

December 17, 2021

The following documents were identified as public comment and filed in Docket No. 2020-0089.

Attachments: CWRM Resp Ltr to PUC-Public Comment Requested 121721-signed.pdf; Exhibit C-PUC Launiupoko Stream Rpt by LIC.pdf; Exhibit D-LIC Ltr to CWRM kauaula diversion 20211129.pdf; Exhibit E-to PUC Launiupoko Irrigation Company Srvc area.pdf; Exhibit F-CWRM Letter to Wainee Land and Homes, LLC 6-5240-002 and -003.pdf; Exhibit G-Kauaula Schematic.pdf; Exhibit H-Launiupoko Schematic.pdf; Exhibit A-PUC-CWRM Analysis of USGS Data.docx.pdf; Exhibit B-to PUC Kauaula Water Rpt Use by LIC.pdf

Importance: High

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Sent: Friday, December 17, 2021 2:03 PM

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Subject: FW: CWRM Resp Ltr to PUC w/Attached Exhibits A-H

Importance: High

Aloha Honorable Public Utilities Commissioners~

Attached is CWRM Deputy Manuel's response letter to the Public Utilities Commission, along with attached Exhibits A – H.

This is in regards of the basic information requested from PUC about CWRM's understanding of LIC's current water usage related to our LIC rate case docket (2020-0089).

Mahalo.

Rae Ann Hyatt

Private Secretary to Deputy Kaleo Manuel

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DEPUTY DIRECTOR

December 17, 2021

The Honorable Chair and Members of the
Hawai'i Public Utilities Commission
State of Hawai'i
465 South King Street, Room 103
Honolulu, Hawai'i 96813

Dear Commissioners:

Re: Request for Public Comment in Docket No. 2020-0089, Launiupoko Irrigation
Company, Inc. Application for a Change in Rates and Other Approvals

The Commission on Water Resource Management (CWRM) responds to the Hawai'i Public Utilities Commission's (Commission) request for public comment in Docket No. 2020-0089 on Launiupoko Irrigation Company's (LIC) rate case. The Commission requested CWRM's analysis on its understanding of LIC's current irrigation water needs and available surface water. CWRM would like to preface its answers to questions below with the caveat that surface water availability highly fluctuates because of the flashiness of streams that don't always align with water and energy utilities' needs and demands. The Commission specifically wanted to know the following:

- 1) *CWRM's estimate of the surface water currently available from both the Kaua'ula and Launiupoko streams that LIC can use while still meeting those streams' interim instream flow standard (IIFS);*

The IIFS for Kaua'ula stream is 5.2 cubic feet per second (cfs) (3.36 million gallons per day (mgd)) below the main diversion, near an altitude of 1,540 feet, and 6.35 cfs (4.1 mgd) below the kuleana users near an altitude of 270 feet. The IIFS for Launiupoko stream is 0 cfs (0 mgd) below the diversion, near an altitude of 1,340 feet, meaning that LIC can divert 100% of the streamflow of Launiupoko stream.

To accommodate LIC's transition to other non-potable water sources, CWRM did agree to phase in the implementation of the IIFS for Kaua'ula stream and provided a timeline for the year of 2018. This phased approach required an immediate release of 1 mgd below the main diversion on March 27, 2018 and 0.8 mgd at the siphon from Kaua'ula Ditch; phase 2 required the release of 2 mgd below the main diversion on September 24, 2018 and 0.8 mgd at the siphon from Kaua'ula Ditch.¹

¹ CWRM letter to LIC from May 7, 2018. See Exhibit B of Application for a Change in Rates and Other Approvals; Exhibits A through M; Verification; Docket 2020-0217 from 12/30/2020.

CWRM staff has data that indicates that LIC has not been in compliance with the IIFS since CWRM's March 2018 order and the phased approach agreed upon on May 7, 2018. See attached Exhibit A. CWRM's estimate of the surface water available from Kaua'ula stream can be found in Table 1 of Exhibit A. That table references CWRM's analysis of the real time data from the U.S. Geological Survey (USGS) gages above and below the main diversion. Prior to the installation of the USGS gages, LIC's reported water use is listed in Exhibit B. LIC has not reported water use from September 2018 to June 2020. In 2018, CWRM staff took spot measurements that are shown in Exhibit A Table 3. Additionally, CWRM staff has a monitoring station in Kaua'ula stream at about 210ft elevation. See Exhibit A Table 4 and 5. These tables reference measurements from that location. CWRM does not have a stream gage in Launiupoko stream, and it is LIC's responsibility to monitor the surface water removed from Launiupoko stream. LIC's reported water use for Launiupoko stream is shown in Exhibit C.

2) *CWRM's estimate of LIC's current irrigation water needs, and whether surface water withdrawals within the IIFS limits are sufficient to meet these needs;*

Establishing IIFSs is the "primary mechanism" by which CWRM discharges its affirmative "duty to protect and promote the entire range of public trust purposes dependent on upon instream flow."² The public trust embodies a "dual mandate of 1) protection and 2) maximum reasonable and beneficial use."³ Therefore, the public trust is "the duty and authority to maintain the purity and flow of our waters for future generations and to assure that the waters of our land are put to reasonable and beneficial uses."⁴ The Hawai'i Supreme Court has recognized four public trust purposes; the maintenance of water in its natural state, domestic water uses, water for the Department of Hawaiian Home Lands, and water use in the exercise of traditional and customary Native Hawaiian rights.⁵ Private commercial uses are not protected by the public trust and are subject to a "higher level of scrutiny."⁶

The State Water Code defines an instream flow standard as a "quantity or flow of water or depth of water which is required to be present at a specific location in a stream system at certain specified times of the year to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses." See Hawaii Revised Statutes (HRS) § 174C-3 ("Definitions"). In considering a petition to amend an interim instream flow standard, the Code directs CWRM to "weigh the importance of the present or potential instream values with the importance of the present or potential uses of water for noninstream purposes, including the economic impact of restricting such uses." HRS §174C-71(2)(D).

² *In re Water Use Permit Applications ("Waiāhole I")*, 94 Hawai'i 97, 148, 9 P.3d 409, 460 (2000).

³ *Id.* at 139, 9 P.3d 445.

⁴ *Id.* at 138, 9 P.3d 450.

⁵ See *Kauai Springs, Inc. v. Planning Comm'n of Kaua'i*, 133 Hawai'i 141, 172, 324 P.3d 951, 982 (2014).

⁶ *Id.*

“Instream use” means beneficial uses of stream water for significant purposes which are located in the stream and which are achieved by leaving the water in the stream. Instream uses include, but are not limited to:

- 1) Maintenance of fish and wildlife habitats;
- 2) Outdoor recreational activities;
- 3) Maintenance of ecosystems such as estuaries, wetlands, and stream vegetation;
- 4) Aesthetic values such as waterfalls and scenic waterways;
- 5) Navigation;
- 6) Instream hydropower generation;
- 7) Maintenance of water quality;
- 8) The conveyance of irrigation and domestic water supplies to downstream points of diversion; and
- 9) The protection of traditional and customary Hawaiian rights.

“Noninstream use” means the use of stream water that is diverted or removed from its stream channel and includes the use of stream water outside of the channel for domestic, agricultural, and industrial purposes.

Since the establishment of the Stream Protection and Management Branch in July 2002, CWRM has been developing a framework for setting measurable instream flow standards statewide. This framework involves an assessment of natural flow conditions, an analysis of the instream uses protected by the State Water Code, the existing and planned noninstream reasonable and beneficial uses of surface water, and the availability of water from alternative sources.

To assess the natural flow conditions, CWRM relied on data from USGS Scientific Investigations Report (2014-5087)⁷, which was a cooperative study from 2011 to 2013 funded by CWRM and USGS to assess low-flow characteristics for streams in the Lahaina District for the 1984-2013 climate period. See Table 1 below. The 50-percent flow-duration discharge, commonly referred to as median (Q50) discharge, is the flow that has been equaled or exceeded 50 percent of the time during a given period of record. Flow-duration discharges that describe low-flow conditions are generally considered to be those equal to or less than the Q50 discharge. The Q₉₀ flow is the flow estimated to be exceeded 90% of the time for the 30-year period 1984-2013 (i.e., on 10% of the time will streamflow be less than this value)

⁷ Cheng, C.L., 2014, USGS Scientific Investigations Report 2014-5087, Low-Flow Characteristics of Streams in the Lahaina District. West Maui, Hawai‘i, available at <https://pubs.usgs.gov/sir/2014/5087/pdf/sir2014-5087.pdf>

Table 1. Estimated natural median (Q₅₀) and low-flow (Q₇₀ and Q₉₀) values for four hydrologic units on West Maui (from USGS Report Cheng 2014) above the main diversion. [cfs = cubic feet per second; mgd = million gallons per day]

Hydrologic Unit	Estimated natural-flow Q50	Estimated natural-flow Q60	Estimated natural-flow Q70	Estimated natural-flow Q80	Estimated natural-flow Q90
Launiupoko (6006)	0.47 cfs (0.30 mgd)	0.44 cfs (0.28 mgd)	0.41 cfs (0.26 mgd)	0.38 cfs (0.25 mgd)	0.35 cfs (0.23 mgd)
Kaua'ula (6007)	9.5 cfs (6.14 mgd)	8.1 cfs (5.24 mgd)	7.1 cfs (4.59 mgd)	6.2 cfs (4.00 mgd)	5.2 cfs (3.36 mgd)

CWRM weighs often competing instream and noninstream uses of water against the amount of water available to accommodate the needs of these uses, where priority is always given to public trust purposes of water. If there is sufficient water to meet the instream uses, then noninstream uses can be considered. The availability of alternative water sources to meet the needs of noninstream uses is also considered. This process is based upon best available information when weighing the present or potential, instream and noninstream uses. In this process CWRM uses hydrologic considerations, instream use considerations, and noninstream considerations.⁸

To assist the balancing between the protection of the public trust purposes and other instream uses and noninstream uses, CWRM distinguished LIC's various noninstream irrigation water needs as agricultural-zoned farm lots, small commercial agricultural operations, and landscaping within private and common use areas.

CWRM used the Irrigation Water Requirement Estimation Decision Support System (IWREDSS) to estimate the irrigation demand for LIC's various noninstream uses.⁹ IWREDSS is an ArcGIS-based numerical simulation model that estimates irrigation demand and water budget components for different crops grown in the Hawaiian environment. The model accounts for different irrigation application systems and water application practices. Using the existing TMK layer and remote sensing data (World View 2.0 satellite imagery, Google Earth, and Google Streetmaps), the approximate acreage of agriculture (and type where possible) and acreage of landscaping was estimated. See data visualized in Exhibit E Figures 1 and 2. Table 2 below details an estimate of LIC's irrigation water needs by use.

⁸ For detailed information on Kaua'ula and Launiupoko hydrologic units see Staff Submittal Amended Interim Instream Flow Standards For the Surface Water Hydrologic Units of Ukumehame (6004), Olowalu (6005), Launiupoko, (6006), and Kaua'ula (6007), Maui from March 20, 2018. Available at <https://files.hawaii.gov/dlnr/cwrn/submittal/2018/sb20180320B1.pdf>

⁹ See Instream Flow Standard Assessment Report (IFSAR), Kaua'ula Unit 6007, PR-2018-04, at 106-199. Available at <https://files.hawaii.gov/dlnr/cwrn/ifsar/PR201804-6007-Kaua'ula.pdf>

Table 2. Estimated non-potable water use for Launiupoko and Kaua'ula hydrologic units and reported water diverted in 2017. Agriculture and landscaping uses are combined since they share a common distribution system managed by LIC.

Hydrologic Unit	Water Users	Method	Estimated Use
Launiupoko			
Reported Water Diverted:	0.643 cfs (0.416 mgd)		
Kaua'ula	Kamehameha Schools lessees (diversified agriculture 13 acres, cacao 53 acres)	Reported	0.613 cfs (0.396 mgd)
	Agriculturally zoned parcels (irrigated pasture 10 acres, diversified agriculture 43 acres, tree crops 35 acres)	IWREDSS	0.469 cfs (0.303 mgd)
	Landscaping (194 acres)	IWREDSS	1.502 cfs (0.969 mgd)
	Return to stream	Reported	1.550 cfs (1.000 mgd)
Reported Water Diverted:	7.09 cfs (4.58 mgd)	Total Water Use:	4.134 cfs (2.672 mgd)

Additionally, in 2018, CWRM considered that LIC provides a small amount of water that is pumped up hill to TMK parcels, which may have appurtenant rights, originally fulfilled by the Pi'ilani 'auwai, which was subsequently replaced by the Kaua'ula Ditch during the plantation era. LIC approximately 1.5 cfs (1.0 mgd) released at the Kaua'ula siphon back into Kaua'ula stream after the hydropower plant to support lo'i agriculture for kuleana users in Kaua'ula Gulch, as part of an informal agreement. Non-potable water is also provided directly to these homes via a separate transmission pipe on the west side of the gulch. See Exhibit G.

When establishing the IIFS for Kaua'ula stream, CWRM found that a lack of streamflow has continued to impede kuleana uses of water, including traditional and customary gathering practices, the cultivation of taro, and the recreational use of water. Insufficient flow is affecting taro cultivation and traditional gathering in Kaua'ula Valley. There is currently one 'auwai supplying sufficient water for six lo'i, but recent field investigations revealed that as many as 33 lo'i have been cleared and are ready to be planted if sufficient water were supplied.

CWRM assumed that restoration of flows to Kaua'ula stream will greatly benefit native aquatic species since native species are common in nearby streams that support smaller flows. The IIFS is designed to provide habitat and maintain a wetted pathway between the Kaua'ula stream diversion and the siphon release point.

CWRM also found that the IIFS for Kaua'ula stream would allow LIC to meet the 0.4 mgd agricultural demand for Kamehameha Schools' lessee 100-percent of the time, and LIC could meet their 0.303 mgd agricultural use water demand 100-percent of the time, when combined with water diverted from Launiupoko stream. See Exhibit G and H. LIC's landscaping irrigation needs could be met with pumping groundwater as an alternative water source. CWRM also advised that "[w]ater conservation should be mandated throughout the [Launiupoko] hydrologic unit, including the planting of drought tolerant plants. Large expanses of sod as landscaping is an inappropriate use of scarce water resources and should be eliminated as much as possible."

To assess LIC's current irrigation water needs as requested by the Commission, CWRM has not conducted an update of the IWREDSS due to the extensive research this entails to estimate the current agricultural and landscaping uses of LIC's customers. CWRM staff assumes that LIC's water needs for landscaping have increased due to more lots having been developed in the past four years with a potential slight increase for agricultural uses as well.

CWRM relies on the cooperation of diverters to report their water use timely. On December 14, 2021, CWRM has received LIC's report of its water use for the Launiupoko stream diversion for the entire year of 2021. See Exhibit C. On September 28, 2021, CWRM requested LIC to provide reports of the amount of water distributed to Ku'ia Estate Chocolate (KEC), the Kaua'ula valley homes, Kaua'ula reservoir, and returned to the stream at the siphon immediately. On October 28, 2021, LIC provided the above requested data with the exception of the flow into Kaua'ula reservoir.¹⁰

CWRM's preliminary analysis of this data found that KEC's daily water use, which ranges approximately between 0.060 and 0.108 mgd, is less than CWRM's 2018 estimated need of 0.396 mgd. However, CWRM would like to highlight that water use is not an indication of the actual need. KEC's need may indeed be higher as the reported use, which could be due to LIC's curtailments or not having reached full buildout yet. Moreover, the eight months span of LIC's reported use is an extremely small sample size for hydrology, and this sample occurred during one of the most severe hydrological droughts on record for Maui. For example, between June and July 2021 (51 days), flow at Wailuku River at Kepaniwai Park (USGS 16604500) was below Q₇₅ 33 days, below Q₈₅ 21 days, and below Q₉₅ 5 days.

The average daily water use of the Kaua'ula valley homes is 0.058 mgd and the total Kapu uses average between 0.032 and 0.112 mgd based on the report by LIC. CWRM would like to note that the reported water use for Kapu 1" and 1.5" is not a total consumptive use and an unknown amount of water is returned from the kalo lo'i back to LIC's ditch system. Traditional kalo cultivation utilizes a throughflow of irrigation water and is only minimally consumptive. On December 9, 2021, CWRM received a formal complaint by Na Aikane O Maui and Ke'eaumoku Kapu alleging

¹⁰ LIC Letter to CWRM from October 28, 2021. See Letter From: R. Strand To: Commission Re: Launiupoko Irrigation Co., Inc., Docket No. 2020-0089 from 11/12/21.

wasted water by LIC at various location of LIC's system. This alleged waste potentially affected the kuleana users' reported water use by LIC as well. CWRM will forward this formal letter to LIC for their response. Additionally, CWRM would like to highlight for the Commission that some of the Kaua'ula valley water uses are considered domestic uses, which is one of the public trust purposes.

Based on the data provided by LIC, CWRM staff estimates that the total daily noninstream water use for KEC's agricultural uses and other constitutionally protected uses averages between 0.150 and 0.280 mgd. Table 1 of Exhibit A shows when the 0.280 mgd of use was available to divert in 2021 (highlighted in green). In 2021, LIC's agricultural uses of 0.303 mgd could be met with surface water diverted by Launiupoko every month except for June and September, including considering a small increase of agricultural uses as well. See Exhibit C.

CWRM would like to note that LIC in its request for a certificate of public convenience and necessity (CPCN) estimated its non-potable water demand to be approximately 1.331 mgd at full 6000 acres buildout in 2008.¹¹ See PUC Docket No. 2002-0203. LIC's projection was that Kaua'ula and Launiupoko stream together would provide a supply of 2.1 mgd of surface water and the estimated demand of 1.331 mgd is approximately 63% of the estimated supply. Already in 2018 LIC exceeded its own estimated demand and continues to do so in 2021.

3) Does CWRM expect LIC's current irrigation water needs to change over the next 12-18 months?

CWRM cannot determine LIC's future irrigation water needs, but CWRM has been preparing for changes in rainfall and an increased frequency of extreme weather events such as droughts and flooding. In March 2019, CWRM entered into a joint funding agreement with USGS to estimate ground water recharge for future climate conditions in Hawai'i.¹² Results of this study are expected to be published in early 2022.

Additionally, CWRM would like to clarify statements made by LIC in its application for general rate increase and notify the Commission of other pending items concerning LIC before CWRM.

In its application LIC stated that "[r]ecent governmental rule changes and usage demands have led to the necessity to locate and improve additional sources to provide continued service to the service area community."¹³ CWRM fulfilled its affirmative constitutional duty to protect public trust purposes when establishing a numeric IIFS for Kaua'ula stream in March of 2018. This does not constitute a governmental rule change. Furthermore, CWRM's Hawai'i Administrative Rules (HAR) explicitly provide that "[i]nterim instream flow standards are by their nature temporary and subject to change. Consequently, any reliance upon the interim standards shall be at the water user's own risk." See HAR § 13-169-43 (b).

¹¹ Decision and Order No. 20424 at 3. PUC Docket No. 2002-0203
<https://dms.puc.hawaii.gov/dms/DocumentViewer?pid=A1001001A08D19B13930H17002>

¹² Available at <https://files.hawaii.gov/dlnr/cwrml/submittal/2019/sb20190319B1.pdf>

¹³ Application for a Change in Rates and Other Approvals: Exhibits A through M; Verification; Docket 2020-0217 from 12/30/2020, Exhibit A at 1.

LIC also stated the following: "As the severe limitation of Applicant's primary non-potable water source was effectuated with little warning by the CWRM, Applicant could not adequately anticipate the significant disruption in the purveyance of non-potable water and Applicant experienced significant expenses that could not be recovered in the current rate structure, as the current rate structure assumed gravity fed water sources, rather than pumped groundwater sources."¹⁴

CWRM provided ample notice of its intent to set a numeric IIFSs for ten streams in West Maui. On March 16, 2011, CWRM entered into a joint funding agreement with USGS to conduct a study of low-flow characteristics for streams in the Lahaina district.¹⁵ West Maui Land Company (WML) provided access to the study sites from 2011 to 2013, and WML and Peter Martin did participate in a stakeholder meeting with USGS on May 1, 2014. In October 2016, CWRM began its outreach to irrigation managers, landowners, and community groups and conducted its first site visit to Launiupoko on December 1, where introductions with WML employees took place. On January 25, 2017, CWRM met with WML at their Kahului office.

The following are pending items concerning LIC before CWRM.

On September 28, 2021, CWRM has notified LIC that the company has not been meeting the IIFS established on March 20, 2018 and has not implemented CWRM's order to modify LIC's stream diversion.¹⁶ In this letter CWRM staff also requested LIC to install appropriate measuring devices (e.g., rated flume, weir with staff plate) and to monitor the amount of water flowing to Kaua'ula Reservoir above the siphon within 90 days. On October 28, 2021, LIC replied stating that within 30 days LIC would submit conceptual plans for the modification and that "[c]ommencement of these modifications will be conditioned on LIC's receipt of a revised temporary rate increase from the PUC providing LIC with funds required to fund pumping costs and to meet other operating expenses not objected to by the Consumer Advocate and to remove the condition to discontinue rationing in drought conditions."¹⁷ On November, 29 2021, LIC submitted conceptual plans for the modifications of the diversion structure and reiterated above mentioned condition for commencement of the modification. See Exhibit D. CWRM staff is currently reviewing the conceptual plans. While CWRM understands there are costs associated with modifications, CWRM orders cannot be made dependent on funding relief through orders by the Commission.

On September 29, 2021, CWRM notified Wainee Land and Homes, LLC that CWRM requires a pump installation permit for the installation of a 700 gallons per minute (gpm) pump at the State Well No. 6-5240-002 (TMK (2) 4-6-015:001) and if Wainee Land and Homes, LLC intends to install a second pump another pump installation permit is required prior to commencement of work. See attached Exhibit F. Wainee Land and Homes, LLC is the landowner of the latter TMK parcel including the State Well Nos. 6-5240-002 and -003 and has an easement agreement with

¹⁴ Application for a Change in Rates and Other Approvals: Exhibits A through M; Verification; Docket 2020-0217 from 12/30/2020, at 7-8.

¹⁵ <https://files.hawaii.gov/dlnr/cwrmsubmittal/2011/sb201103C1.pdf>

¹⁶ CWRM Letter to LIC from September 28, 2021 (Ref: CWRM.5738.6). See Letter From: R. Strand To: Commission Re: Launiupoko Irrigation Co., Inc., Docket No. 2020-0089 from 11/12/21.

¹⁷ LIC Letter to CWRM from October 28, 2021. See Letter From: R. Strand To: Commission Re: Launiupoko Irrigation Co., Inc., Docket No. 2020-0089 from 11/12/21.

LIC who is the proposed well operator.¹⁸ LIC refers to these wells as Wainee A/B skimming wells and the pump installations are part of LIC's capital improvement projects.¹⁹ CWRM has only received a Well Completion Report Part II from West Maui Construction for State Well No. 6-5240-002 and is awaiting a pump installation permit application.

As mentioned earlier, on December 9, 2021, CWRM received a formal complaint by Na Aikane O Maui alleging wasted water by LIC at various location of LIC's irrigation system that potentially affect kuleana users' reported water use by LIC. CWRM will forward this formal letter to LIC for their response.

If there are any questions, please contact me at kaleo.l.manuel@hawaii.gov or via phone at 808-587-0214.

Ola i ka wai,



M. Kaleo Manuel
Deputy Director

Attachments:

- Exhibit A – CWRM Data for Kaua'ula Stream
- Exhibit B – LIC Reported Data for Kaua'ula Stream
- Exhibit C – LIC Reported Data for Launiupoko Stream
- Exhibit D – LIC Letter to CWRM from November 29, 2021
- Exhibit E – IWREDSS Figures
- Exhibit F – CWRM Letter to Wainee Land and Homes, LLC (Ref: 6-5240-002 and -003.let.docx)
- Exhibit G – Kaua'ula Schematic
- Exhibit H – Launiupoko Schematic

¹⁸ See Attachment 1 to Launiupoko Irrigation Co., Inc.'s Responses to Consumer Advocate's Second Submission of Information Requests; Exhibits: Verification; Docket No. 2020-0089 from 10/22/21, at 143 [PDF], Lease of Easement.

¹⁹ See Launiupoko Irrigation Co., Inc.'s Responses to Public Utilities Commission's Information Requests; Exhibits: Verification; Docket No. 2020-0089 from 11/24/2021; PUC-LIC-IR-04 referencing Exhibit G Update.

