EAST MAUI IRRIGATION COMPANY, LLC

P.O. BOX 791628, PAIA, MAUI, HAWAIʻI 96779-1628 • (808) 579-9516

December 11, 2024

The Honorable Dawn N. S. Chang
Chair and Members of the State Board of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809
Via email: blnr.testimony@hawaii.gov

RE: BLNR Agenda December 13, 2024, Item D-9: Issuance of Revocable Permit to Alexander & Baldwin, Inc. and East Maui Irrigation Company, LLC for the Development, Diversion, and Use of Surface Water for Diversified Agriculture, Currently Existing Historical Industrial and Non-Agricultural Uses, Reservoir, Fire Protection, Hydroelectric and County of Maui Department of Water Supply and Kula Agricultural Park Purposes on the Island of Maui; Tax Map Keys: (2) 1-1-001:44 and 050, 1-1-002:002 (por.); 1-2-004:005 & 007, 2-9-014:001, 005, 011, 012 & 017

Dear Chair Chang and Members of the Board:

This testimony is being submitted on behalf of A&B and EMI, the current holders of the East Maui revocable permit ("RP"). As you know, the Board has authorized one-year RPs pending the public auction for a long-term water lease. The water diversion authorized under the RP is essential to support Mahi Pono's ongoing effort to re-establish agriculture across Central Maui on a former sugarcane farm. If successful, this would be the first rejuvenation of agriculture on this scale in the entire State following the demise of the sugar and pineapple industries, and the first significant needle-mover toward increased food self-sufficiency and a restored agricultural industry for the State of Hawaiʻi.

We appreciate the time and effort of Staff in preparing the Staff Submittal, but would like to raise a few concerns with some of the Staff's recommendations:

I. WATER ALLOCATION AS A MONTHLY AVERAGE VS. ANNUAL AVERAGE

In the Staff Submittal, the Staff recommends a cap, or water allocation, that is expressed in terms of a monthly average, rather than the annual average currently applicable to the 2024 RP. As the Staff acknowledges in the Submittal, a monthly average is more challenging for farming operations because it does not provide the flexibility that is needed to account for constantly changing variables that affect water needs and water availability on the farm. For example, a rigid monthly allocation does not account for month-to-month variations in water needs for crop irrigation that are driven by changes in weather and harvest planting schedules. Nor does it allow

for additional storage and irrigation when surface water is abundant, to compensate for times when surface water is less available.

To illustrate, for the 2024 RP the Board set a cap of 38.25 mgd calculated on an annual average. Although for nine of the first eleven months of the year, water diversions remained below 38.25 mgd cap, in March and November, the diversions for agriculture exceeded this amount. Particularly in November, Mahi Pono was able to use the abundant surface water to flush out salts that accumulated in the soil as a result of the lesser amount of available surface water and the significant amount of groundwater used for irrigation to compensate in the prior months. This is a common farming practice. Had the 2024 RP been applied as a monthly average allocation, Mahi Pono would not have had that flexibility to divert more water notwithstanding that the water was available, needed by the farming operation, and put to reasonable and beneficial use. This was explained in our November 22, 2024 letter to the Board, a copy of which is attached to this written testimony.

If the allocation is going to be administered on a monthly basis, then the amount needs to accommodate the month with the highest need/use to allow for these variations in water availability and demand.

While the Staff raised compliance concerns in the Submittal as the basis for returning to a monthly average allocation, the Staff also points out in the Submittal that the average diverted amount through October is 32.49 mgd—well below the Board-imposed cap of 38.25 mgd. While we maintain that an annual average allows for the flexibility needed in farming operations and, as discussed further below, conforms with industry standards, as a compromise, a six-month or quarterly average could be used rather than a monthly allocation. This would address the Staff's compliance concerns while also providing Mahi Pono with some flexibility that is greatly needed in farming operations. Because of this flexibility, the allocation, while having to be higher than a monthly average cap, would not need to accommodate the highest month of use needed on the farm, in the way that a monthly allocation would need to.

II. 3,264 GPAD WATER ALLOCATION

The Staff's recommended water allocation of 3,264 GPAD should be increased. The Staff calculated the recommended allocation by using the median three months of water diversions from 2024 thus far as the numerator, but used the maximum amount of acreage—which did not occur until later in the year—as the denominator. Comparing an average amount of water usage (that excludes the highest months of water use in July and November) with the largest amount of planted acres is an apples-to-oranges comparison that results in an understated water duty.

Water studies demonstrate that higher water duties are needed to adequately support the types of crops cultivated by Mahi Pono. The State Department of Agriculture has consistently found that at least 3,900 GPAD averaged annually is needed to properly farm an area that is 50% planted. With Mahi Pono's farming operations, we are looking at areas that are 100% planted.

In addition, Dr. Ali Fares completed a separate study on crop water requirements for Maui's central valley in which Dr. Fares opined that approximately 3,900 GPAD averaged annually would be needed to support Mahi Pono's crops/farm plan. A copy of Dr. Fares's report is attached to this

testimony. Dr. Fares was a tenured professor at the University of Hawai'i at Manoa, where he led the University's watershed hydrology laboratory. Dr. Fares is perhaps more known for his development of the Irrigation Water Requirement Estimation Decisions Support System ("IWREDSS") which is a GIS model developed to help estimate crop irrigation requirements in Hawai'i that CWRM continues to rely on to this day.

It is important to note that the water duties calculated by both the State Department of Agriculture and Dr. Fares are based on an annual average. Those numbers would need to higher if converted to a monthly average.

III. SEEPAGE AND EVAPORATION ESTIMATE

The Staff Submittal proposes a condition that EMI and/or Mahi Pono estimate how long it would take on average, for each reservoir to be emptied if no water were to flow into or be deliberately removed from it. This information, however, was already addressed by CWRM in its June 2018 Decision & Order. There, CWRM explained that estimating seepage and evaporation by way of direct measurement would be require closing the reservoirs, allowing water to remain in the reservoirs for a period of time, and taking before and after readings. In other words, the reservoirs would need to be filled and not used just so these measurements could be taken. As CWRM determined, this would be impractical because, among other things, it would interrupt the ongoing farming operations as the reservoirs could not be used while the tests were being conducted.

For this reason, during the CWRM contested case proceedings, HC&S calculated an estimate of seepage and evaporation. As to seepage, HC&S multiplied a relatively low seepage factor and a relatively high seepage factor from the National Engineering Handbook published by the Soil Conservation Service of the U.S. Department of Agriculture, by the average surface area under water and reached a low seepage loss per day estimate of 16.76 percent of average daily water deliveries of surface and groundwater and a high seepage loss per day estimate of 35.46 percent of average daily water deliveries. As to evaporation, the average daily evaporation rate of 0.40 acre-inches was multiplied by the average daily surface area of the water in the system, which yielded an average daily evaporation loss rate (based on the then-existing water diversions) for the entire system.

The mathematical estimate used in the CWRM contested case proceeding and accepted by CWRM should address any concern regarding these estimates.

IV. INTERIM COMMITTEE MEETINGS

The Staff Submittal recommends that the Board require the County of Maui to assume responsibility for organizing and scheduling monthly meetings of the interim committee to discuss water usage issues in the areas covered by the RP, given the County's prior statements regarding its desire to work with interested stakeholders on a long-term disposition of water. The proposed conditions, however, state that Permittee shall coordinate with this interim committee, the same language as in prior years where the Permittee was responsible for calling these meetings. The Board should clarify which entity is responsible for scheduling and convening the quarterly meetings of the interim committee. To the extent the Board directs the County to do so, A&B and

EMI would appreciate assurances that they will not be found in non-compliance with the RP if the County fails to comply with this condition.

V. CONCLUSION

Mahi Pono's agricultural operation furthers numerous state policies and mandates, and provides significant public benefits, and thus is deserving of the support of the State through a reasonable 2025 RP. This is particularly true given the delay in proceeding with a long-term license. As noted by the Staff, under the Hawai'i State Constitution the State is mandated to "conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands." Included in the objectives under the Hawai'i State Plan (HRS chapter 226) is the objective of developing diversified agriculture throughout the State; related policies to achieve that objective include the enhancement of agricultural growth by providing public incentives and encouraging private initiatives, assuring the availability of agriculturally suitable lands with adequate water to accommodate present and future needs, and increasing the attractiveness and opportunities for an agricultural education and livelihood.

The purpose of the RP (and the future long-term water lease) is to provide water for significant agricultural uses within Mahi Pono's farm, the majority of which are Important Agricultural Lands ("**IAL**") in Central Maui,[1] which in turn will keep these IAL lands in agriculture, increase the State's food security and agricultural self-sufficiency, create jobs that are not dependent upon tourism, and generally support the economy of Maui and the State.

This is a time when diverse sources of new economic activity on Maui need to be developed, especially sources that enhance the food security and sustainability of Maui and are untethered to the tourism industry. We believe Mahi Pono's farm plan is one of the most significant developments in this regard. Please consider our comments above, as they are essential to maintaining the momentum Mahi Pono has achieved over the past years in investing in a new economic activity on Maui. We respectfully urge the Board in its decision today to support continued progress of this farm plan.

[1] Approximately 22,000 acres of Mahi Pono's 30,000 acres of agricultural fields are designated as IAL.

EAST MAUI IRRIGATION COMPANY, LLC

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November 22, 2024

VIA E-MAIL AND U.S. MAIL

The Honorable Dawn Chang, Chair
and Members of the Board of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

RE: Holdover of Revocable Permit No. S-7967 issued to Alexander & Baldwin, Inc. ("A&B") and East Maui Irrigation Company, LLC ("EMI") for Water Use on the Island of Maui

Dear Chair Chang:

The purpose of this letter is to request the Board of Land and Natural Resources ("Board") to review, consider and authorize the renewal of the subject permit ("RP**")** for calendar year 2025. Renewal of the RP will enable the continued provision of water to the County of Maui for its Nahiku and Upcountry Maui public water systems, and to Mahi Pono to support its farming activities in Central Maui and its continued progress in transitioning 30,000 acres—22,254 of which are designated important agricultural lands—from vacant former sugarcane land to a diversified portfolio of food crops. Mahi Pono's diversified agriculture operations provide jobs, strengthens and diversifies the economy, keeps important agricultural lands productive, and promotes food security and sustainability. We believe the continuation of the subject permit will serve the State's best interests.

Water needs for 2025

Water usage and needs on the Mahi Pono farm in 2024 has been a better indicator of how water is going to be used in the future on the farm than prior years, due to the size of the farm and the amount of planted and irrigated acres. For calendar year 2025, the Permittees believe that water diversions will continue to vary month-to month, with this variance driven by availability of surface water (weather), the County of Maui's needs, and the amount of acres in active agriculture on Mahi Pono's diversified farm. Given this variance, the Permittees support the 2025 RP utilizing a 'cap' on water based on an appropriate water usage standard (in gallons per acre per day, or "GPAD"), applied to the number of cultivated acres rather than a definitive cap figure—the structure proposed by BLNR staff for the long-term water license. This structure would set an average per-acre water standard We continue to ask that this per-acre water standard be expressed as an annual average, as that best reflects actual water availability and

needs on the farm—when rainfall and water availability is high, additional water is used on the farm to store in reservoirs, or in the ground, and to flush out salts that accumulate in the soil as a result of using groundwater for irrigation. This flexibility is needed by Mahi Pono to maximize its ability to successfully cultivate its crops. This is a common farming practice.

In the structure proposed by the BLNR staff for the long-term water license, the staff proposed an average per-acre water standard of 3,764 GPAD. The Permittees believe that Mahi Pono could operate under a 3,764 GPAD standard for calendar year 2025 if that standard was applied as an annual average. An annual average was used for the 2024 RP, and it allowed Mahi Pono and the County of Maui to operate under a 38.25 MGD limit, despite the monthly diversions exceeding the annual average based cap on two separate occasions through the first 11 months of 2024: (1) 39.39 MGD in March, and (2) approximately 52 MGD thru the first 20 days of November.

Month	County Use *(DWS + Kula Ag Park)*	Mahi Pono Diversified Agriculture *(Surface + Ground)*	Historic / Industrial Uses	Total Applied Water *(County + Mahi Pono + Historic)*	Diversions @ Honopou	2024 RP Cap
January	0.75	22.32	0.04	**23.11**	29.95	38.25
February	1.45	29.93	0.04	**31.42**	32.31	38.25
March	2.60	31.36	0.03	**33.99**	39.39	38.25
April	1.99	28.59	0.04	**30.62**	33.47	38.25
May	1.15	27.33	0.04	**28.52**	30.84	38.25
June	2.27	31.08	0.04	**33.39**	36.7	38.25
July	4.42	36.05	0.04	**40.51**	34.94	38.25
August	3.38	33.19	0.04	**36.61**	33.25	38.25
September	3.33	27.09	0.06	**30.48**	28.72	38.25
October	4.27	35.57	0.05	**39.89**	25.33	38.25
November	4.65	43.29	0.05	**47.99**	52.32	38.25
Average	**2.75**	**31.44**	**0.04**	**34.23**	**34.27**	**38.25**

If a monthly average was used for the 2024 RP, then the 38.25 MGD cap would not have allowed for the provision of enough water for Mahi Pono and the County of Maui in these two months. An annual average allows Mahi Pono to divert more water when it is available to irrigate an increasing number of planted acres, and to “catch-up” on irrigation deficiencies that occurred in the drier months by using surface water when it is available and enabling the soil to store water for the plant. An annual average also allows Mahi Pono to use excess surface water when it is available to leach groundwater salts from the soils, thus offsetting the long-term effects of salt accumulation on crops. For example, due to low surface water availability in the month of October 2024, Mahi Pono needed to use 16.87 MGD of groundwater, which was over 10 MGD higher than the average amount of groundwater used in any previous month. When

there was heavy rainfall – and correspondingly high surface water availability – in November 2024, Mahi Pono used the available additional surface water to leach groundwater salts that had built up in our soils in October, and to catch-up on irrigation deficiencies from September and October. These agricultural benefits would not have been possible if the 2024 RP had been based on a monthly average.

If the 2025 RP is instead based on something other than an annual average (e.g., a quarterly or monthly average), then a higher per-acre water standard would be needed and should be used. In its 2019 Agricultural Water Use and Development Plan Update, the Hawaii State Department of Agriculture provides other potential water standards, expressed as an annual average, the normal agronomic practice, and based on a study of over 100 farms statewide. The following is an excerpt from page xxiv:

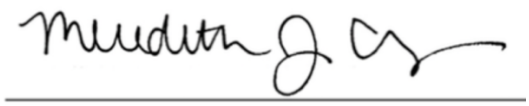
> *This AWUDP Update expands on this analysis by evaluating water demand from 113 farms growing different crops in various growing regions throughout the state; water demand rates from farms in Kunia, Oahu,; and published historical demand rates. Based on this evaluation, the planning-level agricultural water demand rates at the farm-level water meter are as follows:*
>
> - *3,900 gpd/acre for diversified agriculture, for usable acreage that is 50 percent planted (average condition);*
> - *7,800 gpd/acre for diversified agriculture, for usable acreage that is 100 per cent planted;*
> - *8,100 gpd/acre for diversified agriculture, for usable acreage that is 50 percent planted, under drought conditions;*
> - *16,200 gpd/acre for diversified agriculture for usable acreage that is 100 percent planted, under drought or dry conditions; and*
> - *8,000 gpd/acre or more for irrigated pastures (usable acreage that is 100 percent planted.*
>
> *These water demand rates are for statewide planning for agricultural water demand. If a specific site is being studied, a site-specific water demand analysis should be completed.*

We acknowledge that an annual average gives DLNR staff more pause relative to enforcement. However, we cannot emphasize enough how an annual average water duty standard is the better fit for a working farm and agricultural success, as evidenced by the State Department of Agriculture's utilization of crop water standards based on annual averages. However, if a quarterly average is must be used, then the Permittees believe that Mahi Pono could also operate under a 3,900 GPAD standard if that standard was based on a quarterly average. A quarterly average – while not as beneficial as an annual average – would allow Mahi Pono at least some degree of flexibility to use a higher amount of water when it is

available to offset irrigation deficiencies that impact crops during dryer months. By contrast, this flexibility would be severely restricted if a monthly average is used.

In closing the Permittees are requesting that the Board approve the renewal of the subject permit for the 2025 calendar year, to enable continued investment in and progress on the establishment of the Mahi Pono farm with a cultivated acreage-based water standard of either (a) 3,764 GPAD applied as an annual average, or (b) 3,900 GPAD based on a quarterly average.

Sincerely,



Meredith J. Ching, A&B

Mark Vaught, EMI

Crop Irrigation Water Requirements Estimates for Mahi Pono, Maui, Hawaii

Prepared by:

Dr. Ali Fares, Email: alifares@yahoo.com

Irrigation Crop Water Expert Cypress, Texas

August 5, 2024

1. Introduction

I am Ali Fares, Endowed Water Security and Food-Energy-Water Nexus Professor at Prairie View A&M University. Over three decades, I have dedicated myself to advancing soil, water, and natural resources management in the United States and internationally. My career includes a pivotal 11-year tenure at the University of Hawaii-Manoa, where I led the Watershed Hydrology Laboratory and spearheaded several groundbreaking water projects. Working in Hawaii's diverse landscapes, I focused on optimizing water use efficiency in agriculture through advanced hydrological models. My work in Hawaii included the development of IWREDSS, which has been pivotal for Hawaii's water management strategies.

Before my work in Hawaii, I made substantial strides in Florida, particularly in citrus irrigation and nutrient management. My research efforts aimed to enhance nitrogen management practices in citrus groves, balancing improved crop yields with environmental sustainability goals. These initiatives were crucial in addressing the challenges of intensifying agricultural practices while minimizing environmental impacts.

As a Principal Investigator (PI) and co-PI, I have secured over $100 million in research grants, leading pioneering soil and water science projects that have shaped global agricultural practices and environmental policies. Beyond research, mentoring the next generation of scientists has been a priority throughout my career. I have guided and supported numerous undergraduate and graduate students, postdoctoral fellows, and international scholars, fostering their development as future leaders in agricultural and environmental sciences.

In addition to my academic roles, I have played significant roles in national and international service. I have testified before Congress on critical water management issues, organized meetings with UNESCO to promote environmental sustainability, and contributed to initiatives at the intersection of agriculture and artificial intelligence. My recognition as a Fellow of two prestigious societies underscores my impact and influence in advancing soil and agronomic sciences worldwide.

My commitment to advancing scientific knowledge and promoting sustainable agriculture and environmental stewardship is reflected in my candidacy for recognition as a Fellow in the American Society of Agronomy. Based on my experience in irrigation, especially related to developing IWREDSS for Hawaii's water management strategies, I am providing the water requirements for Maui Pono’s farming operation. I believe in fostering partnerships that ensure

agricultural productivity and environmental responsibility, essential for the long-term sustainability of our natural resources.

This report is on the irrigation water requirements for crops such as citrus, macadamia nuts, coffee, irrigation paste, avocado, tropical fruits, and row crops, specifically for Mahi Pono.

The methodology employed in this report utilizes a daily water budget approach grounded in site-specific long-term daily weather data (rainfall, air temperature, and evapotranspiration), crop water uptake parameters (leaf area index, root distribution, and crop coefficient), and soil physical properties (water holding capacity and curve number). The irrigation water requirements determined in this report are specific to the field-level irrigation system. They exclude conveyance losses, which typically range from 20% to 40 5 in the western United States, based on the physical characteristics of the conveyance infrastructure.

The report provides:

- A detailed overview of the water balance approach used to calculate irrigation water requirements.
- A succinct justification for the chosen irrigation management strategy.
- The irrigation needs are expressed in millions of gallons per day, categorized by parcel, crop, and operation.
- A summary of the findings.
- A comprehensive list of references utilized in the analysis.

