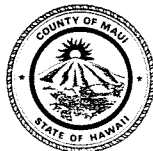


JOSIAH K. NISHITA
County Clerk



MARGARET C. CLARK
Deputy County Clerk

OFFICE OF THE COUNTY CLERK

COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793
www.mauicounty.gov/county/clerk

January 27, 2020

Honorable Shane M. Sinenci, Chair
Environmental, Agricultural, and
Cultural Preservation Committee
Council of the County of Maui
Wailuku, Hawaii 96793

Dear Chair Sinenci:

Respectfully transmitted is a copy of COUNTY COMMUNICATION NO. 20-65, from Councilmember Shane M. Sinenci, that was referred to your Committee by the Council of the County of Maui at its meeting of January 24, 2020. Also attached is a report entitled "BOARD OF WATER SUPPLY TEMPORARY INVESTIGATIVE GROUP OCTOBER 17, 2019, AS AMENDED & APPROVED DECEMBER 19, 2019: FEASIBILITY OF PURCHASING AND MAINTAINING THE EMI WATER DELIVERY SYSTEM, which was submitted at the meeting and was also referred to your Committee.

Respectfully,

A handwritten signature in black ink, appearing to read "Josiah K. Nishita".

JOSIAH K. NISHITA
County Clerk

/lks

Enclosure

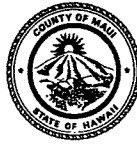
cc: Director of Council Services

Council Chair
Alice L. Lee

Vice-Chair
Keani N.W. Rawlins-Fernandez

Presiding Officer Pro Tempore
Tasha Kama

Councilmembers
Riki Hokama
Kelly Takaya King
Michael J. Molina
Tamara Paltin
Shane M. Sinenci
Yuki Lei K. Sugimura



COUNTY COUNCIL
COUNTY OF MAUI
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793
www.MauiCounty.us

January 13, 2020

Director of Council Services
Traci N. T. Fujita, Esq.

RECEIVED

2020 JAN 15 AM 9:51

OFFICE OF THE
COUNTY CLERK

The Honorable Alice L. Lee
Council Chair
County of Maui
Wailuku, Hawaii 96793

Dear Chair Lee:

**SUBJECT: BOARD OF WATER SUPPLY TEMPORARY
INVESTIGATIVE GROUP REPORT – FEASIBILITY OF
PURCHASING AND MAINTAINING THE EAST MAUI
IRRIGATION WATER DELIVERY SYSTEM (PAF 20-008)**

May I request the matter of the report entitled "BOARD OF WATER SUPPLY TEMPORARY INVESTIGATIVE GROUP OCTOBER 17, 2019, AS AMENDED & APPROVED DECEMBER 19, 2019: FEASIBILITY OF PURCHASING AND MAINTAINING THE EMI WATER DELIVERY SYSTEM," be placed on the next Council meeting agenda.

Sincerely,

A handwritten signature in black ink, appearing to read "Shane M. Sinenci", is written over a horizontal line.

SHANE M. SINENCI
Councilmember

paf:kmatt:20-008b

COUNTY COMMUNICATION NO. 20-65

Board of Water Supply Temporary Investigative Group October 17, 2019, as Amended & Approved December 19, 2019

Feasibility of Purchasing and Maintaining the EMI Water Delivery System

Table of Contents

I. TIG INVESTIGATION BACKGROUND:	4
<i>STATED PURPOSE OF THE INVESTIGATION:</i>	4
<i>ATTEMPTS TO ACCESS INFORMATION ON BEHALF OF THE PUBLIC:</i>	4
<i>SCOPE OF INVESTIGATION:</i>	6
<i>URGENCY OF INVESTIGATION:</i>	7
<u>MAHI PONO'S INTENTIONS PER THE DRAFT EIS</u>	7
<u>BWS TIG OBLIGATIONS TO THE PUBLIC</u>	9
II. HOW THE EMI SYSTEM IMPACTS EAST MAUI & UPCOUNTRY MAUI:	10
<i>DESCRIPTION OF THE EMI SYSTEM PER THE DRAFT ENVIRONMENTAL IMPACT STATEMENT:</i>	10
<i>CURRENT DIVERSION BY THE EMI DELIVERY SYSTEM AS STATED IN THE DRAFT EIS:</i>	11
<i>EXAMPLES OF COMMUNITY CONCERNS AS RELAYED AT FOCUS GROUP PER DEIS:</i>	11
<i>DESCRIPTION OF EMI SYSTEM PER DEPT OF WATER SUPPLY DRAFT WATER USE & DEVELOPMENT PLAN FOR KO'OLAU AND CENTRAL SECTORS:</i>	12
<u>TRANSPORT OF STREAM WATER FROM EAST MAUI</u>	12
<u>WATER USE MAUI DEPARTMENT OF WATER SUPPLY UPCOUNTRY SYSTEM</u>	13
<u>FUTURE WATER USE MDWS UPCOUNTRY SYSTEM</u>	15
<u>UPCOUNTRY METER LIST</u>	16
III. STRATEGIES FOR CREATING AND CONSERVING FRESH WATER CAPACITY	17
<i>HAWAII FRESH WATER BLUEPRINT FOR ACTION:</i>	17
<i>ADAPTING TO CLIMATE CHANGE, STATE OF HAWAII, OFFICE OF PLANNING:</i>	18
<i>WATER USE DEVELOPMENT PLAN STRATEGIES FOR ADDRESSING IMPACTS OF THE CLIMATE CRISIS:</i>	19
<i>UPCOUNTRY CONSERVATION:</i>	20
<u>DEMAND SIDE CONSERVATION MEASURES</u>	20
<u>SUPPLY SIDE CONSERVATION MEASURES</u>	21
<i>OTHER WAYS OF INCREASING AVAILABILITY OF POTABLE AND NON-POTABLE WATER:</i>	22
<i>EAST MAUI WATERSHED MANAGEMENT:</i>	26
<i>MAUI FOREST PROTECTION AND COST SAVINGS:</i>	27
<i>NEXUS BETWEEN EMI DELIVERY SYSTEM & EAST MAUI WATERSHED:</i>	30
<i>STREAM RESTORATION:</i>	31
<i>ENVIRONMENTAL AND SOCIAL IMPACTS OF AGRICULTURE:</i>	31
<i>GENERAL RESOURCE MANAGEMENT:</i>	33