Exhibit A

Table 1: CWRM Analysis of USGS Data - Available Divertible Flow and Diverted Flow

Date	USGS 16641000 Kaua'ula Stream above Intake (mgd)	USGS 16643100 Kaua'ula Stream below Intake (mgd)	Available Divertible Flow (mgd)	Diverted flow into Kaua'ula Tunnel (mgd)	Amount of Allowable Divertible Flow Exceeded (mgd)
		<i>IIFS < 3.36 mgd highlighted</i>			
6/12/2020	3.47	0.27	0.11	3.20	3.09
6/13/2020	3.30	0.23	0.00	3.06	3.06
6/14/2020	3.48	0.17	0.12	3.32	3.19
6/15/2020	4.61	0.30	1.25	4.31	3.06
6/16/2020	6.33	0.76	2.97	5.58	2.60
6/17/2020	3.89	0.15	0.53	3.74	3.21
6/18/2020	3.10	0.14	0.00	2.95	2.95
6/19/2020	3.06	0.14	0.00	2.91	2.91
6/20/2020	2.91	0.10	0.00	2.81	2.81
6/21/2020	2.86	0.11	0.00	2.75	2.75
6/22/2020	2.82	0.11	0.00	2.71	2.71
6/23/2020	2.82	0.10	0.00	2.72	2.72
6/24/2020	2.80	0.10	0.00	2.71	2.71
6/25/2020	2.78	0.10	0.00	2.68	2.68
6/26/2020	2.73	0.10	0.00	2.63	2.63
6/27/2020	2.71	0.10	0.00	2.61	2.61
6/28/2020	2.77	0.10	0.00	2.67	2.67
6/29/2020	2.74	0.10	0.00	2.64	2.64
6/30/2020	2.70	0.77	0.00	1.93	1.93
7/1/2020	2.66	1.16	0.00	1.51	1.51
7/2/2020	2.69	0.76	0.00	1.93	1.93
7/3/2020	2.68	0.45	0.00	2.23	2.23
7/4/2020	2.70	0.42	0.00	2.28	2.28
7/5/2020	2.64	0.43	0.00	2.22	2.22
7/6/2020	2.64	0.30	0.00	2.34	2.34
7/7/2020	2.66	0.21	0.00	2.46	2.46
7/8/2020	2.75	0.19	0.00	2.55	2.55
7/9/2020	2.86	0.21	0.00	2.64	2.64
7/10/2020	2.71	0.19	0.00	2.52	2.52

7/11/2020	2.70	0.19	0.00	2.51	2.51
7/12/2020	2.70	0.20	0.00	2.50	2.50
7/13/2020	2.75	0.20	0.00	2.55	2.55
7/14/2020	5.21	1.40	1.85	3.81	1.96
7/15/2020	3.72	0.52	0.36	3.20	2.84
7/16/2020	2.93	0.31	0.00	2.62	2.62
7/17/2020	2.75	0.25	0.00	2.50	2.50
7/18/2020	2.68	0.23	0.00	2.46	2.46
7/19/2020	2.73	0.23	0.00	2.51	2.51
7/20/2020	2.75	0.22	0.00	2.53	2.53
7/21/2020	2.70	0.19	0.00	2.51	2.51
7/22/2020	2.74	0.41	0.00	2.33	2.33
7/23/2020	2.70	0.79	0.00	1.91	1.91
7/24/2020	2.70	0.75	0.00	1.95	1.95
7/25/2020	2.73	0.75	0.00	1.98	1.98
7/26/2020	3.70	0.00	0.34	3.70	3.36
7/27/2020	4.67	2.34	1.31	2.33	1.02
7/28/2020	3.74	1.28	0.38	2.46	2.08
7/29/2020	5.36	2.41	2.00	2.95	0.95
7/30/2020	8.01	7.76	4.65	0.26	
7/31/2020	4.03	0.98	0.67	3.04	2.38
8/1/2020	3.44	0.90	0.08	2.55	2.46
8/2/2020	3.43	0.94	0.07	2.49	2.42
8/3/2020	4.46	1.19	1.10	3.27	2.17
8/4/2020	3.41	0.88	0.05	2.53	2.48
8/5/2020	3.22	0.85	0.00	2.37	2.37
8/6/2020	5.16	1.49	1.80	3.67	1.87
8/7/2020	6.19	1.76	2.83	4.43	1.60
8/8/2020	5.72	1.64	2.36	4.08	1.72
8/9/2020	5.37	1.55	2.01	3.82	1.81
8/10/2020	4.61	1.40	1.25	3.21	1.96
8/11/2020	4.12	1.32	0.76	2.80	2.04
8/12/2020	3.50	1.21	0.14	2.29	2.15
8/13/2020	3.30	0.87	0.00	2.43	2.43
8/14/2020	3.12	0.53	0.00	2.59	2.59
8/15/2020	3.07	0.54	0.00	2.53	2.53
8/16/2020	2.92	0.58	0.00	2.34	2.34
8/17/2020	2.89	0.57	0.00	2.32	2.32
8/18/2020	3.01	0.58	0.00	2.43	2.43
8/19/2020	3.02	0.57	0.00	2.45	2.45
8/20/2020	3.31	0.69	0.00	2.62	2.62
8/21/2020	3.15	0.65	0.00	2.49	2.49
8/22/2020	2.91	0.57	0.00	2.35	2.35
8/23/2020	2.88	0.53	0.00	2.35	2.35

8/24/2020	2.80	0.52	0.00	2.29	2.29
8/25/2020	2.73	0.52	0.00	2.20	2.20
8/26/2020	2.69	0.53	0.00	2.16	2.16
8/27/2020	2.61	0.53	0.00	2.08	2.08
8/28/2020	2.57	0.50	0.00	2.07	2.07
8/29/2020	2.55	0.47	0.00	2.07	2.07
8/30/2020	2.53	0.64	0.00	1.89	1.89
8/31/2020	2.86	1.29	0.00	1.56	1.56
9/1/2020	3.12	1.01	0.00	2.11	2.11
9/2/2020	2.93	0.68	0.00	2.26	2.26
9/3/2020	2.75	0.59	0.00	2.16	2.16
9/4/2020	2.60	0.50	0.00	2.11	2.11
9/5/2020	2.75	0.42	0.00	2.33	2.33
9/6/2020	2.63	0.57	0.00	2.06	2.06
9/7/2020	2.95	0.79	0.00	2.16	2.16
9/8/2020	3.59	1.36	0.23	2.22	2.00
9/9/2020	4.58	1.51	1.22	3.07	1.85
9/10/2020	3.28	1.09	0.00	2.20	2.20
9/11/2020	2.84	0.86	0.00	1.98	1.98
9/12/2020	2.75	0.74	0.00	2.01	2.01
9/13/2020	2.66	0.70	0.00	1.95	1.95
9/14/2020	2.60	0.66	0.00	1.95	1.95
9/15/2020	2.56	0.65	0.00	1.91	1.91
9/16/2020	2.49	0.63	0.00	1.87	1.87
9/17/2020	2.38	0.58	0.00	1.80	1.80
9/18/2020	2.29	0.53	0.00	1.76	1.76
9/19/2020	2.40	0.52	0.00	1.89	1.89
9/20/2020	2.37	0.50	0.00	1.86	1.86
9/21/2020	2.29	0.43	0.00	1.86	1.86
9/22/2020	2.28	0.40	0.00	1.88	1.88
9/23/2020	2.60	0.54	0.00	2.07	2.07
9/24/2020	2.91	0.75	0.00	2.17	2.17
9/25/2020	2.29	0.50	0.00	1.79	1.79
9/26/2020	2.18	0.37	0.00	1.82	1.82
9/27/2020	2.30	0.32	0.00	1.98	1.98
9/28/2020	2.76	0.28	0.00	2.48	2.48
9/29/2020	2.28	0.21	0.00	2.07	2.07
9/30/2020	2.20	0.23	0.00	1.96	1.96
10/1/2020	2.20	0.27	0.00	1.93	1.93
10/2/2020	2.70	0.31	0.00	2.39	2.39
10/3/2020	2.56	0.25	0.00	2.31	2.31
10/4/2020	2.28	0.49	0.00	1.79	1.79
10/5/2020	2.15	0.78	0.00	1.37	1.37
10/6/2020	2.19	0.78	0.00	1.42	1.42

10/7/2020	2.11	0.72	0.00	1.38	1.38
10/8/2020	2.15	0.74	0.00	1.41	1.41
10/9/2020	2.11	0.70	0.00	1.42	1.42
10/10/2020	2.06	0.63	0.00	1.43	1.43
10/11/2020	2.00	0.63	0.00	1.37	1.37
10/12/2020	1.95	0.62	0.00	1.32	1.32
10/13/2020	1.98	0.59	0.00	1.39	1.39
10/14/2020	1.98	0.59	0.00	1.38	1.38
10/15/2020	1.96	0.59	0.00	1.36	1.36
10/16/2020	2.07	0.61	0.00	1.46	1.46
10/17/2020	2.07	0.60	0.00	1.47	1.47
10/18/2020	2.06	0.58	0.00	1.48	1.48
10/19/2020	2.02	0.56	0.00	1.46	1.46
10/20/2020	2.04	0.55	0.00	1.49	1.49
10/21/2020	2.06	0.52	0.00	1.54	1.54
10/22/2020	2.01	0.56	0.00	1.45	1.45
10/23/2020	1.99	0.54	0.00	1.45	1.45
10/24/2020	1.97	0.49	0.00	1.48	1.48
10/25/2020	2.00	0.49	0.00	1.51	1.51
10/26/2020	2.00	0.48	0.00	1.52	1.52
10/27/2020	1.95	0.45	0.00	1.50	1.50
10/28/2020	1.88	0.42	0.00	1.46	1.46
10/29/2020	2.79	0.52	0.00	2.27	2.27
10/30/2020	2.18	0.41	0.00	1.77	1.77
10/31/2020	2.26	0.31	0.00	1.95	1.95
11/1/2020	2.08	0.30	0.00	1.78	1.78
11/2/2020	1.98	0.25	0.00	1.74	1.74
11/3/2020	2.17	0.28	0.00	1.89	1.89
11/4/2020	2.56	0.26	0.00	2.29	2.29
11/5/2020	2.10	0.24	0.00	1.86	1.86
11/6/2020	1.99	0.23	0.00	1.76	1.76
11/7/2020	2.56	0.24	0.00	2.32	2.32
11/8/2020	2.27	0.21	0.00	2.06	2.06
11/9/2020	2.25	0.23	0.00	2.02	2.02
11/10/2020	2.37	0.24	0.00	2.13	2.13
11/11/2020	3.23	0.30	0.00	2.93	2.93
11/12/2020	2.86	0.19	0.00	2.67	2.67
11/13/2020	2.82	0.24	0.00	2.59	2.59
11/14/2020	2.36	0.25	0.00	2.11	2.11
11/15/2020	2.11	0.25	0.00	1.85	1.85
11/16/2020	1.99	0.25	0.00	1.75	1.75
11/17/2020	2.02	0.25	0.00	1.76	1.76
11/18/2020	5.34	2.90	1.98	2.44	0.46
11/19/2020	4.32	1.70	0.96	2.62	1.66

11/20/2020	5.84	2.94	2.48	2.90	0.42
11/21/2020	6.53	4.09	3.17	2.44	
11/22/2020	14.22	12.67	10.86	1.55	
11/23/2020	25.53	18.48	22.17	7.04	
11/24/2020	23.98	17.06	20.62	6.92	
11/25/2020	7.30	3.12	3.94	4.19	0.24
11/26/2020	5.91	2.33	2.55	3.57	1.03
11/27/2020	6.38	2.50	3.02	3.88	0.86
11/28/2020	6.27	2.48	2.91	3.79	0.88
11/29/2020	5.84	2.30	2.48	3.54	1.06
11/30/2020	4.88	1.91	1.52	2.97	1.45
12/1/2020	3.97	1.31	0.61	2.66	2.05
12/2/2020	3.65	1.01	0.29	2.63	2.35
12/3/2020	3.44	0.82	0.08	2.62	2.54
12/4/2020	3.39	0.74	0.03	2.66	2.62
12/5/2020	3.28	0.70	0.00	2.58	2.58
12/6/2020	3.16	0.52	0.00	2.64	2.64
12/7/2020	3.19	0.47	0.00	2.71	2.71
12/8/2020	3.17	0.48	0.00	2.68	2.68
12/9/2020	3.06	0.45	0.00	2.60	2.60
12/10/2020	3.02	0.42	0.00	2.60	2.60
12/11/2020	2.93	0.28	0.00	2.64	2.64
12/12/2020	2.93	0.19	0.00	2.73	2.73
12/13/2020	2.94	0.19	0.00	2.75	2.75
12/14/2020	2.93	0.17	0.00	2.76	2.76
12/15/2020	3.02	0.19	0.00	2.82	2.82
12/16/2020	4.54	1.35	1.18	3.19	2.01
12/17/2020	3.65	1.33	0.29	2.32	2.03
12/18/2020	3.30	1.06	0.00	2.24	2.24
12/19/2020	3.41	1.01	0.05	2.40	2.35
12/20/2020	6.02	1.97	2.66	4.05	1.39
12/21/2020	4.69	1.10	1.33	3.59	2.26
12/22/2020	3.59	0.34	0.23	3.25	3.02
12/23/2020	3.14	0.23	0.00	2.91	2.91
12/24/2020	2.97	0.22	0.00	2.75	2.75
12/25/2020	2.87	0.21	0.00	2.66	2.66
12/26/2020	5.05	1.76	1.69	3.29	1.60
12/27/2020	3.11	0.47	0.00	2.64	2.64
12/28/2020	2.57	0.26	0.00	2.31	2.31
12/29/2020	2.46	0.21	0.00	2.26	2.26
12/30/2020	2.64	0.63	0.00	2.01	2.01
12/31/2020	4.31	0.89	0.95	3.42	2.47
1/1/2021	8.73	3.67	5.37	5.05	
1/2/2021	4.01	0.83	0.65	3.18	2.53

1/3/2021	3.49	0.48	0.13	3.01	2.88
1/4/2021	3.39	0.43	0.03	2.95	2.93
1/5/2021	3.87	1.21	0.51	2.66	2.15
1/6/2021	3.10	1.22	0.00	1.88	1.88
1/7/2021	2.87	1.12	0.00	1.75	1.75
1/8/2021	2.73	1.03	0.00	1.69	1.69
1/9/2021	3.33	1.26	0.00	2.07	2.07
1/10/2021	3.59	1.23	0.23	2.36	2.13
1/11/2021	2.86	0.93	0.00	1.93	1.93
1/12/2021	2.70	0.88	0.00	1.82	1.82
1/13/2021	2.68	0.87	0.00	1.81	1.81
1/14/2021	2.57	0.82	0.00	1.75	1.75
1/15/2021	2.54	0.79	0.00	1.75	1.75
1/16/2021	2.46	0.74	0.00	1.72	1.72
1/17/2021	2.81	0.73	0.00	2.08	2.08
1/18/2021	0.00	0.00	0.00	0.00	
1/19/2021	15.45	6.66	12.09	8.79	
1/20/2021	6.37	1.15	3.01	5.22	2.21
1/21/2021	5.40	1.11	2.04	4.29	2.25
1/22/2021	4.28	1.07	0.92	3.21	2.29
1/23/2021	4.38	1.07	1.02	3.31	2.29
1/24/2021	3.97	1.01	0.61	2.96	2.35
1/25/2021	3.74	1.01	0.38	2.73	2.35
1/26/2021	4.77	1.02	1.41	3.75	2.34
1/27/2021	6.37	1.20	3.01	5.16	2.16
1/28/2021	4.85	0.89	1.49	3.96	2.47
1/29/2021	7.82	1.48	4.46	6.34	1.88
1/30/2021	14.93	2.62	11.57	12.31	0.74
1/31/2021	14.48	6.19	11.12	8.29	
2/1/2021	6.10	1.14	2.74	4.96	2.22
2/2/2021	4.86	0.84	1.50	4.02	2.52
2/3/2021	5.63	1.15	2.27	4.48	2.21
2/4/2021	5.63	1.06	2.27	4.57	2.30
2/5/2021	4.38	0.76	1.02	3.62	2.60
2/6/2021	3.93	0.76	0.57	3.17	2.60
2/7/2021	3.63	0.76	0.27	2.87	2.60
2/8/2021	3.47	0.76	0.11	2.71	2.60
2/9/2021	3.34	0.76	0.00	2.58	2.58
2/10/2021	3.21	0.92	0.00	2.29	2.29
2/11/2021	3.12	1.04	0.00	2.07	2.07
2/12/2021	3.08	1.05	0.00	2.03	2.03
2/13/2021	3.20	0.93	0.00	2.27	2.27
2/14/2021	3.03	0.87	0.00	2.17	2.17
2/15/2021	2.95	0.89	0.00	2.07	2.07

2/16/2021	2.86	0.90	0.00	1.96	1.96
2/17/2021	5.27	2.32	1.91	2.95	1.04
2/18/2021	5.63	1.25	2.27	4.38	2.11
2/19/2021	5.02	1.13	1.66	3.89	2.23
2/20/2021	4.54	0.69	1.18	3.85	2.67
2/21/2021	3.37	0.70	0.01	2.67	2.66
2/22/2021	3.08	0.75	0.00	2.33	2.33
2/23/2021	3.01	0.70	0.00	2.31	2.31
2/24/2021	3.11	0.72	0.00	2.38	2.38
2/25/2021	2.95	0.81	0.00	2.14	2.14
2/26/2021	2.95	0.73	0.00	2.22	2.22
2/27/2021	9.50	8.34	6.14	1.16	
2/28/2021	20.04	16.80	16.68	3.23	
3/1/2021	17.00	13.51	13.64	3.49	
3/2/2021	7.56	1.67	4.20	5.89	1.69
3/3/2021	6.19	0.67	2.83	5.53	2.69
3/4/2021	5.33	0.65	1.97	4.68	2.71
3/5/2021	5.20	0.75	1.84	4.45	2.61
3/6/2021	5.13	1.01	1.77	4.12	2.35
3/7/2021	6.19	1.47	2.83	4.72	1.89
3/8/2021	18.94	0.00	15.58	18.94	3.36
3/9/2021	30.70	0.00	27.34	30.70	3.36
3/10/2021	9.11	0.30	5.75	8.82	3.06
3/11/2021	7.63	0.06	4.27	7.57	3.30
3/12/2021	7.30	0.05	3.94	7.25	3.31
3/13/2021	34.00	17.97	30.64	16.03	
3/14/2021	8.53	1.00	5.17	7.54	2.36
3/15/2021	9.76	3.30	6.40	6.46	0.06
3/16/2021	20.10	15.58	16.74	4.52	
3/17/2021	37.03	23.46	33.67	13.57	
3/18/2021	17.32	7.76	13.96	9.57	
3/19/2021	9.24	3.18	5.88	6.06	0.18
3/20/2021	13.12	5.05	9.76	8.07	
3/21/2021	11.50	3.35	8.14	8.15	0.01
3/22/2021	7.50	2.60	4.14	4.89	0.76
3/23/2021	6.31	2.42	2.95	3.89	0.94
3/24/2021	5.67	2.31	2.31	3.35	1.05
3/25/2021	5.34	2.24	1.98	3.10	1.12
3/26/2021	5.09	2.18	1.73	2.91	1.18
3/27/2021	4.87	2.13	1.51	2.73	1.23
3/28/2021	4.53	2.00	1.17	2.53	1.36
3/29/2021	4.45	1.93	1.09	2.52	1.43
3/30/2021	4.52	1.92	1.16	2.60	1.44
3/31/2021	4.25	1.91	0.89	2.34	1.45

4/1/2021	5.58	2.22	2.22	3.36	1.14
4/2/2021	4.18	1.96	0.82	2.22	1.40
4/3/2021	4.99	1.92	1.63	3.07	1.44
4/4/2021	13.38	2.95	10.02	10.42	0.41
4/5/2021	14.15	2.82	10.79	11.34	0.54
4/6/2021	10.47	2.35	7.11	8.12	1.01
4/7/2021	6.33	1.84	2.97	4.49	1.52
4/8/2021	8.73	2.02	5.37	6.71	1.34
4/9/2021	5.33	1.05	1.97	4.28	2.31
4/10/2021	4.91	1.01	1.55	3.90	2.35
4/11/2021	5.88	1.22	2.52	4.67	2.14
4/12/2021	5.06	0.78	1.70	4.28	2.58
4/13/2021	4.69	0.82	1.33	3.87	2.54
4/14/2021	4.46	0.82	1.10	3.64	2.54
4/15/2021	4.31	0.81	0.95	3.50	2.55
4/16/2021	4.18	0.78	0.82	3.40	2.58
4/17/2021	4.27	0.83	0.91	3.44	2.53
4/18/2021	4.14	0.81	0.78	3.33	2.55
4/19/2021	4.06	0.79	0.70	3.26	2.57
4/20/2021	4.03	0.78	0.67	3.24	2.58
4/21/2021	3.99	0.76	0.63	3.23	2.60
4/22/2021	3.97	0.76	0.61	3.21	2.60
4/23/2021	3.91	0.76	0.55	3.15	2.60
4/24/2021	4.37	0.95	1.01	3.42	2.41
4/25/2021	4.43	0.97	1.07	3.46	2.39
4/26/2021	4.31	0.94	0.95	3.37	2.42
4/27/2021	3.94	0.81	0.58	3.13	2.55
4/28/2021	3.88	0.79	0.52	3.08	2.57
4/29/2021	4.58	1.08	1.22	3.50	2.28
4/30/2021	5.97	1.58	2.61	4.38	1.78
5/1/2021	5.58	1.43	2.22	4.16	1.93
5/2/2021	6.01	1.54	2.65	4.47	1.82
5/3/2021	4.70	0.95	1.34	3.75	2.41
5/4/2021	4.39	0.82	1.03	3.57	2.54
5/5/2021	5.25	1.29	1.89	3.96	2.07
5/6/2021	4.21	0.73	0.85	3.48	2.63
5/7/2021	3.72	0.56	0.36	3.17	2.80
5/8/2021	3.59	0.51	0.23	3.08	2.85
5/9/2021	3.72	0.56	0.36	3.15	2.80
5/10/2021	4.54	0.90	1.18	3.63	2.46
5/11/2021	4.07	0.70	0.71	3.37	2.66
5/12/2021	4.83	1.04	1.47	3.79	2.32
5/13/2021	6.36	1.54	3.00	4.82	1.82
5/14/2021	6.53	1.75	3.17	4.78	1.61

5/15/2021	6.09	1.62	2.73	4.48	1.74
5/16/2021	5.76	1.45	2.40	4.31	1.91
5/17/2021	4.92	1.07	1.56	3.85	2.29
5/18/2021	4.22	0.76	0.86	3.46	2.60
5/19/2021	3.97	0.67	0.61	3.30	2.69
5/20/2021	4.17	0.78	0.81	3.39	2.58
5/21/2021	4.63	1.00	1.27	3.63	2.36
5/22/2021	4.18	0.80	0.82	3.38	2.56
5/23/2021	3.74	0.62	0.38	3.12	2.74
5/24/2021	3.57	0.57	0.21	3.00	2.79
5/25/2021	3.44	0.53	0.08	2.91	2.83
5/26/2021	3.37	0.50	0.01	2.87	2.86
5/27/2021	3.28	0.49	0.00	2.79	2.79
5/28/2021	3.26	0.47	0.00	2.79	2.79
5/29/2021	3.23	0.45	0.00	2.78	2.78
5/30/2021	3.16	0.44	0.00	2.72	2.72
5/31/2021	3.15	0.43	0.00	2.71	2.71
6/1/2021	3.10	0.42	0.00	2.68	2.68
6/2/2021	3.04	0.39	0.00	2.64	2.64
6/3/2021	3.04	0.39	0.00	2.65	2.65
6/4/2021	3.07	0.39	0.00	2.68	2.68
6/5/2021	3.00	0.37	0.00	2.63	2.63
6/6/2021	3.00	0.36	0.00	2.64	2.64
6/7/2021	3.21	0.41	0.00	2.80	2.80
6/8/2021	3.34	0.45	0.00	2.89	2.89
6/9/2021	3.05	0.37	0.00	2.68	2.68
6/10/2021	3.15	0.37	0.00	2.78	2.78
6/11/2021	3.10	0.36	0.00	2.73	2.73
6/12/2021	3.63	0.50	0.27	3.12	2.86
6/13/2021	3.19	0.41	0.00	2.79	2.79
6/14/2021	3.55	0.52	0.19	3.04	2.84
6/15/2021	3.12	0.40	0.00	2.71	2.71
6/16/2021	3.04	0.38	0.00	2.66	2.66
6/17/2021	3.16	0.42	0.00	2.74	2.74
6/18/2021	3.02	0.41	0.00	2.62	2.62
6/19/2021	2.93	0.39	0.00	2.55	2.55
6/20/2021	2.85	0.36	0.00	2.49	2.49
6/21/2021	2.86	0.36	0.00	2.49	2.49
6/22/2021	2.82	0.35	0.00	2.48	2.48
6/23/2021	2.83	0.35	0.00	2.48	2.48
6/24/2021	2.78	0.43	0.00	2.35	2.35
6/25/2021	2.71	0.61	0.00	2.11	2.11
6/26/2021	2.73	0.61	0.00	2.12	2.12
6/27/2021	2.71	0.61	0.00	2.09	2.09

6/28/2021	2.70	0.61	0.00	2.09	2.09
6/29/2021	2.68	0.61	0.00	2.06	2.06
6/30/2021	2.66	0.61	0.00	2.05	2.05
7/1/2021	2.71	0.61	0.00	2.10	2.10
7/2/2021	2.75	0.61	0.00	2.15	2.15
7/3/2021	6.32	1.71	2.96	4.61	1.65
7/4/2021	4.39	1.28	1.03	3.12	2.08
7/5/2021	2.74	0.74	0.00	2.00	2.00
7/6/2021	3.13	0.91	0.00	2.22	2.22
7/7/2021	2.66	0.66	0.00	2.00	2.00
7/8/2021	2.60	0.58	0.00	2.02	2.02
7/9/2021	2.36	0.56	0.00	1.80	1.80
7/10/2021	2.51	0.57	0.00	1.94	1.94
7/11/2021	2.53	0.57	0.00	1.96	1.96
7/12/2021	2.33	0.57	0.00	1.76	1.76
7/13/2021	2.26	0.56	0.00	1.71	1.71
7/14/2021	2.26	0.54	0.00	1.72	1.72
7/15/2021	2.24	0.55	0.00	1.69	1.69
7/16/2021	2.22	0.56	0.00	1.67	1.67
7/17/2021	2.43	0.63	0.00	1.80	1.80
7/18/2021	3.83	1.71	0.47	2.13	1.65
7/19/2021	3.88	1.80	0.52	2.08	1.56
7/20/2021	3.55	0.82	0.19	2.73	2.54
7/21/2021	5.60	2.15	2.24	3.45	1.21
7/22/2021	3.47	0.26	0.11	3.21	3.10
7/23/2021	9.11	4.08	5.75	5.03	
7/24/2021	9.05	3.62	5.69	5.43	
7/25/2021	12.86	7.17	9.50	5.69	
7/26/2021	7.76	2.32	4.40	5.44	1.04
7/27/2021	5.82	0.61	2.46	5.21	2.75
7/28/2021	5.75	0.48	2.39	5.27	2.88
7/29/2021	5.36	0.29	2.00	5.07	3.07
7/30/2021	4.67	0.23	1.31	4.45	3.13
7/31/2021	4.21	0.23	0.85	3.98	3.13
8/1/2021	3.92	0.36	0.56	3.57	3.00
8/2/2021	3.76	0.69	0.40	3.06	2.67
8/3/2021	3.80	0.79	0.44	3.01	2.57
8/4/2021	3.85	0.54	0.49	3.31	2.82
8/5/2021	4.58	0.69	1.22	3.89	2.67
8/6/2021	6.66	2.59	3.30	4.07	0.77
8/7/2021	4.21	0.25	0.85	3.96	3.11
8/8/2021	3.76	0.20	0.40	3.55	3.16
8/9/2021	3.61	0.20	0.25	3.41	3.16
8/10/2021	3.86	0.24	0.50	3.62	3.12

8/11/2021	4.85	0.69	1.49	4.16	2.67
8/12/2021	3.65	0.21	0.29	3.44	3.15
8/13/2021	4.36	0.66	1.00	3.70	2.70
8/14/2021	3.86	0.34	0.50	3.52	3.02
8/15/2021	5.47	1.93	2.11	3.54	1.43
8/16/2021	4.09	0.58	0.73	3.51	2.78
8/17/2021	3.70	0.30	0.34	3.40	3.06
8/18/2021	3.52	0.25	0.16	3.27	3.11
8/19/2021	3.51	0.24	0.15	3.27	3.12
8/20/2021	3.38	0.24	0.02	3.14	3.12
8/21/2021	3.73	0.58	0.37	3.15	2.78
8/22/2021	4.80	1.75	1.44	3.05	1.61
8/23/2021	7.88	4.39	4.52	3.50	
8/24/2021	7.63	1.16	4.27	6.46	2.20
8/25/2021	4.61	0.36	1.25	4.26	3.00
8/26/2021	4.03	0.32	0.67	3.71	3.04
8/27/2021	4.20	0.32	0.84	3.88	3.04
8/28/2021	3.79	0.30	0.43	3.48	3.06
8/29/2021	3.64	0.30	0.28	3.34	3.06
8/30/2021	3.60	0.29	0.24	3.31	3.07
8/31/2021	3.51	0.30	0.15	3.21	3.06
9/1/2021	2.95	0.34	0.00	2.60	2.60
9/2/2021	2.93	0.31	0.00	2.62	2.62
9/3/2021	3.19	0.31	0.00	2.88	2.88
9/4/2021	2.99	0.32	0.00	2.66	2.66
9/5/2021	2.96	0.31	0.00	2.65	2.65
9/6/2021	2.97	0.30	0.00	2.67	2.67
9/7/2021	2.93	0.30	0.00	2.64	2.64
9/8/2021	2.94	0.30	0.00	2.64	2.64
9/9/2021	2.88	0.29	0.00	2.59	2.59
9/10/2021	2.83	0.29	0.00	2.54	2.54
9/11/2021	2.82	0.31	0.00	2.51	2.51
9/12/2021	2.97	0.28	0.00	2.68	2.68
9/13/2021	2.81	0.45	0.00	2.36	2.36
9/14/2021	3.72	1.06	0.36	2.66	2.30
9/15/2021	3.43	0.65	0.07	2.78	2.71
9/16/2021	2.90	0.43	0.00	2.47	2.47
9/17/2021	2.94	0.41	0.00	2.53	2.53
9/18/2021	3.05	0.39	0.00	2.66	2.66
9/19/2021	3.17	0.36	0.00	2.81	2.81
9/20/2021	3.00	0.32	0.00	2.68	2.68
9/21/2021	3.19	0.32	0.00	2.88	2.88
9/22/2021	3.08	0.34	0.00	2.73	2.73
9/23/2021	3.28	0.29	0.00	2.99	2.99