2. Water Balance Approach

a. Water Budget

Changes in soil water storage for a specific plant root zone, ΔS, are calculated as a function of all water inputs and outputs in and out of the root zone as follows:

$$\Delta S = P + G + IRR_{net} - Q_{GW+Runoff} - ET_c \quad (1)$$

where P (in) is the rainfall, G (in) is the groundwater contribution, IRRnet (in) is the net irrigation requirement, QGW+Runoff (in) is the summation of water losses as groundwater drainage and surface runoff, ETc (in) is the plant evapotranspiration. The soil water storage capacity at the root zone (S) (in) is expressed as the product of the available soil water holding capacity (ASWHC) (in) in the plant root zone and the plant root zone depth (z) (in). The ASWHC is the water stored between the soil field capacity and its permanent wilting point. These irrigation calculations assume that irrigation is triggered once the available water is depleted by 50%; this allowable

water deficit level (AWD) is specific to the type of plant or crop used. Calculated irrigation water replaces the depleted available water from the root zone, allowing the water content to reach field capacity.

b. Irrigation Requirements

The gross irrigation requirement (IRR) is calculated for a planted area as follows using equation (1),

$$IRR = \frac{ET_c - R_e - G}{F_i . LF} \qquad (2)$$

where Re is the effective rainfall, which represents the portion of the gross rainfall that remains in the root zone for plant use after canopy interception and excess drainage of rainfall below the rootzone; it is equal to Re = P - QGW+Runoff, Fi is the irrigation efficiency, and LF is the leaching fraction. Leaching is applying irrigation water more than the soil moisture depletion level to prevent salt buildup in the root zone, especially for salt-sensitive plants under arid semi-arid conditions.

c. Evapotranspiration

There are different reliable methods for calculating daily crop evapotranspiration (ETc). The two most used methods are based on either pan evaporation (PE) data or weather data. ETc is the product PE, pan coefficient (Kp), and crop coefficient (Kc) for the PE approach. Long-term PE data for Hawaii have been used based on the work of Eckren and Cheng (1980). ETc for each plant cover is calculated as follows based on PE data:

$$ETc = Kc \times Kp \times PE \qquad (3)$$

The second approach to calculating ETc, which is based on weather data, includes different methods, i.e., Penman-Monteith (Monteith, 1965), Hargreaves and Samani (1982), and Priestley and Taylor (1972). We calculated ETc based on the Hargreaves and Samani method as follows:

$$ETc = 0.0135 \times Kc \times KT \times Ra \times TD^{0.5} \times (TC + 17.8) \quad (4)$$

where TD = Tmax-Tmin (°C), TC is the average daily temperature (°C), Ra is the extraterrestrial radiation (mm/day) calculated based on the latitude of Honolulu International Airport location (21.33208), and KT is an empirical coefficient; it is equal to 0.162 for "interior" regions and 0.19 for coastal regions such as Hawaii.

d. Surface Water Runoff

Runoff was calculated using the SCS curve number method using the following equation:

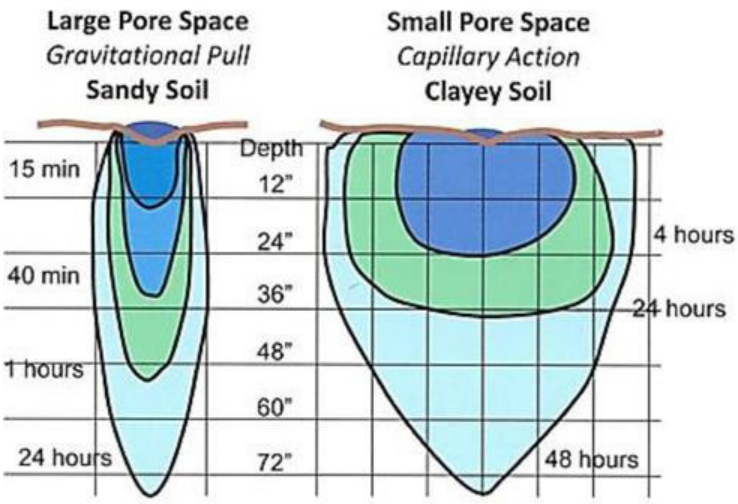
$$Q_{Runoff} = \frac{(P - 0.2S)^2}{P + 0.8S} \qquad (6)$$

where P is daily rainfall (in), S is potential maximum retention, which is related to curve number as:

$$S = \frac{1000}{CN} - 10 \qquad (7)$$

CN is the curve number related to the surface's imperviousness. For impervious and water surfaces, CN=100; CN is less than 100 for natural surfaces. CN is determined based on hydrologic soil group and land use type. The CN used for this project is equal to 76.

Despite their high clay content, Hawaiian soils behave like sandy soils due to their mineral composition. These soils are rich in kaolinite and iron/aluminum oxides, which do not retain water as effectively as other clays like smectite or illite. This mineralogy creates stable aggregates with a network of larger pores, facilitating rapid water infiltration and drainage. Hawaii's warm, moist climate accelerates organic matter decomposition, further reducing water retention. These soils exhibit rapid water movement through the soil profile and can experience surface sealing and crusting during intense rainfall, mimicking sandy soil behavior. This is well- documented by researchers at the University of Hawaii, including Green and Fox (1978) in their publication "Soil Properties and Root Distribution Determine Water Availability to Crops" and by Sartori et al. (2011).



3. Results of the Analysis

The results presented in this analysis are for the micro-sprinkler / Trickle Spray system for all crops and land uses on Mahi Pono's farm for Citrus, Irrigated Pasture, Macadamia, Avocado, Coffee, Tropical Fruits, Row Crops, Other Crops, and Leased Agricultural Lands. Irrigation requirements were calculated individually for each crop and land-use parcel, with all requirements summarized and totaled.

Results of the analysis are presented per crop or land use category shown on the map. Details for each of those categories are discussed as such.

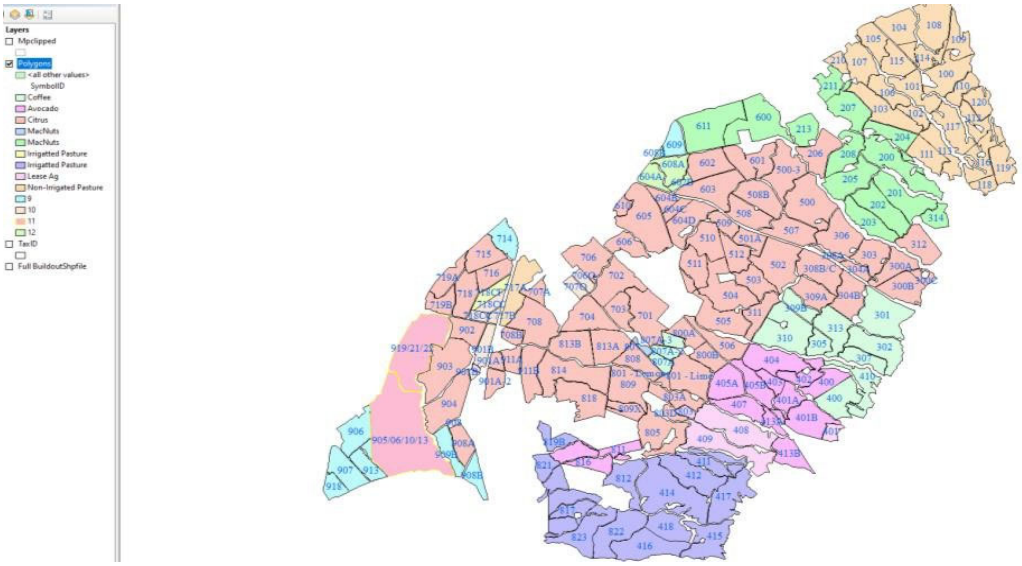


Figure 1 Land Use Map of Mahi Pono Used for this Water Use Analysis.

a. Citrus

Citrus in this report refers to all citrus products, including lemons and limes; it covers sixty-five parcels totaling 13,125 acres, representing 53% of the irrigated land. Irrigation of each of these parcels was calculated using IWREDSS; results of this analysis are given for each parcel using its corresponding TMK.

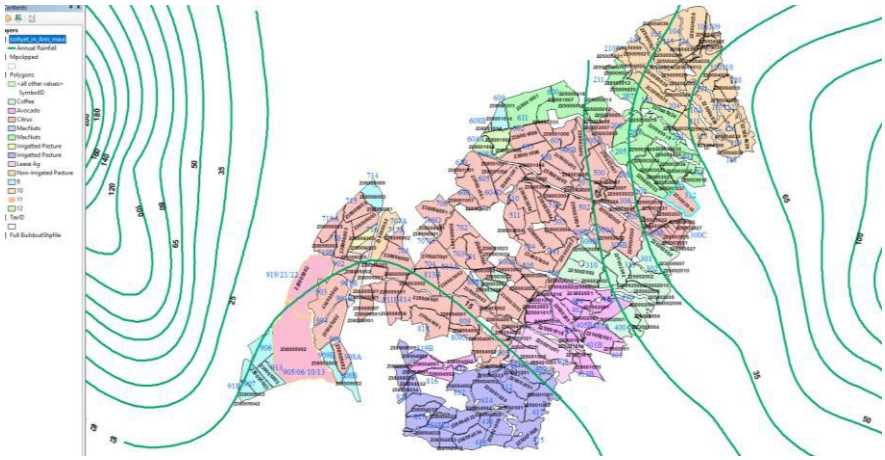


Figure 2 Land Use Map of Mahi Pono: Parcels, Corresponding TMKs & the Rain isohyets.

Table 1 summarizes the gallons of irrigation water per acre for each of the sixty-five citrus parcels, 13,125 acres total, with a water requirement of 33.29 mgd. These results show a pronounced spatial variability across the farm. Citrus at different parcels has different irrigation requirements, as low as 1,673 gallons per acre per day at parcel 312 and as high as 2,776 gallons per acre per day at parcel 901. The average irrigation requirements are 2,536 gallons per acre per day. Parcel 901 receives an average of 15" of rain annually and has an evapotranspiration demand of 81", resulting in about 64" of crop water deficit. This deficit drives the crop's irrigation requirements (Figure 2).

On the other hand, parcel 312 receives more than three times as much rain as parcel 901, with an annual average rainfall of 49.2 inches. This parcel has 69 inches of evapotranspiration demand, resulting in only 20 inches of water deficit, less than a third of that experienced by the same crop at parcel 901. Again, this is an excellent example of the variability encountered across this operation. As such, irrigation flexibility is essential for a successful, economically viable crop production operation at Mahi Pono.

Table 1. Water Use in Gallon Per Acre Per Day for Each Citrus Parcel Using A Spray / Micro-Irrigation System											
Parcel #	206	300	303	306	309	311	312	500	500	501	502
GPD	2,159	1,753	1,966	1,832	2,369	2,369	1,673	2,539	2,479	2,644	2,644
Parcel #	503	504	505	506	507	508	508	509	510	511	512
GPD	2,644	2,644	2,644	1,983	2,539	2,539	2,539	2,591	1,983	1,983	1,983
Parcel #	601	602	603	604	605	606	610	701	702	703	703
GPD	2,566	2,566	2,566	2,686	2,686	2,686	2,686	2,695	2,695	2,695	2,695
Parcel #	704	706	706	707	708	708	715	716	718	719	800
GPD	2,695	2,546	2,546	2,740	2,759	2,740	2,703	2,703	2,703	2,703	2,654
Parcel #	801	803	803	805	808	809	809	813	814	818	901
GPD	2,654	2,679	2,601	2,679	2,654	2,679	2,679	2,654	2,679	2,679	2,759
Parcel #	901	902	903	904	908	911	304-A	304-B	308 A	308 BC	Total
GPD	2,776	2,769	2,769	2,769	2,769	2,759	1,966	2,369	2,265	2,369	2536

Table 2. Citrus Total Water Use Per Parcel in Millions of Gallons Per Day Using A Spray / Micro-Irrigation System											
Parcel #	206	300	303	306	309	311	312	500	500	501	502
Acreage	200	285	176	260	162	147	199	378	273	115	328
MGD	0.43	0.50	0.35	0.48	0.38	0.35	0.33	0.96	0.68	0.30	0.87
Parcel #	503	504	505	506	507	508	508	509	510	511	512
Acreage	154	321	244	157	189	185	219	88	201	180	151
MGD	0.41	0.85	0.65	0.31	0.48	0.47	0.56	0.23	0.40	0.36	0.30
Parcel #	601	602	603	604	605	606	610	701	702	703	703
Acreage	228	202	267	368	446	136	45	316	262	124	20
MGD	0.58	0.52	0.69	0.99	1.20	0.37	0.12	0.85	0.71	0.33	0.05
Parcel #	704	706	706	707	708	708	715	716	718	719	800
Acreage	248	248	2	62	310	63	179	145	191	243	222
MGD	0.67	0.63	0.01	0.17	0.86	0.17	0.48	0.39	0.52	0.66	0.59
Parcel #	801	803	803	805	808	809	809	813	814	818	901
Acreage	281	145	48	268	163	72	268	448	344	267	45
MGD	0.75	0.39	0.12	0.72	0.43	0.19	0.72	1.19	0.92	0.72	0.12
Parcel #	901	902	903	904	908	911	304-A	304-B	308 A	308 BC	Total
Acreage	94	149	346	293	128	288	59	215	23	242	13125
MGD	0.26	0.41	0.96	0.81	0.35	0.79	0.12	0.51	0.05	0.57	33.29

Table 2 Under the cell of each parcel, there is the size of the parcel called "Acreage," followed by the amount of irrigation water needed for that parcel, which is equal to the product of the size (acreage) in acres and the number of gallons per acre per day for that parcel. The values are presented in millions of gallons per day (MGD).

Figure 3 The Citrus Parcel 312 with the Lowest Irrigation Requirements.

Figure 4 The Citrus Parcel 901A with the most considerable Irrigation Requirements

4. Avocado

The irrigation water requirements were also calculated for avocado, which covers 2,131 acres planted on 12 parcels. All these parcels are in the south-central part of the property. They receive between 18 to 27 inches of rain and are subject to potential evapotranspiration demands ranging between 85 and 89" resulting in water deficits ranging between 58 to 71 inches.

Table 3. Avocado Average Water Use for each Parcel in Gallon Per Acre Per Day

Parcel #	400	401	402	403	803	816	Total
GAD	2,751	2,751	2,751	2,751	2,751	3,311	2,888
Parcel #	**404**	**405**	**413**	**407**	**811**	**902**	
GAD	2,751	2,751	2,922	3,104	3,311	3,304	

This is the driest and highest plant water demand compared to the rest of the operation. The irrigation water demand was calculated for each of the 12 parcels. Parcels 816 and 811 registered the highest irrigation demands, with 3,311 gallons per acre per day, compared to 400 through 405, which only needed 2,751 gallons per acre per day. These parcels are from the wetter side of the watershed and are closer to the mountains than the other parcels. The 2,132 acres of avocado require 6.16 million gallons per day of irrigation, with an average water requirement of 2,888

gallons per acre per day. This average irrigation rate is 14% higher than the average irrigation requirement for citrus.

Table 4. Avocado Total Water Use Per Parcel in Millions of Gallons Per Day							
Parcel #	**400**	**401**	**402**	**403**	**803**	**816**	**Total**
Acreage	150	396	123	71	6	237	2132
MGD	0.413	1.089	0.338	0.195	0.017	0.785	6.16
Parcel #	**404**	**405**	**413**	**407**	**811**	**902**	
Acreage	271	381	216	172	107	2	
MGD	0.746	1.048	0.631143	0.534	0.354	0.007	

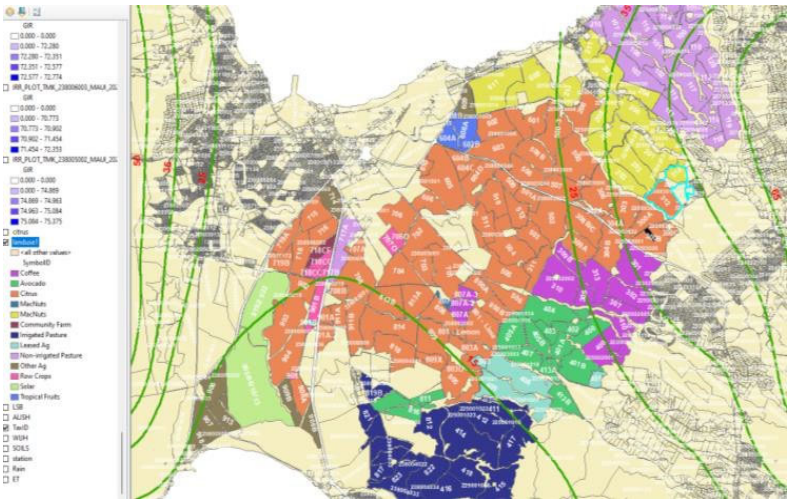


Figure 4 The Land Use Map shows the Avocado Parcel located in the middle area of the dryer of the operation.

5. Irrigated Pasture

Irrigated pasture includes 24 parcels that cover 3,874 acres. The calculation assumed that Mahi Pono would use big irrigation guns to irrigate these areas. Widespread practice is to use this type of irrigation system to allow the user to irrigate large areas cost-effectively. This is a critical component that should be considered to help farmers such as Mahi Pono optimize the use of their resources. The irrigated pasture parcels are in a dryer environment than the avocado parcels as the rainfall in that area ranges between 13.9 and 15 inches per year, which is about 8% variation. The transpiration demand is remarkably high, about 74 ", with about 15% variability between the lowest and highest rates. The daily irrigation water for the irrigated pasture varied between 6,786 and 7,834 and averaged 7,146 GAD for the 3,874 acres (Table 5). Since only one-third of the pasture will be irrigated at one time, the irrigation water needs will be **9.2 million gallons per day**. This amount is included in the summary table.

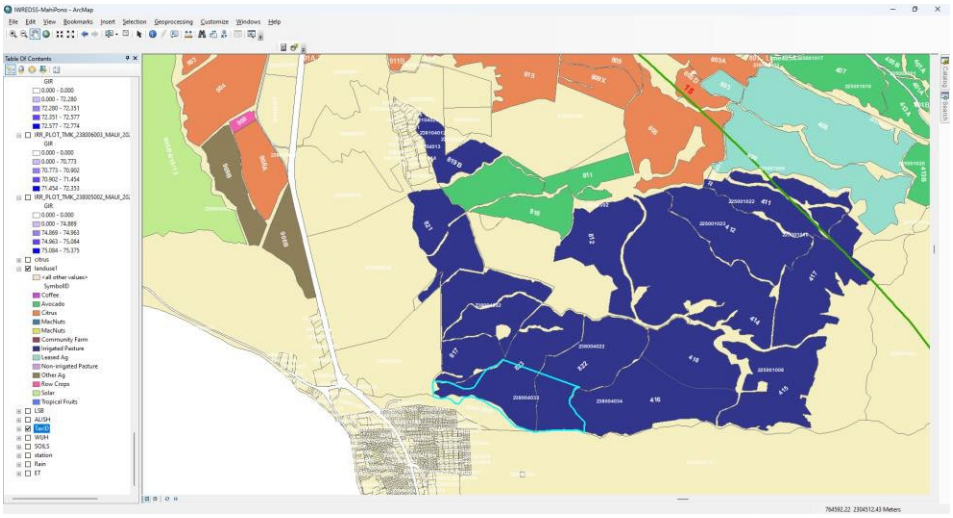


Figure 5 The Land Use Map shows the Irrigated Pasture Parcels located in the middle area of the dryer of the operation.

Table 5 Irrigated Pasture: Average Water Use for each Parcel in Gallon Per Acre Per Day									
Parcel #	**411**	**412**	**414**	**415**	**416**	**417**	**418**	**Sub-Totals**	**Totals**
GAD	7116	7116	6988	6988	7019	7052	7105	7055	7148
Parcel #	**819B**	**821**	**822**	**823**	**812**	**817**	**16/822/82**	**Sub-Totals**	
GAD	7834	6786	6908	6908	7514	7666	7075	7241	

Table 6 . Irrigated Pasture Total Water Use Per Parcel in Millions of Gallons Per Day									
Parcel #	**411**	**412**	**414**	**415**	**416**	**417**	**418**	**Sub-Totals**	**Totals**
Acreage	198	277	531	259	320	280	197	2062	**3874**
MGD	1.409	1.971	3.711	1.810	2.246	1.975	1.400	14.52	**27.6**
Parcel #	**819B**	**821**	**822**	**823**	**812**	**817**	**16/822/82**	**Sub-Totals**	**Annual Irrigated Area**
Acreage	104	87	300	286	211	356	468	1812	**1,291**
MGD	0.815	0.590	2.072	1.976	1.585	2.729	3.311	13.08	**9.20**

6. Coffee

Coffee occupies 1,997 acres. On average, coffee crops use 2,583 gallons per acre per day, a slightly higher rate than the 2,536 GAD of the citrus but lower than those of Irrigated Pasture and Avocado (Table 7). There is a 23% difference between this crop's highest and lowest irrigation water needs. Coffee parcels need 5.2 million gallons daily for optimum growth and yields (Table 8).

Table 7: Coffee: Average Water Use for each Parcel in Gallon Per Acre Per Day

Parcel #	301	302	305	307	309	310	Sub-Total	Total
GAD	2755	2755	2755	2345	2755	2755	2712	2583
Parcel #	313	400	410	807	807			
GAD	2755	2249	2249	2249	2249		2393	

Table 8: Coffee Total Water Use Per Percel in Millions of Gallons Per Day

Parcel #	301	302	305	307	309	310	Sub-Total	Total
Acreage	292	257	96	125	107	313	1190	1997
MGD	0.805	0.708	0.265	0.293	0.295	0.862	3.2	5.2
Parcel #	313	400	410	807	807		Sub-Total	
Acreage	230	229	178	21	149		807	
MGD	0.634	0.515	0.400	0.047	0.335		1.9	

7. Macadamia

Macadamia parcels occupy 3,040 acres. They are in the part of the operation with the highest rainfall and lowest evapotranspiration demands (Figure 6). The average irrigation water need is 2,368 (Table 9). Macadamia parcels need 7.2 million gallons daily to meet their crop water needs (Table 10).