IV. NATIVE HAWAIIAN LAND & WATER RIGHTS	36
<i>HAWAIIAN HOMES COMMISSION ACT, 1921:</i>	36
<i>EXCERPT FROM THE KO`OLAU WATER USE AND DEVELOPMENT PLAN, DHHL MAUI ISLAND PLAN:</i>	41
<i>EXCERPT FROM THE CENTRAL WATER USE AND DEVELOPMENT PLAN DHHL WATER RESOURCES:</i>	41
<i>EXCERPTS FROM DRAFT EIS RELATING TO DHHL LANDS:</i>	42
<i>FAILURE OF THE STATE TO FULFILL FIDUCIARY RESPONSIBILITY:</i>	43
<i>OWNERSHIP CONSIDERATIONS & REVERSION OF CROWN LANDS WITH CESSATION OF SUGAR CANE:</i>	44
V. CONSIDERATIONS RE: PURCHASING & MAINTAINING EMI SYSTEM	49
<i>GENERAL CONSIDERATIONS:</i>	49
<i>CONDEMNATION REQUIREMENTS (PER MAUI COUNTY CORP COUNSEL):</i>	50
<i>FAIR MARKET VALUE OF THE EMI SYSTEM:</i>	52
<i>LEGAL OWNERSHIP OF THE EMI SYSTEM:</i>	53
<i>ASSESSED VALUE OF THE EMI SYSTEM RELATIVE TO REPAIRS NEEDED:</i>	53
<i>OPERATING COSTS AND MANAGEMENT CONSIDERATIONS:</i>	56
<i>OPPORTUNITIES FOR DIRECT COST SAVINGS THROUGH IMPROVED MAINTENANCE:</i>	56
<i>LIABILITIES:</i>	57
<i>OPPORTUNITIES FOR INDIRECT COST SAVINGS THROUGH MITIGATING HEALTH AND SAFETY RISKS:</i>	57
<i>OPPORTUNITIES TO SUPPORT CULTURALLY AND COMMUNITY-BASED ECONOMIC DEVELOPMENT AS DEFINED BY THE COMMUNITY:</i>	58
<i>ECONOMIC AND OTHER BENEFITS OF ACCOUNTABILITY REGARDING STREAMS FLOWS:</i>	58
<i>SAFEGUARDING PUBLIC HEALTH & COMMUNITY SECURITY:</i>	59
<i>POTENTIAL SOURCES OF PUBLIC AND ENVIRONMENTAL AND INFRASTRUCTURAL INVESTMENT FUNDS:</i>	61
<i>RISKS OF LEAVING ACCESS TO THE PUBLIC TRUST IN PRIVATE HANDS:</i>	62
<i>IN SUMMARY: DETERMINING COSTS AND BENEFITS OF PURCHASING EMI SYSTEM</i>	64
VI. ALTERNATIVE WATER SOURCES	65
<i>PI`IHOLO AND OLINDA WATER TREATMENT FACILITIES:</i>	65
<i>POTABLE GROUNDWATER DEVELOPMENT:</i>	66
VII. ALTERNATIVES TO PURCHASING THE EMI SYSTEM	69
VIII. CALCULATIONS FOR INITIAL PURCHASE PRICE, ESTIMATED EXPENSES, AND POTENTIAL REVENUES FOR A PUBLIC TRUST WATER SYSTEM	70
<i>INITIAL PURCHASE PRICE AND COST TO RESTORE EMI DITCH SYSTEM:</i>	70
<i>BOND PAYMENTS:</i>	70
<i>VALUE OF PURCHASING SYSTEM PRIOR TO MAHI PONO OBTAINING A LONG-TERM LEASE:</i>	70
<i>VALUE OF THE SYSTEM BASED ON WATER DELIVERY RIGHTS:</i>	71
<i>WATER SYSTEM OPERATIONS COSTS:</i>	73
<i>POTENTIAL REVENUE STREAMS:</i>	74
IX. COUNTY BIDDING ON A LONG-TERM LEASE	76
X. EXAMPLE GOVERNANCE STRUCTURES	78
XI. RECOMMENDATIONS AND CONCLUSION:	80
1. PRIMARY CONSIDERATIONS WITH REGARD TO THE PUBLIC TRUST:	80
2. OTHER CONSIDERATIONS RE: SERVING THE PEOPLE OF MAUI:	80

3. <u>RECOMMENDED IMMEDIATE ACTIONS:</u>	81
A. COUNTY APPLICATION FOR A LONG-TERM LEASE:	81
B. RE-NEGOTIATE CURRENT CONTRACTS WITH EMI/MAHI PONO	82
4. <u>RECOMMENDED NEAR-TERM ACTIONS:</u>	82
5. <u>ADDITIONAL RECOMMENDATIONS FOR LONG-TERM STEWARDSHIP OF THE PUBLIC TRUST:</u>	83
6. <u>IN CONCLUSION:</u>	84
XII. FINAL STATEMENTS	85

APPENDICES:

1. GRANT NAKAMA LETTER TO DIRECTOR JEFFREY PEARSON, JULY 1, 2019
2. DRAFT BOARD OF WATER SUPPLY LETTER TO MAHI PONO, AWAITING APPROVAL BY MAYOR VICTORINO
3. SENATOR KAIALI'I KAHELE LETTER TO MAYOR MICHAEL VICTORINO, MAY 2, 2019
4. EAST MAUI H2O ROUNDTABLE
5. AUGUST 2, 2017 TRANSMITTAL FROM CORPORATION COUNCIL TO THEN-COUNCIL MEMBER ELLE COCHRAN
6. HONOLULU VS. COLLINS DECISION (CONDEMNATION)
7. LAND LEASE BEARING, GENERAL LEASE #3578, 1959
8. WAI O KE OLA HE WAHI MO'OLELO NO MAUI HIKINA
9. WAI O KE OLA HE WAHI MO'OLELO NO MAUI HIKINA
10. WAI O KE OLA HE WAHI MO'OLELO NO MAUI HIKINA
11. NELSON V. DHHL
12. HRS 171-58
13. 1973 LEASE AND AMENDMENTS THROUGH SEPTEMBER 2018
14. MAP OF EAST MAUI STREAMS AND DITCHES

NOTES ON DOCUMENT:

MUCH OF THIS DOCUMENT CONSISTS OF EXCERPTS FROM OTHER DOCUMENTS, WHETHER THE MAUI ISLAND DRAFT WATER USE AND DEVELOPMENT PLAN OR THE DRAFT EIS CREATED BY ALEXANDER & BALDWIN AND EAST MAUI IRRIGATION OR VARIOUS LEGAL DOCUMENTS RELATED TO OWNERSHIP OF THE WATER SYSTEM AND RELEVANT LANDS.

ALL DOCUMENTS ARE INCLUDED AS A REFERENCE FOR WHAT HAS BEEN SAID ABOUT THE SYSTEM, MAUI RESIDENTS' NEEDS, AND THE LEGAL ENVIRONMENT. INCLUSION IN THIS REPORT DOES NOT IMPLY THAT THE TEMPORARY INVESTIGATIVE GROUP HAS IN ANY WAY CONFIRMED THE VERACITY OF ANY DOCUMENTS OR CLAIMS.

WE HAVE MADE EVERY ATTEMPT TO INCLUDE INTERNET LINKS TO THE ORIGINAL DOCUMENTS AND/OR ATTACHMENTS AS APPENDICES, AND TO MAKE THE SOURCES OF TEXTS CLEAR. WE HOPE THAT THE READER WILL USE THIS DOCUMENT AS A STARTING POINT FOR FURTHER RESEARCH.

PLEASE ALSO NOTE THAT SOME GRAMMATICAL ERRORS, MISSPELLINGS, AND INCONSISTENCY IN SPELLINGS OF HAWAIIAN PLACE NAMES ARE PART OF THE ORIGINAL DOCUMENTS, AND THEREFORE HAVE NOT BEEN CORRECTED.

I. TIG Investigation Background:

Stated Purpose of the Investigation:

Explore the Feasibility of Purchasing and Maintaining the EMI Water Delivery System and Examine Other Alternatives for Ensuring That The People of Maui County Have Authority Over the Delivery of Water, Which is A Public Trust

Attempts to Access Information on Behalf of the Public:

Over the last several months the Maui County Board of Water Supply (BWS) has had several discussions regarding the role of Mahi Pono in the community. In a letter approved unanimously by the Board on September 19, 2019 to be sent to Mahi Pono Operations Manager Grant Nakama, contingent upon approval by Mayor Michael Victorino, the BWS stated the following:

...the [Maui County] Board [of Water Supply] has been extending invitations for Mahi Pono, LLC to attend one of our board meetings since March. We are very eager to have a continued dialog between the Board and Mahi Pono as we continually get testimony submissions and questions from the Maui community on water and land use subjects that are beyond our purview. A dialog between the Board and Mahi Pono can help mitigate any falsely placed frustrations throughout the community that are generated from the perceived lack of transparency from the Board when we don't have the answers to provide them.

As a Board that is dedicated to addressing matters related to safeguarding Maui residents' access to water, we are very interested in developing a clear vision of the island's total water resources and current and future demand. To that end, the Board has recently reached out to all private water purveyors and extended invitations to meetings. These invitations have been extended in order to gain an inclusive picture of the island water resources and delivery options as well as to see if there are untapped opportunities for County and private water purveyors to support one another.

Based on statements made in your July 1 letter and discussions during recent meetings, the Board would still welcome your attendance at our next meeting. If that cannot be arranged, we would like to extend some follow-up questions regarding Mahi Pono's current and future plans as they relate to water use. Having some answers to these questions that we pose here will help us to communicate with the wider Maui community that has been addressing the Board. For example: In your July 1 letter, you state: **"We have always been committed to supplying the County of Maui – and by**

extension, the Upcountry Maui community – with water from the EMI system. Having said that, our ability to supply water is 100% dependent on our right to legally access and deliver water.” You further state, “That said, if a [Revocable Permit] is successfully obtained – whether by A&B, EMI or by Mahi Pono – then the County will continue to receive water for the Upcountry Maui community.” We appreciate the clarity of this statement but the follow up to this is what will happen if Mahi Pono does not obtain a Revocable Permit to divert water?