9/24/2021	3.95	0.38	0.59	3.57	2.98
9/25/2021	4.87	0.84	1.51	4.03	2.52
9/26/2021	5.04	1.17	1.68	3.87	2.19
9/27/2021	6.24	1.65	2.88	4.58	1.71
9/28/2021	5.94	0.52	2.58	5.42	2.84
9/29/2021	4.08	0.56	0.72	3.52	2.80
9/30/2021	3.50	0.52	0.14	2.98	2.84
10/1/2021	3.65	0.41	0.29	3.24	2.95
10/2/2021	3.66	0.28	0.30	3.38	3.08
10/3/2021	3.31	0.27	0.00	3.04	3.04
10/4/2021	3.71	0.29	0.35	3.42	3.07
10/5/2021	3.48	0.30	0.12	3.19	3.06
10/6/2021	3.42	0.28	0.06	3.14	3.08
10/7/2021	3.48	0.32	0.12	3.17	3.04
10/8/2021	3.89	0.30	0.53	3.59	3.06
10/9/2021	8.98	0.73	5.62	8.25	2.63
10/10/2021	8.34	0.33	4.98	8.01	3.03
10/11/2021	6.85	0.65	3.49	6.20	2.71
10/12/2021	10.15	1.78	6.79	8.36	1.58
10/13/2021	7.56	0.34	4.20	7.22	3.02
10/14/2021	7.63	0.75	4.27	6.88	2.61
10/15/2021	13.44	5.02	10.08	8.43	
10/16/2021	11.70	3.69	8.34	8.01	
10/17/2021	6.98	0.41	3.62	6.57	2.95
10/18/2021	5.93	0.32	2.57	5.60	3.04
10/19/2021	5.24	0.32	1.88	4.92	3.04
10/20/2021	4.86	0.32	1.50	4.54	3.04
10/21/2021	4.73	0.37	1.37	4.36	2.99
10/22/2021	4.58	0.68	1.22	3.90	2.68
10/23/2021	4.50	0.76	1.14	3.74	2.60
10/24/2021	4.65	0.61	1.29	4.05	2.75
10/25/2021	5.02	0.47	1.66	4.54	2.89
10/26/2021	4.33	0.47	0.97	3.86	2.89
10/27/2021	4.25	0.55	0.89	3.70	2.81
10/28/2021	4.18	0.66	0.82	3.52	2.70
10/29/2021	4.09	0.45	0.73	3.65	2.91
10/30/2021	4.05	0.41	0.69	3.64	2.95
10/31/2021	3.98	0.39	0.62	3.59	2.97
11/1/2021	4.03	0.37	0.67	3.65	2.99
11/2/2021	3.99	0.37	0.63	3.61	2.99
11/3/2021	3.96	0.36	0.60	3.60	3.00
11/4/2021	4.65	0.33	1.29	4.32	3.03
11/5/2021	4.12	0.30	0.76	3.82	3.06
11/6/2021	3.84	0.30	0.48	3.54	3.06

11/7/2021	3.78	0.30	0.42	3.48	3.06
11/8/2021	3.74	0.29	0.38	3.45	3.07
11/9/2021	3.73	0.29	0.37	3.44	3.07
11/10/2021	3.66	0.30	0.30	3.36	3.06
11/11/2021	3.64	0.30	0.28	3.33	3.06
11/12/2021	3.92	0.31	0.56	3.61	3.05
11/13/2021	3.95	0.31	0.59	3.64	3.05
11/14/2021	4.03	0.29	0.67	3.74	3.07
11/15/2021	3.97	0.29	0.61	3.68	3.07
11/16/2021	3.96	0.28	0.60	3.67	3.08
11/17/2021	3.97	0.28	0.61	3.68	3.08
11/18/2021	3.94	0.28	0.58	3.66	3.08
11/19/2021	3.94	0.29	0.58	3.65	3.07
11/20/2021	3.94	0.29	0.58	3.65	3.07
11/21/2021	3.94	0.30	0.58	3.64	3.06
11/22/2021	4.33	0.30	0.97	4.03	3.06
11/23/2021	4.32	0.30	0.96	4.02	3.06
11/24/2021	3.91	0.29	0.55	3.62	3.07
11/25/2021	3.79	0.29	0.43	3.50	3.07
11/26/2021	3.79	0.29	0.43	3.50	3.07
11/27/2021	3.80	0.29	0.44	3.51	3.07
11/28/2021	7.88	3.20	4.52	4.69	0.16
11/29/2021	13.06	5.25	9.70	7.81	
11/30/2021	5.11	0.77	1.75	4.34	2.59
12/1/2021	4.00	0.74	0.64	3.26	2.62
12/2/2021	3.79	0.74	0.43	3.05	2.62
12/3/2021	6.12	0.70	2.76	5.42	2.66
12/4/2021	5.01	0.52	1.65	4.49	2.84
12/5/2021	35.74				
12/6/2021	24.95				
12/7/2021	7.24				
12/8/2021	4.57	0.29	1.21	4.28	3.07
12/9/2021	3.64	0.29	0.28	3.35	3.07
12/10/2021	3.84	0.28	0.48	3.55	3.08
12/11/2021	4.21	0.29	0.85	3.92	3.07
12/12/2021	6.46	0.39	3.10	6.08	2.97

Table 2: Kaua‘ula Stream Mean Monthly Available and Diverted Flow

Note: Mean monthly flows are less informative as they are highly skewed by peak flow events.

Month	Year	Mean Monthly Available Flow while IIFS met (mgd)	Mean Monthly Diverted Flow (mgd)
June	2020	0.26	3.05
July	2020	0.37	2.43
August	2020	0.40	2.60
September	2020	0.05	2.06
October	2020	0.00	1.58
November	2020	2.62	2.78
December	2020	0.30	2.75
January	2021	1.94	3.54
February	2021	1.45	2.91
March	2021	7.59	7.00
April	2021	2.19	4.28
May	2021	1.04	3.51
June	2021	0.02	2.56
July	2021	1.35	3.08
August	2021	0.96	3.61
September	2021	0.35	2.97
October	2021	2.27	4.89
November	2021	1.06	3.84
December	2021	1.27	4.15

Table 3: CWRM 2018 Measurements

	Total Water available above LIC diversion (mgd)	Diverted into Kaua'ula Tunnel (mgd)	Kaua'ula Stream below Intake (mgd)	Kaua'ula Ditch above Kaua'ula Reservoir (what LIC is taking into their system) (mgd)
3/26/2018				1.4
4/23/2018	5.27	2.76	2.51	0.61
7/10/2018	4.16	3.89	0.27	1.72
7/27/2018	4.47	4.33	0.14	0.87
8/13/2018	4.21	3.26	0.95	2.07
9/5/2018	7.64	6.09	1.55	
10/15/201				
8	5.15	4.62	0.53	
10/22/201				
8	4.29	3.16	1.13	
11/15/201				
8	3.83	3	0.83	
11/27/201				
8	3.88	2.89	0.99	

Table 4: Kaua‘ula Stream Flow Below Siphon at Lahaina Pump 2 Ditch (Extension of Honokohau Ditch) CWRM Monitoring Station – Mean Monthly Flow (mgd)

Note: Mean monthly flows are less informative as they are highly skewed by peak flow events. CWRM has daily data from 3/31/17 to 3/19/21

Month-Year	2017	2018	2019	2020	2021
January		2.52	3.22	9.94	6.42
February		12.40	29.47	0.76	0.86
March		3.91	0.59	5.27	3.09
April		11.23	0.59	3.73	
May	3.64	2.10	0.82	7.07	
June	2.36	2.49		1.43	
July	2.61	2.98		2.04	
August	1.86	7.57		0.44	
September	1.76	1.92		0.47	
October	1.60	1.39		0.51	
November	19.62	0.66		26.13	
December	3.88	0.82	1.38	0.99	
January	16.29				

Table 5: Kaua‘ula Stream Flow Below Siphon at Lahaina Pump 2 Ditch (Extension of Honokohau Ditch) CWRM Monitoring Station – Mean Daily Flow (mgd)

Date	2017	2018	2019	2020	2021
1-Jan		1.23	0.76	0.24	15.22
2-Jan		1.25	0.59	0.24	0.82
3-Jan		1.28	0.55	1.23	0.72
4-Jan		1.29	0.54	17.45	0.70
5-Jan		1.26	0.53	2.11	0.48
6-Jan		1.24	0.53	1.09	0.34
7-Jan		1.25	0.52	0.73	0.38
8-Jan		1.27	0.51	18.04	0.45
9-Jan		1.29	0.51	217.64	0.46
10-Jan		1.28	0.51	11.29	0.76
11-Jan		1.21	0.51	6.56	0.37
12-Jan		1.17	0.51	25.80	0.39
13-Jan		1.17	0.60	1.60	0.40
14-Jan		1.16	0.58	0.44	0.39
15-Jan		1.16	0.54	0.26	0.39
16-Jan		1.15	0.52	0.19	0.40
17-Jan		1.13	0.53	0.17	0.42
18-Jan		1.11	0.57	0.16	164.60
19-Jan		1.11	0.54	0.17	1.40
20-Jan		1.12	0.54	0.20	0.75
21-Jan		1.46	0.73	0.31	0.66
22-Jan		1.15	0.77	0.35	0.68
23-Jan		16.48	0.64	0.33	0.73
24-Jan		26.68	0.58	0.27	0.69
25-Jan		1.20	0.57	0.23	0.68
26-Jan		1.19	0.61	0.23	0.70
27-Jan		1.19	0.92	0.22	0.75
28-Jan		1.15	0.81	0.20	0.77
29-Jan		1.15	1.75	0.18	0.89
30-Jan		1.14	21.40	0.18	1.35
31-Jan		1.18	59.89	0.18	1.29
1-Feb		1.39	1.61	0.18	0.75
2-Feb		1.40	1.10	0.16	0.61
3-Feb		1.43	0.92	0.16	0.68
4-Feb		1.50	0.82	0.15	0.75
5-Feb		1.38	0.74	0.14	0.77
6-Feb		1.30	0.69	0.19	0.82
7-Feb		1.39	0.64	0.43	0.90
8-Feb		2.21	0.61	0.42	0.86

9-Feb	2.35	0.59	0.35	0.87
10-Feb	2.03	0.57	0.28	0.84
11-Feb	1.79	0.56	0.23	0.83
12-Feb	1.85	0.54	0.21	0.84
13-Feb	1.91	0.53	0.19	0.85
14-Feb	2.04	804.15	0.19	0.85
15-Feb	268.43	1.35	0.20	0.82
16-Feb	5.65	0.99	0.22	0.83
17-Feb	3.08	0.80	0.26	0.94
18-Feb	5.92	0.79	0.28	0.85
19-Feb	4.90	0.83	0.29	0.80
20-Feb	3.04	0.74	0.28	0.81
21-Feb	3.00	0.71	0.26	0.83
22-Feb	2.82	0.71	0.26	0.82
23-Feb	2.98	0.71	0.26	0.83
24-Feb	2.86	0.70	0.34	0.90
25-Feb	2.92	0.70	0.47	0.92
26-Feb	6.39	0.71	0.77	0.88
27-Feb	7.06	0.71	1.74	1.00
28-Feb	4.25	0.63	7.17	1.54
29-Feb			5.98	
1-Mar	3.98	0.59	3.44	2.01
2-Mar	3.77	0.58	2.27	1.00
3-Mar	3.60	0.57	1.56	0.78
4-Mar	3.63	0.56	1.17	0.80
5-Mar	3.70	0.55	1.29	0.81
6-Mar	3.72	0.57	23.52	0.77
7-Mar	3.73	0.63	28.19	0.79
8-Mar	3.84	0.66	16.48	1.77
9-Mar	3.87	0.66	10.61	3.23
10-Mar	3.79	0.63	7.14	0.72
11-Mar	3.83	0.61	5.27	0.62
12-Mar	3.99	0.59	4.25	0.63
13-Mar	4.92	0.59	3.59	5.82
14-Mar	4.08	0.59	3.16	0.56
15-Mar	3.97	0.59	2.86	0.56
16-Mar	3.93	0.62	2.66	18.38
17-Mar	3.88	0.64	2.39	10.33
18-Mar	3.85	0.64	2.21	2.98
19-Mar	3.76	0.61	2.13	6.11
20-Mar	3.71	0.59	2.13	
21-Mar	3.77	0.59	2.13	
22-Mar	3.86	0.63	2.42	

23-Mar		3.97	0.66	7.25
24-Mar		4.29	0.66	5.49
25-Mar		4.09	0.61	3.70
26-Mar		4.06	0.56	2.99
27-Mar		3.99	0.53	2.81
28-Mar		3.88	0.52	2.71
29-Mar		3.89	0.51	2.68
30-Mar		3.88	0.50	2.56
31-Mar	1.30	3.94	0.49	2.41
1-Apr	1.35	3.93	0.49	2.29
2-Apr	1.39	85.08	0.51	2.22
3-Apr	1.33	11.90	0.53	2.22
4-Apr	1.27	3.81	0.53	2.20
5-Apr	1.19	10.18	0.54	2.04
6-Apr	1.17	5.14	0.54	3.23
7-Apr	1.18	9.27	0.55	12.66
8-Apr	1.19	6.47	0.55	3.82
9-Apr	1.18	4.64	0.55	3.06
10-Apr	1.24	3.79	0.56	2.59
11-Apr	1.33	7.77	0.55	2.31
12-Apr	1.23	5.19	0.55	2.25
13-Apr	1.33	62.25	0.55	2.22
14-Apr	1.42	32.72	0.55	2.22
15-Apr	1.42	16.47	0.54	2.22
16-Apr	1.41	16.82	0.54	2.22
17-Apr	2.30	8.91	0.53	2.22
18-Apr	1.87	7.46	0.53	2.30
19-Apr	1.33	4.82	0.53	2.52
20-Apr	1.34	3.18	0.53	2.67
21-Apr	3.05	2.71	0.52	3.04
22-Apr	1.51	2.40	0.52	3.26
23-Apr	1.56	2.13	0.52	3.65
24-Apr	1.61	3.58	0.52	4.26
25-Apr	1.63	2.52	0.52	5.18
26-Apr	1.59	4.09	0.52	6.25
27-Apr	1.56	2.73	0.52	6.38
28-Apr	1.50	2.53	0.52	6.53
29-Apr	29.71	2.27	0.87	6.79
30-Apr	38.12	2.17	1.77	7.17
1-May	5.23	2.05	1.56	7.94
2-May	1.69	2.05	1.40	10.59
3-May	1.99	2.05	1.25	15.16
4-May	2.24	2.05	1.14	17.10

5-May	2.05	2.05	1.05	12.06
6-May	2.02	2.05	0.98	9.02
7-May	1.91	2.05	0.93	7.06
8-May	1.82	2.05	0.89	95.12
9-May	1.91	2.05	0.85	7.46
10-May	2.04	2.05	0.82	3.73
11-May	1.99	2.05	0.79	2.44
12-May	2.02	2.05	0.76	1.61
13-May	2.00	2.05	0.74	1.47
14-May	2.17	2.05	0.73	1.53
15-May	2.73	2.05	0.72	1.52
16-May	2.16	2.05	0.71	1.50
17-May	2.03	2.05	0.70	1.51
18-May	2.03	2.05	0.69	1.53
19-May	2.45	2.00	0.67	1.54
20-May	2.51	1.89	0.66	1.44
21-May	2.62	1.89	0.65	1.51
22-May	2.74	1.89	0.65	1.62
23-May	2.88	1.89	0.64	1.59
24-May	2.91	1.89	0.63	1.60
25-May	2.67	1.89	0.62	1.58
26-May	2.49	1.98	0.61	1.57
27-May	2.54	2.13	0.61	1.57
28-May	2.58	2.44	0.61	1.67
29-May	2.09	2.89	0.60	1.73
30-May	2.17	2.95	0.38	1.70
31-May	2.50	2.45	0.23	1.70
1-Jun	2.63	2.15	0.16	1.53
2-Jun	2.92	2.38	0.14	1.59
3-Jun	2.78	2.73	0.46	1.60
4-Jun	2.64	3.17	0.18	1.57
5-Jun	2.58	3.10	0.12	1.45
6-Jun	2.71	2.81	0.09	1.48
7-Jun	2.71	2.61	0.07	1.59
8-Jun	2.81	2.33	0.07	1.61
9-Jun	2.65	2.08	0.07	1.67
10-Jun	2.71	2.05	0.05	1.84
11-Jun	2.60	2.05	0.05	1.78
12-Jun	2.55	2.05	4.04	1.77
13-Jun	2.63	2.05	0.19	1.74
14-Jun	3.09	2.05	0.09	1.70
15-Jun	3.04	2.05	0.05	1.69
16-Jun	2.75	2.05	14.02	1.63

17-Jun	2.65	2.05	1.44	1.76
18-Jun	2.69	2.11	0.32	1.70
19-Jun	2.74	2.27	0.13	1.55
20-Jun	2.70	2.44	4.70	0.20
21-Jun	2.58	2.59	8.21	0.91
22-Jun	2.32	2.59	1.68	1.18
23-Jun	2.38	2.59	0.72	1.80
24-Jun	2.29	2.76	0.37	1.79
25-Jun	2.35	3.01	0.29	1.65
26-Jun	2.43	3.02	0.25	1.07
27-Jun	2.40	3.18		0.75
28-Jun	2.50	2.99		0.75
29-Jun	2.18	2.78		0.74
30-Jun	2.18	2.62		0.73
1-Jul	2.28	2.54		0.63
2-Jul	2.21	2.49		0.65
3-Jul	2.28	2.49		0.71
4-Jul	2.21	2.49		0.72
5-Jul	2.30	2.60		0.72
6-Jul	2.32	3.35		0.70
7-Jul	2.36	6.02		0.72
8-Jul	2.37	3.54		0.75
9-Jul	2.25	3.13		0.76
10-Jul	2.03	3.02		0.77
11-Jul	1.30	2.78		0.76
12-Jul	1.38	2.47		0.75
13-Jul	1.36	2.40		0.78
14-Jul	1.39	2.40		1.34
15-Jul	1.34	2.40		0.69
16-Jul	1.38	2.40		0.70
17-Jul	1.45	2.54		0.70
18-Jul	1.35	2.90		0.69
19-Jul	1.39	3.11		0.70
20-Jul	1.56	3.14		0.69
21-Jul	1.63	3.14		0.70
22-Jul	2.01	3.14		0.73
23-Jul	2.35	3.14		0.59
24-Jul	1.73	3.14		0.59
25-Jul	1.87	3.14		0.61
26-Jul	1.94	3.14		40.32
27-Jul	1.86	3.14		1.24
28-Jul	1.92	3.14		0.41
29-Jul	2.13	3.14		0.59

30-Jul	1.90	3.11	2.15
31-Jul	1.96	2.95	0.35
1-Aug	1.89	2.75	0.26
2-Aug	1.72	2.48	0.24
3-Aug	1.74	2.33	0.23
4-Aug	1.73	2.09	0.22
5-Aug	1.71	1.95	0.20
6-Aug	1.71	1.75	0.50
7-Aug	1.73	1.67	0.93
8-Aug	1.76	1.67	1.03
9-Aug	1.80	1.67	0.67
10-Aug	1.87	1.67	0.58
11-Aug	1.98	1.67	0.52
12-Aug	1.77	1.58	0.44
13-Aug	1.80	1.42	0.40
14-Aug	1.80	1.35	0.36
15-Aug	1.81	1.34	0.37
16-Aug	1.76	1.27	0.35
17-Aug	1.72	1.15	0.37
18-Aug	1.72	1.13	0.38
19-Aug	1.72	1.13	0.37
20-Aug	1.62	1.14	0.42
21-Aug	1.68	1.32	0.48
22-Aug	2.71	1.82	0.45
23-Aug	1.95	2.68	0.45
24-Aug	1.93	179.36	0.45
25-Aug	1.90	4.08	0.45
26-Aug	1.78	2.34	0.42
27-Aug	1.55	2.47	0.43
28-Aug	1.44	2.17	0.43
29-Aug	1.45	1.87	0.44
30-Aug	1.43	1.77	0.42
31-Aug	1.34	1.74	0.38
1-Sep	1.32	1.74	0.42
2-Sep	1.32	1.74	0.40
3-Sep	1.34	1.71	0.40
4-Sep	1.28	1.63	0.40
5-Sep	1.23	1.40	0.40
6-Sep	1.29	1.18	0.41
7-Sep	1.33	1.04	0.42
8-Sep	1.29	1.04	0.42
9-Sep	1.51	1.04	0.45
10-Sep	1.73	1.04	0.47

11-Sep	2.01	1.04	0.46
12-Sep	1.91	3.06	0.46
13-Sep	1.86	2.01	0.48
14-Sep	1.79	1.91	0.51
15-Sep	1.77	2.09	0.51
16-Sep	1.89	2.28	0.50
17-Sep	1.84	2.17	0.51
18-Sep	1.80	2.12	0.51
19-Sep	1.67	1.88	0.49
20-Sep	1.69	1.40	0.48
21-Sep	1.74	1.27	0.50
22-Sep	1.67	1.55	0.48
23-Sep	1.60	1.54	0.49
24-Sep	1.62	1.78	0.51
25-Sep	1.52	1.55	0.49
26-Sep	1.57	1.30	0.50
27-Sep	1.65	11.34	0.52
28-Sep	1.72	1.17	0.52
29-Sep	1.62	1.24	0.52
30-Sep	1.55	1.31	0.53
1-Oct	1.57	1.35	0.53
2-Oct	1.61	1.38	0.54
3-Oct	1.65	1.47	0.53
4-Oct	1.80	1.33	0.51
5-Oct	1.95	1.08	0.50
6-Oct	1.73	0.95	0.49
7-Oct	1.69	0.94	0.52
8-Oct	1.69	0.92	0.51
9-Oct	1.67	0.95	0.49
10-Oct	1.71	0.99	0.50
11-Oct	1.70	1.03	0.50
12-Oct	3.93	0.87	0.48
13-Oct	2.10	0.85	0.50
14-Oct	1.55	0.89	0.49
15-Oct	2.86	0.93	0.49
16-Oct	1.57	0.95	0.49
17-Oct	1.64	0.93	0.51
18-Oct	1.63	0.89	0.50
19-Oct	1.64	0.85	0.50
20-Oct	1.62	0.86	0.49
21-Oct	1.59	0.89	0.49
22-Oct	1.57	0.88	0.49
23-Oct	1.55	0.90	0.49

24-Oct	555.33	0.89	0.49
25-Oct	1.57	0.86	0.52
26-Oct	1.54	1.00	0.52
27-Oct	1.55	1.10	0.56
28-Oct	1.61	0.81	0.54
29-Oct	1.57	0.73	0.52
30-Oct	1.59	12.93	0.48
31-Oct	1.59	1.67	0.53
1-Nov	1.55	0.67	0.54
2-Nov	1.51	0.88	0.55
3-Nov	1.60	0.80	0.56
4-Nov	1.55	0.65	0.56
5-Nov	1.60	0.72	0.57
6-Nov	1.34	0.63	0.56
7-Nov	1.40	0.65	0.57
8-Nov	1.41	0.61	0.58
9-Nov	1.44	0.58	0.64
10-Nov	1.44	0.72	0.74
11-Nov	2.37	0.63	0.76
12-Nov	1.66	0.61	0.77
13-Nov	1.40	0.60	0.79
14-Nov	1.39	0.61	0.80
15-Nov	5.58	0.61	0.82
16-Nov	4.87	0.61	0.79
17-Nov	1.83	1.25	0.80
18-Nov	1.36	1.24	7.06
19-Nov	1.35	0.73	5.00
20-Nov	1.29	0.61	10.01
21-Nov	1.22	0.56	18.00
22-Nov	1.27	0.54	117.66
23-Nov	20.43	0.53	309.01
24-Nov	8.69	0.53	266.64
25-Nov	8.21	0.53	17.75
26-Nov	7.78	0.55	4.43
27-Nov	12.47	0.53	4.88
28-Nov	7.08	0.53	5.67
29-Nov	2.97	0.53	3.79
30-Nov	8.41	0.53	2.48
1-Dec	6.30	0.53	1.15
2-Dec	270.71	0.53	0.93
3-Dec	39.00	0.53	0.87
4-Dec	6.55	0.53	0.88
5-Dec	2.23	0.53	0.88

6-Dec	1.47	0.53	0.90
7-Dec	1.45	0.53	0.77
8-Dec	1.41	1.45	0.56
9-Dec	1.40	4.08	0.58
10-Dec	1.43	0.64	0.70
11-Dec	1.39	1.76	0.76
12-Dec	1.37	0.83	0.81
13-Dec	1.37	0.67	0.83
14-Dec	1.65	0.61	0.82
15-Dec	4.08	0.55	0.84
16-Dec	2.60	0.53	0.86
17-Dec	1.46	0.52	0.88
18-Dec	1.36	0.52	0.81
19-Dec	1.36	0.89	0.78
20-Dec	106.96	0.74	2.64
21-Dec	36.07	1.23	0.94
22-Dec	1.88	1.10	0.72
23-Dec	1.31	0.72	0.72
24-Dec	1.29	0.60	0.70
25-Dec	1.27	0.55	0.71
26-Dec	1.27	0.54	5.09
27-Dec	1.35	0.53	0.80
28-Dec	1.31	0.51	0.72
29-Dec	1.27	0.50	0.69
30-Dec	1.25	0.50	0.56
31-Dec	1.23	1.10	0.87

EXHIBIT B

Table 1: Kaua‘ula Reported Water Use by LIC

Note: 2017 until June 12, 2020, monthly mean average reported.