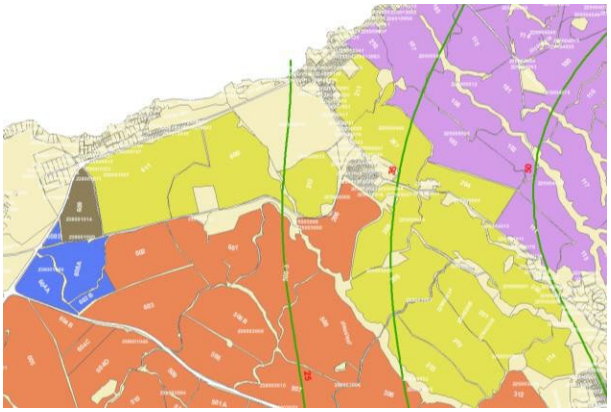


Figure 6 The Land Use Map Shows the Macadamia Parcels located in the wettest northeastern area of the operation.

Table 9. Macadamia: Average Water Use for each Parcel in Gallon Per Acre Per Day

Parcel #	200	201	202	203	204	205	207	Sub-Totals	Total
GAD	2,020	1,968	2,092	2,463	2,285	2,529	2,285	2,235	2,368
Parcel #	211	208	213	600	611	314	807		
GAD	2,344	2,482	2,435	2,729	2,729	1,755	3,031	2,501	

Table 10. Macadamia, Total Water Use Per Parcel in Millions of Gallons Per Day

Parcel #	200	201	202	203	204	205	207	Sub-Totals	Total
Acreage	358	257	246	195	136	243	236	1671	3040
MGD	0.723	0.506	0.515	0.480	0.311	0.615	0.539	3.7	7.2
Parcel #	211	208	213	600	611	314	807		
Acreage	122	176	145	400	413	104	9	1369	
MGD	0.286	0.437	0.353	1.091	1.127	0.183	0.027	3.5	

Row Crops

In this section, we assumed that sweet potatoes could be grown year-round, given the favorable weather conditions. Sweet potatoes take 4 to 6 months, so we calculated the irrigation water requirements for this crop's six-month, three-growing season on the allocated parcels. The first growing season is January – June, the second is March-August, and the third is July – December. Then, we multiplied the sum of the three growing seasons' irrigation requirements by two-thirds to allocate only the water needs for two growing seasons per year. The total irrigation water needs of the land use was 1.92 million gallons (Table 11) per day, with an average of 5,949 gallons per acre day (Table 12).

Table 11. Row Crops, Total Water Use Per Parcel in Millions of Gallons Per Day for two Growing Seasons of Sweet Potatoes

Parcel #	901B	908	706	707	Sub-Totals	Totals
GAD	5,927	5,981	6,180	6,180	6,029	5,949
Parcel #	178CC	717		Sub-Totals		
Acreage	5,868	5,868			5,868	

Table 12. Row Crops: Sweet Potatoes: Parcel Average Water Use in Gallon Per Acre Per Day for two growing seasons per year

Parcel #	901B	908	706	707	Sub-Totals	Totals
Acreage	103	12	42	41	198	322
MGD	0.61	0.072	0.26	0.25	1.20	1.92
Parcel #	178CC	717		Sub-Totals		
Acreage	98	26			124	
MGD	0.58	0.15			0.73	

Tropical Fruits

For this land use, we calculate the irrigation water requirements for mangoes. The daily water use reached 2,650 gallons per acre, totaling 0.85 million gallons daily. The average water use per acre per day was higher than that of citrus, avocado, and coffee. One of the main reasons for this is the low rainfall and high evaporation demands in those parcels (Figure 7)

Table 13. Tropical Fruits: Average Water Use for each Parcel in Gallon Per Acre Per Day

Parcel #	602B	608A	604 A	602B	Total
GAD	2676	2676	2676	2572	2650

Table 14. Tropical Fruits: Parcel Mango Average Water Use in Gallon / Acre / Day

Parcel #	602B	608A	604 A	602B	Total
Acreage	14	144	105	16	279
MGD	0.04	0.44	0.32	0.04	0.85

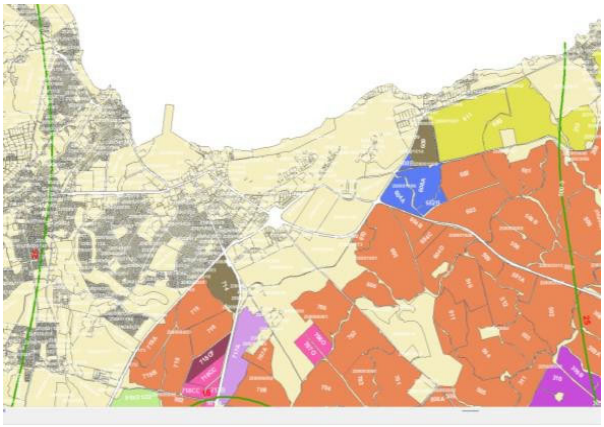


Figure 7. The Land Use Map shows the Tropical Fruits Parcels located in the northcentral area of the operation, which has low rainfall and high evapotranspiration demands.

8. Leased Ag

In this land use option, we used the same assumption we had for row crops because the crop of choice for these parcels is sweet potatoes. Given the favorable weather conditions to grow sweet potatoes year-round and the fact that sweet potatoes take between 4 and 6 months, we calculated the irrigation water requirements for a six-month, three-growing season of this crop on the allocated parcels. The first growing season is January – June, the second is March-August, and the third is July – December. Then, we multiplied the sum of the three growing seasons' irrigation requirements by two-thirds to allocate only the water needs for two growing seasons per year (Table 15).

Table 15. Leased Ag: Average water use in Gallon / Acre / Day for 3 growing seasons / TMKs

TMKS	January - June	March - Au	July - Dec	Annual
238004002	2,621	3,138	2,632	5,597
225001021	2,618	3,158	2,631	5,607
225001001	2,490	3,000	2,508	5,334
225002001	2,205	2,713	2,277	4,799
238005002	2,859	3,294	2,827	5,990

The total irrigation water needs of the leased Ag was 4.34 million gallons (Table 16) per day, with an average of 5,440 gallons per acre day (Table 16).

Table 16. Leased Ag: Parcel Average water use in Gallon / Acre / Day for 2 growin

Parcels #	803	408	409	401	901	Total
Annual Gallo	5,471	5,471	5,471	4,799	5,990	5,440
Acreage	32	363	339	55	10	799
Parcels Irriga	0.18	1.99	1.85	0.26	0.06	4.34

9. Other Agriculture Crops

In this land use option, we assumed the growth of a generic crop irrigated with a micro-sprinkler irrigation system. It uses between 2,772 and 3,085 GPA. We calculated the irrigation water requirements for that crop on the allocated parcels (Table 17). The 1,062 acres of this land use will use 3.20 million gallons daily.

Table 17. Other Agricultural Crops (GPD, 5,860 for 609 & 714 and 6523 for the others)

Parcel #	609	714	906	907	908	909	913	918	Total
Acreage	109	150	180	190	108	122	110	93	1,062
MGPD	0.30	0.42	0.56	0.59	0.33	0.38	0.34	0.29	3.20

10. Summary

In summary, irrigation water requirements for Mahi Pono were calculated for each parcel using IWREDSS based on long-term site-specific weather data, soil physical properties, and crop water parameters. The results show spatial variability from the inherent spatiotemporal rainfall, temperature, and evapotranspiration demands across the site. Citrus represents fifty-three percent of the total land and uses 50% of the irrigation requirements; however, irrigated pasture represents 16% of the land and uses 19% of the total irrigation water needs of the operation. Avocado, coffee,

and tropical fruits' water requirements are based on their percentages of total land.

Table 18. Summary of all land uses: use of Spray / Micro-Sprinklers

	Citrus	Irrigated Pasture	Macadami	Avocado	Coffee	Tropical Fruits	Row Crops	Other Ag	Leased Ag	Total
Acreage	13,125	3,874	3,040	2,132	1,997	279	322	1,032	799	**26,600**
Percentage of the total Land	49.3%	14.6%	11.4%	8.0%	7.5%	1.0%	1.2%	3.9%	3.0%	100%
Millions of Gallons per day	**33.29**	**9.20**	**7.19**	**6.17**	**5.16**	**0.85**	**1.92**	**3.20**	**4.34**	**71.3**
% of Total Water needs	48.9%	13.5%	10.6%	9.1%	7.6%	1.2%	2.8%	4.7%	6.4%	105%
GAD	2,536	7,124	2,366	2,895	2,583	3,041	5,972	3,096	5,431	3,894
Actual Land	**13125**	**3,874**	**3,040**	**2,132**	**1,997**	**279**	**322**	**1,062**	**799**	**26,630**

The irrigation water requirements calculated in this report account solely for the irrigation system at the field level. They do not factor in the conveyance efficiency, which usually varies between 60% and 80%, depending on the physical properties of the conveyance system. The conveyance efficiency represents the efficiency of water transport and is influenced by the length and condition of the conveyance systems. Losses such as system leakages and evaporation significantly reduce this efficiency. It is important to note that in larger irrigation systems, the conveyance efficiency is lower compared to smaller systems due to the more extended conveyance systems.

12. References

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The photo of drip in Sand and clay soils is from Michigan State University's extension website: https://www.canr.msu.edu/news/soil_type_influences_irrigation_strategy

From: Stacey Alapai
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Wednesday, December 11, 2024 5:25:34 PM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Stacey and I live in Makawao, Maui. By now you should be fully aware of how our community feels about these unnecessary stream diversions and corporate control of our water. Please reduce their use to only what they need and require them to take special precautions to reduce waste of this precious resource. I support the Sierra Club's testimony that I have copied below.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono’s unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui’s streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

I urge the Board to take the following actions:
- Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
- Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.
Stacey Alapai

From: Bobbie Best
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Agenda item D-9
Date: Thursday, December 12, 2024 7:47:13 AM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

I'm a Maui resident of over fifty years. I oppose the amount of the 2025 revocable permit.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

[Include personal stories or connection to Maui Hikina]

I urge the Board to take the following actions:

- Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
- Require the diverters to use lined reservoirs to prevent further waste.

Mahalo for considering this input.

Bobbie Best
Wailuku

RICHARD T. BISSEN, JR.
Mayor

JOSIAH K. NISHITA
Managing Director

OFFICE OF THE MAYOR
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAI'I 96793
www.mauicounty.gov

December 12, 2024

The Board of Land and Natural Resources
Honorable Dawn N. S. Chang, Chair
Honorable members of the Board of Land of Natural Resources

To Whom It May Concern:

The County of Maui respectfully submits this testimony to support the renewal of the Revocable Permit for one year to Alexander & Baldwin, Inc. and East Maui Irrigation Company, LLC. The renewal of this permit is vital to supporting the County's agricultural, municipal, and emergency needs, while aligning with our shared goals of promoting food security, economic sustainability, and community well-being.

The County of Maui has been working with the newly formed East Maui Water Authority, Mahi Pono and East Maui Irrigation Company to address this issue in the long term, and initial discussions have been productive. A one year extension of this revocable permit will allow all stakeholders to continue working toward a long term, mutually beneficial agreement, and we remain committed to working collaboratively with all stakeholders to ensure that water use is managed sustainably and equitably.

Additionally, the County of Maui will support the scheduling and organizing of the interim committee meetings monthly to assist in discussions in these areas.

Thank you for your consideration.

Sincerely,

RICHARD T. BISSEN, JR.
Mayor

From: Nick Crowley
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D9
Date: Wednesday, December 11, 2024 10:19:25 PM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Nick Crowley and I am a resident of Makawao, Maui.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

I urge the Board to take the following actions:

> Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
>
> Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

It has already been proven through the degradation of the environment on Maui that this corporate water hoarding is a terrible practice that hinders the present and future of this island. If the elected leaders will not do what is right for the majority of people and see through the short term gains of aligning themselves with corporations they will suffer the consequences of retribution by the people.

East Maui

From: Jocelyn Cruz
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Thursday, December 12, 2024 12:29:53 PM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Jocelyn and I am a resident of Haiku, Maui.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

As a farmer and friends of many farmers it's a travesty that this is even being proposed. As you know water is a public trust ensured by our state constitution, please do the right thing and do NOT allow anymore water to be diverted!

I urge the Board to take the following actions:

Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.

Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

Jocelyn Cruz

STATE OF HAWAIʻI | KA MOKUʻĀINA ʻO HAWAIʻI
DEPARTMENT OF LAND AND NATURAL RESOURCES | KA ʻOIHANA KUMUWAIWAI ʻĀINA
COMMISSION ON WATER RESOURCE MANAGEMENT | KE KAHUWAI PONO
P.O. BOX 621
HONOLULU, HAWAII 96809

December 12, 2024

Chairperson Dawn N.S. Chang
Board of Land and Natural Resources
1151 Punchbowl Street, Room 130
Honolulu, HI 96813

Subject: Issuance of Revocable Permit to Alexander & Baldwin, Inc. and East Maui Irrigation Company, LLC for the Development, Diversion, and Use of Surface Water for Diversified Agriculture, Currently Existing Historical Industrial and Non-Agricultural Uses, Reservoir, Fire Protection, Hydroelectric, and County of Maui Department of Water Supply and Kula Agricultural Park Purposes on the Island of Maui; Tax Map Keys: (2) 1-1-001:044 and 050, 1-1-002:002 (por.), 1-2-004:005 & 007, 2-9-014:001, 005, 011, 012 & 017.

Aloha Chair Chang and Commissioners:

Overview

The Commission on Water Resource Management (Commission) is the regulatory agency that oversees the protection and rightful sharing of all freshwater in the State of Hawaiʻi. Establishment and maintenance of instream flow standards (for surface water) and sustainable yields (for groundwater) and the issuance of water use permits (in designated water management areas) is the purview of the Commission. The Commission issues permits for stream diversion works and stream channel alterations (for surface water) and permits for well construction and pump installation (for groundwater). Commission staff appreciate the opportunity to comment on the proposed revocable permit for the East Maui License Area for surface water for use for drinking water by Maui County Department of Water Supply (DWS), and diversified agriculture and other uses by Mahi Pono.

Overall, the submittal is consistent with the Commission's intention in the 2018 Decision and Order[1] and the November 2022[2] order to amend the interim instream flow standards (interim IFS) in East Maui to ensure instream uses are protected to the extent practicable and to ensure that drinking water is available to meet the demands of the Maui County DWS Upcountry Water System while providing for the reasonable irrigation needs of 90% of the important agricultural

[1] https://files.hawaii.gov/dlnr/cwrm/cch/cchma1301/CCHMA1301-20180620-CWRM.pdf
[2] https://files.hawaii.gov/dlnr/cwrm/submittal/2022/sb20221115B5.pdf

lands in the central valley of Maui. Instream flow standards "serve as the primary mechanism by which the Commission is to discharge its duty to protect and promote the entire range of public trust purposes dependent upon instream flows." *In re Water use Permit Applications* (*Waiāhole I*), 94 Hawai'i 97, 148 (2000). Instream uses are protected by maintaining interim IFS and the Commission maintains a robust network of over 40 surface water monitoring stations to monitor hydrological conditions across the East Maui region.

The Commission staff agrees with the submittal's position that only a small amount of groundwater from the Applicant's privately owned wells is available and that these resources should not be factored into the calculation of the Applicant's water allocation. While groundwater may be used to supplement surface water under low-flow conditions, the Commission's policy has always been that groundwater should be reserved for highest and best uses, i.e., drinking water supply, and not for non-potable needs such as crop irrigation. The availability of groundwater from each of the aquifer systems is detailed below.

Surface Water Availability from East Maui

Availability of Streamflow Data

In 1989, East Maui Irrigation (EMI) filed the registration and declaration of water use for approximately 450 stream diversions on the Island of Maui. Many of these registrations were for small seeps and springs that the Commission considers "minor" in that they represented less than 1% of the total annual water diverted via the East Maui Irrigation System.[3] The "main" diversions were those built across larger stream channels that had intake capacities ranging from 5 million gallons per day (mgd) to 50 mgd. Most of these streams have had some continuous record stream gaging provided by the U.S. Geological Survey (USGS). Some records were as short as 30 years (e.g., USGS 16566 'O'opuola Stream), while others continue today, with over 100 years of record (e.g., USGS 16587000 Honopou Stream). Due to lack of funding or the accomplishment of data collection goals, a subset of these stations are currently active.

- Current streamflow data collected by these stations can be found here: https://waterdata.usgs.gov/hi/nwis/rt

- Flow duration statistics for active and discontinued locations throughout East Maui are available from USGS here: https://pubs.usgs.gov/publication/sir20165103

In addition to data available via USGS, Commission staff conducted partial-record gaging at many smaller headwater tributaries to estimate low-flow duration statistics in the 2020-2022 period and conducted seepage runs on streams that had no seepage data. Seepage data is the

[3] The East Maui Irrigation System includes the Ko'olau-Wailoa-Hāmākua Ditch, the Spreckels-New Hāmākua-Kauhikoa Ditch, Manuel Luis-Center-Lowrie Ditch, and the Ha'ikū Ditch but is distinguished from the Upper and Lower Kula Systems, which also divert water from East Maui, but are owned by the County of Maui.

analysis of synoptic streamflow measurements that characterize surface water-groundwater interactions under stable flow conditions.

- Those data can be found here: https://files.hawaii.gov/dlnr/cwrm/publishedreports/PR202201.pdf

- Hydrological data, including seepage runs, groundwater conditions, and summarized hydrological statistics for many of these streams in East Maui can also be found here: https://pubs.usgs.gov/wri/1998/4142/report.pdf https://pubs.usgs.gov/wri/wri99-4090/pdf/wri99-4090.pdf

Seepage from the EMI System

The EMI System transports diverted water efficiently via lined ditch and tunnel throughout most of the region. The principal ditch in the EMI System is the Koʻolau-Wailoa Ditch. The Koʻolau Ditch has a total length of 10.2 miles, 75% of which is tunnel; the remainder is in lined open ditches that have cut stone or concrete lining. The Wailoa Ditch has a total length of 9.6 miles and is entirely in tunnel or concrete-lined flumes. Seepage measurements conducted by the USGS for the open channel portions of the Koʻolau-Wailoa Ditch indicate very little seepage change between locations. The maximum reported capacity of the Koʻolau-Wailoa Ditch is 160 mgd, suggesting most of the water transported via the EMI System will be efficiently transported to the Maui's central valley.

- Additional information regarding the EMI System's seepage measurements can be found here: https://pubs.usgs.gov/of/2012/1115/of2012-1115_full-text.pdf

Compliance with Interim IFS

Based on the flow-duration statistics for the 1984-2013 hydrological conditions summarized in Cheng (2016; https://pubs.usgs.gov/publication/sir20165103), under the current interim instream flow standards, approximately 56 mgd is estimated to be available from streams in East Maui at median flows for transmission by the EMI System. This is an estimate based on median flows, so there may be greater or lower amounts of water available based on current stream conditions. Current conditions are dependent on large scale oceanic and atmospheric circulation patterns (such as the Pacific Decadal Oscillation (PDO), El Niño/La Niña Southern Oscillation (ENSO), and Interdecadal Pacific Oscillation (IPO)), which affect sea surface temperature anomalies, trade winds, and atmospheric moisture.

The Applicant's diversion of water is compliant with the current interim IFS. During drought conditions, there may be insufficient water naturally flowing in the stream to achieve the interim IFS. Commission staff identify drought conditions by evaluating hydrological conditions at natural flow index stations. In East Maui, five USGS streamflow monitoring stations are used to identify drought conditions:

- 165080000 Hanawi Stream https://waterdata.usgs.gov/monitoring-location/16508000

- 16518000 West Wailuaiki Stream
  https://waterdata.usgs.gov/monitoring-location/16518000

- 16552800 Waikamoi Stream
  https://waterdata.usgs.gov/monitoring-location/16587000

- 16570000 Naiiliilihaele Stream
  https://waterdata.usgs.gov/monitoring-location/16570000

- 16587000 Honopou Stream
  https://waterdata.usgs.gov/monitoring-location/16587000

Groundwater Availability in Central Maui

Sustainable yields establish the availability of groundwater from an aquifer system.[4] Like instream flow standards, "sustainable yields perform the same function of guiding water planning and regulation by prescribing responsible limits to the development and use of public water resources." *Waiāhole I*, 94 Hawai'i at 148.

In the September to November 2024 period, the Commission has received reported water use for 30 wells in the Pā'ia aquifer system, 24 wells in the Ha'ikū aquifer system, 11 wells in the Makawao aquifer system, and 42 wells in the Kahului aquifer system. The sustainable yields, current (2024) 12-month moving average, and 5-year average withdrawal from the Kahului, Pā'ia, Makawao, and Ha'ikū aquifer systems are provided in Table 1.

Wells in the Paia aquifer system operated by both Maui County DWS and Mahi Pono are relied upon during drought periods to supplement the lack of surface water available for potable and non-potable needs. The 2024 12-month moving average pumpage in the Pā'ia aquifer system was 6.373 mgd compared to a sustainable yield of 7 mgd, with a maximum monthly pumpage of 15.481 mgd in the previous 5 years. The sustainable yield was exceeded in the Kahului aquifer system every month from 2019 to 2024, and pumpage from the Pā'ia aquifer system has exceeded sustainable yield a total of 8 of the last 14 months.

[4] Under HRS § 174C-3, "[s]ustainable yield" is defined as "the maximum rate at which water may be withdrawn from a water source without impairing the utility or quality of the water source as determined by the Commission."