“We would greatly appreciate any clarity that Mahi Pono can provide on this list of questions that has been generated by or presented to the Board:

- **If Mahi Pono does not obtain a Revocable Permit, will Mahi Pono be able to still commit to working with the County of Maui to ensure affordable access to water for upcountry Maui residents?**
- **Since the water that flows from the Wailoa Ditch to the Kamole Treatment Plant is maintained by Mahi Pono and EMI, would the lack of a Revocable Permit cease that ditch maintenance and flow?**
- Is Mahi Pono interested in exploring an agreement to provide water that is harvested from its own lands to the County’s Kamole Water Treatment plant?
- Is Mahi Pono willing to consider shared management of the Wailoa Ditch and other ditch systems? The current condition of the ditch system and the cost of maintenance/repairs that are needed would help clarify the monetary constraints of providing water to the Kamole Water Treatment plant, and
- If the water leases are obtained by EMI, what portion would go to Mahi Pono lands and what portion would go to remaining A&B lands, many of which are entitled for development? Are there other agreements besides the original sales agreement between Mahi Pono and A&B?”

(Bold added for emphasis, July 1, 2019 Grant Nakama letter and BWS draft letter attached, Appendices 1 and 2)

As noted in the letter, the Board of Water Supply has been reaching out to Mahi Pono since March, 2019. The only communication received from Mahi Pono was the letter referred to above from Mr. Nakama to Director Jeff Pearson, which Mr. Pearson has stated was intended to be shared with the BWS.

As a result of growing concerns about communication and transparency, a Temporary Investigative Group (TIG) to explore options for ensuring access to water was approved on July 18, 2019, including the following TIG members:

- Board Member Norman Franco
- Board Chair Shay Chan Hodges
- Board Member Toni Eaton
- Board Member Joseph Aquino

Norman Franco was approved to be Chair of the TIG, Shay Chan Hodges was approved to be Vice Chair.

On July 23, 2019, Joseph Aquino resigned from the TIG due to work responsibilities.

Scope of investigation:

As approved on July 18, 2019, during its investigation, the temporary investigative group (TIG) may:

- Conduct interviews and discussions with County of Maui personnel related to the delivery of water to Upcountry and Central Maui.
- Conduct interviews and discussions with State of Hawaii personnel related to the delivery of water to Upcountry and Central Maui.
- Conduct interviews and discussions with anyone whom the TIG determines has the knowledge, expertise and experience necessary to assist TIG members in increasing their understanding of the scope, operations and maintenance of the EMI Water Delivery System as well as the costs related to the purchase or condemnation of the EMI water delivery system and the cost of its maintenance, including, if necessary, the purchase or condemnation of relevant Mahi Pono lands.
- Conduct interviews and discussions with anyone whom the TIG determines has the knowledge, expertise and experience necessary to assist TIG members in increasing their understanding of potential financial mechanisms and organizational structures necessary for the acquisition and governance of the EMI Water Delivery System, in order to promote system sustainability, ensure fiscal integrity, maximize the public welfare and maintain the public trust.
- Consult with representatives and stakeholders with diverse expertise relating to the TIG investigation.
- Review documents, contracts, studies and other written information relevant to the investigation.

Urgency of Investigation:

Mahi Pono's Intentions per the Draft EIS

On September 23, 2019, the East Maui Irrigation System (EMI) and Alexander & Baldwin (A&B) Draft Environmental Impact Statement (DEIS) for the *Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas*¹, situated at TMK Nos. (2) 1-2- 004:005, 007 (por.), 1-1-002:002, 1-1-001:044, 1-1-001:050, 2-9-014:001, 005, 011, 012, 017 in the Makawao and Hana Districts, on the island of Maui was posted by the Hawaii Department of Health Office of Environmental Quality Control (OEQC) in its bulletin and on its website.

The 2,700 page Draft Environmental Impact Statement provides some information regarding Mahi Pono's costs and plans, and is available online (see footnote). It is referenced throughout this report as "DEIS" with accompanying page numbers.

This document answers some of the questions posed by the Board. For example:

"Without the Water Lease, even if EMI could find it economically feasible to continue maintaining the EMI Aqueduct System to divert non-governmental water for diversified agriculture in Central Maui, **there may not be enough water to allocate much or any to the MDWS**. This lack of water would exacerbate the effects of drought when other surface water sources are unreliable for the KAP and the Nāhiku, this could eliminate their primary source of water. **Insufficient water delivered to the County through the EMI Aqueduct System could have significant effects on health and safety of those who currently rely on that water delivery.**"

(Bold added for emphasis, DEIS, *Page xiii, Relationship Between Local Short-term Uses of Humanity's Environment and the Maintenance and Enhancement of Long-Term Productivity*)

"The existing water delivery agreements with the MDWS are contingent upon the Water Lease being issued, therefore **if no Water Lease is issued, it is assumed that the delivery of water to the MDWS would terminate**. Under the Reduced Water Volume alternative, depending on the amount of water authorized under the Water Lease, the MDWS may receive no water from the Wailoa Ditch or some amount up to 7.1 mgd². **The greater the reduction in the amount authorized under the Water Lease, proportionally less water will be available to the MDWS.**"

(Bold added for emphasis, DEIS, *Page 3-5, 3.2 Alternative Analysis 3.2.1 Reduced Water Volume Alternative*)

¹ http://oeqc2.doh.hawaii.gov/EA_EIS_Library/2019-09-23-MA-DEIS-East-Maui-Water-Lease.pdf

² "mgd" = million gallons per day

The following table from the Draft EIS, Page 1945, T-1, shows how Mahi Pono intends to allocate water from the EMI Aqueduct under various scenarios, including “no lease,” along with other water sources.

