND
1,2,4-Trichlorobenzene	EPA 625.1	ug/L	ND		ND		1.0	0.49	ND
2-Chlorophenol	EPA 625.1	ug/L	ND		ND		1.0	0.28	ND
4-Chloro-3-methylphenol	EPA 625.1	ug/L	ND		ND		1.0	0.23	ND
2,4-Dichlorophenol	EPA 625.1	ug/L	ND		ND		1.0	0.26	ND
2,4-Dimethylphenol	EPA 625.1	ug/L	ND		ND		1.0	0.76	ND
2,4-Dinitrophenol	EPA 625.1	ug/L	ND		ND		10	4.4	ND
2-Methyl-4,6-dinitrophenol	EPA 625.1	ug/L	ND		ND		5.0	2.4	ND
2-Nitrophenol	EPA 625.1	ug/L	ND		ND		1.0	0.26	ND
4-Nitrophenol	EPA 625.1	ug/L	ND		ND		5.0	1.2	ND
Pentachlorophenol	EPA 625.1	ug/L	ND		ND		1.0	0.4	ND
Phenol	EPA 625.1	ug/L	ND		ND		1.0	0.17	ND
2,4,6-Trichlorophenol	EPA 625.1	ug/L	ND		ND		1.0	0.22	ND
Aldrin	EPA 608.3	ug/L	ND		ND		0.009	0.0041	ND

Table D-1

2023 Annual Remaining Pollutants Analysis

Alpha-BHC	EPA 608.3	ug/L	ND		ND		0.009	0.0044	ND
Beta-BHC	EPA 608.3	ug/L	ND		ND		0.009	0.0057	ND
Delta-BHC	EPA 608.3	ug/L	ND		ND		0.009	0.0061	ND
Gamma-BHC	EPA 608.3	ug/L	ND		ND		0.009	0.0053	ND
Chlordane	EPA 608.3	ug/L	ND		ND		0.2	0.1163	ND
4,4'-DDD	EPA 608.3	ug/L	ND		ND		0.009	0.0066	ND
4,4'-DDE	EPA 608.3	ug/L	ND		ND		0.009	0.0048	ND
4,4'-DDT	EPA 608.3	ug/L	ND		ND		0.009	0.0053	ND
Endosulfan I	EPA 608.3	ug/L	ND		ND		0.009	0.0045	ND
Endosulfan II	EPA 608.3	ug/L	ND		ND		0.009	0.0055	ND
Endosulfan Sulfate	EPA 608.3	ug/L	ND		ND		0.02	0.0112	ND
Endrin	EPA 608.3	ug/L	ND		ND		0.009	0.0068	ND
Endrin Aldehyde	EPA 608.3	ug/L	ND		ND		0.009	0.0032	ND
Heptachlor	EPA 608.3	ug/L	ND		ND		0.009	0.0041	ND
Heptachlor Epoxide	EPA 608.3	ug/L	ND		ND		0.009	0.007	ND
Methoxychlor	EPA 608.3	ug/L	ND		ND		0.009	0.0085	ND
Mirex	EPA 608.3	ug/L	ND		ND		0.01	0.0097	ND
Toxaphene	EPA 608.3	ug/L	ND		ND		0.25	0.1001	ND
PCB-1016	EPA 608.3	ug/L	ND		ND		0.9	0.2892	ND
PCB-1221	EPA 608.3	ug/L	ND		ND		0.9	0.2892	ND
PCB-1232	EPA 608.3	ug/L	ND		ND		0.9	0.2892	ND
PCB-1242	EPA 608.3	ug/L	ND		ND		0.9	0.2892	ND
PCB-1248	EPA 608.3	ug/L	ND		ND		0.9	0.2892	ND
PCB-1254	EPA 608.3	ug/L	ND		ND		0.9	0.2892	ND
PCB-1260	EPA 608.3	ug/L	ND		ND		0.9	0.2892	ND
Guthion (Azinphos, Methyl)	EPA 614	ug/L	ND		ND		0.1	0.042	ND
Demeton-O	EPA 614	ug/L	ND		ND		0.1	0.035	ND
Demeton-S	EPA 614	ug/L	ND		ND		0.1	0.045	ND
Malathion	EPA 614	ug/L	ND		ND		0.1	0.033	ND
Parathion	EPA 614	ug/L	ND		ND		0.25	0.243	ND
Cyanide, Total	SM 4500-CN E	ug/L	ND		ND		5.0	2.53	ND
2,3,7,8-Dioxin	EPA 1613B	pg/L	ND		ND		11	0.97	ND
Chromium, Total Recoverable	EPA 200.8	ug/L	1.3	J	1.6	J	2.0	0.976	ND