Table 1. Current sustainable yields for aquifer systems in the Central Aquifer Sector and current (November 2024) 12-month moving average (MAV) pumpage, 2019-2024 5-year average reported pumpage, and maximum reported monthly pumpage. [million gallons per day, mgd]

System	Sustainable Yield (mgd)	2024 12-month MAV (mgd)	2019-2024 5-year average (mgd)	2019-2024 Maximum Pumpage (mgd)
Kahului	1	5.448	4.807	8.230
Paia	7	6.373	3.466	15.481
Makawao	7	1.435	0.922	2.464
Haiku	24	0.658	0.820	1.210

Mahi Pono operates two wells in the Kahului aquifer system, which serve the Hopoi-Maʻalaea fields in combination with surface water from West Maui streams. These wells do not serve the fields supplied by surface water from East Maui. Mahi Pono operates nine wells in the Pāʻia aquifer system and one well in the Haʻikū aquifer system, all of which are combined with surface water to support non-potable irrigation demand (Table 2). Mahi Pono does not have any wells in the Makawao aquifer system. The latest 12-month moving average pumpage from Mahi Pono's wells indicate approximately 6.4 mgd has been used to supplement surface water on average during the previous year.

Historic pumping rates that far exceed current sustainable yields from the Haʻikū, Pāʻia, and Kahului aquifers was possible because of the large volumes of imported surface water that augmented recharge in the region. With the reduction in recharge associated with reduced irrigation usage, these historic pumping rates are not sustainable. Given the current (2024) 12-month moving average of pumpage, there is approximately 0.627 mgd of unpumped availability to expand groundwater use from the Pāʻia aquifer system, where most of Mahi Pono wells are located (Figure 1). Almost all wells are located at the lowest elevation ditch (Haʻikū Ditch) and could not be used to service the upper fields.

Table 2. Wells registered to Mahi Pono servicing their irrigation needs of the Central Aquifer Sector, current (2021) 12-month moving average (MAV) pumpage, and 5-year average pumpage. [million gallons per day, mgd] [note: reported pumpage from Mahi Pono through October 2024]

Well ID	Well name	Aquifer System	2024 12-month MAV (mgd)	2019-2024 5-year average pumpage (mgd)
6-4825-001	Kihei Shaft	Paia	0.153	0.037
6-5323-001	Paia-Pump 2	Paia	3.382	0.775
6-5321-001	Kaheka-Pump 18	Paia	0.000	0.000
6-5520-001	Maliko Pump 11	Paia	0.000	0.000
6-5522-001	Kuau Pump 12	Paia	1.599	0.846
6-5422-001	Paia Mill-Pump 13	Paia	1.513	1.290
6-5422-002	Paia-Pump 17	Paia	0.000	0.000
6-5424-001	HC&S 4	Paia	0.000	0.000
6-5226-002	Puunene-Pump 6	Paia	0.000	0.000
6-5520-001	Maliko Pump 11	Haiku	0.000	0.000
6-5224-002	Puunene-Pump 9	Kahului	0.000	0.000
6-5128-002	Waikapu Sh-Pump 7	Kahului	0.755	2.537

Maui DWS operates two high-elevation water delivery systems that deliver surface water to the Olinda Water Treatment Facility (WTF) and Piiholo WTF, along with six wells that contribute to their Upcountry Water System (Figure 2). Of the six wells, only five have been utilized in any capacity in the last five years (Table 2). Water from the EMI System is delivered to the Kamole WTF at Kamole Weir on the Wailoa Ditch. Groundwater pumpage to service the Upcountry Water System is extremely costly, due to the high elevation of the population centers. Further, many of the Maui DWS wells are located below historic pineapple fields, which leach legacy pesticides into the groundwater system, necessitating additional treatment before distribution.

Figure 1. Aquifer system boundaries, sustainable yields, and well locations with well ID for wells registered to Mahi Pono.

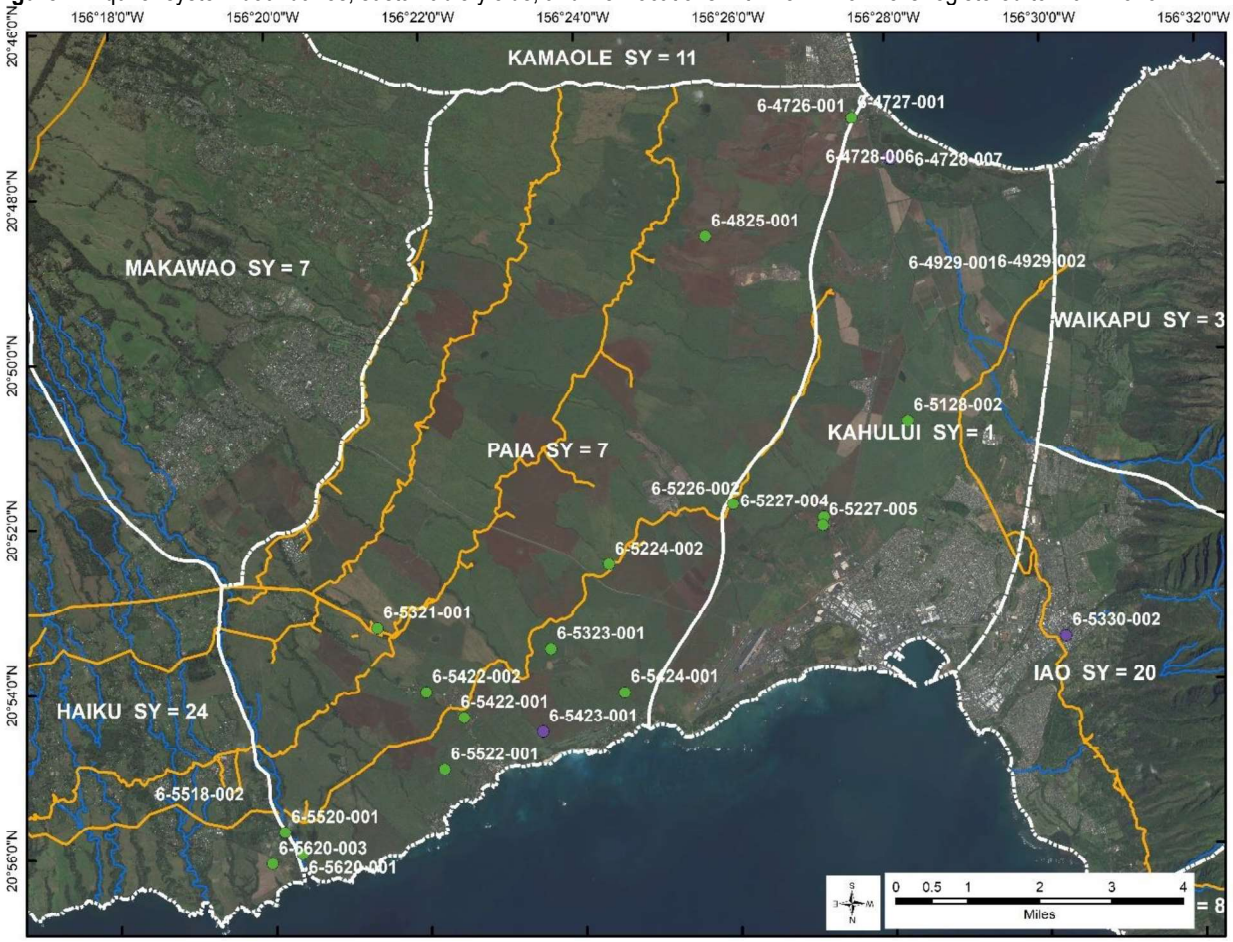


Table 3. Wells registered to Maui DWS servicing the Upcountry Water System, current (2024) 12-month moving average (MAV) pumpage, and 5-year average pumpage. [million gallons per day, mgd] [note: Maui DWS data only reported through Sept 2024]

Well ID	Well name	Aquifer System	2024 12-month MAV (mgd)	2019-2024 5-year average pumpage (mgd)
6-5420-002	Hamakuapoko 1	Paia	0.041	0.028
6-5320-001	Hamakuapoko 2	Paia	0.177	0.086
6-5420-001	Old Maui HS	Paia	0.000	0.000
6-5018-002	Pookela B[1]	Makawao	1.337	n/a
6-5118-002	Pookela MDWS	Makawao	0.952	0.512
6-5419-001	Haiku	Haiku	0.113	0.191
6-5317-001	Kaupakulua MDWS	Haiku	0.570	0.571

[1] pumpage at Pookela B well started in June 2024; pumpage is the mean from July to October 2024

Figure 2. Aquifer system boundaries, sustainable yields, and well locations with well ID for wells registered to Maui DWS as well as the fields of historic pineapple production that may indicate groundwater contamination.

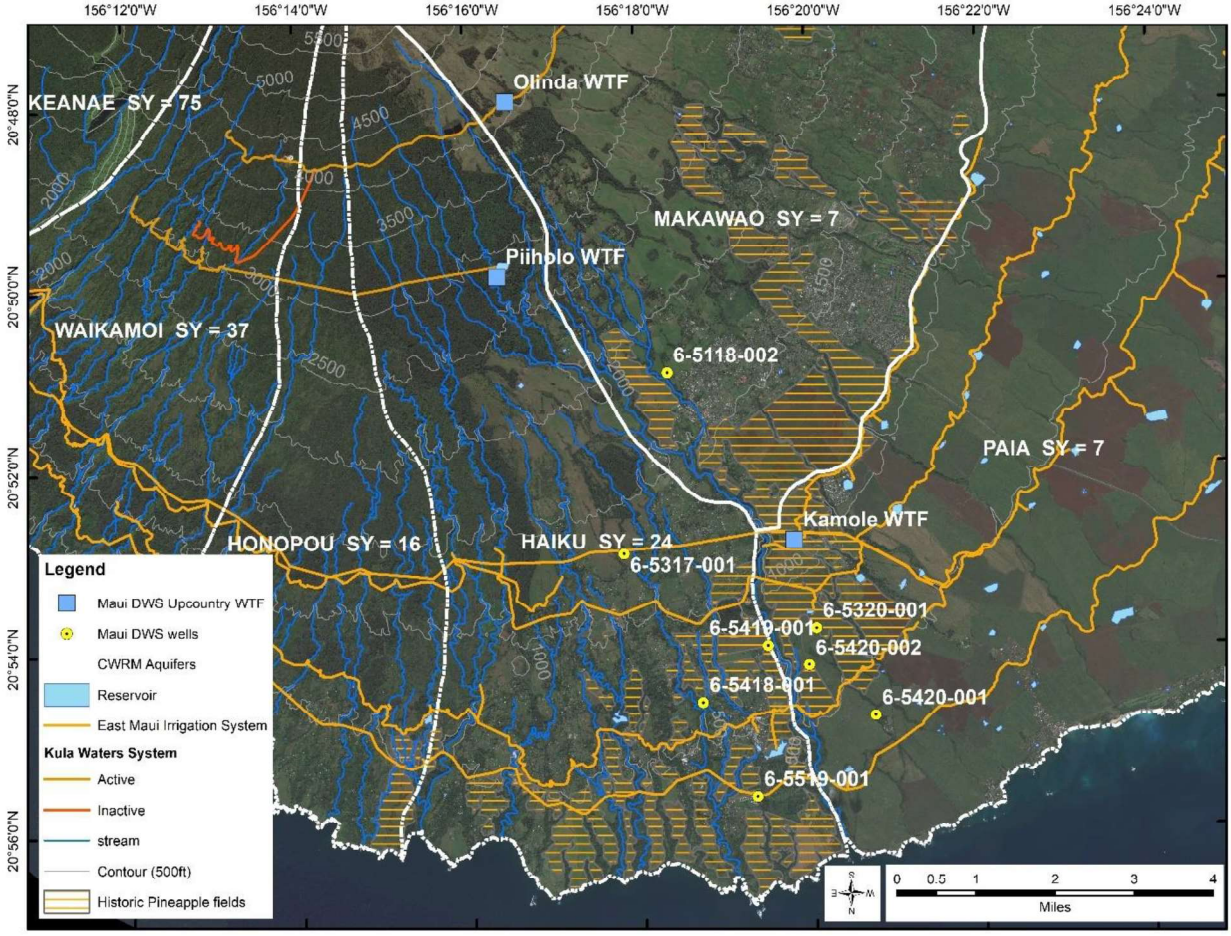
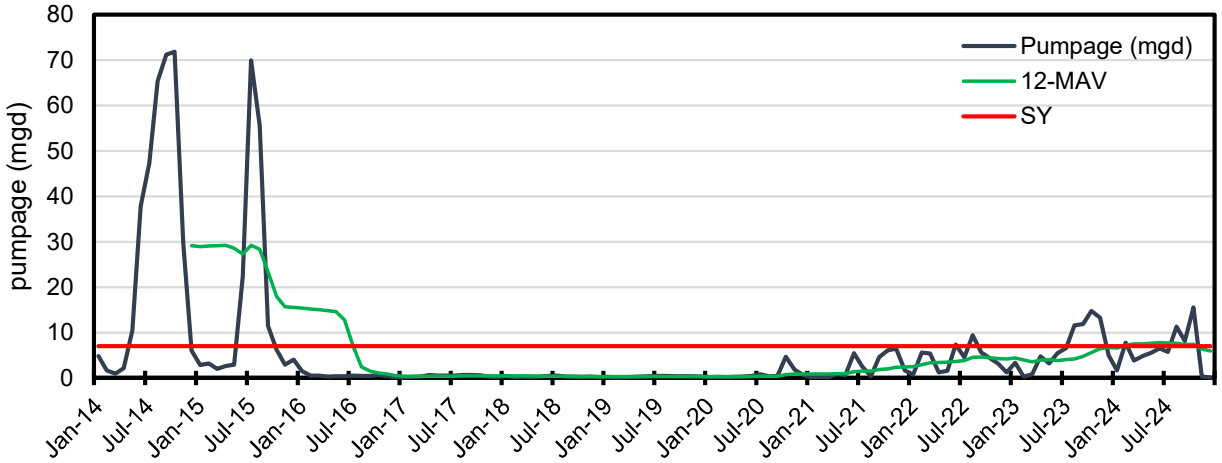


Figure 3. Total monthly pumpage from the Paia Aquifer System from 2014 to 2024 with 12-month moving average (12-MAV) and current aquifer system sustainable yield (SY).



Ola i ka wai,

CIARA W.K. KAHAHANE
Deputy Director

JOSH GREEN, M.D.
GOVERNOR
STATE OF HAWAII
Ke Kia'āina o ka Moku'āina 'o Hawai'i

SYLVIA J. LUKE
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STATE OF HAWAII
Ka Hope Kia'āina o ka Moku'āina 'o Hawai'i

KALI WATSON
CHAIRPERSON, HHC
Ka Luna Ho'okele

KATIE L. LAMBERT
DEPUTY TO THE CHAIR
Ka Hope Luna Ho'okele

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
Ka 'Oihana 'Āina Ho'opulapula Hawai'i
P. O. BOX 1879
HONOLULU, HAWAII 96805

December 9, 2024

TESTIMONY

TO: Dawn Chang, Chairperson
Board of Land and Natural Resources (BLNR)

FROM: Kali Watson, Chairperson
Department of Hawaiian Home Lands (DHHL)

RE: BLNR Agenda Item D-9, meeting of December 13, 2024[i]

Dear Chair Chang:

The Department of Hawaiian Home Lands (DHHL) offers this testimony on the above referenced agenda item. **While DHHL does not oppose this submittal, we respectfully request the amending of the submittal to include DHHL as a necessary stakeholder and party in the proposed monthly interim committee meetings under recommendation 3.c.(6).** Below we describe our interests and rights related to the East Maui Irrigation (EMI) System.

DHHL's interests and rights related to the EMI System

Water Reservations for DHHL homesteading

The DHHL, HHC and our beneficiaries have a deep-rooted connection to the waters historically and currently diverted by the EMI system and the EMI system itself. The waters diverted are the most viable water source for our 6,942 acres of DHHL lands in Kēōkea - Waiohuli and Pūlehunui. DHHL submitted a reservation petition to the Commission on Water Resource Management (CWRM) related to this system on December 16, 2020, which CWRM has not yet fully acted upon. Under Hawai`i Revised Statute (HRS) 171-58(g), the BLNR is obligated to notify, consult with, and jointly develop a reservation of water rights for current and future homestead needs before issuing water leases.

Appraisal and Native Hawaiian Rehabilitation Fund Revenue

As outlined under section 213 of the Hawaiian Homes Commission Act (HHCA) and Article XII, Section 1 of the Hawai`i State Constitution, DHHL is entitled to 30% of the revenue generated from any water disposition (via license, lease, or revocable permit or otherwise). These monies are payable into the Native Hawaiian Rehabilitation Fund (NHRF). Given the significant scale of the EMI system, the proposed licensing process and associated lease terms will have substantial impact on DHHL's financial interests.

East Maui Regional Community Board / `Aha Wai o Maui Hikina

The recently constituted East Maui Regional Community Board / `Aha Wai o Maui Hikina includes a designated seat for a representative of the Hawaiian Homes Commission (HHC). This Board governs the East Maui Water Authority. The purpose of this water authority is to acquire, manage, and control water collection and delivery systems with County staff in the Nāhiku, Ke'anae, Honomanū, and Huelo water license areas. DHHL is actively involved in the work of the East Maui Regional Community Board / `Aha Wai o Maui Hikina through the participation of our consultant, Jonathan Likeke Scheuer. The inclusion of a designated seat for DHHL on the East Maui Regional Community Board / `Aha Wai o Maui Hikina represents a significant milestone in advocating for our interests in water resources and the assurance of the prioritization of public trust purposes. The creation of this designated seat reflects the County of Maui's acknowledgment of DHHL's important role in water resource management.

Other Rights our HHC, DHHL, and Beneficiaries may possess

In addition to the rights we have discussed, we also note that there are other rights our HHC, DHHL, and beneficiaries may possess related to the EMI and its water resources. These include, but are not limited to, the rights to exercise traditional and customary practices related to the waters diverted; rights to water for farming and ranching purposes that are not on conducted on Hawaiian Home Lands; the water needs for our `āina at Ke`anae and Wailuanui that were historically dewatered by the EMI system; and any domestic water rights that our beneficiaries may possess.

<u>Our Desired Outcomes</u>

Given the reasons outlined above, DHHL respectfully requests that BLNR amend the proposed action to include DHHL as a party in the proposed monthly interim committee meetings to discuss water usage issues in the areas where the streams that water may be diverted from under this revocable permit are located. We note that water reservations for DHHL is an issue that will be covered at these meetings and request to be included as a necessary stakeholder. DHHL would also like clarification on whether this requirement of Maui County to assemble a monthly meeting will be duplicative of the current quarterly meetings CWRM

already convenes. If not, how will these meetings differ from those in terms of scope of discussion, or how will it otherwise complement these quarterly CWRM stakeholder meetings?

Thank you for this opportunity to provide testimony. DHHL looks forward to working collaboratively with BLNR and DLNR staff to ensure the interests of our beneficiaries, Commission, and Department are protected.

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[i] The full title of this agenda item is **Issuance of a Revocable Permit to Alexander & Baldwin, Inc. and East Maui Irrigation Company, LLC for the Development, Diversion, and Use of Surface Water for Diversified Agriculture, Currently Existing Historical Industrial, and Non-Agricultural Uses, Reservoir, Fire Protection, Hydroelectric, and County of Maui Department of Water Supply and Kula Agricultural Park Purposes on the Island of Maui; Tax Map Keys: (2) 1-1-001:004 and 050, 1-1-002:002 (por.), 1-2-004:005 & 007, 2-9-014:001, 005, 011, 012 & 017.**

From: Mina Elison
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony Against Proposed Water Diversion in East Maui
Date: Thursday, December 12, 2024 8:29:50 AM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Mina and I am a resident of Keʻei.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

I urge the Board to take the following actions:

- Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
- Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

Sincerely,
Mina Elison

From: Keala Fung
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Wednesday, December 11, 2024 8:16:47 PM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Keala and I am a resident of Honolulu.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

Maui is a very special place to me as I have family there who have been there for generations, and their livelihood depends on the land, and the well being of the land depends on water. To allocate more water than is needed is not only irresponsible but it is unethical.

I urge the Board to take the following actions:

> Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
>
> Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

Keala Fung

December 12, 2024

Chairperson Dawn Chang
Commission on Water Resource Management
Department of Land and Natural Resources
1151 Punchbowl St, Room 227
Honolulu, HI 96813

Aloha Chair Chang and Members of the Board of Land and Natural Resources,

My name is Shay Chan Hodges and I am a Haiku resident who became involved in East Maui water issues after I was appointed to the Maui County Board of Water Supply in 2016. I was Vice Chair and Chair of the Water Board from 2018 to 2021.

Since then, I have learned a great deal about Mahi Pono, the Canadian Public Sector Pension Investment Board (PSP), and the investment and operational strategies of Canadian pension funds, particularly with regard to water systems.

As you may know, Mahi Pono Holdings, LLC is the only member of Mahi Pono, LLC, both of which are registered as foreign entities in Hawaii. Mahi Pono Holdings, LLC's sole member is the Canadian Public Sector Pension Investment Board (PSP). PSP is a Crown Corporation with $265 billion in assets under management that invests the pension funds of the Canadian Forces, the Royal Canadian Mounted Police, the federal public service, and the Reserve Force. Many of those workers are represented by the Public Service Alliance of Canada (PSAC) union, which has more than 200,000 members. As was testified to at the November BLNR meeting, James Infantino, the National Pension Officer for PSAC, spoke at the September East Maui Water Authority meeting and gave a very clear message to Water Authority members and the community: "**Don't let PSP investments anywhere near this long-term lease**."