Table 1. Water Supply, Allocation, and Costs

Item	Multiplier or Source	Baselines			Alternative Future Water Leases		Units
		Typical Sugar	Recent Sugar	Post Sugar	Limited to D&O	No Lease	
1.a. SURFACE AND BRACKISH WATER SUPPLY							
Surface water from the EMI System							
East of Honopou Stream							
State lands	70%	n.e.	n.e.	n.e.	61.57	-	mgd
Private lands	30%	n.e.	n.e.	n.e.	26.39	26.39	mgd
Total, east of Honopou Stream		n.e.	n.e.	23.99	87.95	26.39	mgd
Honopou Stream to Maliko Gulch, private lands	D&O & A&A	n.e.	n.e.	4.37	4.37	4.37	mgd
Total surface water supply	A&B or D&O	156.54	113.71	28.36	92.32	30.76	mgd
Brackish groundwater	A&B, D&O, or PEP	42.50	69.90	-	21.31	7.69	mgd
Total water supply		199.04	183.61	28.36	113.63	38.44	mgd
Reduction in supply of surface water							
From typical sugar flow of 156.69 mgd		-	42.83	n.e.	64.22	125.79	mgd
From recent sugar flow of 113.71 mgd			-	n.e.	21.39	82.96	mgd
1.b. WATER ALLOCATION							
MDWS, surface water from EMI	D&O	3.23	7.10	2.86	7.10	-	mgd
Ag and related uses							
Sugarcane	D&O	143.19	132.45				mgd
Pineapple	HC&S	0.25					mgd
HC&S, industrial activities	D&O	7.98	6.25	1.00			mgd
Diversified Ag	A&B or Total less losses			4.00	82.34	29.72	mgd
Maintenance of reservoirs for fire protection	D&O			n.e.			mgd
Other	D&O		0.41				mgd
System losses (excludes water for pineapple)	22.7% losses or D&O	44.39	41.67	n.e.	24.18	8.73	mgd
Total Ag uses	Supply less MDWS	195.81	180.78	n.e.	106.53	38.44	mgd
System losses, Ag use and system losses		22.7%	23.05%	n.e.	22.7%	22.7%	
Ag Uses, after system losses (excluding pineapple)							
Irrigation Use	Residual	143.19	132.45	n.e.	82.34	29.72	mgd
Non-irrigation Use	Above	7.98	6.66	n.e.	-	-	mgd
Total Ag uses, after system losses		151.17	139.11	n.e.	82.34	29.72	mgd
Spill							
Irrigation use		94.72%	95.21%	n.e.	100.0%	100.0%	
Non-irrigation use		5.28%	4.79%	n.e.	0.0%	0.0%	
Irrigation use, after system losses							
Surface water	Residual	112.07	81.24	n.e.	65.88	23.77	mgd
Brackish groundwater	Groundwater – % loss x % irrigation use	31.12	51.21	n.e.	16.47	5.94	mgd
Total Ag use (excluding pineapple)	from above	143.19	132.45	4.00	82.34	29.72	mgd
Spill							
Surface water		78.3%	61.3%	n.e.	80.0%	80.0%	
Brackish groundwater		21.7%	38.7%	n.e.	20.0%	20.0%	
Adjustment			(-2.27)				mgd
Total water use		199.04	183.61	n.e.	113.63	38.44	mgd
1.c. WATER DELIVERY COSTS							
Surface water from EMI	MHI	3.5	3.9	16.2	6.8	12.9	\$11,000 gal
Brackish groundwater	A&B/EMI	n.e.	52.0	52.0	52.0	52.0	\$11,000 gal

The DEIS describes the ownership relationship of EMI, Mahi Pono, and A&B in this way:

"the EMI Aqueduct System is owned and operated by the EMI. EMI was previously a wholly owned subsidiary of A&B. In February, 2019, MP EMI, LLC, became a co-owner of EMI. In addition to becoming the co-owner of the EMI Aqueduct System, as noted above, Mahi Pono acquired former sugarcane and watershed lands, including the Central Maui agricultural fields, from A&B in December 2018. Agricultural operations are centralized under Mahi Pono, LLC." (DEIS, Page 1-2, The EMI Aqueduct System.)

BWS TIG Obligations to the Public

The Board of Water Supply approved convening a "Temporary Investigative Group" to examine Alternatives for Ensuring That The People of Maui County Have Authority Over the Delivery of Water, Which is A Public Trust" in July, 2019.

According to the Draft Environmental Impact Statement that was completed as a necessary step in Mahi Pono's application for a 30-year lease:

*"if no Water Lease is issued, it is assumed that the delivery of water to the [Maui Department of Water Supply] would terminate," and given that -- as stated in the DEIS --
"insufficient water delivered to the County through the EMI Aqueduct System could have significant effects on health and safety of those who currently rely on that water delivery."*

On October 11, 2019, contrary to recommendations by its staff, the Board of Land and Natural Resources unanimously approved a one-year permit allowing Alexander & Baldwin to continue to divert water from East Maui streams on state lands in 2020 – an increased draw by 10 million gallons per day. Of the 45 mgd³ approved, 5 mgd would supply state projects and the County Department of Water Supply⁴.

Because Mahi Pono has not committed to working with the County of Maui to ensure affordable access to water for Upcountry Maui residents if a revocable permit or lease is not approved and given that the public trust continues to be tethered to legal decisions made regarding EMI, A&B, and Mahi Pono, TIG members believe that it is a public health imperative for the County Council and Mayor to explore all facets for self-determination with regard to access to water as soon as possible.