WUR ID	Gage ID	Gage Name	Start Date	End Date	Date Submit	Mgd
001321	21	Kaua'ula Tunnel	01/01/2017	01/31/2017	02/09/2017	4.839
001346	21	Kaua'ula Tunnel	02/01/2017	02/28/2017	03/23/2017	5.138
001374	21	Kaua'ula Tunnel	03/01/2017	03/31/2017	05/15/2017	5.046
001373	21	Kaua'ula Tunnel	04/01/2017	04/30/2017	05/15/2017	4.901
001547	21	Kaua'ula Tunnel	05/01/2017	05/31/2017	12/22/2017	4.964
001422	21	Kaua'ula Tunnel	06/01/2017	06/30/2017	08/02/2017	4.548
001444	21	Kaua'ula Tunnel	07/01/2017	07/31/2017	08/09/2017	4.621
001545	21	Kaua'ula Tunnel	08/01/2017	08/31/2017	12/22/2017	4.435
001546	21	Kaua'ula Tunnel	09/01/2017	09/30/2017	12/22/2017	3.438
001548	21	Kaua'ula Tunnel	10/01/2017	10/31/2017	12/22/2017	4.204
001587	21	Kaua'ula Tunnel	11/01/2017	11/30/2017	01/30/2018	4.087
001586	21	Kaua'ula Tunnel	12/01/2017	12/31/2017	01/30/2018	0.697
001608	21	Kaua'ula Tunnel	01/01/2018	01/31/2018	02/28/2018	2.422
001656	21	Kaua'ula Tunnel	02/01/2018	02/28/2018	03/12/2018	4.488
001694	21	Kaua'ula Tunnel	03/01/2018	03/31/2018	04/12/2018	5.447
001727	21	Kaua'ula Tunnel	04/01/2018	04/30/2018	06/06/2018	5.291
001787	21	Kaua'ula Tunnel	05/01/2018	05/31/2018	08/13/2018	4.587
001788	21	Kaua'ula Tunnel	06/01/2018	06/30/2018	08/13/2018	4.166
001786	21	Kaua'ula Tunnel	07/01/2018	07/31/2018	08/13/2018	4.373
001816	21	Kaua'ula Tunnel	08/01/2018	08/31/2018	09/25/2018	2.233
001838	21	Kaua'ula Tunnel	09/01/2018	09/30/2018	11/06/2018	0.000
001871	21	Kaua'ula Tunnel	10/01/2018	10/31/2018	01/12/2019	0.000
001873	21	Kaua'ula Tunnel	11/01/2018	11/30/2018	01/12/2019	0.000
001872	21	Kaua'ula Tunnel	12/01/2018	12/31/2018	01/12/2019	0.000
001932	21	Kaua'ula Tunnel	01/01/2019	01/31/2019	03/01/2019	0.000
001958	21	Kaua'ula Tunnel	02/01/2019	02/28/2019	04/15/2019	0.000
001977	21	Kaua'ula Tunnel	03/01/2019	03/31/2019	05/10/2019	0.000
002037	21	Kaua'ula Tunnel	04/01/2019	04/30/2019	08/05/2019	0.000
						Reported zero (0) flow. Suspect no data available.
						Reported zero (0) flow. Suspect no data available.
						Reported zero (0) flow. Suspect no data available.
						Reported zero (0) flow. Suspect no data available.
						Reported zero (0) flow. Suspect no data available.
						Reported zero (0) flow. Suspect no data available.
						Reported zero (0) flow. Suspect no data available.

002220	21	Kauaula Tunnel	05/01/2019	05/31/2019	01/08/2020	No data available.
002221	21	Kauaula Tunnel	06/01/2019	06/30/2019	01/08/2020	No data available.
002222	21	Kauaula Tunnel	07/01/2019	07/31/2019	01/08/2020	No data available.
002223	21	Kauaula Tunnel	08/01/2019	08/31/2019	01/08/2020	No data available.
002224	21	Kauaula Tunnel	09/01/2019	09/30/2019	01/08/2020	No data available.
002225	21	Kauaula Tunnel	10/01/2019	10/31/2019	01/08/2020	No data available.
002226	21	Kauaula Tunnel	11/01/2019	11/30/2019	01/08/2020	No data available.
002227	21	Kauaula Tunnel	12/01/2019	12/31/2019	01/08/2020	No data available.
002572	21	Kauaula Tunnel	05/01/2020	05/31/2020	01/03/2021	Reported zero (0) flow. Suspect no data available.
002578	21	Kauaula Tunnel	06/01/2020	06/30/2020	01/05/2021	No data available.
002940	21	Kauaula Tunnel	06/12/2020	06/12/2020	11/22/2021	3.198
002940	21	Kauaula Tunnel	06/13/2020	06/13/2020	11/22/2021	3.062
002940	21	Kauaula Tunnel	06/14/2020	06/14/2020	11/22/2021	3.314
002940	21	Kauaula Tunnel	06/15/2020	06/15/2020	11/22/2021	4.309
002940	21	Kauaula Tunnel	06/16/2020	06/16/2020	11/22/2021	5.575
002940	21	Kauaula Tunnel	06/17/2020	06/17/2020	11/22/2021	3.740
002940	21	Kauaula Tunnel	06/18/2020	06/18/2020	11/22/2021	2.952
002940	21	Kauaula Tunnel	06/19/2020	06/19/2020	11/22/2021	2.913
002940	21	Kauaula Tunnel	06/20/2020	06/20/2020	11/22/2021	2.810
002940	21	Kauaula Tunnel	06/21/2020	06/21/2020	11/22/2021	2.752
002940	21	Kauaula Tunnel	06/22/2020	06/22/2020	11/22/2021	2.713
002940	21	Kauaula Tunnel	06/23/2020	06/23/2020	11/22/2021	2.720
002940	21	Kauaula Tunnel	06/24/2020	06/24/2020	11/22/2021	2.707
002940	21	Kauaula Tunnel	06/25/2020	06/25/2020	11/22/2021	2.681
002940	21	Kauaula Tunnel	06/26/2020	06/26/2020	11/22/2021	2.629
002940	21	Kauaula Tunnel	06/27/2020	06/27/2020	11/22/2021	2.610
002940	21	Kauaula Tunnel	06/28/2020	06/28/2020	11/22/2021	2.668
002940	21	Kauaula Tunnel	06/29/2020	06/29/2020	11/22/2021	2.636
002940	21	Kauaula Tunnel	06/30/2020	06/30/2020	11/22/2021	1.932
002940	21	Kauaula Tunnel	07/01/2020	07/01/2020	11/22/2021	1.505
002579	21	Kauaula Tunnel	07/01/2020	07/31/2020	01/05/2021	No data available.
002940	21	Kauaula Tunnel	07/02/2020	07/02/2020	11/22/2021	1.925
002940	21	Kauaula Tunnel	07/03/2020	07/03/2020	11/22/2021	2.229
002940	21	Kauaula Tunnel	07/04/2020	07/04/2020	11/22/2021	2.280
002940	21	Kauaula Tunnel	07/05/2020	07/05/2020	11/22/2021	2.216
002940	21	Kauaula Tunnel	07/06/2020	07/06/2020	11/22/2021	2.339

002940	21	Kauaula Tunnel	07/07/2020	07/07/2020	11/22/2021	2.455
002940	21	Kauaula Tunnel	07/08/2020	07/08/2020	11/22/2021	2.552
002940	21	Kauaula Tunnel	07/09/2020	07/09/2020	11/22/2021	2.642
002940	21	Kauaula Tunnel	07/10/2020	07/10/2020	11/22/2021	2.519
002940	21	Kauaula Tunnel	07/11/2020	07/11/2020	11/22/2021	2.513
002940	21	Kauaula Tunnel	07/12/2020	07/12/2020	11/22/2021	2.500
002940	21	Kauaula Tunnel	07/13/2020	07/13/2020	11/22/2021	2.545
002940	21	Kauaula Tunnel	07/14/2020	07/14/2020	11/22/2021	3.805
002940	21	Kauaula Tunnel	07/15/2020	07/15/2020	11/22/2021	3.198
002940	21	Kauaula Tunnel	07/16/2020	07/16/2020	11/22/2021	2.616
002940	21	Kauaula Tunnel	07/17/2020	07/17/2020	11/22/2021	2.500
002940	21	Kauaula Tunnel	07/18/2020	07/18/2020	11/22/2021	2.455
002940	21	Kauaula Tunnel	07/19/2020	07/19/2020	11/22/2021	2.506
002940	21	Kauaula Tunnel	07/20/2020	07/20/2020	11/22/2021	2.526
002940	21	Kauaula Tunnel	07/21/2020	07/21/2020	11/22/2021	2.513
002940	21	Kauaula Tunnel	07/22/2020	07/22/2020	11/22/2021	2.326
002940	21	Kauaula Tunnel	07/23/2020	07/23/2020	11/22/2021	1.906
002940	21	Kauaula Tunnel	07/24/2020	07/24/2020	11/22/2021	1.951
002940	21	Kauaula Tunnel	07/25/2020	07/25/2020	11/22/2021	1.983
002940	21	Kauaula Tunnel	07/27/2020	07/27/2020	11/22/2021	2.332
002940	21	Kauaula Tunnel	07/28/2020	07/28/2020	11/22/2021	2.461
002940	21	Kauaula Tunnel	07/29/2020	07/29/2020	11/22/2021	2.946
002940	21	Kauaula Tunnel	07/30/2020	07/30/2020	11/22/2021	0.258
002940	21	Kauaula Tunnel	07/31/2020	07/31/2020	11/22/2021	3.043
002940	21	Kauaula Tunnel	08/01/2020	08/01/2020	11/22/2021	2.545
002577	21	Kauaula Tunnel	08/01/2020	08/31/2020	01/05/2021	No data available
002940	21	Kauaula Tunnel	08/02/2020	08/02/2020	11/22/2021	2.487
002940	21	Kauaula Tunnel	08/03/2020	08/03/2020	11/22/2021	3.269
002940	21	Kauaula Tunnel	08/04/2020	08/04/2020	11/22/2021	2.532
002940	21	Kauaula Tunnel	08/05/2020	08/05/2020	11/22/2021	2.364
002940	21	Kauaula Tunnel	08/06/2020	08/06/2020	11/22/2021	3.669
002940	21	Kauaula Tunnel	08/07/2020	08/07/2020	11/22/2021	4.432
002940	21	Kauaula Tunnel	08/08/2020	08/08/2020	11/22/2021	4.083
002940	21	Kauaula Tunnel	08/09/2020	08/09/2020	11/22/2021	3.818
002940	21	Kauaula Tunnel	08/10/2020	08/10/2020	11/22/2021	3.211
002940	21	Kauaula Tunnel	08/11/2020	08/11/2020	11/22/2021	2.797

002940	21	Kauaula Tunnel	08/12/2020	08/12/2020	11/22/2021	2.287
002940	21	Kauaula Tunnel	08/13/2020	08/13/2020	11/22/2021	2.429
002940	21	Kauaula Tunnel	08/14/2020	08/14/2020	11/22/2021	2.590
002940	21	Kauaula Tunnel	08/15/2020	08/15/2020	11/22/2021	2.526
002940	21	Kauaula Tunnel	08/16/2020	08/16/2020	11/22/2021	2.339
002940	21	Kauaula Tunnel	08/17/2020	08/17/2020	11/22/2021	2.319
002940	21	Kauaula Tunnel	08/18/2020	08/18/2020	11/22/2021	2.429
002940	21	Kauaula Tunnel	08/19/2020	08/19/2020	11/22/2021	2.448
002940	21	Kauaula Tunnel	08/20/2020	08/20/2020	11/22/2021	2.616
002940	21	Kauaula Tunnel	08/21/2020	08/21/2020	11/22/2021	2.494
002940	21	Kauaula Tunnel	08/22/2020	08/22/2020	11/22/2021	2.345
002940	21	Kauaula Tunnel	08/23/2020	08/23/2020	11/22/2021	2.351
002940	21	Kauaula Tunnel	08/24/2020	08/24/2020	11/22/2021	2.287
002940	21	Kauaula Tunnel	08/25/2020	08/25/2020	11/22/2021	2.203
002940	21	Kauaula Tunnel	08/26/2020	08/26/2020	11/22/2021	2.158
002940	21	Kauaula Tunnel	08/27/2020	08/27/2020	11/22/2021	2.080
002940	21	Kauaula Tunnel	08/28/2020	08/28/2020	11/22/2021	2.067
002940	21	Kauaula Tunnel	08/29/2020	08/29/2020	11/22/2021	2.074
002940	21	Kauaula Tunnel	08/30/2020	08/30/2020	11/22/2021	1.886
002940	21	Kauaula Tunnel	08/31/2020	08/31/2020	11/22/2021	1.563
002940	21	Kauaula Tunnel	09/01/2020	09/01/2020	11/22/2021	2.106
002580	21	Kauaula Tunnel	09/01/2020	09/30/2020	01/05/2021	No data available.
002940	21	Kauaula Tunnel	09/02/2020	09/02/2020	11/22/2021	2.255
002940	21	Kauaula Tunnel	09/03/2020	09/03/2020	11/22/2021	2.158
002940	21	Kauaula Tunnel	09/04/2020	09/04/2020	11/22/2021	2.106
002940	21	Kauaula Tunnel	09/05/2020	09/05/2020	11/22/2021	2.326
002940	21	Kauaula Tunnel	09/06/2020	09/06/2020	11/22/2021	2.061
002940	21	Kauaula Tunnel	09/07/2020	09/07/2020	11/22/2021	2.158
002940	21	Kauaula Tunnel	09/08/2020	09/08/2020	11/22/2021	2.222
002940	21	Kauaula Tunnel	09/09/2020	09/09/2020	11/22/2021	3.068
002940	21	Kauaula Tunnel	09/10/2020	09/10/2020	11/22/2021	2.196
002940	21	Kauaula Tunnel	09/11/2020	09/11/2020	11/22/2021	1.977
002940	21	Kauaula Tunnel	09/12/2020	09/12/2020	11/22/2021	2.009
002940	21	Kauaula Tunnel	09/13/2020	09/13/2020	11/22/2021	1.951
002940	21	Kauaula Tunnel	09/14/2020	09/14/2020	11/22/2021	1.944
002940	21	Kauaula Tunnel	09/15/2020	09/15/2020	11/22/2021	1.906

002940	21	Kauaula Tunnel	09/16/2020	09/16/2020	11/22/2021	1.867
002940	21	Kauaula Tunnel	09/17/2020	09/17/2020	11/22/2021	1.802
002940	21	Kauaula Tunnel	09/18/2020	09/18/2020	11/22/2021	1.757
002940	21	Kauaula Tunnel	09/19/2020	09/19/2020	11/22/2021	1.886
002940	21	Kauaula Tunnel	09/20/2020	09/20/2020	11/22/2021	1.860
002940	21	Kauaula Tunnel	09/21/2020	09/21/2020	11/22/2021	1.860
002940	21	Kauaula Tunnel	09/22/2020	09/22/2020	11/22/2021	1.880
002940	21	Kauaula Tunnel	09/23/2020	09/23/2020	11/22/2021	2.067
002940	21	Kauaula Tunnel	09/24/2020	09/24/2020	11/22/2021	2.164
002940	21	Kauaula Tunnel	09/25/2020	09/25/2020	11/22/2021	1.789
002940	21	Kauaula Tunnel	09/26/2020	09/26/2020	11/22/2021	1.815
002940	21	Kauaula Tunnel	09/27/2020	09/27/2020	11/22/2021	1.977
002940	21	Kauaula Tunnel	09/28/2020	09/28/2020	11/22/2021	2.481
002940	21	Kauaula Tunnel	09/29/2020	09/29/2020	11/22/2021	2.067
002940	21	Kauaula Tunnel	09/30/2020	09/30/2020	11/22/2021	1.964
002940	21	Kauaula Tunnel	10/01/2020	10/01/2020	11/22/2021	1.932
002576	21	Kauaula Tunnel	10/01/2020	10/31/2020	01/05/2021	No data available.
002940	21	Kauaula Tunnel	10/02/2020	10/02/2020	11/22/2021	2.390
002940	21	Kauaula Tunnel	10/03/2020	10/03/2020	11/22/2021	2.306
002940	21	Kauaula Tunnel	10/04/2020	10/04/2020	11/22/2021	1.789
002940	21	Kauaula Tunnel	10/05/2020	10/05/2020	11/22/2021	1.370
002940	21	Kauaula Tunnel	10/06/2020	10/06/2020	11/22/2021	1.415
002940	21	Kauaula Tunnel	10/07/2020	10/07/2020	11/22/2021	1.382
002940	21	Kauaula Tunnel	10/08/2020	10/08/2020	11/22/2021	1.408
002940	21	Kauaula Tunnel	10/09/2020	10/09/2020	11/22/2021	1.415
002940	21	Kauaula Tunnel	10/10/2020	10/10/2020	11/22/2021	1.428
002940	21	Kauaula Tunnel	10/11/2020	10/11/2020	11/22/2021	1.370
002940	21	Kauaula Tunnel	10/12/2020	10/12/2020	11/22/2021	1.324
002940	21	Kauaula Tunnel	10/13/2020	10/13/2020	11/22/2021	1.389
002940	21	Kauaula Tunnel	10/14/2020	10/14/2020	11/22/2021	1.382
002940	21	Kauaula Tunnel	10/15/2020	10/15/2020	11/22/2021	1.363
002940	21	Kauaula Tunnel	10/16/2020	10/16/2020	11/22/2021	1.460
002940	21	Kauaula Tunnel	10/17/2020	10/17/2020	11/22/2021	1.466
002940	21	Kauaula Tunnel	10/18/2020	10/18/2020	11/22/2021	1.479
002940	21	Kauaula Tunnel	10/19/2020	10/19/2020	11/22/2021	1.460
002940	21	Kauaula Tunnel	10/20/2020	10/20/2020	11/22/2021	1.492

002940	21	Kauaula Tunnel	10/21/2020	10/21/2020	11/22/2021	1.544
002940	21	Kauaula Tunnel	10/22/2020	10/22/2020	11/22/2021	1.454
002940	21	Kauaula Tunnel	10/23/2020	10/23/2020	11/22/2021	1.454
002940	21	Kauaula Tunnel	10/24/2020	10/24/2020	11/22/2021	1.479
002940	21	Kauaula Tunnel	10/25/2020	10/25/2020	11/22/2021	1.512
002940	21	Kauaula Tunnel	10/26/2020	10/26/2020	11/22/2021	1.518
002940	21	Kauaula Tunnel	10/27/2020	10/27/2020	11/22/2021	1.499
002940	21	Kauaula Tunnel	10/28/2020	10/28/2020	11/22/2021	1.460
002940	21	Kauaula Tunnel	10/29/2020	10/29/2020	11/22/2021	2.267
002940	21	Kauaula Tunnel	10/30/2020	10/30/2020	11/22/2021	1.770
002940	21	Kauaula Tunnel	10/31/2020	10/31/2020	11/22/2021	1.951
002940	21	Kauaula Tunnel	11/01/2020	11/01/2020	11/22/2021	1.777
002637	21	Kauaula Tunnel	11/01/2020	11/30/2020	02/24/2021	No data available.
002940	21	Kauaula Tunnel	11/02/2020	11/02/2020	11/22/2021	1.738
002940	21	Kauaula Tunnel	11/03/2020	11/03/2020	11/22/2021	1.886
002940	21	Kauaula Tunnel	11/04/2020	11/04/2020	11/22/2021	2.293
002940	21	Kauaula Tunnel	11/05/2020	11/05/2020	11/22/2021	1.860
002940	21	Kauaula Tunnel	11/06/2020	11/06/2020	11/22/2021	1.757
002940	21	Kauaula Tunnel	11/07/2020	11/07/2020	11/22/2021	2.319
002940	21	Kauaula Tunnel	11/08/2020	11/08/2020	11/22/2021	2.061
002940	21	Kauaula Tunnel	11/09/2020	11/09/2020	11/22/2021	2.016
002940	21	Kauaula Tunnel	11/10/2020	11/10/2020	11/22/2021	2.132
002940	21	Kauaula Tunnel	11/11/2020	11/11/2020	11/22/2021	2.926
002940	21	Kauaula Tunnel	11/12/2020	11/12/2020	11/22/2021	2.668
002940	21	Kauaula Tunnel	11/13/2020	11/13/2020	11/22/2021	2.584
002940	21	Kauaula Tunnel	11/14/2020	11/14/2020	11/22/2021	2.106
002940	21	Kauaula Tunnel	11/15/2020	11/15/2020	11/22/2021	1.854
002940	21	Kauaula Tunnel	11/16/2020	11/16/2020	11/22/2021	1.744
002940	21	Kauaula Tunnel	11/17/2020	11/17/2020	11/22/2021	1.764
002940	21	Kauaula Tunnel	11/18/2020	11/18/2020	11/22/2021	2.442
002940	21	Kauaula Tunnel	11/19/2020	11/19/2020	11/22/2021	2.616
002940	21	Kauaula Tunnel	11/20/2020	11/20/2020	11/22/2021	2.894
002940	21	Kauaula Tunnel	11/21/2020	11/21/2020	11/22/2021	2.435
002940	21	Kauaula Tunnel	11/22/2020	11/22/2020	11/22/2021	1.550
002940	21	Kauaula Tunnel	11/23/2020	11/23/2020	11/22/2021	7.041
002940	21	Kauaula Tunnel	11/24/2020	11/24/2020	11/22/2021	6.912

002940	21	Kauaula Tunnel	11/25/2020	11/25/2020	11/22/2021	4.186
002940	21	Kauaula Tunnel	11/26/2020	11/26/2020	11/22/2021	3.572
002940	21	Kauaula Tunnel	11/27/2020	11/27/2020	11/22/2021	3.876
002940	21	Kauaula Tunnel	11/28/2020	11/28/2020	11/22/2021	3.792
002940	21	Kauaula Tunnel	11/29/2020	11/29/2020	11/22/2021	3.540
002940	21	Kauaula Tunnel	11/30/2020	11/30/2020	11/22/2021	2.972
002940	21	Kauaula Tunnel	12/01/2020	12/01/2020	11/22/2021	2.655
002638	21	Kauaula Tunnel	12/01/2020	12/31/2020	02/24/2021	No data available.
002940	21	Kauaula Tunnel	12/02/2020	12/02/2020	11/22/2021	2.629
002940	21	Kauaula Tunnel	12/03/2020	12/03/2020	11/22/2021	2.623
002940	21	Kauaula Tunnel	12/04/2020	12/04/2020	11/22/2021	2.655
002940	21	Kauaula Tunnel	12/05/2020	12/05/2020	11/22/2021	2.578
002940	21	Kauaula Tunnel	12/06/2020	12/06/2020	11/22/2021	2.642
002940	21	Kauaula Tunnel	12/07/2020	12/07/2020	11/22/2021	2.713
002940	21	Kauaula Tunnel	12/08/2020	12/08/2020	11/22/2021	2.681
002940	21	Kauaula Tunnel	12/09/2020	12/09/2020	11/22/2021	2.603
002940	21	Kauaula Tunnel	12/10/2020	12/10/2020	11/22/2021	2.603
002940	21	Kauaula Tunnel	12/11/2020	12/11/2020	11/22/2021	2.642
002940	21	Kauaula Tunnel	12/12/2020	12/12/2020	11/22/2021	2.733
002940	21	Kauaula Tunnel	12/13/2020	12/13/2020	11/22/2021	2.752
002940	21	Kauaula Tunnel	12/14/2020	12/14/2020	11/22/2021	2.758
002940	21	Kauaula Tunnel	12/15/2020	12/15/2020	11/22/2021	2.823
002940	21	Kauaula Tunnel	12/16/2020	12/16/2020	11/22/2021	3.191
002940	21	Kauaula Tunnel	12/17/2020	12/17/2020	11/22/2021	2.319
002940	21	Kauaula Tunnel	12/18/2020	12/18/2020	11/22/2021	2.242
002940	21	Kauaula Tunnel	12/19/2020	12/19/2020	11/22/2021	2.397
002940	21	Kauaula Tunnel	12/20/2020	12/20/2020	11/22/2021	4.044
002940	21	Kauaula Tunnel	12/21/2020	12/21/2020	11/22/2021	3.592
002940	21	Kauaula Tunnel	12/22/2020	12/22/2020	11/22/2021	3.249
002940	21	Kauaula Tunnel	12/23/2020	12/23/2020	11/22/2021	2.907
002940	21	Kauaula Tunnel	12/24/2020	12/24/2020	11/22/2021	2.752
002940	21	Kauaula Tunnel	12/25/2020	12/25/2020	11/22/2021	2.655
002940	21	Kauaula Tunnel	12/26/2020	12/26/2020	11/22/2021	3.288
002940	21	Kauaula Tunnel	12/27/2020	12/27/2020	11/22/2021	2.642
002940	21	Kauaula Tunnel	12/28/2020	12/28/2020	11/22/2021	2.306
002940	21	Kauaula Tunnel	12/29/2020	12/29/2020	11/22/2021	2.255

002940	21	Kauaula Tunnel	12/30/2020	12/30/2020	11/22/2021	2.009
002940	21	Kauaula Tunnel	12/31/2020	12/31/2020	11/22/2021	3.417
002940	21	Kauaula Tunnel	01/01/2021	01/01/2021	11/22/2021	5.052
002940	21	Kauaula Tunnel	01/02/2021	01/02/2021	11/22/2021	3.178
002940	21	Kauaula Tunnel	01/03/2021	01/03/2021	11/22/2021	3.004
002940	21	Kauaula Tunnel	01/04/2021	01/04/2021	11/22/2021	2.952
002940	21	Kauaula Tunnel	01/05/2021	01/05/2021	11/22/2021	2.662
002940	21	Kauaula Tunnel	01/06/2021	01/06/2021	11/22/2021	1.880
002940	21	Kauaula Tunnel	01/07/2021	01/07/2021	11/22/2021	1.744
002940	21	Kauaula Tunnel	01/08/2021	01/08/2021	11/22/2021	1.693
002940	21	Kauaula Tunnel	01/09/2021	01/09/2021	11/22/2021	2.074
002940	21	Kauaula Tunnel	01/10/2021	01/10/2021	11/22/2021	2.358
002940	21	Kauaula Tunnel	01/11/2021	01/11/2021	11/22/2021	1.932
002940	21	Kauaula Tunnel	01/12/2021	01/12/2021	11/22/2021	1.822
002940	21	Kauaula Tunnel	01/13/2021	01/13/2021	11/22/2021	1.809
002940	21	Kauaula Tunnel	01/14/2021	01/14/2021	11/22/2021	1.744
002940	21	Kauaula Tunnel	01/15/2021	01/15/2021	11/22/2021	1.744
002940	21	Kauaula Tunnel	01/16/2021	01/16/2021	11/22/2021	1.718
002940	21	Kauaula Tunnel	01/17/2021	01/17/2021	11/22/2021	2.080
002940	21	Kauaula Tunnel	01/18/2021	01/18/2021	11/22/2021	0.000
002940	21	Kauaula Tunnel	01/19/2021	01/19/2021	11/22/2021	8.786
002940	21	Kauaula Tunnel	01/20/2021	01/20/2021	11/22/2021	5.220
002940	21	Kauaula Tunnel	01/21/2021	01/21/2021	11/22/2021	4.289
002940	21	Kauaula Tunnel	01/22/2021	01/22/2021	11/22/2021	3.211
002940	21	Kauaula Tunnel	01/23/2021	01/23/2021	11/22/2021	3.308
002940	21	Kauaula Tunnel	01/24/2021	01/24/2021	11/22/2021	2.959
002940	21	Kauaula Tunnel	01/25/2021	01/25/2021	11/22/2021	2.733
002940	21	Kauaula Tunnel	01/26/2021	01/26/2021	11/22/2021	3.747
002940	21	Kauaula Tunnel	01/27/2021	01/27/2021	11/22/2021	5.162
002940	21	Kauaula Tunnel	01/28/2021	01/28/2021	11/22/2021	3.954
002940	21	Kauaula Tunnel	01/29/2021	01/29/2021	11/22/2021	6.337
002940	21	Kauaula Tunnel	01/30/2021	01/30/2021	11/22/2021	12.300
002940	21	Kauaula Tunnel	01/31/2021	01/31/2021	11/22/2021	8.288
002940	21	Kauaula Tunnel	02/01/2021	02/01/2021	11/22/2021	4.955
002940	21	Kauaula Tunnel	02/02/2021	02/02/2021	11/22/2021	4.018
002940	21	Kauaula Tunnel	02/03/2021	02/03/2021	11/22/2021	4.477