The basis for his message was PSP Investment's well-known record of international water grabs, exploitation of water resources and local communities, which PSAC – representing PSP's beneficiaries -- does not support.

It's important to understand that PSP's exploitive and destructive water strategies are not unusual for PSP nor for Canadian Pension funds.

I am submitting my testimony from London. Recently, the London-based Sunday Times Magazine published a seven-page feature story with the headline, "**Dirty Business, How Thames Water Got Away With it.**"

Per the story, "this summer, Thames Water was fined a record $104 million pounds [$130 million US] for dumping sewage in [UK] rivers and the company faces collapse." The pollution of the rivers is so bad that the British Environmental Agency opened a criminal investigation into Thames Water. Further, Thames Water "frequently comes bottom of industry rankings for customer service and leaks. A succession of owners stand accused of extracting huge dividends while letting its aged infrastructure go to seed."

Those owners include Omers, a $94 Billion (US) Canadian pension fund, representing 628,000 members, which reportedly may lose up to a billion dollars on this investment.

For UK residents, Thames Water is not just a mismanaged investment. Decisions must now be made in the United Kingdom about how to fix what is now a major infrastructure and environmental problem – and for which taxpayers may ultimately have to foot the bill.

I encourage you to read the attached December 1, 2024 Sunday Times Magazine article as it describes how the privatization of this vital water infrastructure allowed private interests to load it up with debt while extracting huge dividends, increase water bills by 47%, and pollute UK waterways.

Our Maui community's experiences with the Canadian Public Sector Pension Investment Board (PSP)/Mahi Pono thus far are consistent with Thames Water. A Canadian Pension Fund is seeking to control a vital water source with little transparency and accountability, in order to extract profits. Meanwhile, safeguards have yet to be put in place to ensure that our public trust waters do not become another mismanaged foreign investment that our community ultimately pays for.

The BLNR should not ignore the record of PSP and Canadian pension funds' strategies and disastrous outcomes in California, Australia, and the United Kingdom, when considering any water agreements with Mahi Pono.

The BLNR should prioritize stewardship and accountability now so that Maui does not face the crisis that UK residents are now grappling with in order to have access to clean water and save their waterways.

With regard to the proposed 2025 revocable permit:

- The proposed diversion amount exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices**. I urge the Board to reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.**
- Water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization. **I urge the Board to require the diverters to use lined reservoirs to prevent further waste.**

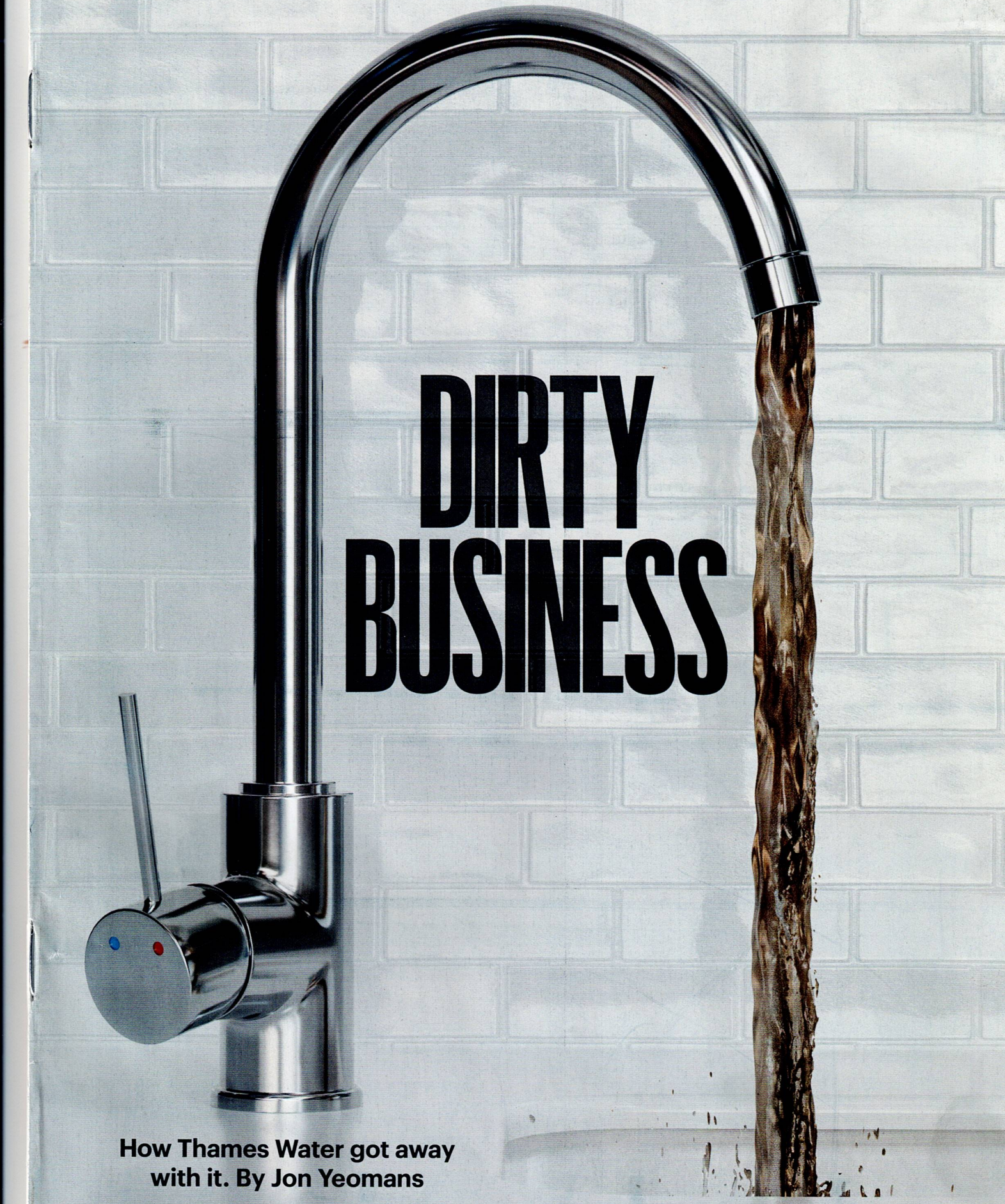
Thank you for your consideration.

Sincerely,

Shay Chan Hodges
Haiku, Maui

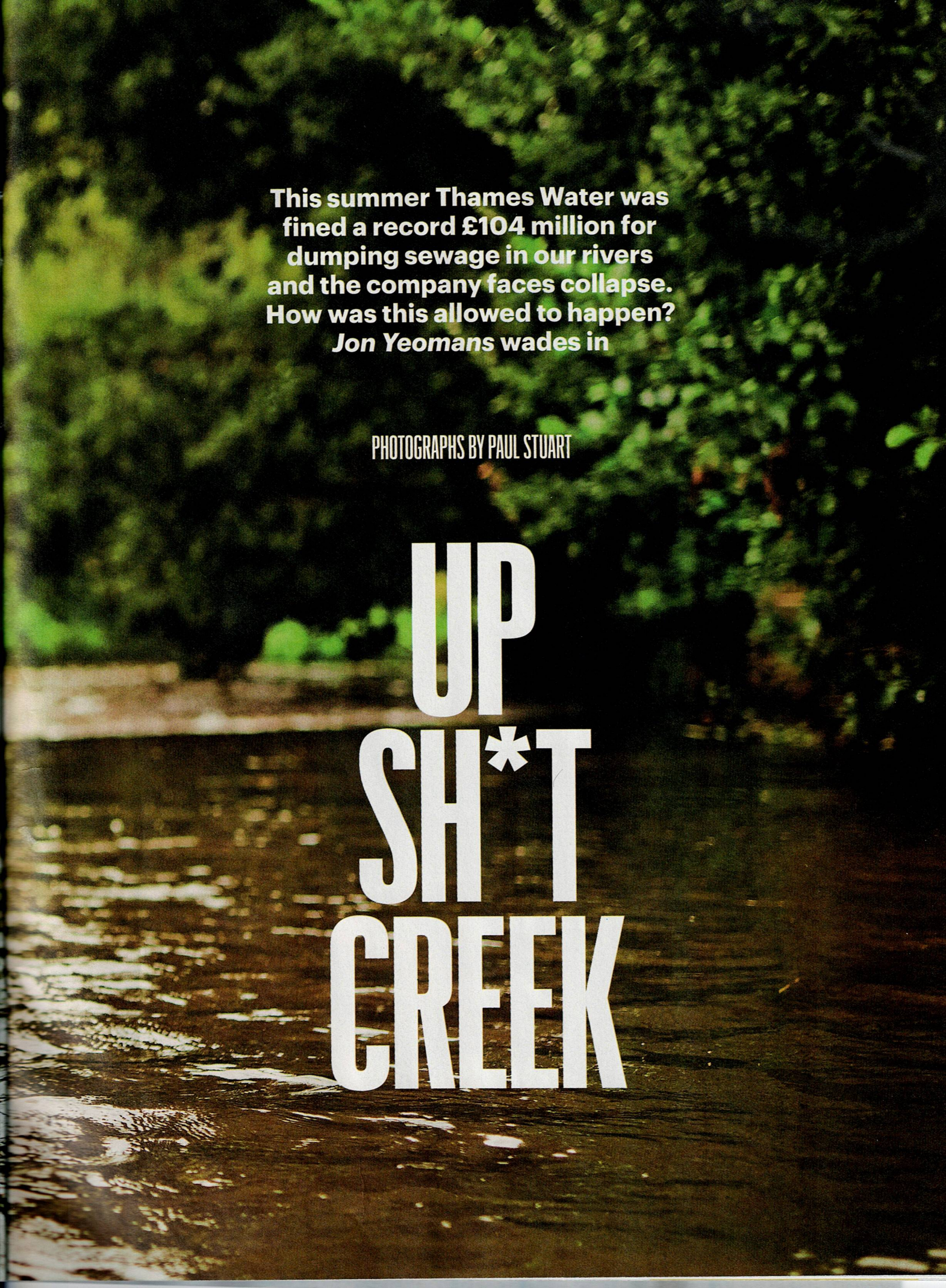
THE SUNDAY TIMES *magazine*

December 1 2024



DIRTY BUSINESS

How Thames Water got away with it. By Jon Yeomans



This summer Thames Water was fined a record £104 million for dumping sewage in our rivers and the company faces collapse. How was this allowed to happen? *Jon Yeomans* wades in

PHOTOGRAPHS BY PAUL STUART

UP SH*T CREEK

Above and previous pages: tests carried out by Alistair Young of the River Wey Trust in Tilford, Surrey, prove that water quality is below the safe limit

Alistair Young is standing in a river in green rubber waders and a salmon-pink jumper. He grasps a net with both hands and plunges it below the surface. Brown water swirls around his hips. Young is a trustee of the River Wey Trust and he wants to see just how dirty the river in Tilford, Surrey, is. "This is citizen science in operation," he says. "The more data you collect, the more useful it is."

Back on dry land Young uses a turkey baster to fish out mayflies and shrimps from his river sample. Their levels are below average for the time of year, suggesting the Wey is not in tip-top condition; this stretch has an ecological status of "poor", according to the Environment Agency.

The agency estimates that just 14 per cent of England's rivers are in "good" health. In July its annual report found that the number of serious pollution incidents in Britain rose from 44 in 2022 to 47 in 2023 and more than 90 per cent of these were caused by four water companies: Anglian, Southern, Yorkshire and Thames. The state of Britain's rivers has become a national outrage — and its floundering water companies are shouldering the blame.

Young tests the water for phosphates and nitrates, nutrients typically found in farm run-off and sewage. A sample taken at this spot a few days later, in late September, is sent to a lab, which finds *E. coli* in the river is more than four times the safe bathing limit.

Upriver from Tilford is a sewage works owned by Thames Water, the poster child for the industry's excess and calamity and the biggest water provider in Britain. With revenues of £2.5 billion, it serves 15 million households in the southeast. It is also the most indebted, with £15.2 billion of borrowings. In 2017 it received a then record fine of £20 million for a string of pollution incidents on the River Thames. In 2021 the Environment Agency opened a criminal investigation into water companies, including Thames. This summer it was hit with a £104 million fine for sewage spills. While it was not the worst offender for spills last year (see table on page 15), it frequently comes bottom of industry rankings for customer service and leaks. A succession of owners stand accused of extracting huge dividends while letting its aged infrastructure go to seed. It is now in a scramble for financial survival.

It's easy to paint Thames as the villain, controlled by venal owners who didn't have the competence to keep this monopoly supplier solvent. But just how has the firm been allowed to sink so low? With its vast estate crumbling, can it rise to the challenges posed by climate change? And what part do we, the public, have to play in its future?

"The problem to me is the rules Thames follows are not policed," Young says. "They get away with, perhaps morally, things they shouldn't be doing, but we as a community aren't holding them to account." ➤

THIS STRETCH OF THE WEY HAS AN ECOLOGICAL STATUS OF "POOR". JUST 14 PER CENT OF ENGLAND'S RIVERS ARE IN "GOOD" HEALTH

PAUL STUART FOR THE SUNDAY TIMES MAGAZINE

Why is sewage ending up in our rivers?

At Mogden sewage treatment works in west London planes headed for Heathrow scream overhead every 90 seconds, disturbing the peace of the 55 hectares of smelly ponds and circular pools. The site processes 12,000 litres of wastewater a second, serving more than 2 million people.

One of the biggest headaches for Thames Water are those thunderous, rainy days when water is suddenly gushing everywhere. Mogden can quickly exceed its capacity and has to divert rainwater to its storm tanks. When full, these discharge untreated sewage into the river. This is repeated at water companies up and down the country; better monitoring now makes it possible to track discharges in near-real time.

Climate change means storm surge days are increasingly common. "We talk about 'one-in-five-year storm events' happening on a weekly basis in the winters now," one Thames manager says.

The water firms are lobbying the industry regulator, Ofwat, to sanction a huge increase in spending over the next five years to fix this creaky infrastructure. Mogden is a good example of why. While the population of the area it serves has expanded, the site has no room to grow. Up close, weeds spring up along its footpaths. The tiles in the pump house are cracked. A rat pokes its head out near the pungent sorting area where solid objects are extracted from sewage.

People close to Thames Water argue that it is a special case — and that its woes are not entirely self-inflicted. It has some of the oldest infrastructure in the country: much of it dates back to the era of Joseph Bazalgette, the Victorian builder of London's sewers. And its network is vast, stretching from Cirencester in Gloucestershire to Banbury in Oxfordshire and Crawley in West Sussex.

Along with its peers, Thames is also battling increased expectations from the public about what a water company should deliver. These have been stoked by savvy campaigning from the likes of Feargal Sharkey, the former Undertones singer, who has become a frontman for a protest movement that brought thousands of people on to the streets of London last month.

In the water industry river pollution is a sore point. Engineers and executives note that the UK pioneered the system of "combined" storm overflows, whereby rainwater and sewage flow into the same channels. The system built by Bazalgette was hailed for cleaning up London and its river following the Great Stink of 1858, helping to wipe out cholera. The fact that the pipes were designed to spill sewage into the Thames *only* when it rained heavily was part of their genius, given that the river had effectively been an open sewer in the past. Re-engineering the UK's whole sewer network is too expensive and impractical: one estimate put the cost at £600 billion.

Some in the industry suggest that cuts in funding at the Environment Agency, which also regulates water suppliers, have made it harder to police river pollution. Some grumble that other bad actors, such as farmers and housebuilders, share the blame. Yet there is a widespread acceptance that these excuses, even when they have merit, won't wash.

"We've always put stuff into rivers," an industry source says. "But now we're just going to have to make sure that they are acceptably clean."

Feargal Sharkey joins Save Windermere protesters; storm overflow is discharged into the river at the Thames Water sewage treatment works in Windsor

MIRRORPIX, REX

How did things get so bad?

For Thames, the big question is whether it can actually pull off the improvements required. It emerged earlier this year that it did not even have complete maps of its network. A senior industry source describes the dilemma thus: "How much do they understand about their assets? Do they really know where problems are? And if they had extra funding, could they fix the right assets to improve their performance or would they just be operating blind?"

The first inkling of serious trouble at Thames came with the sudden resignation of its boss, Sarah Bentley, in June 2023, amid reports of a boardroom bust-up. Since 2017 Thames has been owned by a clutch of infrastructure investors including Omers, a Canadian pension fund; China's sovereign wealth fund; and the British university pension scheme USS. Thames's management had been negotiating with its investors for new cash to keep the firm afloat. In October 2023 it announced that shareholders were prepared to pump in £3.25 billion.

There was a catch, however. The bulk of this money would not come unless Thames could reach a favourable settlement with Ofwat over how much it can raise customer bills between 2025 and 2030. In the arcane world of water, Ofwat sets strict limits on ➤

THE AVERAGE ANNUAL HOUSEHOLD WATER BILL IS £422, COMPARED WITH £285 IN 1989-90 — AND THAT'S ADJUSTED FOR INFLATION

how much firms can charge consumers. In an industry where there is no effective competition, the regulator has to make sure customers are getting a fair deal.

It soon became apparent that Thames's owners could not reach a deal over the returns they would be allowed to make from their investment. In March this year they flounced out, declaring Thames "uninvestable". Thames's lenders have now seized control. With the company saying it would run out of cash this month, a group of City institutions that hold about £12 billion of its debt have offered it a £1.5 billion loan at painfully high levels of interest. All eyes are on December 19, when Ofwat is due to make its final ruling on bills. If Thames can win concessions, then investors may be willing to put in the £3 billion or so it needs — not in loans but in fresh money.

The alternative is that Thames slips into a "special administration", with taxpayers on the hook for its costs. This would trigger a political tsunami for the government and a crisis of confidence for the industry. The stakes are worryingly high.

Echoes of the 1970s

Wind the clock back 50 years and the debate about Britain's water sector was not so different. The talk then was also of the need to invest and the lack of funds to do it. By the 1970s nationalised water companies had been consolidated into ten regional authorities. But their ability to borrow was restricted by central government. Margaret Thatcher had a solution: privatise the sector, allow it to borrow freely and lift the burden on the taxpayer.

Michael Howard, a future leader of the Conservative Party, was minister for the environment in Thatcher's government in 1988-89. Now aged 83, Lord Howard recalls: "Our water industry needed a very large amount of investment and it simply wasn't going to get that if it had to compete with the demands for schools, police, roads and the health service."

There was another pressing reason: since joining the European Economic Community in 1973 the UK had to meet stringent European directives on water quality. And so, in 1989, the government cancelled the debt of the ten water companies, granted them a dowry of £2.3 billion and listed them on the London Stock Exchange. Two regulators, Ofwat and the Drinking Water Inspectorate (DWI), were established.

In the decade after privatisation bills jumped 47 per cent as firms played catch-up on investment. After 2000 bill rises levelled off as the initial surge in spending moderated. Today the industry lobby group Water UK says the average household bill is about £422 a year, compared with £285 (adjusted for inflation) in 1989-90.

The industry defends its record. "Our drinking water is consistently at the very top of world rankings," says David Henderson, chief executive of Water UK. "That was not the case in the 1970s and 1980s. Leakage has been cut by about a third [since 1990]. There have been very tangible improvements."

Data from the Environment Agency appears to back this up, with rivers showing falls in ammonia, phosphorus (from sewage) and biochemical oxygen demand (BOD, an indicator of pollution) since the 1980s.

In 1995 the government ditched its "golden shares" in water suppliers, which had given it the power to block takeovers. It was a pivotal moment, as was an order in 1999 by Ofwat to lower bills. With returns in its home market limited by the regulator's diktats, Thames set its sights on snapping up foreign companies, including in the US.

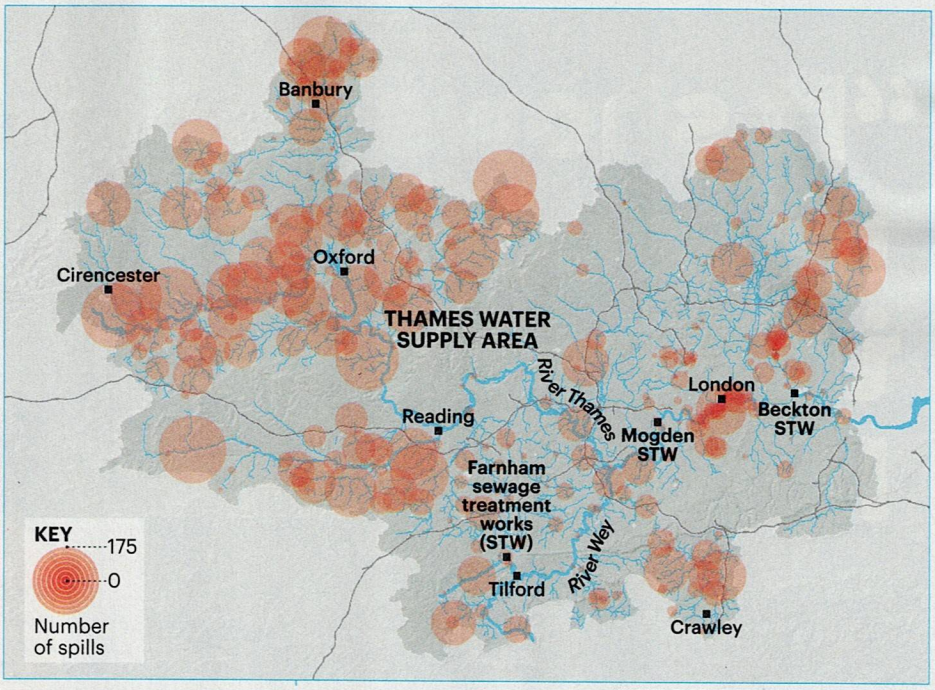
In 2000 it became a target itself and was bought by the German energy giant RWE for £4.3 billion. By 2004 Thames had an empire on which the sun never set, with subsidiaries in Chile, Hong Kong, Thailand, Indonesia and Australia. It wasn't to last. The following year RWE performed a screeching U-turn and put Thames up for sale, having concluded that water and energy companies do not make good bedfellows. Thames was bought by the Australian bank Macquarie in 2006 for £4.8 billion. And the plot thickened.