³ mgd" = million gallons per day

⁴ Maui News, State board OKs more water for Mahi Pono, October 12, 2019, <https://www.mauinews.com/news/local-news/2019/10/state-board-oks-more-water-for-mahi-pono/>

II. How the EMI System Impacts East Maui & Upcountry Maui:

Description of the EMI System Per the Draft Environmental Impact Statement:

The EMI Aqueduct System was constructed in phases, beginning in the 1870s and extending to its completion, as it currently stands, in 1923. It consists of approximately 388 separate intakes, 24 miles of ditches, and 50 miles of tunnels, as well as numerous small dams, intakes, pipes, 13 inverted siphons and flumes. **The EMI Aqueduct System collects surface stream water from approximately 50,000 acres of land (Collection Area), of which approximately 33,000 acres are owned by the State of Hawaii (which includes lands within Nāhiku, Keʻanae, Honomanū and Huelo) (License Area)⁵, and the remaining approximately 17,000 acres which are privately owned by EMI and Mahi Pono.⁶**

The EMI Aqueduct system starts at Makapipi Stream, in the Nahiku portion of the License Area, with the Koolau Ditch. The Koolau Ditch traverses westward across the Keʻanae License Area and into the Honomanū License Area where it crosses paths with the Spreckles Ditch. This is where streams had multiple diversions at different levels to supply water to the EMI Aqueduct System. Separating higher elevation ditches allows them to maintain the very slight slope necessary to convey flows by gravity over long distances to irrigate higher elevation fields. This avoids the cost of energy required to pump water up from ditches delivering water at lower elevations. As the system continues westward, the Koolau Ditch transitions at the boundary between the Honomanū and Huelo portions of the License Area to the Wailoa Ditch. Makai of the Koolau/Wailoa Ditch, are the Manuel Luis and the Center Ditch. At Waikamoi Stream, the New Hamakua Ditch begins, running parallel to the Wailoa Ditch, but at a lower elevation.⁷

The Spreckles Ditch terminates its mauka segment at Waikamoi Stream, and begins its makai segment at Kaʻaiea Stream, until it converges with the Lowrie Ditch at Niliʻilihaele Stream. Makai of Lowrie Ditch is the Haiku Ditch. At Honopou Stream, the water collected within the License Area by the EMI Aqueduct System exits the License Area. Crossing this western boundary of the License Area in descending elevation are the Wailoa Ditch, the New Ditch, the Lowrie Ditch, and the Haiku Ditch. West of Honopou Stream, the EMI Aqueduct System traverses land that was largely owned by A&B and is now largely owned by Mahi Pono. Additional flows from streams located on this land are diverted by the EMI Aqueduct System until it crosses Maliko Gulch beyond which there are no stream diversions. Crossing Maliko Gulch in descending elevation are the Wailoa Ditch, Kauhikoa Ditch, Lowrie Ditch, and the Haiku Ditch.⁸

⁵ DEIS, Page 1-2

⁶ DEIS, Page 2-4

⁷ DEIS, Page 2-4

⁸ DEIS, Page 2-4

Current Diversion by the EMI Delivery System As Stated in the Draft EIS:

Currently, the EMI Aqueduct System is only diverting approximately 20 mgd⁹. As a result, very little surface stream water is currently being diverted relative to what would be allowed should the Water Lease be awarded per the Proposed Action. However, the amount of water that may be diverted should the Water Lease be issued is substantially less than the amount that was diverted during normal sugar production. For example, in 2006 it is estimated that the EMI Aqueduct System delivered approximately 156.69 mgd at Maliko Gulch, whereas under the CWRM¹⁰ D&O¹¹, it is estimated that the delivery at Maliko Gulch will be approximately 92.32 mgd (Akinaka, 2019).¹²

Examples of Community Concerns as Relayed at Focus Group Per DEIS:

Excerpts from the DEIS, 4.7.2 Social Characteristics (Page 4-135):

A focus group with residents and farmers from Huelo and Ha'ikū was convened on November 15, 2018 at Hale Akua in Huelo. Most of these participants live in the Huelo watershed area and many live and farm in areas adjacent to streams that are subject to the CWRM's and D&O.

Also, participants said that EMI personnel do not notify residents in the area when the gates open to allow downstream flow. The sudden onrush of stream water has endangered several people who happened to be in/near the stream at that time.

It was noted that, with the closing of the sugar plantation, the low level of maintenance has deteriorated even further given the reduction of EMI staffing to, reportedly, about eight people.

A second major concern with this group is fairness in how they, as a community, have been treated in two ways. First, they reported of the 25 streams in the petition before the CWRM, only three streams in the Huelo watershed were considered kalo streams and designated for full flow. While they agreed with such designation in other watersheds, they felt more streams in their area should have been considered.

Another fairness related concern raised by the group is that residents and farmers in Huelo and streams. Except for those whose properties have deeds allowing stream water access via pipes, most cannot access stream water. They cannot use the water for agriculture or domestic uses. Participants noted that they are off the electricity grid, and they are very interested in using stream flow for hydroelectricity. It was reported that there have been drought times in which residents had to truck in water even though they live next to streams. It was also said that those who were fortunate to have wells on their property share their water with neighbors during these times.

⁹ mgd" = million gallons per day

¹⁰ CWRM=Hawaii State Commission on Water Resource Management

¹¹ D&O=Decision and Order

¹² DEIS, Page 2-8

An issue often raised in the November 2018 focus group sessions was the reportedly poor condition of the EMI Aqueduct System. Interviewees also discussed this topic from the perspective of reducing water losses. They said that the reduction of water losses would reduce the amount of water required for agricultural operations.

These interviewees wanted to know how Mahi Pono will ensure that continued use of the EMI Aqueduct System will be monitored and operated for efficient use of water, which is valued as a public trust, an integral environmental resource, and essential for healthy ecosystems.

Interviewees pointed out that, even though the CWRM D&O restored several streams in East Maui, the social and cultural effects of historical and significant stream diversions have yet to be rectified. This belief was reiterated several times in the November 2018 focus groups and expressed by those interviewed.