002940	21	Kauaia Tunnel	02/04/2021	02/04/2021	11/22/2021	4.567
002940	21	Kauaia Tunnel	02/05/2021	02/05/2021	11/22/2021	3.618
002940	21	Kauaia Tunnel	02/06/2021	02/06/2021	11/22/2021	3.165
002940	21	Kauaia Tunnel	02/07/2021	02/07/2021	11/22/2021	2.868
002940	21	Kauaia Tunnel	02/08/2021	02/08/2021	11/22/2021	2.713
002940	21	Kauaia Tunnel	02/09/2021	02/09/2021	11/22/2021	2.578
002940	21	Kauaia Tunnel	02/10/2021	02/10/2021	11/22/2021	2.287
002940	21	Kauaia Tunnel	02/11/2021	02/11/2021	11/22/2021	2.074
002940	21	Kauaia Tunnel	02/12/2021	02/12/2021	11/22/2021	2.028
002940	21	Kauaia Tunnel	02/13/2021	02/13/2021	11/22/2021	2.267
002940	21	Kauaia Tunnel	02/14/2021	02/14/2021	11/22/2021	2.164
002940	21	Kauaia Tunnel	02/15/2021	02/15/2021	11/22/2021	2.067
002940	21	Kauaia Tunnel	02/16/2021	02/16/2021	11/22/2021	1.964
002940	21	Kauaia Tunnel	02/17/2021	02/17/2021	11/22/2021	2.952
002940	21	Kauaia Tunnel	02/18/2021	02/18/2021	11/22/2021	4.373
002940	21	Kauaia Tunnel	02/19/2021	02/19/2021	11/22/2021	3.889
002940	21	Kauaia Tunnel	02/20/2021	02/20/2021	11/22/2021	3.850
002940	21	Kauaia Tunnel	02/21/2021	02/21/2021	11/22/2021	2.668
002940	21	Kauaia Tunnel	02/22/2021	02/22/2021	11/22/2021	2.326
002940	21	Kauaia Tunnel	02/23/2021	02/23/2021	11/22/2021	2.306
002940	21	Kauaia Tunnel	02/24/2021	02/24/2021	11/22/2021	2.384
002940	21	Kauaia Tunnel	02/25/2021	02/25/2021	11/22/2021	2.138
002940	21	Kauaia Tunnel	02/26/2021	02/26/2021	11/22/2021	2.216
002940	21	Kauaia Tunnel	02/27/2021	02/27/2021	11/22/2021	1.163
002940	21	Kauaia Tunnel	02/28/2021	02/28/2021	11/22/2021	3.230
002940	21	Kauaia Tunnel	03/01/2021	03/01/2021	11/22/2021	3.488
002940	21	Kauaia Tunnel	03/02/2021	03/02/2021	11/22/2021	5.885
002940	21	Kauaia Tunnel	03/03/2021	03/03/2021	11/22/2021	5.523
002940	21	Kauaia Tunnel	03/04/2021	03/04/2021	11/22/2021	4.677
002940	21	Kauaia Tunnel	03/05/2021	03/05/2021	11/22/2021	4.444
002940	21	Kauaia Tunnel	03/06/2021	03/06/2021	11/22/2021	4.121
002940	21	Kauaia Tunnel	03/07/2021	03/07/2021	11/22/2021	4.722
002940	21	Kauaia Tunnel	03/08/2021	03/08/2021	11/22/2021	0.000
002940	21	Kauaia Tunnel	03/09/2021	03/09/2021	11/22/2021	0.000
002940	21	Kauaia Tunnel	03/10/2021	03/10/2021	11/22/2021	8.811
002940	21	Kauaia Tunnel	03/11/2021	03/11/2021	11/22/2021	7.565

002940	21	Kauaula Tunnel	03/12/2021	03/12/2021	11/22/2021	7.248
002940	21	Kauaula Tunnel	03/13/2021	03/13/2021	11/22/2021	16.021
002940	21	Kauaula Tunnel	03/14/2021	03/14/2021	11/22/2021	7.532
002940	21	Kauaula Tunnel	03/15/2021	03/15/2021	11/22/2021	6.454
002940	21	Kauaula Tunnel	03/16/2021	03/16/2021	11/22/2021	4.522
002940	21	Kauaula Tunnel	03/17/2021	03/17/2021	11/22/2021	13.566
002940	21	Kauaula Tunnel	03/18/2021	03/18/2021	11/22/2021	9.561
002940	21	Kauaula Tunnel	03/19/2021	03/19/2021	11/22/2021	6.059
002940	21	Kauaula Tunnel	03/20/2021	03/20/2021	11/22/2021	8.069
002940	21	Kauaula Tunnel	03/21/2021	03/21/2021	11/22/2021	8.146
002940	21	Kauaula Tunnel	03/22/2021	03/22/2021	11/22/2021	4.890
002940	21	Kauaula Tunnel	03/23/2021	03/23/2021	11/22/2021	3.889
002940	21	Kauaula Tunnel	03/24/2021	03/24/2021	11/22/2021	3.353
002940	21	Kauaula Tunnel	03/25/2021	03/25/2021	11/22/2021	3.101
002940	21	Kauaula Tunnel	03/26/2021	03/26/2021	11/22/2021	2.907
002940	21	Kauaula Tunnel	03/27/2021	03/27/2021	11/22/2021	2.733
002940	21	Kauaula Tunnel	03/28/2021	03/28/2021	11/22/2021	2.532
002940	21	Kauaula Tunnel	03/29/2021	03/29/2021	11/22/2021	2.519
002940	21	Kauaula Tunnel	03/30/2021	03/30/2021	11/22/2021	2.603
002940	21	Kauaula Tunnel	03/31/2021	03/31/2021	11/22/2021	2.339
002940	21	Kauaula Tunnel	04/01/2021	04/01/2021	11/22/2021	3.359
002940	21	Kauaula Tunnel	04/02/2021	04/02/2021	11/22/2021	2.222
002940	21	Kauaula Tunnel	04/03/2021	04/03/2021	11/22/2021	3.068
002940	21	Kauaula Tunnel	04/04/2021	04/04/2021	11/22/2021	10.420
002940	21	Kauaula Tunnel	04/05/2021	04/05/2021	11/22/2021	11.331
002940	21	Kauaula Tunnel	04/06/2021	04/06/2021	11/22/2021	8.114
002940	21	Kauaula Tunnel	04/07/2021	04/07/2021	11/22/2021	4.483
002940	21	Kauaula Tunnel	04/08/2021	04/08/2021	11/22/2021	6.705
002940	21	Kauaula Tunnel	04/09/2021	04/09/2021	11/22/2021	4.277
002940	21	Kauaula Tunnel	04/10/2021	04/10/2021	11/22/2021	3.895
002940	21	Kauaula Tunnel	04/11/2021	04/11/2021	11/22/2021	4.664
002940	21	Kauaula Tunnel	04/12/2021	04/12/2021	11/22/2021	4.283
002940	21	Kauaula Tunnel	04/13/2021	04/13/2021	11/22/2021	3.870
002940	21	Kauaula Tunnel	04/14/2021	04/14/2021	11/22/2021	3.637
002940	21	Kauaula Tunnel	04/15/2021	04/15/2021	11/22/2021	3.495
002940	21	Kauaula Tunnel	04/16/2021	04/16/2021	11/22/2021	3.398

002940	21	Kauaula Tunnel	04/17/2021	04/17/2021	11/22/2021	3.437
002940	21	Kauaula Tunnel	04/18/2021	04/18/2021	11/22/2021	3.327
002940	21	Kauaula Tunnel	04/19/2021	04/19/2021	11/22/2021	3.262
002940	21	Kauaula Tunnel	04/20/2021	04/20/2021	11/22/2021	3.243
002940	21	Kauaula Tunnel	04/21/2021	04/21/2021	11/22/2021	3.230
002940	21	Kauaula Tunnel	04/22/2021	04/22/2021	11/22/2021	3.211
002940	21	Kauaula Tunnel	04/23/2021	04/23/2021	11/22/2021	3.146
002940	21	Kauaula Tunnel	04/24/2021	04/24/2021	11/22/2021	3.417
002940	21	Kauaula Tunnel	04/25/2021	04/25/2021	11/22/2021	3.463
002940	21	Kauaula Tunnel	04/26/2021	04/26/2021	11/22/2021	3.372
002940	21	Kauaula Tunnel	04/27/2021	04/27/2021	11/22/2021	3.127
002940	21	Kauaula Tunnel	04/28/2021	04/28/2021	11/22/2021	3.081
002940	21	Kauaula Tunnel	04/29/2021	04/29/2021	11/22/2021	3.501
002940	21	Kauaula Tunnel	04/30/2021	04/30/2021	11/22/2021	4.380
002940	21	Kauaula Tunnel	05/01/2021	05/01/2021	11/22/2021	4.154
002940	21	Kauaula Tunnel	05/02/2021	05/02/2021	11/22/2021	4.464
002940	21	Kauaula Tunnel	05/03/2021	05/03/2021	11/22/2021	3.747
002940	21	Kauaula Tunnel	05/04/2021	05/04/2021	11/22/2021	3.572
002940	21	Kauaula Tunnel	05/05/2021	05/05/2021	11/22/2021	3.960
002940	21	Kauaula Tunnel	05/06/2021	05/06/2021	11/22/2021	3.475
002940	21	Kauaula Tunnel	05/07/2021	05/07/2021	11/22/2021	3.165
002940	21	Kauaula Tunnel	05/08/2021	05/08/2021	11/22/2021	3.081
002940	21	Kauaula Tunnel	05/09/2021	05/09/2021	11/22/2021	3.152
002940	21	Kauaula Tunnel	05/10/2021	05/10/2021	11/22/2021	3.631
002940	21	Kauaula Tunnel	05/11/2021	05/11/2021	11/22/2021	3.372
002940	21	Kauaula Tunnel	05/12/2021	05/12/2021	11/22/2021	3.792
002940	21	Kauaula Tunnel	05/13/2021	05/13/2021	11/22/2021	4.819
002940	21	Kauaula Tunnel	05/14/2021	05/14/2021	11/22/2021	4.774
002940	21	Kauaula Tunnel	05/15/2021	05/15/2021	11/22/2021	4.477
002940	21	Kauaula Tunnel	05/16/2021	05/16/2021	11/22/2021	4.309
002940	21	Kauaula Tunnel	05/17/2021	05/17/2021	11/22/2021	3.850
002940	21	Kauaula Tunnel	05/18/2021	05/18/2021	11/22/2021	3.463
002940	21	Kauaula Tunnel	05/19/2021	05/19/2021	11/22/2021	3.301
002940	21	Kauaula Tunnel	05/20/2021	05/20/2021	11/22/2021	3.392
002940	21	Kauaula Tunnel	05/21/2021	05/21/2021	11/22/2021	3.631
002940	21	Kauaula Tunnel	05/22/2021	05/22/2021	11/22/2021	3.379

002940	21	Kauaula Tunnel	05/23/2021	05/23/2021	11/22/2021	3.114
002940	21	Kauaula Tunnel	05/24/2021	05/24/2021	11/22/2021	2.997
002940	21	Kauaula Tunnel	05/25/2021	05/25/2021	11/22/2021	2.907
002940	21	Kauaula Tunnel	05/26/2021	05/26/2021	11/22/2021	2.868
002940	21	Kauaula Tunnel	05/27/2021	05/27/2021	11/22/2021	2.791
002940	21	Kauaula Tunnel	05/28/2021	05/28/2021	11/22/2021	2.784
002940	21	Kauaula Tunnel	05/29/2021	05/29/2021	11/22/2021	2.778
002940	21	Kauaula Tunnel	05/30/2021	05/30/2021	11/22/2021	2.720
002940	21	Kauaula Tunnel	05/31/2021	05/31/2021	11/22/2021	2.713
002940	21	Kauaula Tunnel	06/01/2021	06/01/2021	11/22/2021	2.674
002940	21	Kauaula Tunnel	06/02/2021	06/02/2021	11/22/2021	2.642
002940	21	Kauaula Tunnel	06/03/2021	06/03/2021	11/22/2021	2.649
002940	21	Kauaula Tunnel	06/04/2021	06/04/2021	11/22/2021	2.674
002940	21	Kauaula Tunnel	06/05/2021	06/05/2021	11/22/2021	2.629
002940	21	Kauaula Tunnel	06/06/2021	06/06/2021	11/22/2021	2.636
002940	21	Kauaula Tunnel	06/07/2021	06/07/2021	11/22/2021	2.804
002940	21	Kauaula Tunnel	06/08/2021	06/08/2021	11/22/2021	2.888
002940	21	Kauaula Tunnel	06/09/2021	06/09/2021	11/22/2021	2.681
002940	21	Kauaula Tunnel	06/10/2021	06/10/2021	11/22/2021	2.778
002940	21	Kauaula Tunnel	06/11/2021	06/11/2021	11/22/2021	2.733
002940	21	Kauaula Tunnel	06/12/2021	06/12/2021	11/22/2021	3.120
002940	21	Kauaula Tunnel	06/13/2021	06/13/2021	11/22/2021	2.784
002940	21	Kauaula Tunnel	06/14/2021	06/14/2021	11/22/2021	3.036
002940	21	Kauaula Tunnel	06/15/2021	06/15/2021	11/22/2021	2.713
002940	21	Kauaula Tunnel	06/16/2021	06/16/2021	11/22/2021	2.662
002940	21	Kauaula Tunnel	06/17/2021	06/17/2021	11/22/2021	2.739
002940	21	Kauaula Tunnel	06/18/2021	06/18/2021	11/22/2021	2.616
002940	21	Kauaula Tunnel	06/19/2021	06/19/2021	11/22/2021	2.545
002940	21	Kauaula Tunnel	06/20/2021	06/20/2021	11/22/2021	2.487
002940	21	Kauaula Tunnel	06/21/2021	06/21/2021	11/22/2021	2.494
002940	21	Kauaula Tunnel	06/22/2021	06/22/2021	11/22/2021	2.474
002940	21	Kauaula Tunnel	06/23/2021	06/23/2021	11/22/2021	2.481
002940	21	Kauaula Tunnel	06/24/2021	06/24/2021	11/22/2021	2.345
002940	21	Kauaula Tunnel	06/25/2021	06/25/2021	11/22/2021	2.106
002940	21	Kauaula Tunnel	06/26/2021	06/26/2021	11/22/2021	2.119
002940	21	Kauaula Tunnel	06/27/2021	06/27/2021	11/22/2021	2.093

002940	21	Kauaula Tunnel	06/28/2021	06/28/2021	11/22/2021	2.087
002940	21	Kauaula Tunnel	06/29/2021	06/29/2021	11/22/2021	2.061
002940	21	Kauaula Tunnel	06/30/2021	06/30/2021	11/22/2021	2.048
002940	21	Kauaula Tunnel	07/01/2021	07/01/2021	11/22/2021	2.099
002940	21	Kauaula Tunnel	07/02/2021	07/02/2021	11/22/2021	2.145
002940	21	Kauaula Tunnel	07/03/2021	07/03/2021	11/22/2021	4.606
002940	21	Kauaula Tunnel	07/04/2021	07/04/2021	11/22/2021	3.114
002940	21	Kauaula Tunnel	07/05/2021	07/05/2021	11/22/2021	1.996
002940	21	Kauaula Tunnel	07/06/2021	07/06/2021	11/22/2021	2.216
002940	21	Kauaula Tunnel	07/07/2021	07/07/2021	11/22/2021	2.003
002940	21	Kauaula Tunnel	07/08/2021	07/08/2021	11/22/2021	2.022
002940	21	Kauaula Tunnel	07/09/2021	07/09/2021	11/22/2021	1.796
002940	21	Kauaula Tunnel	07/10/2021	07/10/2021	11/22/2021	1.938
002940	21	Kauaula Tunnel	07/11/2021	07/11/2021	11/22/2021	1.964
002940	21	Kauaula Tunnel	07/12/2021	07/12/2021	11/22/2021	1.764
002940	21	Kauaula Tunnel	07/13/2021	07/13/2021	11/22/2021	1.705
002940	21	Kauaula Tunnel	07/14/2021	07/14/2021	11/22/2021	1.718
002940	21	Kauaula Tunnel	07/15/2021	07/15/2021	11/22/2021	1.686
002940	21	Kauaula Tunnel	07/16/2021	07/16/2021	11/22/2021	1.667
002940	21	Kauaula Tunnel	07/17/2021	07/17/2021	11/22/2021	1.796
002940	21	Kauaula Tunnel	07/18/2021	07/18/2021	11/22/2021	2.125
002940	21	Kauaula Tunnel	07/19/2021	07/19/2021	11/22/2021	2.080
002940	21	Kauaula Tunnel	07/20/2021	07/20/2021	11/22/2021	2.726
002940	21	Kauaula Tunnel	07/21/2021	07/21/2021	11/22/2021	3.450
002940	21	Kauaula Tunnel	07/22/2021	07/22/2021	11/22/2021	3.211
002940	21	Kauaula Tunnel	07/23/2021	07/23/2021	11/22/2021	5.026
002940	21	Kauaula Tunnel	07/24/2021	07/24/2021	11/22/2021	5.426
002940	21	Kauaula Tunnel	07/25/2021	07/25/2021	11/22/2021	5.685
002940	21	Kauaula Tunnel	07/26/2021	07/26/2021	11/22/2021	5.433
002940	21	Kauaula Tunnel	07/27/2021	07/27/2021	11/22/2021	5.207
002940	21	Kauaula Tunnel	07/28/2021	07/28/2021	11/22/2021	5.271
002940	21	Kauaula Tunnel	07/29/2021	07/29/2021	11/22/2021	5.065
002940	21	Kauaula Tunnel	07/30/2021	07/30/2021	11/22/2021	4.444
002940	21	Kauaula Tunnel	07/31/2021	07/31/2021	11/22/2021	3.979
002940	21	Kauaula Tunnel	08/01/2021	08/01/2021	11/22/2021	3.566
002940	21	Kauaula Tunnel	08/02/2021	08/02/2021	11/22/2021	3.062

002940	21	Kauaula Tunnel	08/03/2021	08/03/2021	11/22/2021	3.004
002940	21	Kauaula Tunnel	08/04/2021	08/04/2021	11/22/2021	3.308
002940	21	Kauaula Tunnel	08/05/2021	08/05/2021	11/22/2021	3.889
002940	21	Kauaula Tunnel	08/06/2021	08/06/2021	11/22/2021	4.070
002940	21	Kauaula Tunnel	08/07/2021	08/07/2021	11/22/2021	3.954
002940	21	Kauaula Tunnel	08/08/2021	08/08/2021	11/22/2021	3.553
002940	21	Kauaula Tunnel	08/09/2021	08/09/2021	11/22/2021	3.411
002940	21	Kauaula Tunnel	08/10/2021	08/10/2021	11/22/2021	3.618
002940	21	Kauaula Tunnel	08/11/2021	08/11/2021	11/22/2021	4.160
002940	21	Kauaula Tunnel	08/12/2021	08/12/2021	11/22/2021	3.443
002940	21	Kauaula Tunnel	08/13/2021	08/13/2021	11/22/2021	3.695
002940	21	Kauaula Tunnel	08/14/2021	08/14/2021	11/22/2021	3.521
002940	21	Kauaula Tunnel	08/15/2021	08/15/2021	11/22/2021	3.534
002940	21	Kauaula Tunnel	08/16/2021	08/16/2021	11/22/2021	3.508
002940	21	Kauaula Tunnel	08/17/2021	08/17/2021	11/22/2021	3.398
002940	21	Kauaula Tunnel	08/18/2021	08/18/2021	11/22/2021	3.269
002940	21	Kauaula Tunnel	08/19/2021	08/19/2021	11/22/2021	3.269
002940	21	Kauaula Tunnel	08/20/2021	08/20/2021	11/22/2021	3.140
002940	21	Kauaula Tunnel	08/21/2021	08/21/2021	11/22/2021	3.152
002940	21	Kauaula Tunnel	08/22/2021	08/22/2021	11/22/2021	3.049
002940	21	Kauaula Tunnel	08/23/2021	08/23/2021	11/22/2021	3.495
002940	21	Kauaula Tunnel	08/24/2021	08/24/2021	11/22/2021	6.460
002940	21	Kauaula Tunnel	08/25/2021	08/25/2021	11/22/2021	4.257
002940	21	Kauaula Tunnel	08/26/2021	08/26/2021	11/22/2021	3.708
002940	21	Kauaula Tunnel	08/27/2021	08/27/2021	11/22/2021	3.882
002940	21	Kauaula Tunnel	08/28/2021	08/28/2021	11/22/2021	3.482
002940	21	Kauaula Tunnel	08/29/2021	08/29/2021	11/22/2021	3.340
002940	21	Kauaula Tunnel	08/30/2021	08/30/2021	11/22/2021	3.308
002940	21	Kauaula Tunnel	09/01/2021	09/01/2021	11/22/2021	2.610
002940	21	Kauaula Tunnel	09/02/2021	09/02/2021	11/22/2021	2.623
002940	21	Kauaula Tunnel	09/03/2021	09/03/2021	11/22/2021	2.881
002940	21	Kauaula Tunnel	09/04/2021	09/04/2021	11/22/2021	2.662
002940	21	Kauaula Tunnel	09/05/2021	09/05/2021	11/22/2021	2.649
002940	21	Kauaula Tunnel	09/06/2021	09/06/2021	11/22/2021	2.668
002940	21	Kauaula Tunnel	09/07/2021	09/07/2021	11/22/2021	2.636
002940	21	Kauaula Tunnel	09/08/2021	09/08/2021	11/22/2021	2.649

002940	21	Kauaula Tunnel	09/09/2021	09/09/2021	11/22/2021	2.584
002940	21	Kauaula Tunnel	09/10/2021	09/10/2021	11/22/2021	2.539
002940	21	Kauaula Tunnel	09/11/2021	09/11/2021	11/22/2021	2.513
002940	21	Kauaula Tunnel	09/12/2021	09/12/2021	11/22/2021	2.681
002940	21	Kauaula Tunnel	09/13/2021	09/13/2021	11/22/2021	2.364
002940	21	Kauaula Tunnel	09/14/2021	09/14/2021	11/22/2021	2.681
002940	21	Kauaula Tunnel	09/15/2021	09/15/2021	11/22/2021	2.791
002940	21	Kauaula Tunnel	09/16/2021	09/16/2021	11/22/2021	2.474
002940	21	Kauaula Tunnel	09/17/2021	09/17/2021	11/22/2021	2.539
002940	21	Kauaula Tunnel	09/18/2021	09/18/2021	11/22/2021	2.662
002940	21	Kauaula Tunnel	09/19/2021	09/19/2021	11/22/2021	2.817
002940	21	Kauaula Tunnel	09/20/2021	09/20/2021	11/22/2021	2.681
002940	21	Kauaula Tunnel	09/21/2021	09/21/2021	11/22/2021	2.881
002940	21	Kauaula Tunnel	09/22/2021	09/22/2021	11/22/2021	2.739
002940	21	Kauaula Tunnel	09/23/2021	09/23/2021	11/22/2021	2.985
002940	21	Kauaula Tunnel	09/24/2021	09/24/2021	11/22/2021	3.572
002940	21	Kauaula Tunnel	09/25/2021	09/25/2021	11/22/2021	4.050
002940	21	Kauaula Tunnel	09/26/2021	09/26/2021	11/22/2021	3.889
002940	21	Kauaula Tunnel	09/27/2021	09/27/2021	11/22/2021	4.606
002940	21	Kauaula Tunnel	09/28/2021	09/28/2021	11/22/2021	5.426
002940	21	Kauaula Tunnel	09/29/2021	09/29/2021	11/22/2021	3.534
002940	21	Kauaula Tunnel	09/30/2021	09/30/2021	11/22/2021	2.991
002973	21	Kauaula Tunnel	10/01/2021	10/01/2021	12/15/2021	3.256
002973	21	Kauaula Tunnel	10/02/2021	10/02/2021	12/15/2021	3.385
002973	21	Kauaula Tunnel	10/03/2021	10/03/2021	12/15/2021	3.036
002973	21	Kauaula Tunnel	10/04/2021	10/04/2021	12/15/2021	3.424
002973	21	Kauaula Tunnel	10/05/2021	10/05/2021	12/15/2021	3.185
002973	21	Kauaula Tunnel	10/06/2021	10/06/2021	12/15/2021	3.140
002973	21	Kauaula Tunnel	10/07/2021	10/07/2021	12/15/2021	3.178
002973	21	Kauaula Tunnel	10/08/2021	10/08/2021	12/15/2021	3.592
002973	21	Kauaula Tunnel	10/09/2021	10/09/2021	12/15/2021	8.262
002973	21	Kauaula Tunnel	10/10/2021	10/10/2021	12/15/2021	8.010
002973	21	Kauaula Tunnel	10/11/2021	10/11/2021	12/15/2021	6.208
002973	21	Kauaula Tunnel	10/12/2021	10/12/2021	12/15/2021	8.398
002973	21	Kauaula Tunnel	10/13/2021	10/13/2021	12/15/2021	7.229
002973	21	Kauaula Tunnel	10/14/2021	10/14/2021	12/15/2021	6.893

002973	21	Kauaula Tunnel	10/15/2021	10/15/2021	12/15/2021	8.495
002973	21	Kauaula Tunnel	10/16/2021	10/16/2021	12/15/2021	8.062
002973	21	Kauaula Tunnel	10/17/2021	10/17/2021	12/15/2021	6.576
002973	21	Kauaula Tunnel	10/18/2021	10/18/2021	12/15/2021	5.614
002973	21	Kauaula Tunnel	10/19/2021	10/19/2021	12/15/2021	4.923
002973	21	Kauaula Tunnel	10/20/2021	10/20/2021	12/15/2021	4.554
002973	21	Kauaula Tunnel	10/21/2021	10/21/2021	12/15/2021	4.367
002973	21	Kauaula Tunnel	10/22/2021	10/22/2021	12/15/2021	3.921
002973	21	Kauaula Tunnel	10/23/2021	10/23/2021	12/15/2021	3.760
002973	21	Kauaula Tunnel	10/24/2021	10/24/2021	12/15/2021	4.070
002973	21	Kauaula Tunnel	10/25/2021	10/25/2021	12/15/2021	4.554
002973	21	Kauaula Tunnel	10/26/2021	10/26/2021	12/15/2021	3.876
002973	21	Kauaula Tunnel	10/27/2021	10/27/2021	12/15/2021	3.721
002973	21	Kauaula Tunnel	10/28/2021	10/28/2021	12/15/2021	3.540
002973	21	Kauaula Tunnel	10/29/2021	10/29/2021	12/15/2021	3.663
002973	21	Kauaula Tunnel	10/30/2021	10/30/2021	12/15/2021	3.650
002973	21	Kauaula Tunnel	10/31/2021	10/31/2021	12/15/2021	3.605
002973	21	Kauaula Tunnel	11/01/2021	11/01/2021	12/15/2021	3.663
002973	21	Kauaula Tunnel	11/02/2021	11/02/2021	12/15/2021	3.624
002973	21	Kauaula Tunnel	11/03/2021	11/03/2021	12/15/2021	3.618
002973	21	Kauaula Tunnel	11/04/2021	11/04/2021	12/15/2021	4.335
002973	21	Kauaula Tunnel	11/05/2021	11/05/2021	12/15/2021	3.824
002973	21	Kauaula Tunnel	11/06/2021	11/06/2021	12/15/2021	3.547
002973	21	Kauaula Tunnel	11/07/2021	11/07/2021	12/15/2021	3.482
002973	21	Kauaula Tunnel	11/08/2021	11/08/2021	12/15/2021	3.456
002973	21	Kauaula Tunnel	11/09/2021	11/09/2021	12/15/2021	3.437
002973	21	Kauaula Tunnel	11/10/2021	11/10/2021	12/15/2021	3.366
002973	21	Kauaula Tunnel	11/11/2021	11/11/2021	12/15/2021	3.340
002973	21	Kauaula Tunnel	11/12/2021	11/12/2021	12/15/2021	3.611
002973	21	Kauaula Tunnel	11/13/2021	11/13/2021	12/15/2021	3.650
002973	21	Kauaula Tunnel	11/14/2021	11/14/2021	12/15/2021	3.740
002973	21	Kauaula Tunnel	11/15/2021	11/15/2021	12/15/2021	3.689
002973	21	Kauaula Tunnel	11/16/2021	11/16/2021	12/15/2021	3.669
002973	21	Kauaula Tunnel	11/17/2021	11/17/2021	12/15/2021	3.682
002973	21	Kauaula Tunnel	11/18/2021	11/18/2021	12/15/2021	3.663
002973	21	Kauaula Tunnel	11/19/2021	11/19/2021	12/15/2021	3.643