The "vampire kangaroo"

When Macquarie's new headquarters opened in downtown Sydney earlier this year, critics noted the 40-storey building with a curved silver dome resembled a Minion from the *Despicable Me* films. Others likened it to a Dalek.

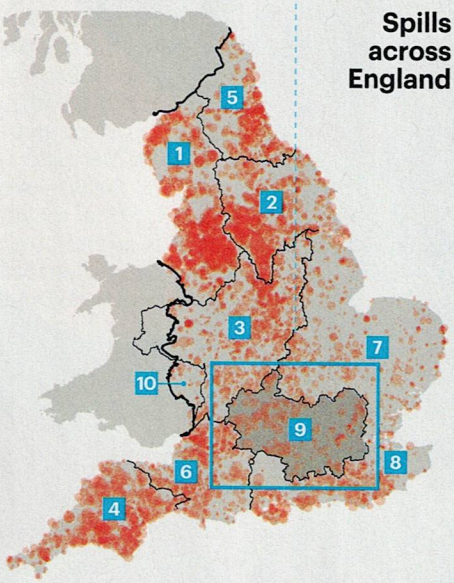
In Australia they call Macquarie "the Millionaires' Factory" for the fabulous ➤

Location and size of Thames Water spills in 2023



SOURCES: THE RIVERS TRUST, ENVIRONMENT AGENCY

Spills across England



Untreated sewage spills — the worst offenders in 2023

		Spill events	Average duration per spill (hours)
1	United Utilities	97,537	6.7
2	Yorkshire Water	77,761	6.6
3	Severn Trent Water	60,253	7.3
4	South West Water	58,249	9.1
5	Northumbrian Water	46,492	6.0
6	Wessex Water	41,453	9.0
7	Anglian Water	31,623	8.6
8	Southern Water	29,494	10.8
9	Thames Water	16,990	11.6
10	Welsh Water*	4,204	5.6

*In England only

salaries it pays. The Sunday Times dubbed it "the vampire kangaroo" for its ability to squeeze money out of ageing assets. In the case of Thames, the principal charge against Macquarie is that it loaded it with debt while extracting huge dividends.

Macquarie concedes that debt at Thames rose from £6 billion to £11 billion on its watch, but says this was used to pay for investment, which totalled £11 billion. It says it withdrew £1 billion in dividends, of which only half ended up in its funds, as it only ever owned 48 per cent of Thames; other funds were also invested. By the time it sold out in 2017 it held a quarter of the business.

The picture is complicated by the layers of holding companies Macquarie created between Thames Water Utilities Ltd, the regulated body, and the ultimate holding company. A BBC investigation in 2017 found that a large chunk of the sum Macquarie paid for Thames came in the form of debt that it ultimately put on the water supplier to repay.

Why was this debt allowed to spiral? Sir Dieter Helm, professor of economic policy at the University of Oxford, says the problem began in the late 1990s when firms realised they could borrow against their assets. "It's like I give you a mortgage-free house and then you go to the bank and borrow money against that house and distribute the proceeds. It was a huge regulatory mistake, and it's not what was intended at the time of privatisation. The borrowing was for investment, not dividends."

Thames was not the only offender. Over time most of England's water companies fell into foreign hands and ramped up their borrowings. Total debt in the sector stood at £68 billion in the year to March 2023 — itself a jump of £8 billion in just a year.

Howard says the regulator "should have insisted on more of the money which the companies needed being raised from equity rather than borrowing. When interest rates were very low, [borrowing] may have seemed a sensible strategy. And they weren't the only people to be caught out when interest rates started to rise. But in retrospect I'd say that was a mistake."

Macquarie jettisoned Thames's foreign adventures and focused it back on the UK. From 2009 to 2016 Thames was led by Martin Baggs, a water industry veteran, who attracted controversy for winning chunky bonuses even as the firm imposed hosepipe bans on customers. One newspaper dubbed him, perhaps inevitably, "Money Baggs".

"Macquarie ran a tight ship," recalls Colm Gibson, managing director at Berkeley Research Group and the head of economic regulation at Thames between 2012 and 2018. "Everything had to be really efficient. They wanted you to spend all the money you needed to spend but no more than that."

Macquarie's funds enjoyed gross returns of 12-13 per cent from their investment in Thames. "We supported Thames Water as it delivered record levels of investment, which enabled the company to reduce leakage and pollution incidents while improving drinking water quality and security of supply," Macquarie says.

Macquarie Bank's HQ in Sydney. The group acquired Thames Water in 2006 from the German energy firm RWE

Charles Watson, the former City PR man who set up the campaign group River Action in 2021, has a different view. "By the time Macquarie scuttled off to Australia it had made a huge return on its investment, which for a monopoly business whose product falls freely out of the sky was just way above what should have been allowed."

Macquarie did not scuttle off far: it still owns swathes of British infrastructure, including Southern Water, which has its own financial problems.

The warning signs were there when the Omers consortium took over Thames in 2017 — the year it received its record £20 million fine for sewage spills. The consortium's main shareholders are now Omers, Universities Superannuation Scheme, Abu Dhabi Investment Authority, British Columbia Investment Management Corporation, Hermes GPE, China Investment Corporation and Queensland Investment Corporation. There was churn at the top: between 2016 and 2024 Thames cycled through seven chief executives, including interim appointments.

Can Thames fix its infrastructure?

The job of sorting out the network has fallen to Chris Weston, 60, who became chief executive of Thames earlier this year. A newcomer to the water industry, he was previously CEO of Agrekko, a FTSE 250 generator hire company, and a managing director of British Gas. He is understood to have split the business more clearly between clean water services and wastewater. But the company is playing catch-up. By its own estimates it must spend about £20 billion to replace assets that are "no longer reliably performing their function or in such poor or failed condition they are beyond useful life".

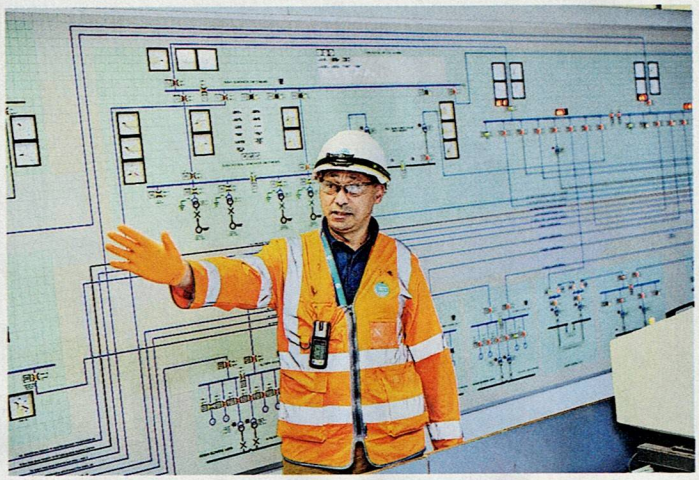
"We have not been great at doing 100 per cent of the maintenance required of us," an insider admits. "There's been a squeeze on budgets and the driver behind that is the size of the bills we're allowed to charge."

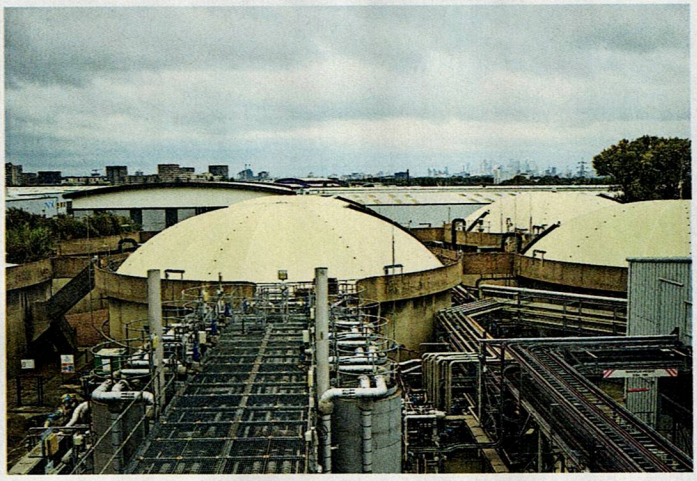
The implication is that Ofwat has been too slavishly focused on keeping down bills to grant water companies the funds they need. Data from Water UK shows that in real terms water bills are lower today than they were in 2014-15 — something that can't be said about sectors such as energy.

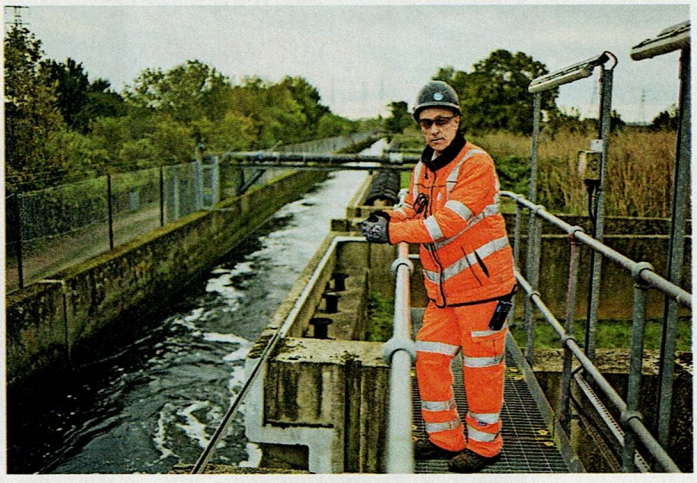
Not everyone, however, buys the water companies' claims of poverty. Dr Mike Keil, of the Consumer Council for Water, accepts that customers may have to pay more to cover the cost of climate change. But he notes that water suppliers that are unhappy with Ofwat's decisions can appeal to the Competition and Markets Authority (CMA). This route has been taken in just 6 per cent of cases, he says. "This is a sector that's ➤

"BY THE TIME MACQUARIE SCUTTLED OFF TO AUSTRALIA IT HAD MADE A HUGE RETURN — WAY ABOVE WHAT SHOULD BE ALLOWED"

GETTY







Beckton sewage treatment works in London. Top left: Marlon Esau, technical manager. Bottom right: David Fenech, area operations manager

saying, 'We can't live with what we were given.' Well, if you can't live with it, why is it that most of the time you have accepted it?"

Green shoots

In Beckton, east London, a vast concrete shaft plunges 85 metres below ground to the deepest point in the capital. This is the pumping station of the Thames Tideway, London's newest sewer — a 25km pipe designed to stop storm overflows washing into the Thames. The £700 million pumping station is the sort of engineering marvel the water industry would like to shout about. "It does actually make you quite proud to be working for Thames when you see that," one worker remarks. Tideway's £4.5 billion total cost will be paid for by Thames's customers over decades. It may form a model for how future water infrastructure can be built.

At 300 acres, Beckton is one of the biggest sewage facilities in Europe. Its sheer scale drives home the point that Thames Water is simply too big to fail. Indeed, sources emphasise time and again: water supplies to customers will not be affected whatever happens. That will do little to quell the outrage that many feel at the parlous state of Britain's biggest water company.

"I'm sure all parties are at fault — the regulator, the operators, the government," one senior executive says. "Everyone has played a role in getting us to where we are."

Various rescue plans are now in train to stop Thames sinking under its debts. The first is to find new investors to put in fresh money. That depends on a favourable settlement from Ofwat when it publishes its pricing determination for the next five years on December 19; it could be delayed further if Thames decides to appeal Ofwat's ruling with the CMA. CKI, whose parent company owns Northumbrian Water and the mobile network Three, is understood to be interested.

A second, more likely plan is that Thames's creditors will supply emergency funding at nose-bleed rates of interest and then restructure its debt. They could swap some of their loans for shares in the firm.

A third, more unpalatable option is to let Thames slip into a "special administration regime", whereby an administrator would impose a "haircut", or debt reduction, on its creditors. It would then be sold back to private investors.

The nuclear option is outright nationalisation, although Steve Reed, Labour's environment secretary, has dismissed the possibility of this.

Whatever happens to Thames, there is a growing sense that the UK cannot stagger on like this. Investors have already delivered the government a warning that the crisis at Thames, plus heavy-handed regulation from Ofwat, will sour investment in the UK. There are signs Labour is listening. It has appointed the former senior civil servant Sir Jon Cunliffe, 71, to lead a commission on water sector reform. Some suggest a merger of regulators could be on the cards.

Yet it is also a moment for the public to ask tough questions of itself. Without letting water companies off the hook, are we as consumers willing to change? Will we curb our water usage? Stop flushing wet wipes that clog up sewers? And accept higher bills? Water company bosses — many of whom have been castigated for their high pay — know this is a hard argument to make.

Back in Surrey, Alistair Young is packing up his test kits. He reflects on his late conversion to river activism; in a previous life he worked in cybersecurity. "I'm not particularly a river person," he says. "For me it's part of looking after the environment and doing something positive. If everybody does a little, you can get a lot done." ■

From: Spencer Hyde
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony on Agenda Item D-9
Date: Thursday, December 12, 2024 10:01:09 AM

Aloha BLNR,

Having lived on Maui for most of my life, I do not believe that A&B is a good steward of the land. They are turning Kahului into a strip-mall wasteland with big box stores and fast food chains. I have completely lost trust in them to be good stewards of Maui's precious water resources. Please, do not allow them to divert more water than absolutely necessary to support real local agriculture and make sure that they eliminate as much water waste as possible. With all of the money that A&B is making leasing out their strip mall spaces to big box stores and fast food chains, they can absolutely afford to install lined reservoirs.

Thanks,
Spencer Hyde
(808) 344-8299
4320 E. Waiola Lp.
Kihei, HI 96753

Restore the Commons

Friday, December 13, 2024

Board of Land and Natural Resources

Agenda Item D-9

Position: Oppose

Me ke Aloha, Chair and Members of the Board of Land Natural Resources

While it is constitutionally appropriate for the Land Board to lease State lands, it's determination of the value and use of available water resources is impertinent. That is the province of the Commission on Water Resource Management, which has the unenviable task of determining necessary flows of water upon the land. To date, it has only determined interim minimum flows, not optimum flows to the benefit of these public trust lands and their potential reasonable and beneficial purposes, including traditional Hawaiian values in the 'āina.

The value of the land in this case is entirely dependent upon the water to be diverted from it to other, non- public trust, private lands. Commercial use of such water is subject to higher scrutiny than the public trust uses outlined by the Supreme Court. The land value to the community – "the State" – is in the use of the land itself, largely based upon its ecological conditions, given all natural resources it contains, pre-eminently the value of the land as served by undiverted natural flowing streams. Hence the value of the proposed lease is entirely dependent upon what the Water Commission may deem available for use other than in the watershed. The only appropriate current action by the Land Board is a determination of the value of these lands in their natural undiverted state. The fact that diversions were appropriated by colonial usurpers has no bearing on the current public trust of the people of Hawaii.

The Land Board is the inappropriate venue for the proposed action, prior to appropriate action having been taken by the Water Commission. In due time, the lease of these lands must be evaluated on the basis of their diminished value with proposed water diversions.

Mahalo for the opportunity to address this issue,

/s/ Charley Ice, Hoa'āina

Hydrologist, Commission on Water Resource Management 25 years (retired)

Planner, Hawaiian Home Lands (10 years), Hawaiian rights specialist and Chair's liaison to the Water Commission

From: Sheala Karratti-Humphries
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Wednesday, December 11, 2024 10:45:20 PM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Sheala and I am a resident of Honolulu. Although I do not live in Maui, I am appalled that our state continues to allow wasteful entities with only profit as their bottom lines to have priority over our natural resources. Water is a human right and also has an intrinsic right to exist—naturally within the ecosystem!

The continuance of water diversion to entities such as Alexander & Baldwin and Mahi Pono after the Lāhainā fires is a slap in the face to residents affected by the horrific tragedy. Until A&B and Mahi Pono can truly step up, mitigate their waste, lessen their water usage and commit to pono practices that put 'āina, kanaka, and all people first, they should not have their permits renewed.

Thank you for your consideration.

Sheala Karratti-Humphries

To: State of Hawaii

From: Harvy King

Subject: Multi-Season Opposition to Garbage Decision Making

It is my personal opinion that due to Lahaina and Red Hill there is enough emergency in Hawaii that you can use all the emergency declarations of the last five years combined to use on top of that Homelessness Emergency Declaration to clean Hawaii up, but you're not. If you're a part of keeping the public upset you're part of the rest of the situation of suspicious corruption. Please take this statistics homework as recommendations
.

Harvy King

DATA 348

Fiorella Penaloza, D.M.

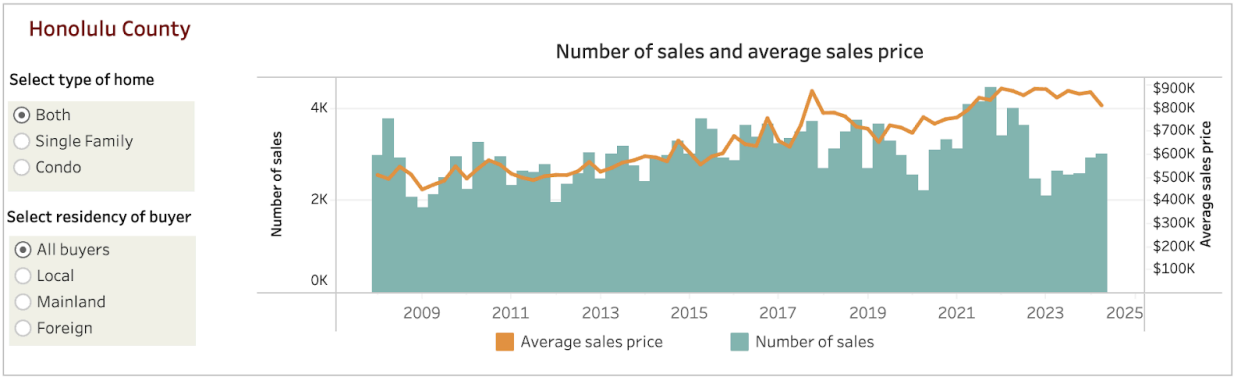
December 11, 2024

Hawaii's FreshWater Dissonance

The control of land and water in Hawaii is saturated in controversy between community and corporation's priorities. Hawaii recently faced the historic loss of Lahaina town. It is well known that the factors that contributed to that day in Lahaina had to do with neglect: of utilities, emergency services, and environmental resilience (State). The Navy's Red Hill fuel contamination of the groundwater is an ongoing wicked problem (EPA). The Navy's Red Hill facility has the long term planning of Oahu in question. Simultaneously, a diaspora of indigenous people from their homeland while the US economy adds costs to the local residents who can afford to stay in Hawaii. The increase in sale price of homes in Hawaii has reached a threshold

out of reach for typical home buyers, that the number of sales has dropped sharply in recent years. Figure one represents how the increased cost of homes has caused a decline in real estate sales.