While there has been interaction between Mahi Pono and East Maui residents, there still needs to be acknowledgement of past wrongs and a “path to healing” that will allow residents and the new landowner to have a constructive relationship.

Those interviewed understood that Mahi Pono is not responsible for whatever occurred during A&B’s tenure. Mahi Pono inherited a legacy that developed for over one hundred years. Nevertheless, to move forward as an integral part of the Maui community, Mahi Pono needs to “make pono” with East Maui so that everyone can move forward. One person said, “There needs to be apology, repentance and reparation.”

Description of EMI System Per Dept of Water Supply Draft Water Use & Development Plan for Ko`olau and Central Sectors:

Excerpted from the Maui Island Water Use And Development Plan Draft, Part III Regional Plans, Ko`olau Aquifer Sector Area (ASEA)¹³:

Transport of Stream Water from East Maui

The EMI collects surface water from the [Ko`olau] sector and delivers it to Hawaiian Commercial & Sugar’s (HC&S) Central Maui cane fields. Some of the water is also used to generate electrical power. **A relatively small amount of water is used for residential and agricultural use by the DWS for its Upcountry Maui Water Systems, which include the Upper Kula and Lower Kula Water Systems.** The EMI ditch system, which began construction in 1876, is the nation’s largest privately built and operated water system; it consists of approximately seventy-five (75) miles of ditches, tunnels, siphons, flumes, and reservoirs. The Ko`olau Department of Agriculture’s AWUDP (2004) listed the average delivery at 165 mgd with a delivery capacity of 435 mgd¹⁴.

¹³ <https://waterresources.mauicounty.gov/DocumentCenter/View/223/Draft-Plan-Section-III-Chapter-17-PDF?bidId=>

¹⁴ Ko`olau WUDP, Page 22

Wailoa Ditch	195 mgd
New Hamakua Ditch	100 mgd
Lowrie Ditch	70 mgd
Ha'ikū Ditch	70 mgd
Total Capacity	435 mgd

In drought conditions, both the Lower and Upper Kula systems require supplemental surface water from Kamole Weir and groundwater pumped up to 4,000 feet. Under current agreement with EMI, MDWS receives 12 mgd from the Wailoa Ditch with an option for an additional 4 mgd. During periods of low flow, MDWS will receive a minimum allotment of 8.2 mgd with HC&S also receiving 8.2 mgd, or prorated shares if less water is available. Proposed amended IIFS could restrict Wailoa ditch off stream uses so that less than 7 mgd is available a few days a year. When more than 7 mgd is available under non-drought conditions, the proposed restored amount would come from EMI's share of the 16.4 mgd. The 2017 Proposal and the current allocation between MDWS and EMI would allow sufficient ditch use for MDWS to meet current demand on the Upcountry system. Under normal flow, exceeding 16 mgd at Wailoa Ditch, and under an allocation of up to 12 mgd for MDWS, projected future demand of 16.4 mgd could also be met. Treatment of more than 6 mgd at the Kamole Weir will require expansion of the water treatment facility and storage construction. Future demand on the Upcountry system as a whole is addressed in the Central aquifer sector report.¹⁵

Water Use Maui Department of Water Supply Upcountry System

MDWS relies on three surface water sources, one of which is delivered by EMI through the Wailoa Ditch, and the other two through two MDWS higher elevation aqueducts maintained by EMI that transport water to Olinda and Kula, under a contractual agreement originated under the 1973 East Maui Water Agreement and subsequent agreements. MDWS and EMI diverts water from Ko'olau ASEA, conveyed to treatment plant facilities located in Ko'olau ASEA (Piipholo Water Treatment Facility) and the Central ASEA (Olinda and Kamole Weir Water Treatment Facilities)¹⁶.

Water Treatment Facility	Elevation	Conveyance System	Production Capacity	Average Production
Olinda	4,200 feet	Upper Kula Flume	2.0 mgd	1.6 mgd
Piipholo	2,900 feet	Lower Kula Flume	5.0 mgd	2.5 mgd
Kamole-Weir	1,120 feet	Wailoa Ditch	6.0 mgd	3.6 mgd

¹⁵ Ko'olau WUDP, Page 123

¹⁶ Ko'olau WUDP, Page 119

Excerpted from Department of Water Supply Fiscal Year 2018 Annual Report:¹⁷

- **Piiholo Water Treatment Plant:** Water produced during FY18: 1,197,415,000 gallons.
- Daily average: **3.28 MGD**
- **Kamole Water Treatment Plant:** Water produced during FY18: 449,530,000 gallons. Daily average: **1.50 MGD**
- **Olinda Water Treatment Plant:** Water produced during FY18: 484,370,000 gallons. Daily average: **1.33 million gallons per day (MGD).**

Excerpted from the Maui Island Water Use And Development Plan Draft, Part III Regional Plans, Central Aquifer Sector Area (ASEA):¹⁸

The Olinda facility diverts water at the upper Waikamoi Flume from the Waikamoi, Puohokamoa, and Haipuena Streams. Water is stored in two 15 million gallon reservoirs and one 100-million gallon reservoir. The Piiholo facility diverts water from the Waikamoi, Puohokamoa, Haipuena Streams and Honomanu streams into a 50-million gallon reservoir. The Kamole-Weir facility relies on EMI diversions from eastern most Makapipi stream to the western most Honopou stream.