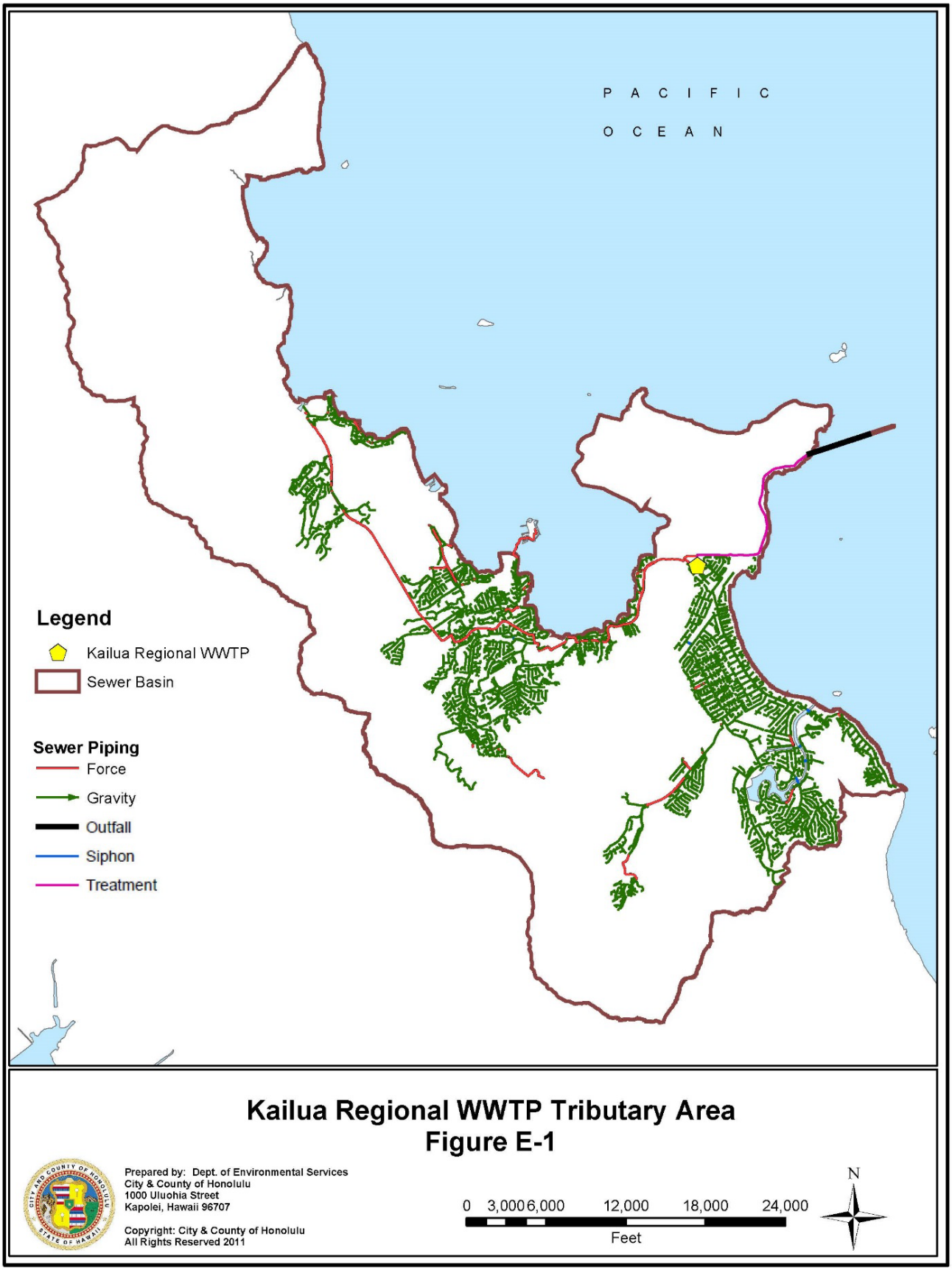
ND = not detected above Method Detection Limit (MDL); Minimum Level (ML) = lowest calibration standard used

Qualifier Flags: J = Value is an estimate because concentration is below ML but above MDL.

Table D-2
2023 Whole Effluent Toxicity Test Results

Date Tested	Species Tested	Test Description	TST Result (Pass/Fail)	% Effect at IWC (0.22% Effluent)
01/12/2023	*Atherinops affinis*[1]	Survival Test	Pass	2.5
		Growth Test	Pass	17.7
02/15/2023	*Ceriodaphnia dubia*	Reproduction Test	Pass	4.25
		Survival Test	Pass	0
03/06/2023	*Tripneustes gratilla*	Fertilization Test	Pass	6.67
04/13/2023	*Atherinops affinis*[1]	Survival Test	Pass	0
		Growth Test	Pass	5.84
05/24/2023	*Ceriodaphnia dubia*	Reproduction Test	Pass	7.55
		Survival Test	Pass	0
06/14/2023	*Tripneustes gratilla*	Fertilization Test	Pass	-0.13
07/14/2023	*Atherinops affinis*[1]	Survival Test	Pass	-5.3
		Growth Test	Pass	-2.81
08/14/2023	*Ceriodaphnia dubia*	Reproduction Test	Pass	3.22
		Survival Test	Pass	0
09/06/2023	*Tripneustes gratilla*	Fertilization Test	Pass	4.51
10/05/2023	*Atherinops affinis*[1]	Survival Test	Pass	2.5
		Growth Test	Pass	-4.01
11/15/2023	*Ceriodaphnia dubia*	Reproduction Test	Pass	-1.61
		Survival Test	Pass	0
12/14/2023	*Tripneustes gratilla*	Fertilization Test	Pass	2.77