002973	21	Kauaula Tunnel	11/20/2021	11/20/2021	12/15/2021	3.643
002973	21	Kauaula Tunnel	11/21/2021	11/21/2021	12/15/2021	3.643
002973	21	Kauaula Tunnel	11/22/2021	11/22/2021	12/15/2021	4.037
002973	21	Kauaula Tunnel	11/23/2021	11/23/2021	12/15/2021	4.025
002973	21	Kauaula Tunnel	11/24/2021	11/24/2021	12/15/2021	3.624
002973	21	Kauaula Tunnel	11/25/2021	11/25/2021	12/15/2021	3.508
002973	21	Kauaula Tunnel	11/26/2021	11/26/2021	12/15/2021	3.501
002973	21	Kauaula Tunnel	11/27/2021	11/27/2021	12/15/2021	3.514
002973	21	Kauaula Tunnel	11/28/2021	11/28/2021	12/15/2021	4.748
002973	21	Kauaula Tunnel	11/29/2021	11/29/2021	12/15/2021	7.926
002973	21	Kauaula Tunnel	11/30/2021	11/30/2021	12/15/2021	4.386

Table 2: Kaua‘ula Stream Release at Siphon Reported by LIC

WUR ID	Gage ID	Gage Name	Start Date	End Date	Date Submit	Mgd
002967	288	Kauaula Dt Release to Kauaula Str at Syphon	01/01/2021	01/31/2021	12/14/2021	1.650
002967	288	Kauaula Dt Release to Kauaula Str at Syphon	02/01/2021	02/28/2021	12/14/2021	1.999
002967	288	Kauaula Dt Release to Kauaula Str at Syphon	03/01/2021	03/31/2021	12/14/2021	1.583
002967	288	Kauaula Dt Release to Kauaula Str at Syphon	04/01/2021	04/30/2021	12/14/2021	1.753
002967	288	Kauaula Dt Release to Kauaula Str at Syphon	05/01/2021	05/31/2021	12/14/2021	1.862
002967	288	Kauaula Dt Release to Kauaula Str at Syphon	06/01/2021	06/30/2021	12/14/2021	1.827
002967	288	Kauaula Dt Release to Kauaula Str at Syphon	07/01/2021	07/31/2021	12/14/2021	1.478
002967	288	Kauaula Dt Release to Kauaula Str at Syphon	08/01/2021	08/31/2021	12/14/2021	1.334
002967	288	Kauaula Dt Release to Kauaula Str at Syphon	09/01/2021	09/30/2021	12/14/2021	1.407
002967	288	Kauaula Dt Release to Kauaula Str at Syphon	10/01/2021	10/31/2021	12/14/2021	1.481

EXHIBIT C

Table 1: Launiupoko Stream Mean Monthly Diverted Flow (in mgd) Reported by LIC – 5 Year Overview

Month-Year	2017	2018	2019	2020	2021
January	0.399	0.385	0.481	0.125	0.359
February	0.24	0.063	0.55	0.381	0.464
March	0.042	0.278	0.494	0.494	0.476
April	0.275	0.451	0.001	0.359	0.578
May	0.18	0.482	0.602	0.238	0.51
June	0.263	0.296	0.338	0.289	0.161
July	0.235	0.358	0.203	0.227	0.318
August	0.44	0.259	0.488	0.219	0.307
September	0.137	0.799	0.069	0.229	0.25
October	0.197	0.683	0.625	0.254	0.307
November	0.132	0.615	0.284	0.408	
December	0.35	0.721	0.283	0.405	

Table 2: Launiupoko Stream Mean Monthly Diverted Flow Reported by LIC

WUR ID	Gage ID	Gage Name	Gage Reporter	Start Date	End Date	Date Submit	Monthly total (MG)	Mgd
001321	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	01/01/2017	01/31/2017	02/09/2017	12.3613	0.399
001346	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	02/01/2017	02/28/2017	03/23/2017	6.7199	0.240
001374	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	03/01/2017	03/31/2017	05/15/2017	1.3126	0.042
001373	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	04/01/2017	04/30/2017	05/15/2017	8.2564	0.275
001547	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	05/01/2017	05/31/2017	12/22/2017	5.5866	0.180
001422	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	06/01/2017	06/30/2017	08/02/2017	7.8992	0.263

001444	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	07/01/2017	07/31/2017	08/09/2017	7.2771	0.235
001545	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	08/01/2017	08/31/2017	12/22/2017	13.629	0.440
001546	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	09/01/2017	09/30/2017	12/22/2017	4.1219	0.137
001548	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	10/01/2017	10/31/2017	12/22/2017	6.0941	0.197
001587	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	11/01/2017	11/30/2017	01/30/2018	3.9585	0.132
001586	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	12/01/2017	12/31/2017	01/30/2018	10.8629	0.350
001608	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	01/01/2018	01/31/2018	02/28/2018	11.9272	0.385
001656	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	02/01/2018	02/28/2018	03/12/2018	1.7598	0.063
001694	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	03/01/2018	03/31/2018	04/12/2018	8.6312	0.278
001727	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	04/01/2018	04/30/2018	06/06/2018	13.5376	0.451
001787	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	05/01/2018	05/31/2018	08/13/2018	14.9501	0.482
001788	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	06/01/2018	06/30/2018	08/13/2018	8.869	0.296
001786	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	07/01/2018	07/31/2018	08/13/2018	11.0985	0.358
001816	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	08/01/2018	08/31/2018	09/25/2018	8.0343	0.259
001838	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	09/01/2018	09/30/2018	11/06/2018	23.9679	0.799
001871	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	10/01/2018	10/31/2018	01/12/2019	21.1638	0.683
001873	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	11/01/2018	11/30/2018	01/12/2019	18.4517	0.615
001872	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	12/01/2018	12/31/2018	01/12/2019	22.3552	0.721
001932	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	01/01/2019	01/31/2019	03/01/2019	14.9249	0.481
001958	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	02/01/2019	02/28/2019	04/15/2019	15.4033	0.550
001977	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	03/01/2019	03/31/2019	05/10/2019	15.3227	0.494
002037	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	04/01/2019	04/30/2019	08/05/2019	0.02093	0.001
002220	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	05/01/2019	05/31/2019	01/08/2020	18.6575	0.602
002221	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	06/01/2019	06/30/2019	01/08/2020	10.1412	0.338
002222	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	07/01/2019	07/31/2019	01/08/2020	6.3	0.203
002223	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	08/01/2019	08/31/2019	01/08/2020	15.12	0.488
002224	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	09/01/2019	09/30/2019	01/08/2020	2.0646	0.069
002225	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	10/01/2019	10/31/2019	01/08/2020	19.3748	0.625
002226	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	11/01/2019	11/30/2019	01/08/2020	8.5166	0.284
002227	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	12/01/2019	12/31/2019	01/08/2020	8.7658	0.283
002324	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	01/01/2020	01/31/2020	05/19/2020	3.8769	0.125
002324	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	02/01/2020	02/29/2020	05/19/2020	11.0615	0.381
002324	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	03/01/2020	03/31/2020	05/19/2020	15.3196	0.494
002324	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	04/01/2020	04/30/2020	05/19/2020	10.7787	0.359
002572	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	05/01/2020	05/31/2020	01/03/2021	7.3669	0.238
002578	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	06/01/2020	06/30/2020	01/05/2021	8.6569	0.289

002579	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	07/01/2020	07/31/2020	01/05/2021	7.0382	0.227
002577	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	08/01/2020	08/31/2020	01/05/2021	6.77721	0.219
002580	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	09/01/2020	09/30/2020	01/05/2021	6.8738	0.229
002576	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	10/01/2020	10/31/2020	01/05/2021	7.8624	0.254
002637	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	11/01/2020	11/30/2020	02/24/2021	12.2255	0.408
002638	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	12/01/2020	12/31/2020	02/24/2021	12.5603	0.405
002967	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	01/01/2021	01/31/2021	12/14/2021	11.1342	0.359
002967	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	02/01/2021	02/28/2021	12/14/2021	12.9824	0.464
002967	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	03/01/2021	03/31/2021	12/14/2021	14.761	0.476
002967	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	04/01/2021	04/30/2021	12/14/2021	17.3455	0.578
002967	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	05/01/2021	05/31/2021	12/14/2021	15.8013	0.510
002967	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	06/01/2021	06/30/2021	12/14/2021	4.8253	0.161
002967	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	07/01/2021	07/31/2021	12/14/2021	9.8588	0.318
002967	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	08/01/2021	08/31/2021	12/14/2021	9.522	0.307
002967	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	09/01/2021	09/30/2021	12/14/2021	7.51	0.250
002967	19	Launiupoko Ditch	Lea Tamayose (WMLCo., Inc.)	10/01/2021	10/31/2021	12/14/2021	9.5059	0.307

Launiupoko Irrigation Company, Inc.

305 E. Wakea Ave., Suite 100
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Phone: (808) 877-4202
Fax: (808) 877-9409

November 29, 2021

BY EMAIL AND U.S. MAIL

M. Kaleo Manuel
Deputy Director
Commission on Water Resource Management
1151 Punchbowl Street, Suite 227
Honolulu, HI 96813
Manuel, Kaleo L <kaleo.l.manuel@hawaii.gov>

Subject: Kaua'ula Stream IIFS
Diversion Modification Schematic
Ref.: CWRM. 5783.6

Dear Mr. Manuel:

In response to your letter dated September 28, 2021 *Ref.: CWRM. 5783.6* requiring modifications to the Kaua'ula Stream diversion to comply with the IIFS and in accordance 1.a. of our Oct. 28, 2021 reply LIC is hereby submitting conceptual plans for the modifications to the diversion to ensure the IIFS of 5.2 cfs (or 3.36 mgd) remains in the stream. Both letters are attached for your reference.

The proposed design modifications include:

- 1) Removing an approximately 5 foot wide by 4 foot deep section or notch from the top of the diversion ("Diversion Notch").
- 2) Installing a steel plate that covers approximately 5 feet x 3 feet 6 inches of the new Diversion Notch that will provide gap of 6 +/- inches at the bottom to allow 5.2 cfs (or 3.36 mgd) to flow into the stream first before any water may be diverted into the ditch. Note that the ditch and diversion Elevations and C Factor for the Weir Flow are to be field verified. Adjustments to the gap between the steel plate and bottom of the Diversion Notch will be made to ensure the IIFS of 5.2 cfs is met.
- 3) A clean-out mechanism will need to be designed and installed to keep the gap free of debris.

Please see attached plan and profile of the proposed modifications for your review and comment. Please advise if additional information, permits or other approvals will be required for CWRM's approval for the work to begin.

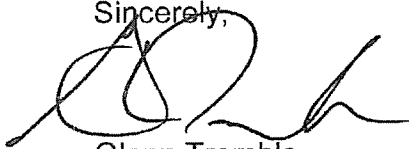
As stated in the Oct. 28, 2021 letter:

- a. Commencement of these modifications will be conditioned on LIC's receipt of a revised temporary rate increase from the PUC providing LIC with the funds required to fund pumping costs and to meet other operating expenses not objected to by the Consumer Advocate and to remove the condition to discontinue rationing in drought conditions.
- b. The timeframe for completion will be subject to any permitting required and the sourcing of any specialized equipment required and the receipt of all governmental and other approvals required for the modifications.

Once these permanent modifications are made, no water will be diverted until the IIFS is met. Using the USGS data over a 473 day period between June 2020 and Sept. 2021, stream flows were at or below the IIFS of 5.2 cfs for 245 days during the 15 month period. Using this period as an example, zero water will be diverted about 51% of the time

Should you have any questions or comments, please feel free to contact the undersigned at (808) 877-4202 or via email at glenn@westmauland.com.

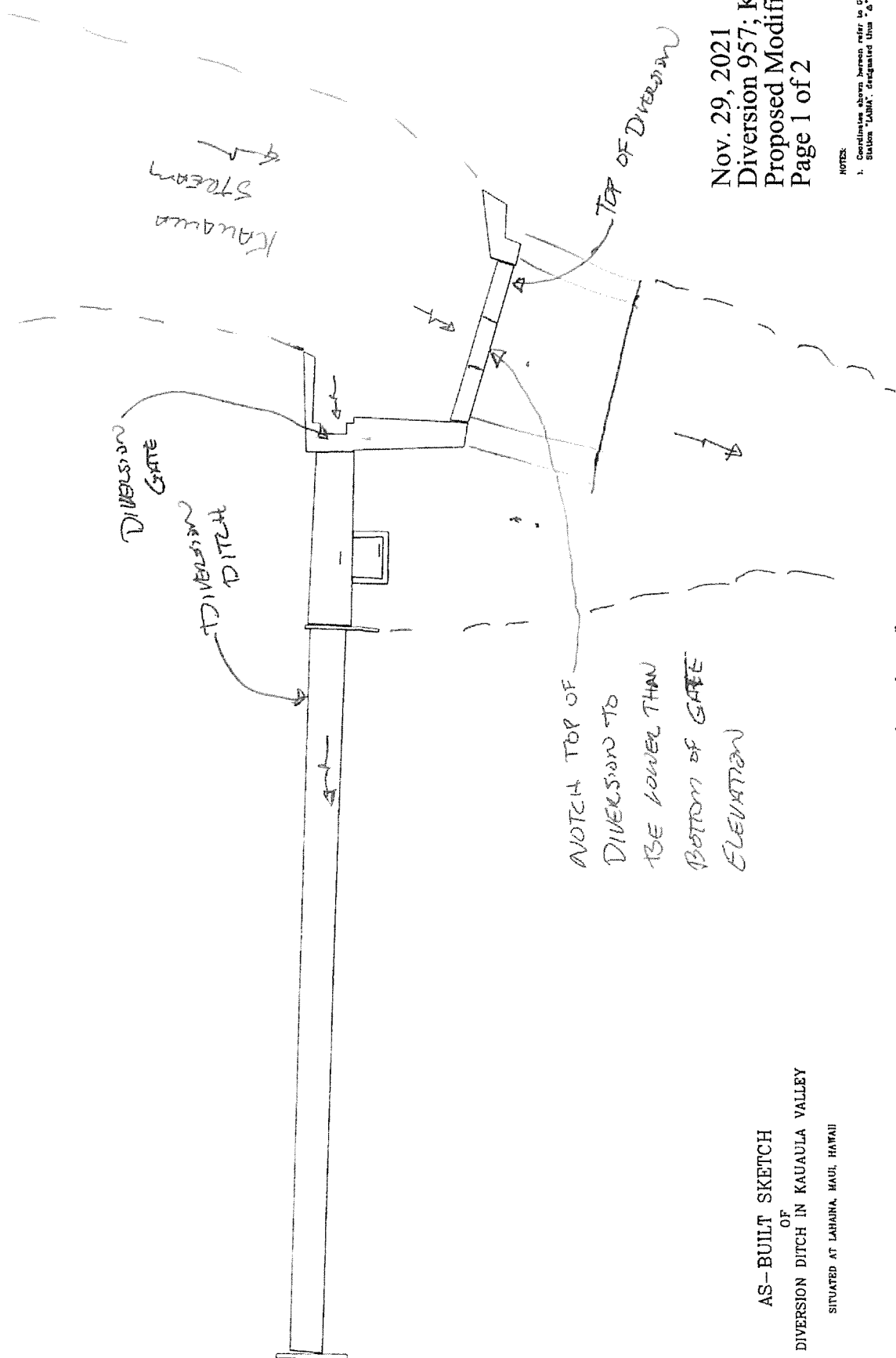
Sincerely,

A handwritten signature in black ink, appearing to read 'Glenn Tremble', with a stylized, cursive script.

Glenn Tremble

CC: Dr. Ayron Strauch, via email ayron.m.strauch@hawaii.gov
Dean Uyeno, via email dean.d.uyeno@hawaii.gov

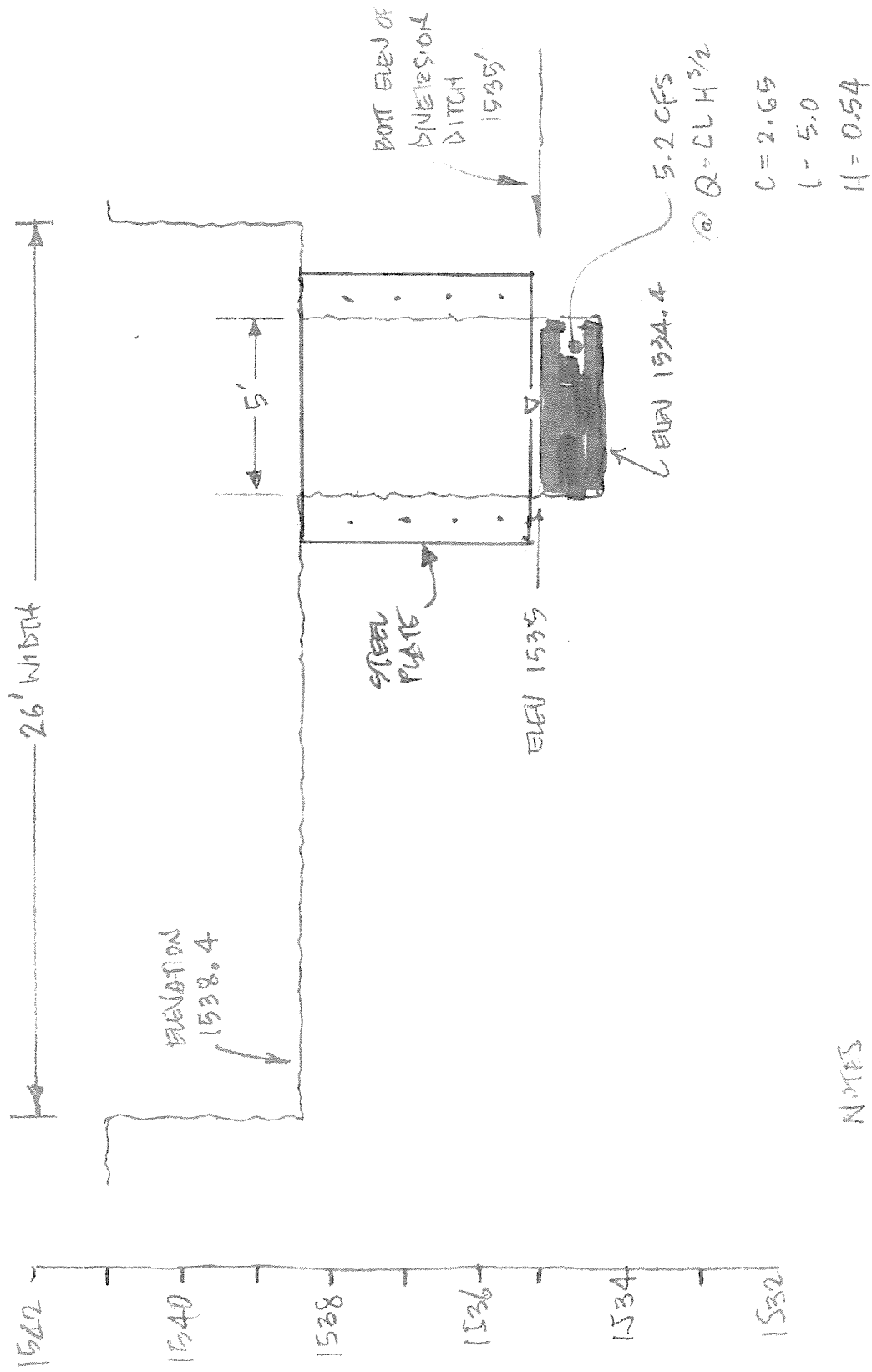
Attachments



AS-BUILT SKETCH
OF
DIVERSION DITCH IN KAUAULA VALLEY
SITUATED AT LAHAINA, MAUI, HAWAII

Nov. 29, 2021
Diversion 957; Kaua'ula Stream
Proposed Modifications
Page 1 of 2

NOTES:
1. Coordinates shown herein refer to Government Survey Triangulation Station "Lahaina", designated UTM "a".



NOTES

1. NOT TO SCALE
2. ELEVATIONS AND C FACTOR FOR WEIR FLOW TO BE FIELD VERIFIED

Launiupoko Irrigation Company, Inc.

305 E. Wakea Ave., Suite 100
Kahului, Maui, Hawaii 96732

Phone: (808) 877-4202
Fax: (808) 877-9409

October 28, 2021

BY EMAIL AND U.S. MAIL

M. Kaleo Manuel
Deputy Director
Commission on Water Resource Management
1151 Punchbowl Street, Suite 227
Honolulu, HI 96813

Dear Mr. Manuel:

Please see our responses below to your letter dated September 28, 2021 Ref.: CWRM. 5783.6 requiring modifications to the Kaua'ula Stream diversion to comply with the IIFS.

1. *Staff are requesting that LIC provide a timeline for diversion modifications that will ensure mauka to makai streamflow at diversion 957 within 30 days from the date of this letter.*
 - a. LIC intends to submit conceptual plans for the modifications requested within 30 days of the date of this letter and will commence implementing the proposed diversion modifications within 30 days of CWRM's approval of said modifications.
 - b. Commencement of these modifications will be conditioned on LIC's receipt of a revised temporary rate increase from the PUC providing LIC with the funds required to fund pumping costs and to meet other operating expenses not objected to by the Consumer Advocate and to remove the condition to discontinue rationing in drought conditions.
 - c. The timeframe for completion will be subject to any permitting required and the sourcing of any specialized equipment required and the receipt of all governmental and other approvals required for the modifications.
2. *Commission staff is requesting that LIC begin to report the amount of water distributed to KEC, the Kaua 'ula Valley homes, Kaua 'ula Reservoir, and returned to the stream at the siphon immediately.*
 - a. Presently, LIC monitors the volume of stream water distributed to each of the above end-users and the amount of water returned to the stream at the siphon through flow meters, with the exception of Kaua'ula Reservoir. In response to CWRM's request, LIC will be working to design a way to remotely meter the flow of stream water into the Kaua'ula Reservoir.

- b. Please find attached the past 8 months of flow meter reports from water delivery to KEC, valley homes, and siphon release. Please clarify how future reporting is to be made. LIC currently provides diversion data to CWRM electronically but without the ability to specify the report format and content.
 - c. LIC expects that releasing water to meet the Interim Instream Flow Standards mandated by CWRM will likely result in all users of LIC's system to be without water 40% of the time.
3. *Staff is requesting that LIC install appropriate measuring devices (e.g., rated flume, weir with staff plate) to monitor the amount of water flowing to Kaua 'ula Reservoir above the siphon (see photos C and D in Table 3) within 90 days.*
 - a. Please clarify the location that CWRM is requesting to be monitored. The attached photos C & D to your letter show locations after the siphon rather than "above the siphon".
 - b. LIC is evaluating alternative locations and devices that will allow remote metering of stream water that flows into Kaua'ula Reservoir. LIC will provide a recommendation to CRWM for comment within 60 days with the intent of implementing such metering within 90 days, subject to CWRM's approval, the receipt of all governmental and other required approvals and the sourcing time for devices.
4. *Commission staff will continue working with LIC to implement an improved system to monitor resources, as well as seek to improve system efficiencies while enforcing the State Water Code.*

LIC is grateful for CWRM's cooperation in working to improve the monitoring of the Kaua'ula Stream water resource while allowing LIC to provide a limited allocation of surface water to its users.

Should you have any questions or comments, please feel free to contact the undersigned at (808) 877-4202 or via email at glenn@westmauland.com.

Sincerely,



Glenn Tremble

CC: Dr. Ayron Strauch, via email ayron.m.strauch@hawaii.gov

Attachment

RETURNED to
STREAM

MONTHLY USAGE (LIC, North Side of Stream)

READ DATE	KEC-GUNNERS	Lower Valley Homes*	Kapu 1"	Kapu 1.5"	TOTAL KAPU
3/1/2021	2,039,400	* see below	337,677	2,737,980	3,075,657
4/1/2021	1,772,500	1,763,102	124,944	839,060	964,004
5/1/2021	2,657,800	1,763,102	231,176	765,060	996,236
6/1/2021	3,259,800	1,763,102	356,060	3,010,070	3,366,130
7/1/2021	2,902,100	1,763,102	171,471	1,386,860	1,558,331
8/1/2021	2,378,700	1,763,102	269,807	1,540,510	1,810,317
9/1/2021	3,075,700	1,763,102	253,283	1,667,754	1,921,037
10/1/2021	1,840,800	1,763,102	145,745	1,049,746	1,195,491

Siphon
meter replaced
7,837,569
48,376,400
57,715,000
54,807,000
45,810,000
41,340,000
42,210,000

*Valley Homes (meter is not read monthly)	
10/1/21 READ	12,993,600.00
3/1/21 READ	651,883.00
7 MOS	12,341,717.00
AVERAGE MONTHLY USAGE	1,763,102.43
DAILY	58,770.08
GPH	2,448.75
GPM	40.81



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

SUZANNE D. CASE
CHAIRPERSON

MICHAEL G. BUCK
ELIZABETH A. CHAR, M.D.
NEIL J. HANNAHS
AURORA KAGAWA-VIVIANI, PH.D.
WAYNE K. KATAYAMA
PAUL J. MEYER

M. KALEO MANUEL
DEPUTY DIRECTOR

September 28, 2021

Ref.: CWRM.5783.6

Glenn Tremble
Launiupoko Irrigation Company
305 E. Wakea Ave, Suite 100
Kahului, Hawaii 96732

Aloha Mr. Tremble:

**Launiupoko Irrigation Company (LIC) Actions Required
For Compliance with Interim Instream Flow Standards (IIFS), Kaua'ula Stream**

On March 20, 2018, the Commission on Water Resource Management (Commission) established an interim instream flow standard (interim IFS) of 5.2 cubic feet per second (3.36 million gallons per day, mgd) on Kaua'ula Stream immediately below Diversion 957 at 1,560 feet operated by Launiupoko Irrigation Company (LIC)¹. The magnitude of the median (Q₅₀) and low (Q₉₀) flow duration values was estimated by the U.S. Geological Survey (USGS) at 9.5 cfs (6.14 mgd) and 5.2 cfs (3.36 mgd), respectively. The interim IFS was established to allow the continued use of 0.400 mgd of water to meet the diversified agricultural needs of Kamehameha School's lessee Ku'ia Estate Chocolate (KEC), 0.303 mgd of various diversified agricultural entities within the LIC Service Area, as well as the unknown off-stream needs of kuleana families in Kaua'ula Valley. Because surface water availability is highly dependent on rainfall, the interim IFS was established with the understanding that uncertainty in actual daily streamflow would result in zero flow available for off-stream usage approximately 10% of the time.