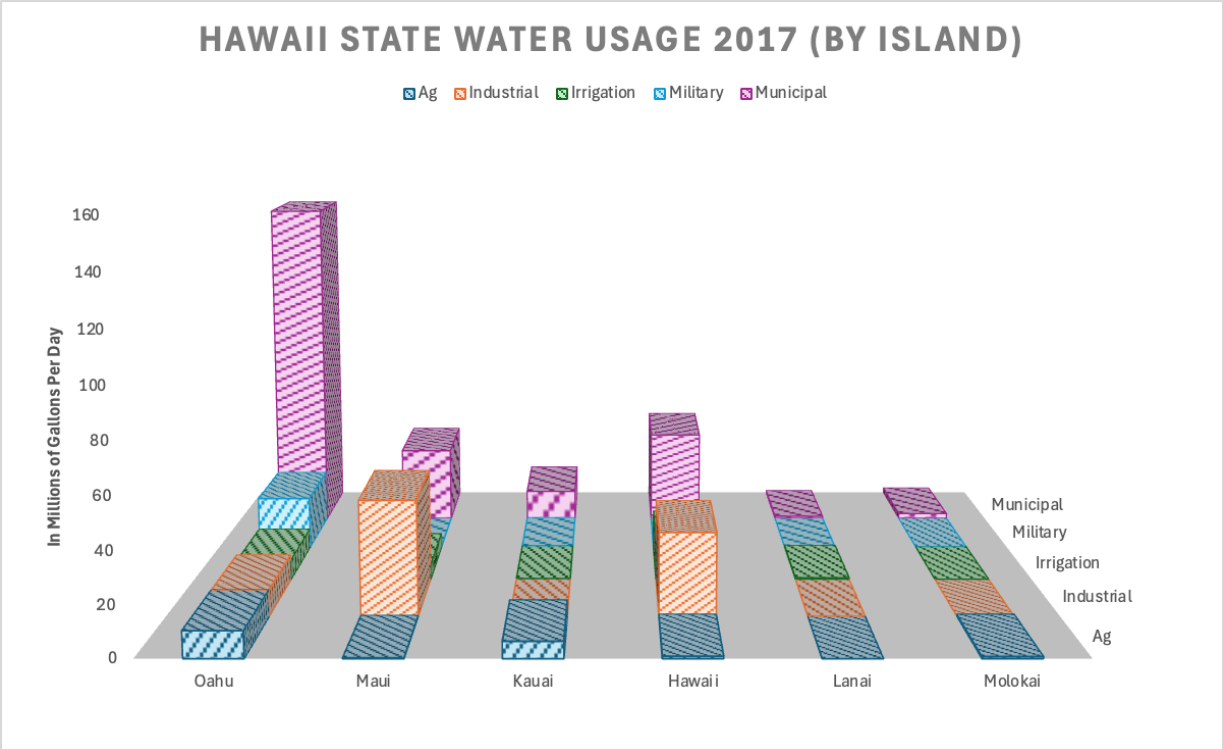
Figure 1. (DBEDT)



Fresh water use has a well established effect on real estate in the rest of the world. In Hawaii however, it is widely accepted that the primary effect on real estate involving water is not fresh water, rather beachfront property. Due diligence is required to elaborate on freshwater metrics in Hawaii. Getting a clear picture of the current state map of Hawaii's water usage trends will facilitate future adjustment recommendations to improve the economy and ecology for Hawaii's current and future residents.

Fresh water is a precious commodity (Young), Hawaii is no exception. Hawaii's water system is complex geologically and the complexity is amplified by the alterations to the water supply system as it has been constructed. The plantation era water usage has redistributed water supply and demand from typical management practices. What is less understood is complete visibility factors into the modern demand dynamics between public and private sectors. Let us explore available data to get a better understanding.

Figure 2. (hawaii.data.gov)



In figure 2, the water use across Hawaii's main islands is not equal. This is expected because of differences in population.

Methodology

The State data is very limited. Water use categories, and lack of data make identifying Hawaii's consumption data difficult to cross reference to validate. Between the State Data, Aloha+ Dashboard, and the USGS historical data, there is not much cohesion in reporting water usage data. There is a significant number measurement categories supported by USGS but the data available is very limited. Based on USGS data alone, separate analysis could be recommended to evaluate what percent of the total water use categories are properly reported. A simple visual estimation is that less than half of the USGS data categories are tracked and reported. There are a variety of USGS data fields that have no information. Total public supply

of fresh water usage is one of the only USGS fresh water usage categories that is available along with the population served. (See Figures 3&4)

Figure 3.

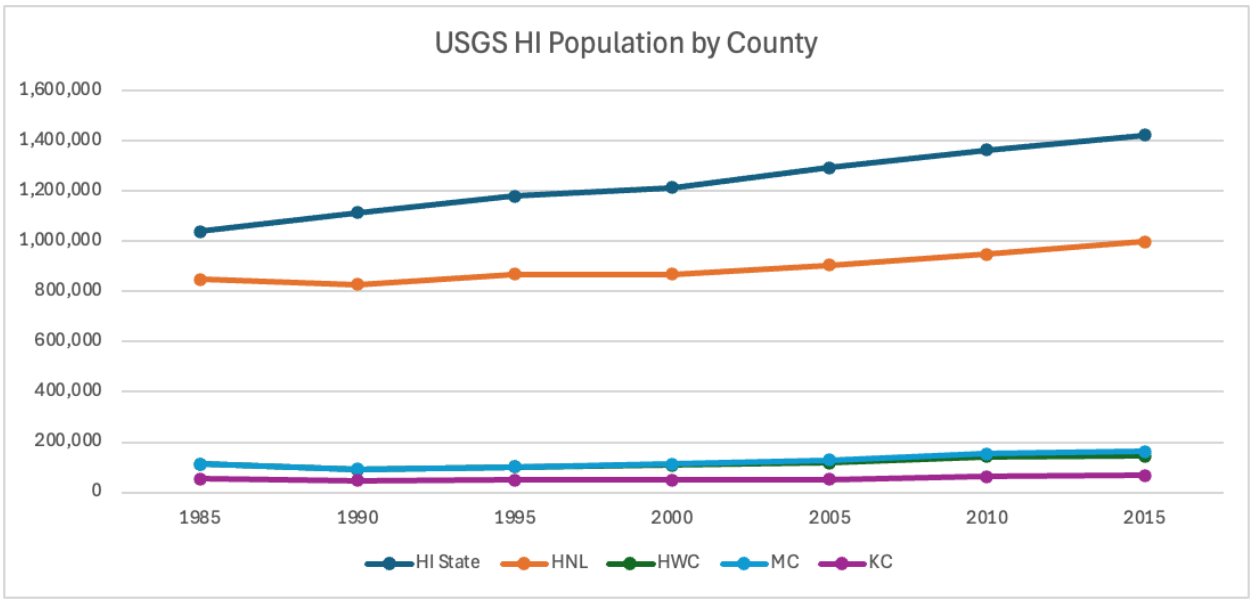
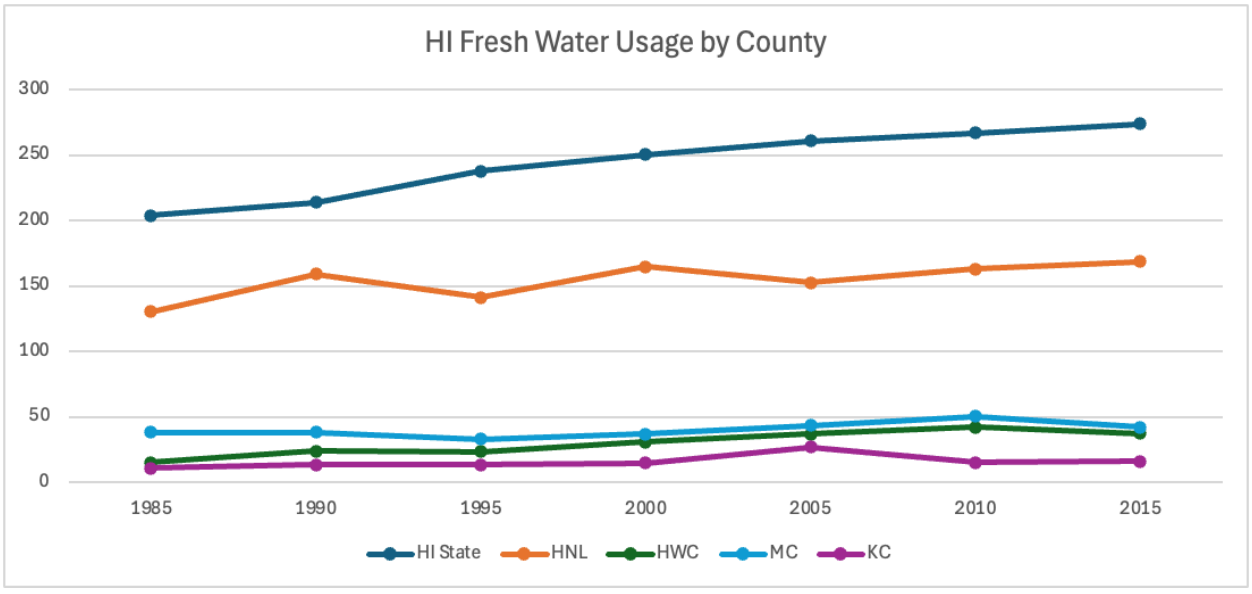


Figure 4. (USGS)



Experiment

When running the statistical two sample t-test of unlike variables, we can reject the null hypothesis; there is sufficient evidence to suggest positive correlation of population increase and water usage increase. USGS "Total Public Supply, Fresh Water" is reliable data. (USGS)

Table 1.

	t Stat	P(T<=t) two-tail
HI State	-24.06943332	3.37879E-07
HNL	-29.26782073	1.05E-07
HWC	-8.210137337	0.000176151
MC	-18.90657135	1.41464E-06
KC	-7.997114565	0.000203872

Results (USGS)

Table 2. & Figure 5.
(Per Capita Usage g/day)

year	HI	HNL	HWC	MC	KC
1985	196	154	134	340	198
1990	193	192	265	420	293
1995	202	163	229	324	274
2000	206	190	290	327	301
2005	202	169	318	341	528
2010	196	172	297	330	246
2015	192	169	258	257	240

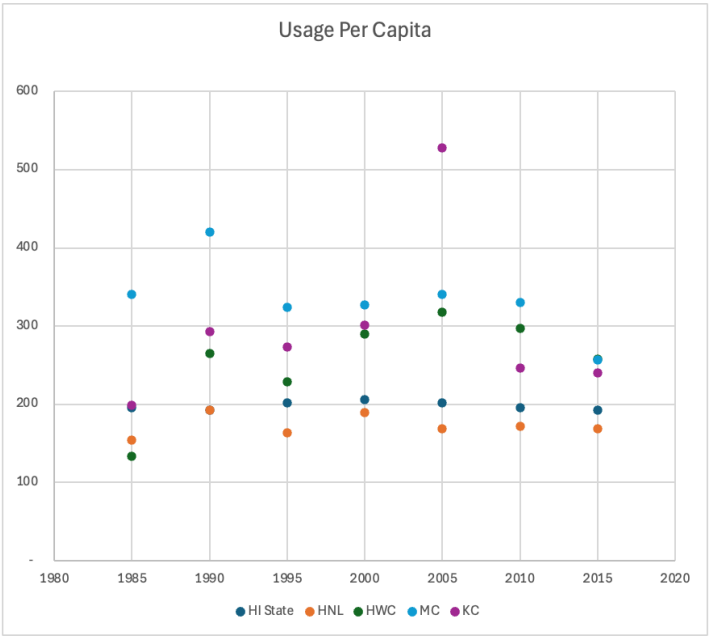
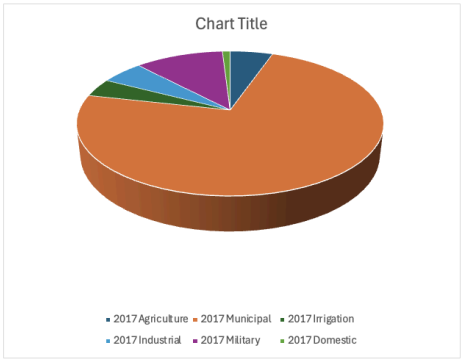
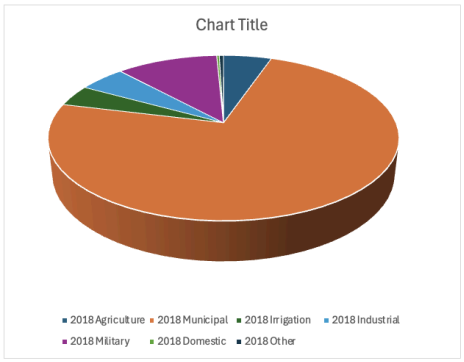


Figure 6. (hawaii.data.gov)

Oahu

Year	Sector	Million Gallons used per Day
2017	Agriculture	10.47
2017	Municipal	142.8
2017	Irrigation	8.04
2017	Industrial	10.35
2017	Military	21.74
2017	Domestic	1.9
2018	Agriculture	9.948
2018	Municipal	138.529
2018	Irrigation	7.866
2018	Industrial	9.598
2018	Military	21.025
2018	Domestic	0.527
2018	Other	0.873



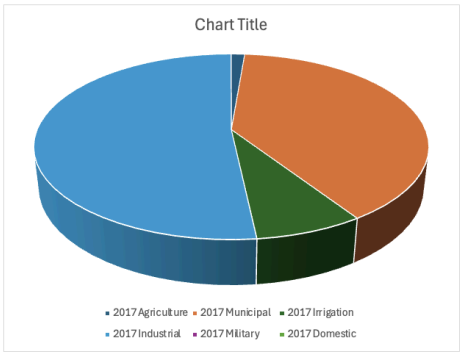


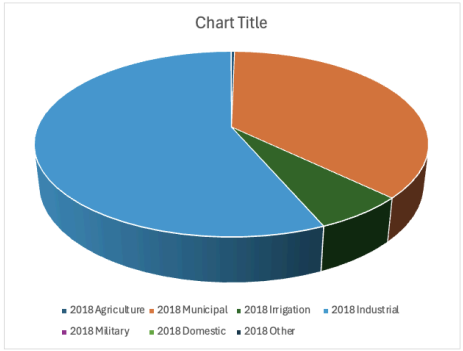
Oahu Stats

Mean	29.5127692
Standard Erro	13.8009543
Median	9.948
Mode	#N/A
Standard Dev	49.7600485
Sample Varia	2476.06242
Kurtosis	3.02020592
Skewness	2.10238854
Range	142.273
Minimum	0.527
Maximum	142.8
Sum	383.666
Count	13

Maui

2017	Agriculture	1.16
2017	Municipal	35.08
2017	Irrigation	6.67
2017	Industrial	45.93
2017	Military	0
2017	Domestic	0.03
2018	Agriculture	0.255
2018	Municipal	30.635
2018	Irrigation	5.299
2018	Industrial	46.877
2018	Military	0
2018	Domestic	0.04
2018	Other	0.002

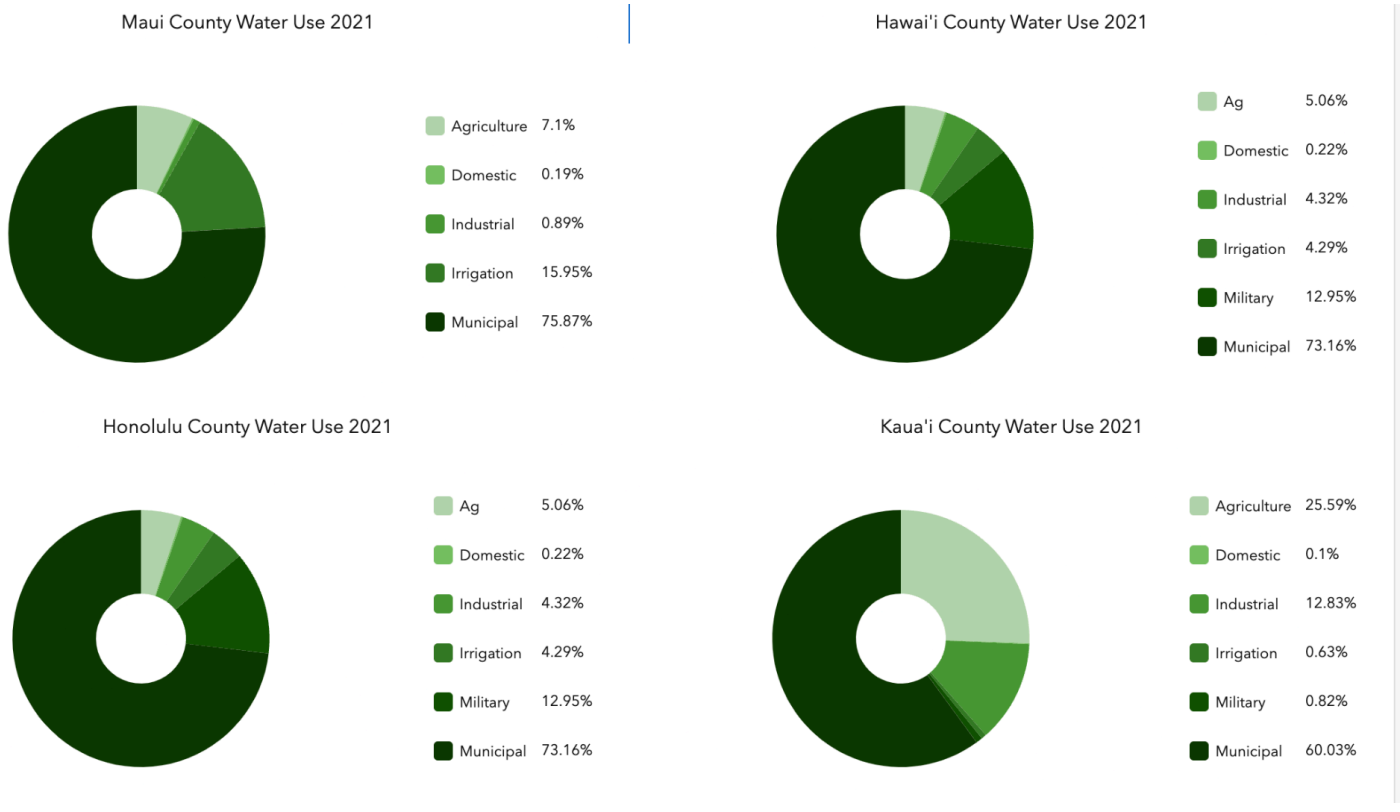




Maui Stats

Mean	13.2290769
Standard Erro	5.23486763
Median	1.16
Mode	0
Standard Dev	18.8745836
Sample Varia	356.249908
Kurtosis	-0.7192123
Skewness	1.06202142
Range	46.877
Minimum	0
Maximum	46.877
Sum	171.978
Count	13

Figure 7. (Aloha +)



Water usage is known to lack significant reporting tracking. A comparative analysis of per capita usage between islands show that Maui, Hawaii Island, and Kauai have significantly higher per capita water use per day than Honolulu County and the State per capita fresh water usage in gallons per day average. There is not sufficient USGS to break this down into further categories. Although State data aligns well between figures 2 & 6, this is the only data provided publicly by the State, short of making a request for data reported from the Water Commission. There is only limited 2017 State Data, and for 2018 there is only Honolulu and Maui County data available. This makes proper data comparison of State of Hawaii and USGS sources effectively impossible.

The USGS total 2015 reported State freshwater usage in millions of gallons per day is 273.87. The Hawaii.data.gov total 2017 fresh water usage total in millions of gallons per is 387.421: that's a difference of 113.551 millions of gallons per day difference over two years, far exceeding the rate of change from increase in population trends. USGS Hawaii Water Science Center was contacted to verify the definition of "public supply," as was a former official of the State Water Commision to verify the definition of "total reported." County comparisons from State data and Aloha + also show skewed trends.

Conclusion

There may exist arguments for the skewed distribution between data sources yet no proper cross analysis can be conducted due to the known limitation of reliable data (Army Corp of Engineers). There is not sufficient evidence to accept the claim that the State conducts highest and best freshwater use management given available science as per, Hawaii Revised Statutes (HRS) The State Water Code, Chapter 174C. (See full Stats)

Recommendations

In short, Hawaii's economy is in a dissonance of water management and the political affairs that operate the development schedule are in a crisis at federal, state, and local levels. Recommendations include conduct a statewide fresh water use audit, utilize Ecosystem Services for adjustments to existing was use permits as "competing applications" as per **HRS [§174C-54 ,** reduce fresh water demand by increasing water conservation (Verstraete).

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From: Malcolm Mackey
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Thursday, December 12, 2024 8:19:57 AM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Malcolm and I am a resident of Molokai.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

I urge the Board to take the following actions:

- Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
- Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

Sincerely,
Malcolm Mackey

From: Connie McAboy
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony - Item D-9
Date: Thursday, December 12, 2024 9:47:37 AM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Connie and I am a resident of Makawao.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Why would you allow more water than they can use?? Especially when this precious resource can be well used by East Maui farmers and residents, this should not be taken from them. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices. Unacceptable!

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

I urge the Board to take the following actions:
1- Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
2- Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

Sincerely,
Connie M.

From:	Jennifer Mitchell
To:	DLNR.BLNR.Testimony
Subject:	[EXTERNAL] Testimony re:agenda item D9
Date:	Thursday, December 12, 2024 11:53:17 AM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Jennifer and I am a resident of Hawaii.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

I urge the Board to take the following actions:

- Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
- Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

Sincerely,

Jennifer Mitchell "OLA I KA WAI" WATER IS LIFE
Kailua Kona,Hawaii

From: Lenea Naipo
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Thursday, December 12, 2024 6:31:05 AM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Lenei Naipo and I am a resident of Waimānalo, Oʻahu.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Kimo Frankel and many others testified to this at the last meeting in November. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

The strongest contributing factor to the Lahaina fires and resulting 100s of lost lives is the desolate ʻāina that foreigners have been drying out for over a hundred years. If we continue to allow these companies, whose interests only lie in bottom line profits, to divert our waters at a rate that far exceeds the amount of water we actually have, we will continue to lose our beloved land, people, and way of life.

Furthermore, the Maui Water Authority was established to help prevent atrocities like the loss of our loved ones from fires caused by desolate land. They have not had time to do the research necessary nor make decisions that will benefit the community and not just foreign companies' investments.