[1]Pacific topsmelt


P A C I F I C
O C E A N
Legend
Kailua Regional WWTP
Sewer Basin
Sewer Piping
Force
Gravity
Outfall
Siphon
Treatment
Kailua Regional WWTP Tributary Area
Figure E-1
Prepared by: Dept. of Environmental Services
City & County of Honolulu
1000 Uluohia Street
Kapolei, Hawaii 96707
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0 3,000 6,000 12,000 18,000 24,000
Feet
N

FIGURE E-2
Population Growth Projections

DEVELOPMENT PLAN AREA	PERCENT OF ACTUAL POPULATION TOTAL				PERCENT OF PROJECTED POPULATION TOTAL		
	1980	1990	2000	2010	2020	2025	2040
Primary Urban Center	54.7%	51.7%	47.9%	45.6%	44.3%	43.7%	43.0%
Ewa	4.7%	5.1%	7.8%	10.6%	13.0%	14.2%	15.9%
Central Oahu	13.3%	15.6%	16.9%	17.7%	17.4%	17.5%	17.7%
East Honolulu	5.7%	5.5%	5.3%	5.2%	5.1%	4.9%	4.6%
Koolau Poko	14.3%	14.1%	13.5%	12.1%	11.5%	11.1%	10.4%
Koolau Loa	1.4%	1.7%	1.7%	1.8%	1.7%	1.7%	1.7%
North Shore	1.7%	1.9%	2.1%	1.9%	1.9%	1.8%	1.8%
Waianae	4.1%	4.5%	4.8%	5.1%	5.0%	5.0%	4.9%
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
	ACTUAL POPULATION				**PROJECTED POPULATION**		
Primary Urban Center	417,240	432,023	419,333	435,118	444,800	449,900	467,100
Ewa	35,523	42,931	68,696	101,397	130,700	146,100	172,700
Central Oahu	101,685	130,526	148,208	168,643	174,400	180,000	192,400
East Honolulu	43,213	45,654	46,735	49,914	51,500	50,600	50,000
Koolau Poko	109,373	117,694	117,999	115,164	115,900	114,600	113,300
Koolau Loa	10,983	14,263	14,546	16,732	17,400	17,700	18,100
North Shore	13,061	15,729	18,380	17,720	18,600	18,900	19,600
Waianae	31,487	37,411	42,259	48,519	50,500	51,600	53,600
TOTAL	**762,565**	**836,231**	**876,156**	**953,207**	**1,003,700**	**1,029,400**	**1,086,700**

City and County of Honolulu
Department of Planning and Permitting
Annual Report on the Status of Land Use on Oahu, December 2020

Table F-1: 2023 In-Plant Spills at Kailua Regional WWTP

DATE	VOLUME (gallons)	FACILITY	TREATMENT LEVEL	DISCHARGED FROM	CAUSE	ACTIONS TAKEN TO CONTROL OVERFLOW	PREVENTATIVE ACTIONS
12/30/23	875	Kailua Regional WWTP	DAFT Recirculation	DAFT No. 1 (back pressure valve area)	Equipment Failure. Top recirculation line corroded and leaking above back pressure valve area.	Secured and isolated recirculation line. Suction pumps were used to return a majority of the spill volume into a sidestream. The affected area was disinfected.	The leak was repaired. Operations to report any leaking joints or connections observed while performing routine checks or preventive maintenance in the back pressure valve area.

Table F-2: 2023 Kailua Regional WWTP Tributary Area Collection System Spills

DATE	VOLUME	LOCATION	DISCHARGED FROM	LINE (PROBLEM ASSET)			CAUSE	ACTIONS TAKEN TO CONTROL OVERFLOW	PREVENTATIVE ACTIONS		
	(gallons)	Address		Asset Number	Type	Size (in.)			PM Changed From	PM Changed To	Other Actions Taken to Prevent Future Spills
01/12/23	5	350 Auwinala Rd.	Cleanout	61778	Lateral	6	Other	The CCH contractor notified the upstream tenants to refrain from using water while crews were lining the lateral, however a tenant within the same household used the washing machine despite the warning. Crews recovered 1 gallon from the ground and 4 gallons dissipated into the ground.	None	No Change	The CCH contractor was reminded to confirm that all users upstream of the lateral are aware not to use water during lining work.