Follow-up Actions Required

1. Modification of Diversion

In its March 20, 2018 Decision, the Commission also ordered LIC to modify the intake in order to provide for continual mauka to makai flow. Based on subsequent site visits, this has not occurred (Table 2). The current setup ensures that 100-percent of the stream is diverted and then a small portion is returned. Staff are requesting that LIC provide a timeline for diversion modifications that will ensure mauka to makai streamflow at diversion 957 within 30 days from the date of this letter. Modifications to the sluice gate need to be made to divert only flows in

¹ Commission on Water Resource Management. (March 20, 2018) Amended Interim Instream Flow Standards For the Surface Water Hydrologic Units of Ukumehame (6004), Olowalu (6005), Launiupoko (600), and Kaua'ula (6007), Maui. <https://files.hawaii.gov/dlnr/cwrn/submittal/2018/sb20180320B1.pdf>

excess of the interim IFS. Commission staff will continue working with LIC to implement an improved system to monitor resources, as well as seek to improve system efficiencies while enforcing the State Water Code. Upon submission of your proposed diversion modifications, the Commission staff will make a determination if a Stream Diversion Works Permit will be required.

2. Monitoring of Water Use

Commission staff is requesting that LIC begin to report the amount of water distributed to KEC, the Kaua'ula Valley homes, Kaua'ula Reservoir, and returned to the stream at the siphon immediately. Based on previous fieldwork, the flow to KEC and Kaua'ula Valley homes is metered and LIC needs to report the metered flow at whatever interval the meter is already read. Staff is requesting that LIC install appropriate measuring devices (e.g., rated flume, weir with staff plate) to monitor the amount of water flowing to Kaua'ula Reservoir above the siphon (see photos C and D in Table 3) within 90 days.

Implementation and Monitoring of the Kaua'ula Interim IFS

Following the March 20, 2018 Decision, Commission staff worked with LIC to implement the interim IFS given the logistical challenges of modifying a 100-year old plantation system. Further, it was understood that the cross-connections to meet the non-potable demands of LIC customers with potable water would take time. Additional delivery costs associated with pumping groundwater could not be recovered until the Public Utilities Commission approved a modification to the LIC rate structure.

While in 2019, Commission staff observed improvements to instream flow and mauka to makai streamflow. Follow-up site visits were limited in 2020 and 2021 due to the ongoing pandemic and restrictions in interisland travel limiting fieldwork. Further, Commission staff and LIC staff were awaiting the installation of real-time streamflow monitoring by US Geological Survey (USGS) on Kaua'ula Stream above and below the diversion in order to better understand the natural variability and availability in flow. In June 2020, USGS was able to complete the installation of the real-time monitoring stations and all stakeholders now have access to the available data.²

On Wednesday, July 1, 2020, Commission staff had a phone call with representatives from West Maui Land Co. and discussed the following, in summary:

1. Any stream water being diverted is delivered only to the KEC and to Kaua'ula Valley families; no surface water is being delivered to the Launiupoko area subdivisions.
2. The interim IFS could not be met while still delivering water to KEC or the Kaua'ula Valley families
3. USGS stream gaging needs additional calibration measurements before the rating curve is complete; but that the real-time data should assist with all water management.

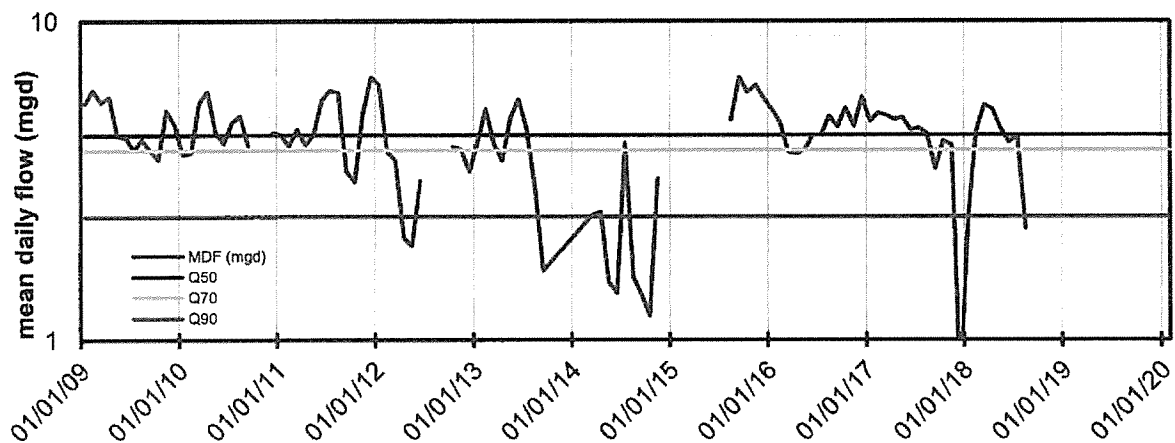
² <https://waterdata.usgs.gov/hi/nwis/current/?type=flow>

4. Since the adoption of the interim IFS, LIC has had to pump groundwater from its wells to make up for the deficit of water which has added cost to the utility that cannot be reclaimed until their PUC docket is revised and a rate increase can be adopted. The PUC docket is vague about delivery water to the Kaua'ula Valley families, but that they are not in the defined service area (i.e., the families should continue to receive water but not be charged).
5. Various management scenarios were discussed, but no way forward to meet the interim IFS and water delivery requirements while being in compliance with the PUC was clear.

On Thursday, August 26, 2021, Commission staff received informal complaints regarding a lack of streamflow in Kaua'ula Stream.

In this communication, Commission staff is following up with the diversion operator and other beneficiaries of surface water from Kaua'ula Stream to better understand the situation. In a conversation with KEC, their water use has varied from 60,000 gallons per day in winter months to 100,000 gallons per day in summer months. An unknown amount of water is delivered to the Kaua'ula Valley families.

Figure 1. Reported diverted mean flow (in million gallons per day, mgd) from Kaua'ula Stream at Kaua'ula Tunnel (CWRM gage 6-21) by Launiupoko Irrigation System from 2009 to 2019 and estimated long-term natural Q_{50} , Q_{70} , and Q_{90} from Cheng (2016).



Unfortunately, since prior to the adoption of an amended interim IFS by the Commission, West Maui (including Kaua'ula Stream) has experienced an unprecedented period of drought.

Figure 2. (A) Mean daily streamflow (in million gallons per day, mgd) at US Geological Survey (USGS) station 16641000 on Kaua'ula Stream above the Launiupoko Irrigation System diversion (diversion 957) and at USGS 16643100 below diversion 957 with estimated long-term natural Q_{50} , Q_{70} , and Q_{90} from Cheng (2016³) for the period June 12, 2020 to August 31, 2021; (B) Mean daily streamflow (mgd) at USGS station 16620000 on Honokōhau Stream with estimated long-term natural Q_{50} , Q_{70} , and Q_{90} from Cheng (2016) for the concurrent period.

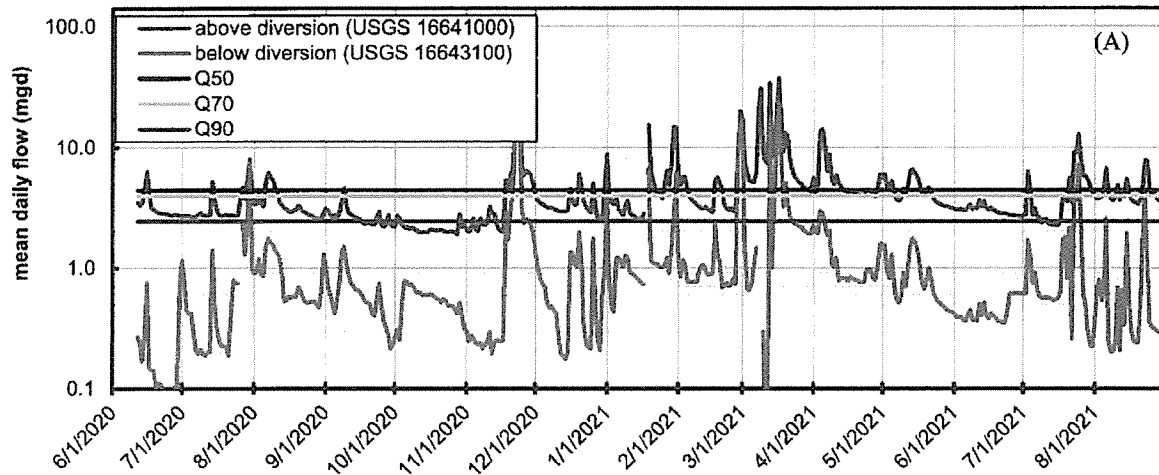
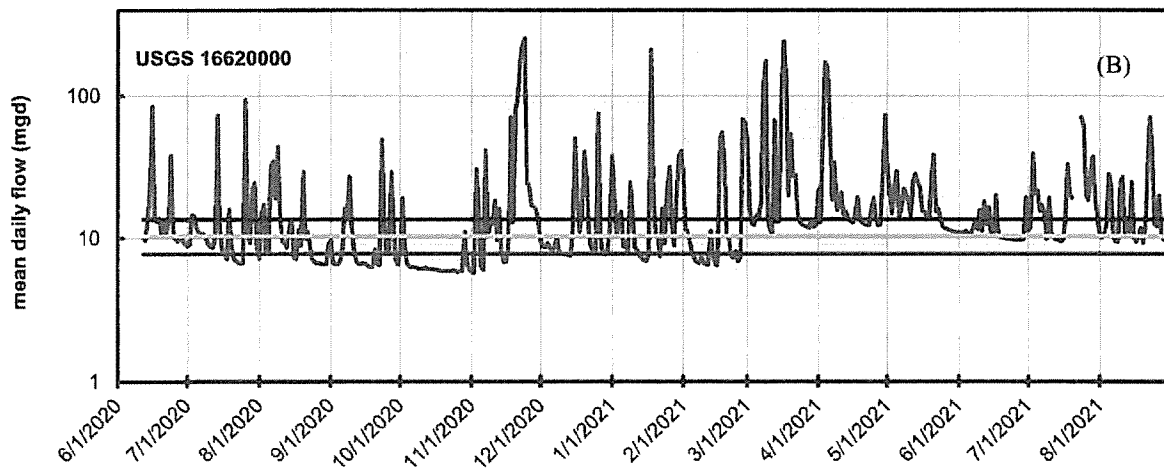


Figure 3. Mean daily streamflow (in million gallons per day, mgd) at US Geological Survey (USGS) station 16620000 on Honokōhau Stream



We understand that the current (2021) and recent (2018-2021) rainfall conditions in West Maui has led to a dramatic decline in runoff and groundwater recharge, resulting in reduced streamflow in Kaua'ula and other streams. Based on total monthly rainfall measured on Pu'u Kukui at SKN 380 (USGS station 205327156351102) from January 2018 to September 2021, West Maui has a cumulative rainfall deficit of 422.14 inches (Figure 4). In other words, since January 2018, there have been 422.14 inches fewer rainfall on Pu'u Kukui compared to the long-term average (Figure 5).

³ Cheng, C.L. (2016) Low-Flow characteristics for Streams on the Islands of Kaua'i, O'ahu, Moloka'i, Maui, and Hawai'i, State of Hawai'i. Scientific Investigations Report 2016-5103.

Table 1. Flow duration characteristics (in million gallons per day, mgd) for Kaua'ula Stream at USGS 16641000 above diversion 957, USGS 16643100 below diversion 957, and an index station at USGS 16620000 on Honokōhau Stream for the period June 12, 2020 to August 31, 2021.

12, 2020 to August 31, 2021.					
	USGS 16641000		USGS 16643100	USGS 16620000	
	2020-2021	1984-2013 ¹	2020-2021	2020-2021	1984-2013 ¹
Q ₅₀	3.34	6.14	0.66	11.25	13.57
Q ₇₀	2.82	4.59	0.47	9.11	10.34
Q ₉₀	2.28	3.36	0.23	6.59	7.76
Q ₉₅	2.07	3.10	0.19	6.15	7.11

¹from Cheng (2016)

Figure 4. Total monthly rainfall (inches, in) from January 2018 to September 2021 (bars) with long-term mean monthly rainfall (black line) measured at Pu'u Kukui (SKN 380) by US Geological Survey (station 205327156351102) at 5,771 feet, Maui.

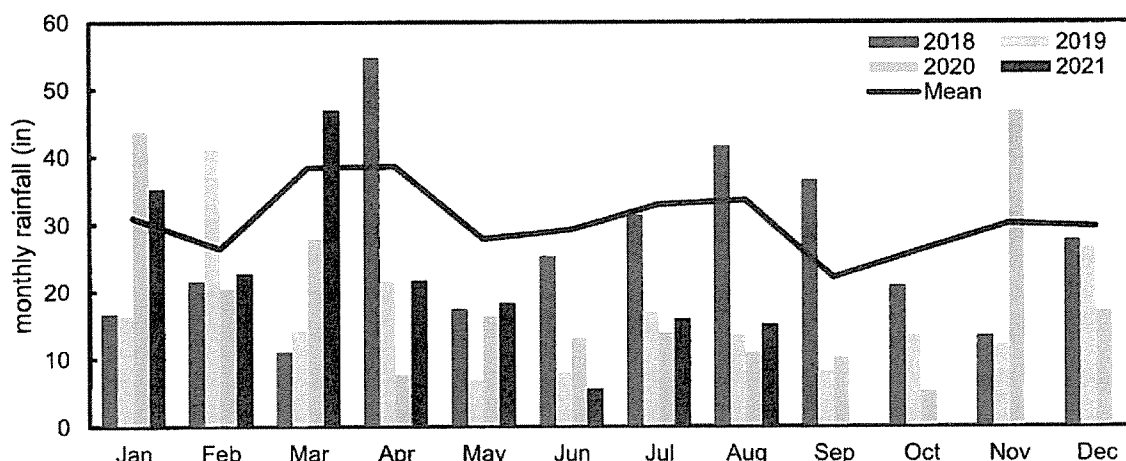


Figure 5. Cumulative rainfall measured at Pu'u Kukui (SKN 380) by US Geological Survey (station 205327156351102) relative to the 1978-2007 base period mean monthly rainfall.

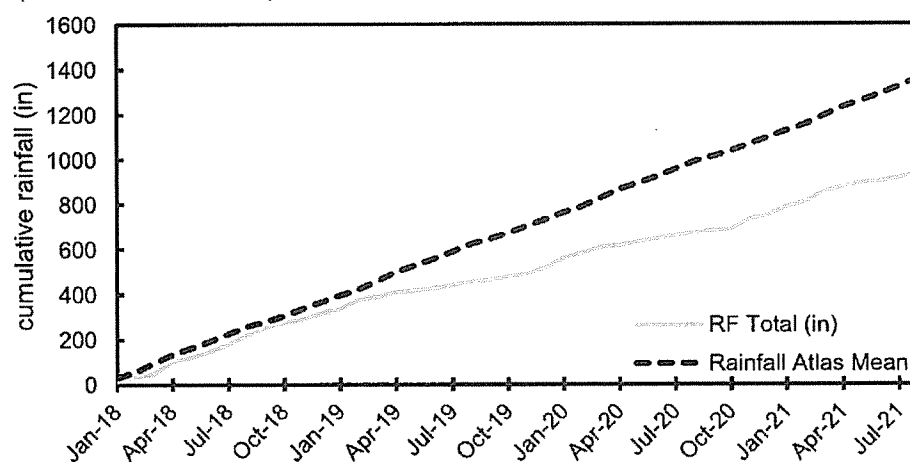


Table 2. Representative photos of (A) Diversion 957 dam across Kaua'ula Stream with intake gate on right bank; (B) close up of intake control gate on right bank; (C) outflow at original sluice basin pre-modification; (D) additional outflow at original sluice basin; (E) returned flow below diversion 957 on Kaua'ula Stream; (F) returned flow from siphon.

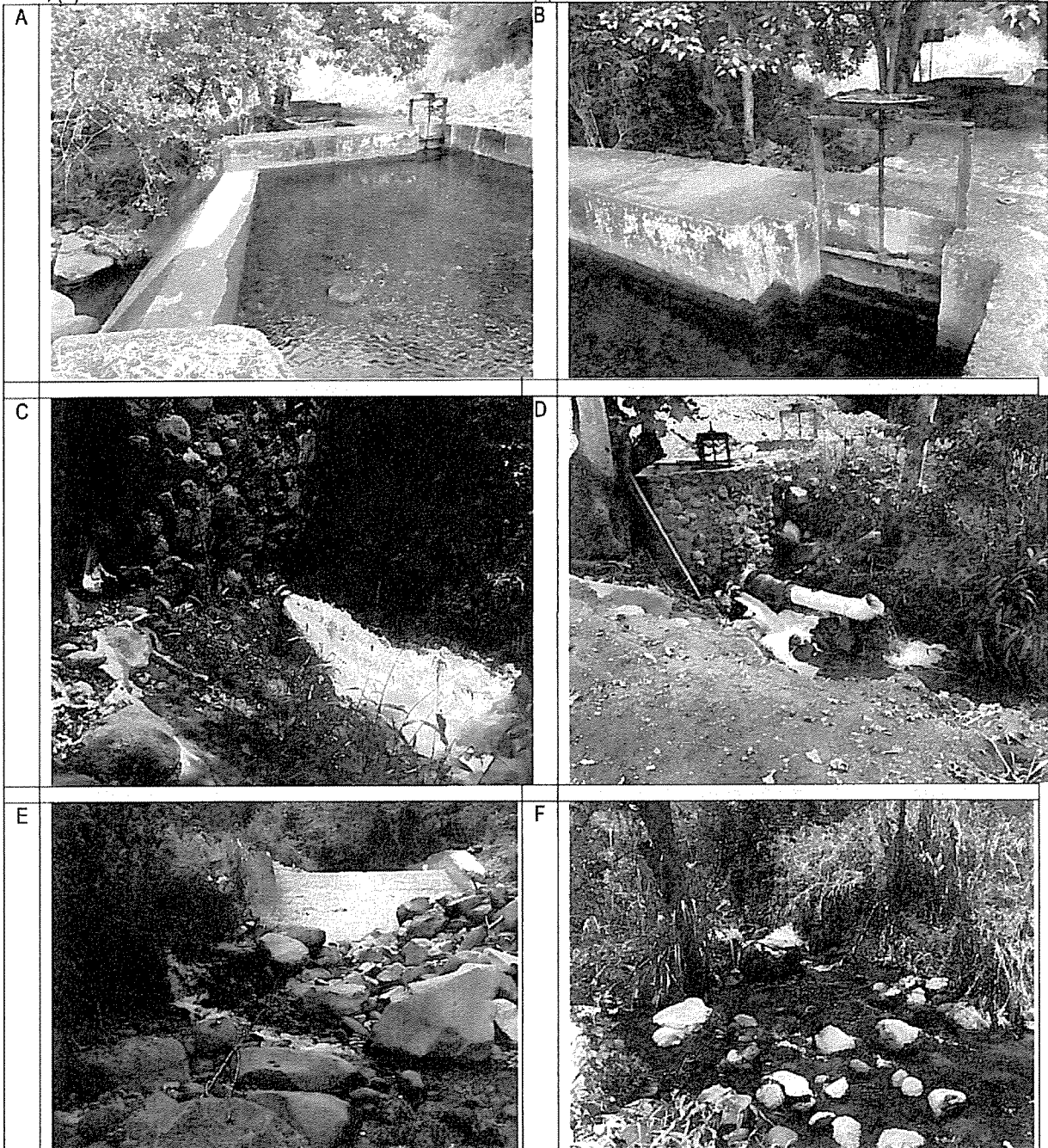
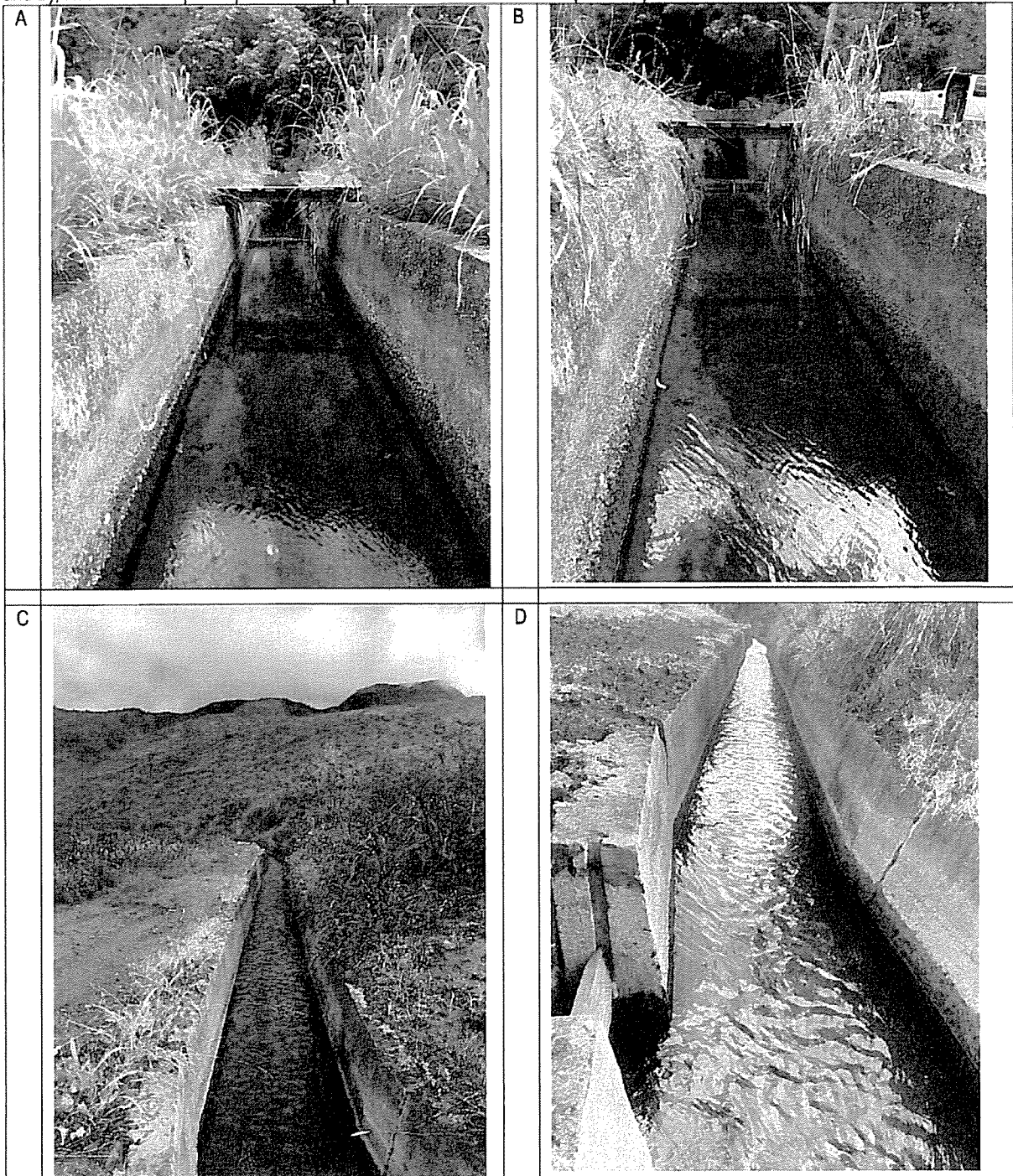


Table 3. Representative photos of Kaua'ula Ditch below intake at diversion 957 from Kaua'ula Stream at 1,560 ft elevation (A and B); Kaua'ula Ditch past siphon above pipeline to Kaua'ula Reservoir (C and D).



Launiupoko Irrigation Company
September 28, 2021

We appreciate your attention to this matter and the follow-up actions required. Should you have any questions, please contact Dr. Ayron Strauch of the Commission staff via email at ayron.m.strauch@hawaii.gov.

Ola i ka wai,



M. KALEO MANUEL
Deputy Director

cc: West Maui Land Co, LLC, Mr. Peter Martin

Exhibit E

Figure 1 Percent of each TMK in the Launiupoko Irrigation Company service area in agriculture as determined using remote sensing.