I urge the Board to take the following actions:

- Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
- Require the diverters to use lined reservoirs to prevent further waste.
- Allow the Maui Water Authority to weigh in on permitting decisions

Mahalo nui for your time and consideration.

Native Hawaiian
LEGAL CORPORATION

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Testimony to the
BOARD OF LAND AND NATURAL RESOURCES

Relating to Agenda Item D-9

Issuance of Revocable Permit to Alexander & Baldwin, Inc. and East Maui Irrigation Company, LLC for the Development, Diversion, and Use of Surface Ater for Diversified Agriculture, Currently Existing Historical Industrial and Non-Agricultural Uses, Reservoir, Fires Protection, Hydroelectric, and County of Maui Department of Water Supply and Kula Agricultural Park Purposes on the Island of Maui; Tax Map Keys: (2) 1-1-001:044 and 050, 1-1-002:002(por.), 1-2-004:005 & 007, 2-0-014:001, 005, 011, 012 & 017.

December 13, 2024 9:00 a.m. DLNR Boardroom

Aloha e Chair Chang and members of the Board of Land and Natural Resources:

The Native Hawaiian Legal Corporation, on behalf of Nā Moku Aupuni O Koʻolau Hui, offers the following comments on Agenda Item D-8 and the Board's consideration of a new revocable permit to Alexander & Baldwin, Inc. and East Maui Irrigation Company, LLC for the development, diversion, and use of surface water from Maui Hikina in 2025.

Nā Moku recognizes and appreciates the staff's attempt to increase some protections for the state's resources and improve its submittal to the Board. However, this year's staff submittal lacks any analysis of the impacts of the action on Native Hawaiian traditional and customary practices, authorizes the diversion of too much water for commercial purposes, and, unfortunately, does not promote best resource management practices for wai. Nā Moku highlights some of the general issues below.

I. The Staff Submittal Does Not Address Impacts on Native Hawaiian Traditional Practices

The staff submittal offers no discussion or consideration of impacts to Native Hawaiian traditional and customary practices.

Government agencies are "required under the Hawai'i Constitution to preserve and protect customary and traditional practices of native Hawaiians." *Ka Pa'akai O Ka 'Āina v. Land Use Comm'n,* 94 Hawai'i 31, 45, 7 P.3d. 1068, 1082 (2000); Haw. Const. Article XII § 7. They have "an affirmative duty" to "protect these rights and to prevent any interference with the exercise of these rights." *Id***.** Pursuant to *Ka Pa'akai*, the Board is obligated to conduct detailed investigations and make specific findings as to: (1) the identity and scope of valued cultural historical, or natural resources in the area, including the extent to which traditional customary native Hawaiian rights are exercised in the area; (2) the extent to which those resources—including any traditional and customary Native Hawaiian practices—will be affected or impaired by the diversion of 40 million gallons of water per day out of East Maui; and (3) the feasible action, if any, to be taken by the agency to reasonably protect such practices if they are found to exist. *See id.* at 47, 7 P.3d at 1084.

DLNR's records are replete with examples of traditional and customary practices that rely on water from Maui Hikina, but none are acknowledged, let alone mentioned, in the staff submittal. The Board must go through the *Ka Pa'akai* analysis before even considering approval of this revocable permit.

II. The Staff Submittal Authorizes the Diversion of Too Much Surface Water

The staff submittal allocates too much water for commercial purposes.

The proposal begins with a total allocation of approximately 40mgd for A&B/EMI and the County's uses. 3,263 gad x total planted acreage is excessive. The Commission on Water Resource Management ("CWRM") has "set the water duty at 2,500 gad for agriculture across the board, for both large- and small- scale agriculture for all types of crops[.]" *In re Surface Water Use Permit Applications*, 154 Hawai'i 309, 332, 550 P.3d 1167, 1190 (2024). 2,500 gad is the figure utilized for Nā Wai 'Ehā, which also irrigates fields in central Maui. It was also the figure relied on in last year's proposal. Why the staff submittal allocates so much extra surface water in an area that could also be irrigated by nearby groundwater sources[1] is internally inconsistent within the divisions of the Department of Land and Natural Resources ("DLNR"). It also contradicts the state's high trust duties to its water resources.

Additionally, the staff submittal allocates too much water to the County, which does not require 5-6 mgd for its total domestic and Kula ag park uses. Any water the County does not

[1] While it is true that domestic use is the highest and best use of groundwater, it does not follow that groundwater cannot be used for irrigation. *See*, e.g., 2018 and 2022 CWRM Decisions.

use either benefits Mahi Pono—essentially increasing the allocation for its commercial operations—or unfortunately is lost as waste.

The board is obligated to ensure that lessees properly maintain infrastructure and prevent wasting water. *See*, e.g., *Kauaʻi Springs,* 133 Hawaiʻi at 175, 324 P.3d at 985 ("[T]he applicant must implement reasonable measures to mitigate the cumulative impact of existing and proposed diversions on trust purposes, if the proposed use is to be approved."). Giving A&B/EMI this much water prior to (1) ensuring that all the modifications to stream diversions ordered by CWRM in 2018 and 2022 have been completed and (2) requiring modifications to address system losses, including, but not limited to, lining reservoirs and ditches disincentivizes A&B/EMI from completing these necessary modifications in a timely manner.

III. Automatic Increases in the Maximum Amount of Water to be Diverted Is Inappropriate

Nā Moku opposes any proposal allowing further increases in the water diverted out of East Maui for diversified agriculture without proper vetting by the Board at a public meeting and unless and until A&B/EMI can show they have complied with prior orders of CWRM by physically addressing diversion modifications and system losses.

Laws related to disposition of water from state lands obligate the Board—as trustee of the public trust resources of this state—to employ a high level of scrutiny whenever its actions impact public trust resources. *See In Re Water Use Permit Applications,* 94 Hawaiʻi 97, 143, 9 P.3d 409, 455 (2000) ("*Waiāhole*")(mandating that trustees "must take the initiative in considering, protecting, and advancing public rights in the resource at every stage of the planning and decision-making process."). The necessarily requires addressing any proposed changes in allocation at a properly noticed Board meeting. And even then, the Board must consider all data—including, among other things, newer rainfall data that indicates far less water is available from East Maui.[2]

[2] *See* Staff Submittal, CWRM, Agenda Item B6, DHHL Reservation and Amended Interim IFS for Keʻanae, and Honomanū Streams (November 15, 2022) at 31 (noting the estimated water available after 2022 Huelo recommendations are implemented and comparing to older estimates); *see also* Staff Submittal, CWRM, Agenda Item B5, Address the Petition to Amend Instream Flow Standards (PAIFS.5784.6) by Amending the Interim Instream Flow Standards and Reserving a Portion of the Flow for the Department of Hawaiian Home Lands for the Huelo-Region Surface Water Hydrologic Units of Hoʻolawa (6035), Waipiʻo (6036), Hoalua (6038), Hanawana (6039),Kailua (6040), Nailiilihaele (6041), Puehu (6042), ʻOʻopuola (604) (November 15, 2022) at 16 ("Long-term (1920-2012) and recent (1983-2012) trends indicate significant declines in rainfall across areas of East Maui, particularly during the dry season.").

It must also consider the status of A&B/EMI's efforts to comply with CWRM's orders and address system losses before approving any increase. To allow automatic upward adjustments in allocations based on reported acres planted by a third party without further scrutiny of the Board is not only irresponsible resource management but is also an unconstitutional abuse of the Board's vested power, especially where there is no set cap on the total amount of water allocated. *See* Haw. Const. Art. XI § 2 ("The legislature shall vest in one or more executive boards or commissions powers for the management of natural resources owned or controlled by the State, and such powers of disposition thereof as may be provided by law.").

Moreover, under this year's proposal, there are no meaningful enforcement mechanisms to timely address noncompliance by A&B/EMI as it freely increases the water it diverts. Oversight and quarterly reports are rendered useless if the permit does not empower DLNR to affirmatively act by requiring that A&B/EMI take corrective steps to fix issues identified through the reporting. Consequently, A&B/EMI is essentially pre-authorized to take what it wants without any recourse. This allows the Board to turn a blind eye to its kuleana to protect and preserve public trust resources while A&B/EMI continues to profit off the streams.

IV. The Staff Submittal Does Not Promote or Encourage Proper Resource Management

The staff submittal does not fully obligate A&B/EMI to mitigate system losses.

First, the definition of "system losses" is confusing. The Board needs to agree on a clear and reasonable formula that properly captures an accurate picture of the unused water that has been removed from East Maui streams. Nā Moku agrees with the Sierra Club's calculation for system losses.

Second, 22.7% is far too high a percentage of allowable system loss. In contrast, CWRM's mandate for Nā Wai ʻEhā streams limits system losses to less than five percent. The percentage is especially critical where, as here, the staff submittal's proposed conditions do not impose any obligation to complete the lining of reservoirs ahead of time but rather only to "provide an updated plan to reduce system losses" in eight months. Setting a deadline to provide a plan to address system losses merely perpetuates the status quo while simultaneously permitting a continued waste of a valuable resource. As Nā Moku and others have testified repeatedly, the lining of the reservoirs is essential. Indeed, "[t]he value of diverting water, only to lose the water due to avoidable or unreasonable circumstances is unlikely to outweigh the value of retaining the water for instream uses." *In re ʻĪao Ground Water Mgmt. Area High-Level Source Water Use Permit Applications*, 128 Hawai'i 228, 257, 287 P.3d 129, 158 (2012).

Affirmative steps must be taken to protect our precious water resources. *See Waiāhole,* 94 Hawai'i at 143, 9 P.3d at 455 (mandating that trustees "must take the initiative in considering, protecting, and advancing public rights in the resource at every stage of the planning and decision-making process."); *State v. Zimring*, 58 Haw. 106, 121, 566 P.2d 725, 735 (1977) ("Under public trust principles, the State as a trustee has the duty to protect and maintain the property and regulate its use."); *Kelly v. 1250 Oceanside Partners*, 111 Hawai'i 205, 226, 140 P.3d 985, 1006 (2006) (recognizing "an affirmative duty to preserve and protect the State's water resources"); *Ching v. Case*, 145 Hawai'i 148, 152, 449 P.3d 1146, 1150 (2019) (recognizing "an obligation to protect and preserve the resources however they are utilized"). The streams and their riparian, recreational, and cultural water users should not suffer at the hands of a commercial agricultural operation that has been given free reign to take more and more water while ignoring best resource management practices.

V. Stakeholder Meetings Must Be Meaningful

Last year, Nā Moku had to request to be included in permit conditions related to stakeholder meetings and receive detailed reports and updates about the permittees' water use, resource management practices, system loss/waste reduction, and compliance with CWRM orders, among other things. This year, the Department of Hawaiian Home Lands is missing from the list of stakeholders invited to participate in an interim committee to discuss water usage issues. Inclusiveness not only helps to avoid disputes but is also another way in which to demonstrate initiative in advancing public rights in the resources as required by the law. *See Waiāhole,* 94 Hawai'i at 143, 9 P.3d at 455.

To ensure that they are productive, these meetings should be facilitated by a non-commercial entity, whether CWRM staff or the 'Aha Wai o Maui Hikina, which seeks to act as a voice for the community in East Maui water matters. These meetings should employ a collaborative approach to the discussion of "water usage issues" to include substantive updates related to the implementation of CWRM's orders, reducing system losses, lining of reservoirs, updates to the County's Kamole treatment plant and Kula Ag Park, and DHHL's water reservations, and any other current or future uses of East Maui surface water.

VI. Looking to the Future

For decades, the Board has allowed decisions related to East Maui to be made without meaningful and careful consideration. Through the wholesale approval of Maui revocable permits, it has perpetuated a scenario where the status quo means draining the streams dry, ultimately subverting the public trust doctrine by prioritizing commercial uses over those

protected public trust uses. *See* Haw. Const. Art. XI, § 1 & Art. XII, § 7; *Kauai Springs, Inc*, 133 Hawai‘i at 172, 324 P.3d at 982 (“The purpose of the state water resource public trust is to protect certain uses.”).

To fulfill your duties under the public trust, the issues raised by community and stakeholders must finally be taken seriously.

Mahalo,

Ashley K. Obrey, Senior Staff Attorney
For Nā Moku Aupuni O Ko‘olau Hui

From: Shantelle Rackowski
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Thursday, December 12, 2024 8:38:09 AM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Shantelle Mokuahi Rackowski and I am a resident of O`ahu.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

I urge the Board to take the following actions:

> Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
>
> Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

Shantelle Mokuahi Rackowski

Sent from my iPhone

From: David K Shizuma
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Wednesday, December 11, 2024 9:33:14 PM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Keoni Shizuma and I wanted to express my concerns with the amount of water these permits would allow Mahi Pono and Alexander & Baldwin to divert.

The proposed amount exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed is irresponsible and harmful as it takes needed water from streams, coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and cultural practices, negatively affecting the people as well as the ecosystems downstream.

I urge the Board to reduce the allocated diversion amount to align with actual water usage data, ensuring that as much water as possible stays in the streams and feeds their ecosystems.

Mahalo for your consideration,

Keoni Shizuma

From:	John Shockley
To:	DLNR.BLNR.Testimony
Cc:	Rita Shockley
Subject:	[EXTERNAL] LIVE NOTE: Regarding the Maui Water Allocation Agenda Item D-9
Date:	Thursday, December 12, 2024 8:02:35 AM
Attachments:	og-image-placeholder-blank.png

Aloha Chair Chang and BLNR Members!

This is John & Rita Shockley, Coordinators at Free Access Coalition. We live on O'ahu but are concerned that the fair distribution of water on Maui needs to be addressed. We understand that money and power have a great sway on the water allocation between East and West Maui.

The water delivery system is antiquated and needs repair to lessen the water loss in transit across the island. Mahi Pono needs to be required to line the reservoir lines they use to mitigate water waste in transit.

Please use judgment in water allocation to keep the aquifer, estuaries, and river flows viable in East Maui while allowing West Maui developers enough water to fill their needs. We cannot afford to waste the "wai".

Mahalo for your time.

John & Rita Shockley
808 210-9433

Free Access Coalition
freeaccesscoalition.weebly.com

From: Latai Soakai
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Thursday, December 12, 2024 12:06:33 PM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Latai Soakai and I am a resident of Hakipu'u, Oahu but was born and raised in Haiku, Maui.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

Living on an island in the most isolated place in the world, the emphasis on protecting our natural resources like our wai, our water, cannot be emphasized enough. We cannot allow any corporations greed and irresponsible use of our resources to continue such hewa and malpractice. It isn't right and it isn't sustainable, and our future generations will suffer most looking at us asking why we never spoke up or did anything about it. Please make the pono decision that is led by righteousness, not by greed or negligence as our state motto says, "Ua mau ke ea o ka aina i ka pono." The life of the land is perpetuated in righteousness.

I urge the Board to take the following actions:

> Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
>
> Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

East Maui, and a Maui native, Latai Soakai

RICHARD T. BISSEN, JR.
Mayor

JOSIAH K. NISHITA
Managing Director

JOHN STUFFLEBEAN, P.E.
Director

JAMES A. LANDGRAF
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAI'I 96793
http://www.mauicounty.gov/water

BOARD OF LAND AND NATURAL RESOURCES

December 13, 2024

Testimony on D-9: Issuance of Revocable Permit to Alexander & Baldwin, Inc. and East Maui Irrigation Company, LLC for the Development, Diversion, and Use of Surface Water for Diversified Agriculture, Currently Existing Historical Industrial and Non-Agricultural Uses, Reservoir, Fire Protection, Hydroelectric, and County of Maui Department of Water Supply and Kula Agricultural Park Purposes on the Island of Maui; Tax Map Keys: (2)1-1-001:044 and 050, 1-1-002:002 (por), 1-2-004:005 & 007, 2-9-014:001, 005, 011, 012 & 017.

During stream low flow conditions, it appears that available flow in Wailoa ditch will not be sufficient to serve Mahi Pono agricultural irrigation needs and the Upcountry public water system needs while meeting IIFS. As noted in the staff submittal, the Water Resources Protection Plan (WRPP) recommends that the highest quality water should be reserved for the most valuable end use. However, brackish groundwater and otherwise compromised quality water in the Paia and Kahului aquifers should be considered for non-potable agricultural irrigation use. The 2022 Maui Island Water Use & Development Plan (WUDP), unanimously adopted by Maui County Council and approved by the Commission on Water Resource Management, sets forth a balanced approach to diversify supply, where the Mahi Pono field system maintains sufficient reservoir storage to take advantage of high stream flows and to capture stormwater and regional rainfall and using non-potable groundwater as contingency during low-flow periods. This strategy ensures that the public trust uses on the Upcountry system is prioritized to meet the WUDP and community plan objectives to seek expanded municipal withdrawals from the lowest cost source to serve the Upcountry community needs. We don't find that the greater use of groundwater, benefitting from Mahi Pono return irrigation return recharge, would be contrary to the WRPP. The stream flow data that the staff submittal relies upon is 20+ years old. It's highly uncertain whether 56 mgd base flow will be available as actual stream flow has generally decreased and groundwater contingency source will be essential to maintain reliable irrigation supply.

As we have testified on November 8, 2024, the Maui Department of Water Supply (DWS) has commissioned installation of higher capacity membrane filters at the Kamole water treatment facility to improve production capacity and we anticipate that the filter improvements will be taken into production by summer of 2025. The completion of a hydraulic model for the Upcountry system allows DWS to expedite engineering processing of meter priority list applications. These improvements along with an adequate allocation from Wailoa Ditch would allow DWS to serve pent up demand on the system.

Until then, up to 5 mgd allocation on a monthly basis will be sufficient for DWS, as long as additional water will be provided per the 2018 agreement with EMI on those days when DWS requires it. On those days, Mahi Pono can rely on water stored in reservoirs and groundwater to make up the difference. Once DWS notifies the Land Board that its improvements are completed and its capacity increased, we respectfully request that the permit will be placed on the agenda of the next Land Board meeting to discuss revisions to the allocation.

The allocation to DWS is somewhat confusing. The staff submittal states that *diversion of water from East Maui state-owned streams that shall not exceed 5.0 mgd averaged monthly, for use by the Department of Water Supply and 1.0 mgd, averaged monthly, for use by the Kula Agricultural Park for total collective limit of 5.0 mgd, averaged monthly.*

Board staff believes *the recommended limits incentivize the County to more efficiently use of the water diverted on its behalf such as expand storage capacity*. The 2022 WUDP recommends water treatment expansion and storage development based on available ditch flow. We have secured funds and commenced design of raw water reservoirs at Kamole. Additional storage will increase efficient use of the treatment facility, allowing withdrawals from storage at times when high turbidity precludes direct intake from the Wailoa Ditch.

Mahalo for your consideration.

Sincerely,

John Stufflebean, P.E., Director

From: Melissa Tomlinson
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Thursday, December 12, 2024 7:23:45 AM

Aloha kakahiaka BLNR,

In regards to item D-9 I propose supporting the residents of Maui, particularly lineal descendants, in priority over the businesses Mahi Pono and A&B. They have been allotted enough water usage and their greed is showing in requesting more. Far more important issues with water usage are afoot and the fires in Lahaina should be enough of an example for you to restrict both companies.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

I request the Board to take the following actions:

> Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
>
> Require the diverters to use lined reservoirs to prevent further waste.

Sincerely,

Melissa Tomlinson

Lafayette, CA 94549

From: Pete Wilson
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Thursday, December 12, 2024 8:13:24 AM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Peter Wilson and I am a resident of Pahoa HI.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

Allowing any designed system for water retention to not function at peak efficiency is design flaw of great proportions. The planet deserves Human kinds best efforts in it's behalf. DeliPeter Wilsonberate waste of resources does a great disservice to the land and the island.

I urge the Board to take the following actions:

- Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
- Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

Sincerely,
Peter Wilson

--
Pete Wilson
13-927 Kahukai Street
Pahoa HI 96778

808-557-8108

From: keri zacher
To: DLNR.BLNR.Testimony
Subject: [EXTERNAL] Testimony re: agenda item D-9
Date: Thursday, December 12, 2024 8:19:50 AM

Aloha Chair Chang and members of the Board of Land and Natural Resources,

My name is Keri and I am a resident of Molokai.

The proposed diversion amount under the 2025 revocable permit exceeds what both the diverters and the county can use on any given day. Allocating more water than is needed continues to perpetuate waste and take much needed water from native stream and coastal ecosystems and downstream users, including farmers and residents that rely on stream flows for traditional agriculture and subsistence and cultural practices.

Further, water usage data clearly show that millions of gallons of diverted stream water continue to leak from Mahi Pono's unlined reservoirs every day. Millions of gallons of water that should have remained in East Maui's streams, watersheds, aquifers, and estuaries will be lost every day to leakage under the 2025 revocable permit. Allowing these leaks to persist while continuing to take water from East Maui streams is unacceptable, especially as we face ongoing drought conditions and the impacts of climate destabilization.

[Include personal stories or connection to Maui Hikina]

I urge the Board to take the following actions:

- Reduce the allocated diversion amount to align with actual water usage data, ensuring no more water is diverted than is truly needed.
- Require the diverters to use lined reservoirs to prevent further waste.

Thank you for your consideration.

Sincerely,
Keri Zacher