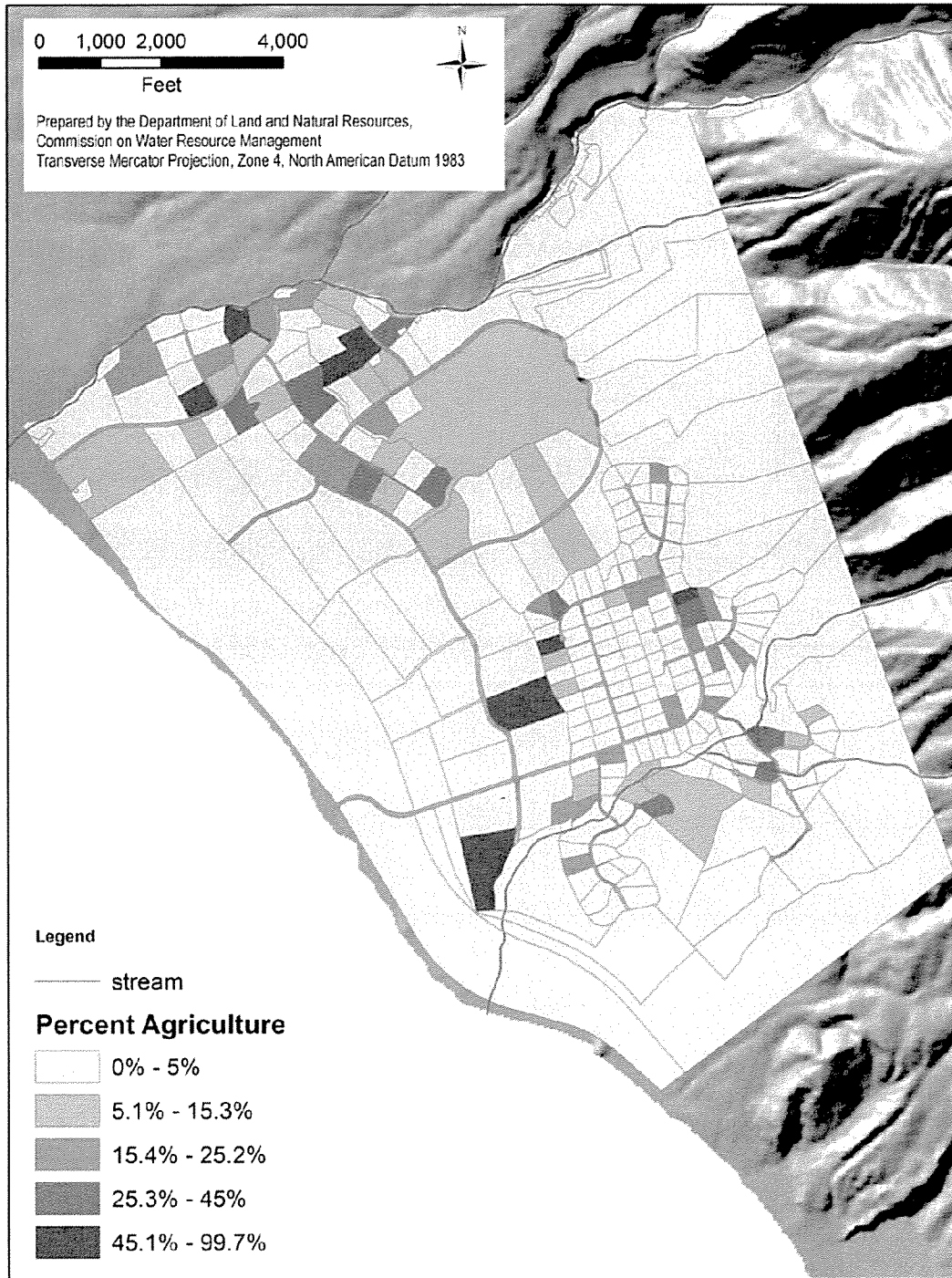
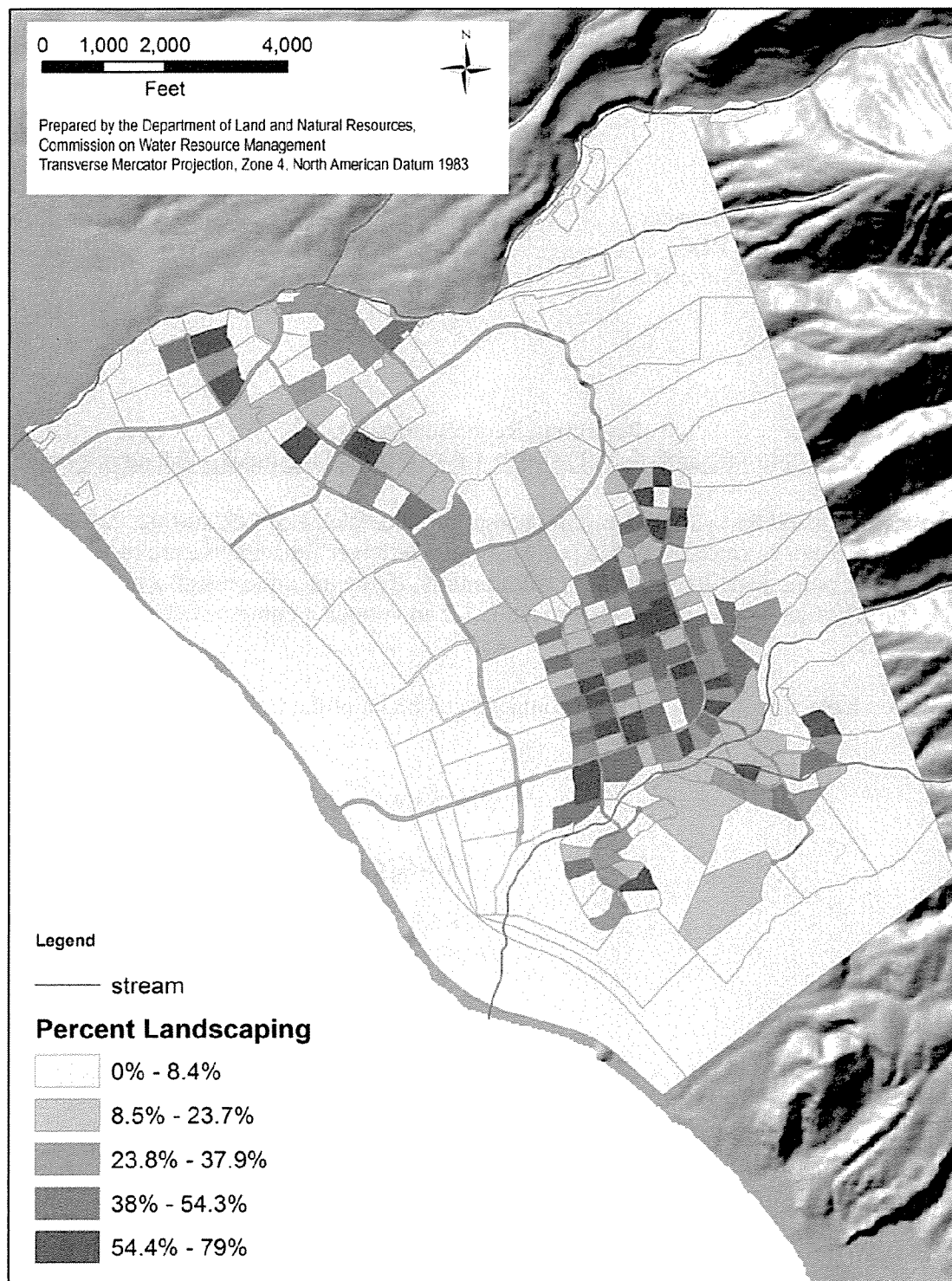


Figure 2. Percent of each TMK in the Launiupoko Irrigation Company service area in landscaping as determined using remote sensing.



DAVID Y. IGE
GOVERNOR OF HAWAII



SUZANNE D. CASE
CHAIRPERSON

MICHAEL G. BUCK
ELIZABETH A. CHAR, M.D.
NEIL J. HANNAHS
AURORA KAGAWA-VIVIANI, PH.D.
WAYNE K. KATAYAMA
PAUL J. MEYER

M. KALEO MANUEL
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

Sep 29, 2021

6-5240-002 and -003.let.docx

Mr. Kyle Ginoza, Project Manager
Wainee Land and Homes, LLC
305 East Wakea Avenue, Suite 100
Kahului, HI 96732

Aloha Mr. Ginoza:

Permitting Requirements for
Well Nos. 6-5240-002 and -003 (TMK (2) 4-6-015:001), Launiupoko, Island of Maui

We understand that you replaced the pump for State Well No. 6-5240-002. While typically a pump can be replaced with a pump of equal or lower capacity, we are requiring you to apply for a new pump installation permit. Additionally, if you intend to install a pump in State Well No. 6-5240-003, you will also need to apply for and obtain a pump installation permit from our office.

If you have any questions, please contact Ryan Imata of the Commission staff at (808) 587-0255.

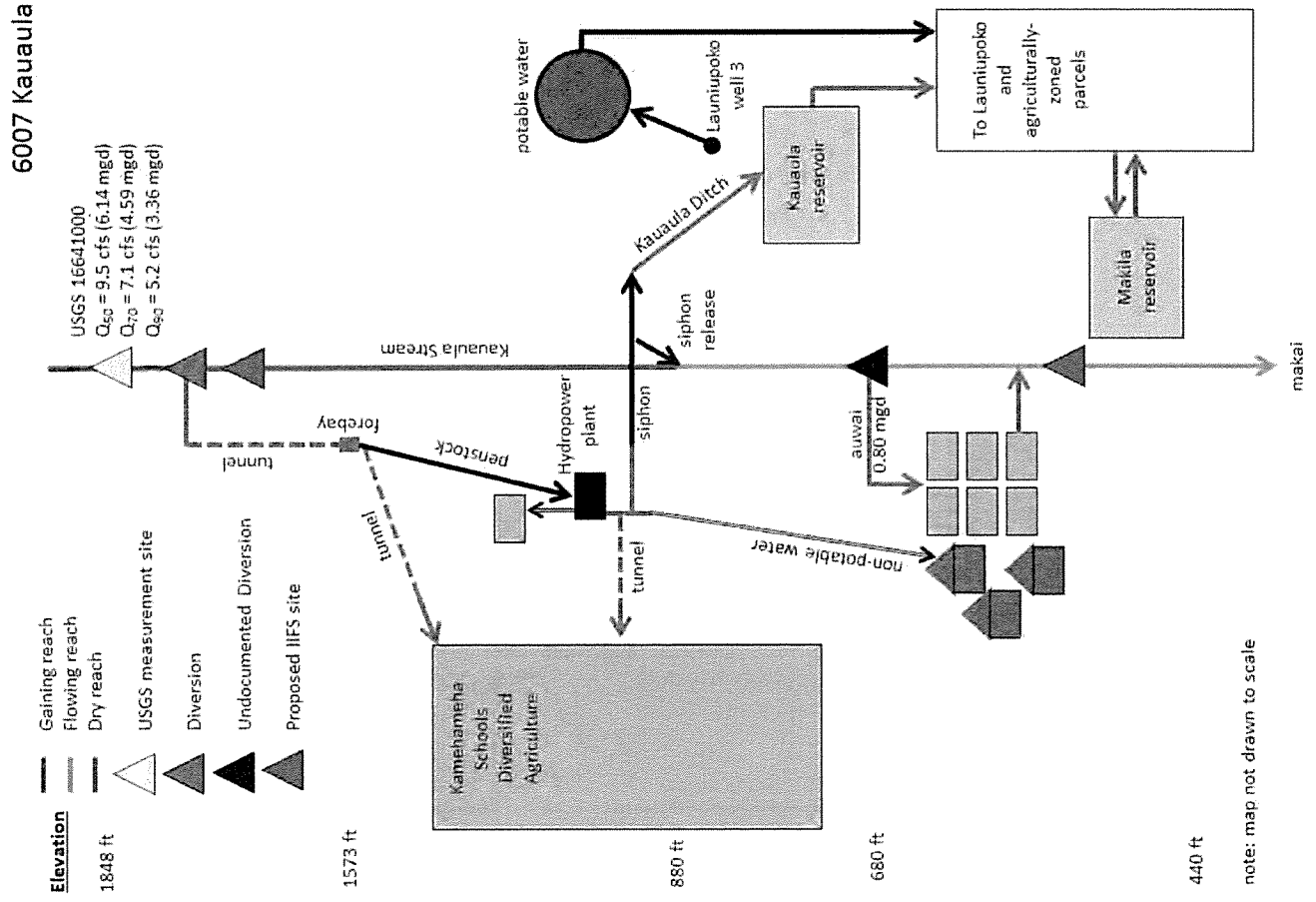
Ola i ka wai,

A handwritten signature in black ink, appearing to read "M. Kaleo Manuel".

M. KALEO MANUEL
Deputy Director

RI:ss

Kaua'ula- IIFS



Q_{50}	Q_{60}	Q_{70}	Q_{90}
9.5 cfs (6.14 mgd)	8.1 cfs (5.24 mgd)	7.1 cfs (4.59 mgd)	5.2 cfs (3.36 mgd)

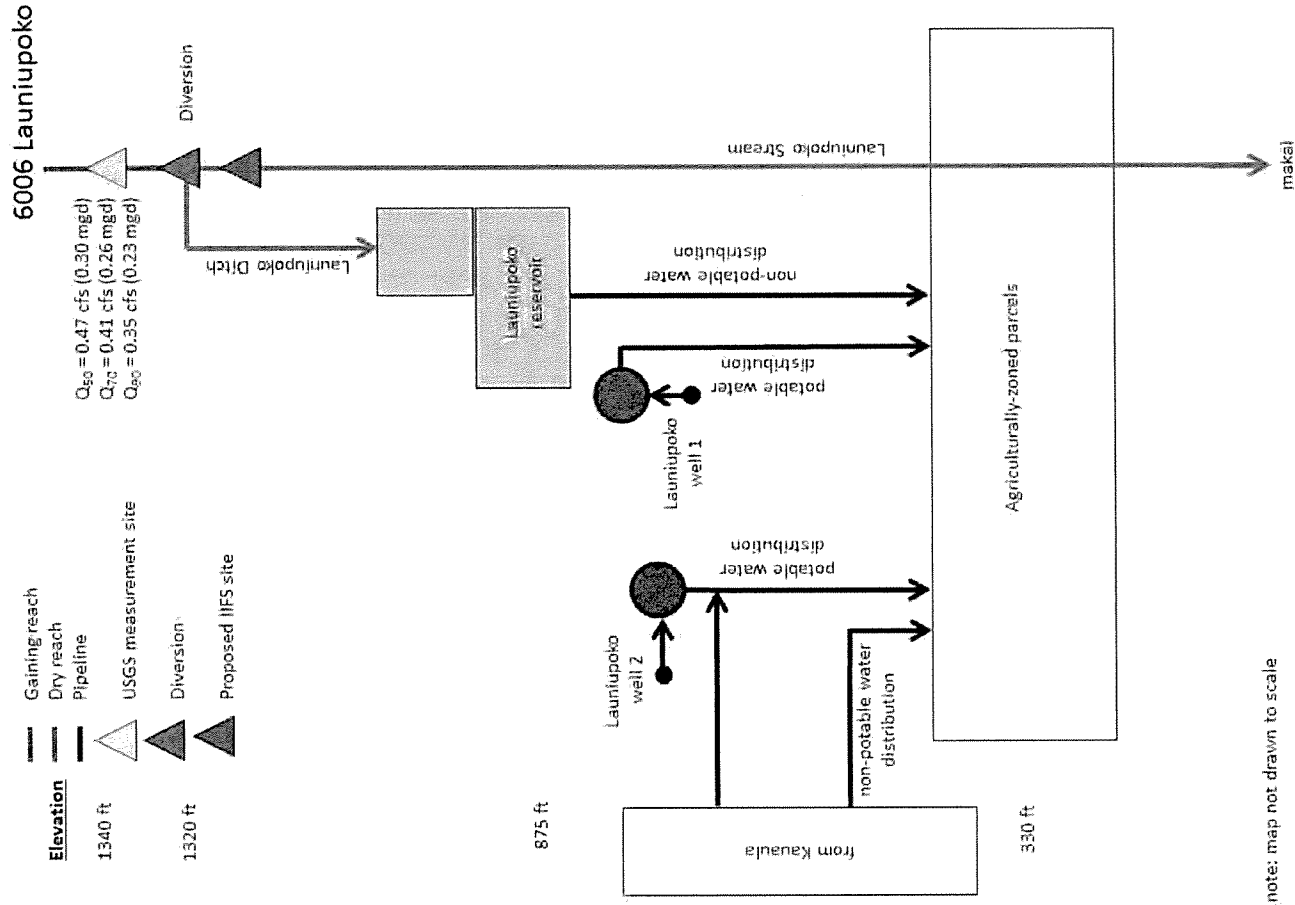
2017 Estimated Amount Diverted	Proposed IIFS	location
7.09 cfs (4.58 mgd)	3.36 mgd	below diversion
	4.1 mgd	below siphon

- Will meet Kamehameha Schools lessees needs 100% of time
- Will meet Launiupoko Irrigation Co ag demand 100% of time with Launiupoko Stream water (0.24 mgd)

note that Figure is from CWRM Staff presentation at CWRM meeting on March 20, 2018



Launiupoko- proposed IIFS



note: map not drawn to scale

note that Figure is from CWRM Staff presentation at CWRM meeting on March 20, 2018



2017 Estimated Amount Diverted	Proposed IIFS	location
0.24 mgd	0 mgd	below diversion

Q_{50}	Q_{60}	Q_{70}	Q_{90}
0.47 cfs (0.30 mgd)	0.44 cfs (0.28 mgd)	0.41 cfs (0.26 mgd)	0.35 cfs (0.23 mgd)

DAVID Y. IGE
GOVERNOR OF HAWAII



SUZANNE D. CASE
CHAIRPERSON

MICHAEL G. BUCK
ELIZABETH A. CHAR, M.D.
NEIL J. HANNAHS
AURORA KAGAWA-VIVIANI, PH.D.
WAYNE K. KATAYAMA
PAUL J. MEYER

M. KALEO MANUEL
DEPUTY DIRECTOR

FILED

2022 APR 12 P 12:59

PUBLIC UTILITIES
COMMISSION

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

COMMISSION ON WATER RESOURCE MANAGEMENT

P.O. BOX 621
HONOLULU, HAWAII 96809

April 8, 2022

Ref.: CWRM.5783.6

The Honorable Chair and Members of the
Hawai'i Public Utilities Commission
State of Hawai'i
465 South King Street, Room 103
Honolulu, Hawai'i 96813

Dear Commissioners:

Additional Information to Request for Public Comment in Docket No. 2020-0089
Launiupoko Irrigation Company, Inc. Application For a Change in Rates and Other Approvals

The Commission on Water Resource Management (CWRM) has additional information to the Hawai'i Public Utilities Commission's (Commission) request for public comment in Docket No. 2020-0089 on Launiupoko Irrigation Company's (LIC) rate case that CWRM provided on December 17, 2021. The Commission requested CWRM's analysis on its understanding of LIC's current irrigation water needs and available surface water.

In its response to the Commission's following question:

- 1) *CWRM's estimate of the surface water currently available from both the Kaua'ula and Launiupoko streams that LIC can use while still meeting those streams' interim instream flow standard (IIFS);*

CWRM mentioned that its "staff has data that indicates that LIC has not been in compliance with the IIFS since CWRM's March 2018 order and the phased approach agreed upon on May 7, 2018. See attached Exhibit A."

On March 31, 2022, CWRM has given notice to LIC of the alleged violation of the measurable IIFS for Kaua'ula Stream. See attached letter Ref.: CWRM.5783.6. In the time period from June 12, 2020 to March 23, 2022 (650 days), there have been 315 days (48.5%) where the IIFS has allegedly been violated. On days when there was insufficient flow above the diversion to meet the IIFS, LIC continued to divert an average of 2.33 mgd. For the period from June 12, 2020 to March 23, 2022, LIC diverted an average of 3.46 mgd (interquartile range: 2.44 – 3.66 mgd) from Kaua'ula Stream.

Hawai'i Public Utilities Commission
April 8, 2022
Page 2

CWRM provided thirty (30) days of the date of its letter for LIC to respond and intends to schedule this case before CWRM for final disposition. On April 4, 2022, LIC acknowledged receipt of the notice and stated that gate valves at the diversion have been set with a flow meter to meet the IIFS. A picture of the installed flow meter was sent in a subsequent email that day by LIC and CWRM replied with additional questions to LIC for clarification. At the date of this letter, no additional responses were received from LIC.

If there are any questions, please contact me at kaleo.l.manuel@hawaii.gov or via phone at 808-587-0214.

Ola i ka wai,



M. KALEO MANUEL
Deputy Director

Attachment

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

March 31, 2022

SUZANNE D. CASE
CHAIRPERSON

MICHAEL G. BUCK
ELIZABETH A. CHAR, M.D.
NEIL J. HANNAHS
AURORA KAGAWA-VIVIANI, PH.D.
WAYNE K. KATAYAMA
PAUL J. MEYER

M. KALEO MANUEL
DEPUTY DIRECTOR

Ref.: CWRM.5783.6

**CERTIFIED COPY MAIL IS FORTHCOMING
RETURN RECEIPT REQUESTED**

Glenn Tremble
Launiupoko Irrigation Company, LLC
305 East Wakea Ave., Suite 100
Kahului, HI 96732

Aloha Mr. Tremble:

**NOTICE OF ALLEGED VIOLATION
Interim Instream Flow Standard
Kaua'ula Stream, Lahaina, Maui**

Notice is hereby given by the Commission on Water Resource Management (Commission) that Launiupoko Irrigation Company, LLC (LIC) may be in violation of the following:

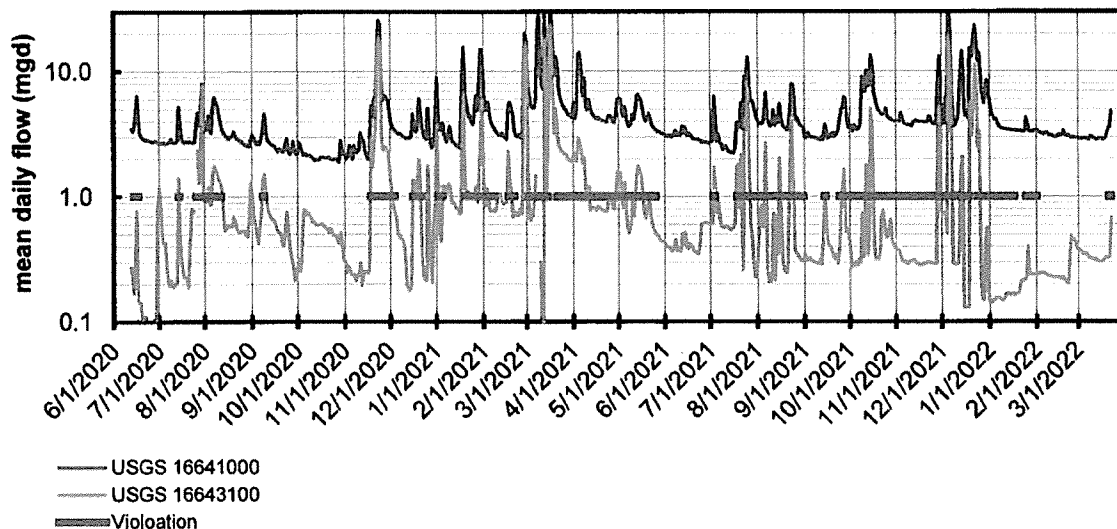
1. The measurable interim instream flow standard for Kaua'ula Stream, below the main diversion (REG.957.6) near an altitude of 1,540 feet, established by the Commission on March 20, 2018, in the amount of 5.2 cubic feet per second (3.36 million gallons per day) based on U.S. Geological Survey (USGS) estimates of total flow Q_{90} .
2. The measurable interim instream flow standard for Kaua'ula Stream, below the kuleana users near an altitude of 270 feet, established by the Commission on March 20, 2018, in the amount of 6.35 cubic feet per second (4.1 million gallons per day) based on USGS estimates of total flow Q_{70} and seepage losses.

Hawaii Revised Statutes §174C-71(2) and Hawaii Administrative Rules §13-169-30(b) directs the Commission to establish instream flow standards on a stream-by-stream basis whenever necessary to protect the public interest in waters of the State. The staff of the Commission monitors and regulates these established instream flow standards to ensure the protection of instream uses and adequate sharing of this limited resource for non-instream purposes.

According to HRS §174C-15, HAR §13-168-3, and Administrative and Civil Penalty Guideline (G14-01), any person who violates any provision of this chapter, or any rule adopted pursuant to this chapter, may be subject to a fine imposed by the Commission. Such fine shall not exceed \$5,000 per violation. For a continuing offense, each day's continuance is a separate violation.

Our records indicate that from June 12, 2020 to March 23, 2022 (650 days), Kaua‘ula Stream had a mean daily flow of 4.55 mgd and that only below Diversion 957. There were 315 days (48.5%) where the mean daily flow at USGS 16643100 below Diversion 957 violated the interim IFS while there was sufficient flow above Diversion 957 at USGS 16641000. On days when there was insufficient flow above Diversion 957 at USGS 16641000 to meet the interim IFS, an average of 2.33 mgd continued to be diverted. For the period from June 12, 2020 to March 23, 2022, an average of 3.46 mgd (interquartile range: 2.44 – 3.66 mgd) was diverted from Kaua‘ula Stream at Diversion 957.

Figure 1. Mean daily flow (million gallons per day, mgd) above diversion 957 at USGS 16641000 and below diversion 957 at USGS 16643100 with dates where flow at USGS 16643100 was below the interim IFS of 3.36 mgd and the flow at USGS 16641000 was above the interim IFS.



On September 28, 2021, Commission staff contacted LIC via letter (*CWRM.5783.6*) and reminded LIC of its obligation to comply with the interim IFS, requested LIC to submit a proposal of the stream diversion modification within 30 days the date of the letter, requested LIC to begin reporting the amount of water distributed to Ku‘ia Estate Chocolate (KEC), the Kaua‘ula valley homes, Kaua‘ula Reservoir, and returned to the stream at the siphon immediately, and requested LIC to install appropriate measuring devices (e.g., rated flume, weir with staff plate) to monitor the amount of water flowing to Kaua‘ula Reservoir above the siphon within 90 days.

On October 28, 2021, LIC responded via letter stating LIC will submit conceptional plans for the stream diversion modification within 30 days and commencement of these modifications LIC conditions on the receipt of a temporary rate increase by the Public Utilities Commission (PUC). LIC also submitted data on the amount of water distributed to KEC, the Kaua‘ula valley homes, Kaua‘ula Reservoir, and returned to the stream at the siphon and stated that LIC will provide a recommendation to the Commission within 60 days for the installation of a measuring device to monitor streamflow into Kaua‘ula reservoir.

On November 29, 2021, LIC submitted conceptual plans for the stream diversion modification and repeated LIC's condition on a revised temporary rate increase. LIC also stated that "[u]sing USGS data over a 473 day period between June 2020 and Sept. 2021, streams flows were at or below the IIFS of 5.2 cfs for 245 days during the 15 month period."

Based on data submitted by LIC, in letter dated October 28, 2021, and recreated in Table 1, there is a substantial amount of diverted flow that continues to be used by LIC, even during drought periods. Follow up site visits to the LIC service area have documented the continued use of water for landscape irrigation, particularly the watering of lawns during the mid-day with full sun. Such usage of water while violating the interim IFS constitutes clear waste of limited water resources.

Table 1. Daily mean diverted flow (gallons) at Diversion 957, metered usage by KEC, valley homes, Kapu homestead, return flow from Kapu homestead (80%), and release from the siphon back to Kaua'ula Stream.

Month	Diverted Flow	Maui Kuia Estate Chocolate Farm	Valley Homes	Kapu homestead	Kapu return (80%)	Siphon release	Balance
March 2021	6,999,846	65,787	50,374	99,215	79,372	1,583,204	5,280,637
April 2021	4,282,599	59,083	50,374	32,133	25,707	1,753,133	2,413,582
May 2021	3,505,865	85,735	50,374	32,137	25,709	1,861,774	1,501,553
June 2021	2,561,071	108,660	50,374	112,204	89,763	1,826,900	552,696
July 2021	3,077,639	93,616	50,374	50,269	40,215	1,477,742	1,445,853
August 2021	3,579,043	76,732	50,374	58,397	46,718	1,333,548	2,106,708
September 2021	2,973,195	102,523	50,374	64,035	51,228	1,407,000	1,400,491
October 2021	4,892,908	59,381	50,374	38,564	30,851	1,481,484	3,293,956

Based on the information and analysis above, we expect LIC to immediately comply with the IIFS on Kaua'ula Stream. The Commission staff is of the opinion that the PUC's order granting LIC's temporary rate relief request, Order No. 37872 in PUC Docket No. 2020-0089, is sufficient for LIC to implement the requested stream diversion modifications and installation of a measuring device at Kaua'ula reservoir.

We welcome LIC to provide a response within thirty (30) days of the date of this letter, as we intend to schedule this case before the Commission for final disposition. You will be notified at that time concerning the meeting time and place.

We appreciate your attention to this matter. Should you have any questions, please contact Dr. Ayron Strauch of the Commission staff at (808) 587-0265, or via email at ayron.m.strauch@hawaii.gov.

Ola i ka wai,



M. KALEO MANUEL
Deputy Director