The Upcountry system spans Koʻolau and Central aquifer sectors, ...and serves about 35,200 people. MDWS also serves non potable water to 31 farm lots at the Kula Agricultural Park (KAP). Current water use at the KAP is about 0.4 mgd. About 80 – 90 percent of the delivered water comes from surface water sources and the remaining portion from basal aquifer wells. Haiku Well and Kaupakalua Well are located in the Koʻolau ASEA, Hamakuapoko Well 1 & 2 and Poʻokela Well are located in the Central ASEA. The combined surface and groundwater source production capacity is 17.9 mgd, 13 mgd from surface water and 4.9 mgd from groundwater. Accounting for system and operational limitations, and use restrictions from Hamakuapoko wells, the reliable capacity is 9.1 mgd. Current water use averages 7.9 mgd within a range of 6 – 10 mgd.

The DOH¹⁹ divides the MDWS Upcountry System into three separate systems: Upper Kula; Lower Kula and the Makawao systems, although all three are interconnected.

MDWS Makawao/Upcountry Water System (PWS 213)

The MDWS Makawao/Upcountry System, also referred to as Makawao District by the DOH, generally serves the area extending from Haʻiku, Makawao, and Pukalani to Haliʻimaile/Paʻia. The system has 6,680 meters and serves about 28,702 people. The sources of water are primarily from surface water imported from East Maui (80%) and well water (20%) from the Haiku and Makawao aquifers. Surface water from the Wailoa Ditch, generated in the Koʻolau ASEA, is

¹⁷ <https://www.mauicounty.gov/DocumentCenter/View/115629/DWS-FY18-Annual-Report>

¹⁸ <https://waterresources.mauicounty.gov/DocumentCenter/View/221/Draft-Plan-Section-III-Chapter-15-PDF?bidId=>, Page 45, 46

¹⁹ DOH=Department of Health

treated at the Kamole Water Treatment Facility (WTF). The facility uses micro-filtration technology and is the largest surface water treatment facility on Maui. It has four booster pumps to move water up to the 2,800 foot elevation, where it can be pumped to the highest service areas at 4,500 feet. Historically, the Kamole WTF is the primary source of water for nearly all of Upcountry during times of drought. There is no raw water storage at the WTF.

MDWS Lower Kula/Upcountry Water System [PWS 247]

The MDWS Lower Kula/Upcountry System, also referred to as Lower Kula District by the DOH, generally serves the area extending from Kula Kai to Omaopio to mid and lower Kimo Drive areas. The system has 1,064 meters and serves about 3,192 people. The sources of water are primarily from surface water imported from East Maui treated at the Piʻiholo WTF. The facility uses direct filtration technology. Granular activated carbon and air stripping treatments were added in 2015 to reduce disinfection-byproducts in the water supply. The system can be supplemented with groundwater from Makawao aquifer.

MDWS Upper Kula/Upcountry Water System [PWS 215]

The MDWS Upper Kula/Upcountry System, also referred to as Upper Kula District by the DOH, generally serves the area extending from Upper Kula to Kula Highlands to Kamaʻole to Upper Olinda-Piʻiholo to Kula Glen to Ulupalakua-Kanaio. The system has 2,346 meters and serves about 7,038 people. The source of water is primarily from surface water from Waikamoi treated at the Olinda WTF. The facility uses micro-filtration technology. Disinfection is provided by anhydrous ammonia, blended with chlorine to form chloramines. Water is stored in 30 MG²⁰ Waikamoi Reservoirs and the 100 MG Kahakapao Reservoirs.

Future Water Use MDWS Upcountry System

Based on growth rates and the socio-economic forecast referenced in the Maui Island Plan, the population Upcountry is projected to grow by about 8,424 to a total of about 43,675 people by 2030. Projected water demand for the base, low and high growth scenarios are shown below.

Water losses due to leaks, seepage, evaporation and other inefficiencies in the treatment, conveyance, distribution and storage of water range widely depending on storage and source transmission system age, length, type and many other factors. To account for water losses and determine source needs for Upcountry, water produced, rather than water billed is used as basis to determine source needs. For the Upcountry system, water losses average 20%.²¹

²⁰ MG=million gallons

²¹ Koʻolau WUDP, Page 121

	2014	2035 Base	2035 High	2035 Low
Consumption	6.26	7.02	7.57	6.42
Production	7.61	8.53	9.20	7.80

Table 16-56 Projected Consumption and Production MDWS Upcountry District System, Base, High and Low Scenarios (mgd) *Excludes Kula Ag Park

Upcountry Meter List²²

In 1993, the MDWS determined that the existing Upcountry water system was found to have insufficient water supply developed for fire protection, domestic and irrigation purposes to add new or additional water services without detriment to those already served.

MDWS created a list of Upcountry properties, by date of application, who requested new and additional water service. In 2002, an administrative rule "Water Meter Issuance Rule for the Upcountry Water System", Title 16, Chapter 106 was created. The rule outlined the procedure for processing applications for water service. New applicants were continually added to the list until provisions were codified in 2013 so that no new applications were accepted after the 2013 provisions became effective. A 2015 ordinance provided certain fire protection exemptions. Still, about half of meter offers are declined presumably due to the expense of required system improvements. The Priority List is estimated to represent an additional 3.7 – 7.3 mgd demand on the Upcountry system as a whole. There are about 1,800 requests for 4,300 meters (excluding those that did not accept a reservation offered, accepted a reservation, or where a meter was installed) for 1,900 dwelling units and a nominal number of commercial units. About two-thirds of the remaining requests are located outside designated growth areas. There remains uncertainty over the number and timing of new meters as well as occupancy.

Sources for requests in Haiku are primarily served by basal wells with sufficient backup capacity to reliably add new services. Sources for requests on the Lower and Upper Kula subsystems are East Maui streams in the Waikamoi area that are subject to Instream Flow Standards and vulnerable to drought. Groundwater from Po'okela Well in Makawao aquifer can supplement the Lower and Upper Kula subsystems. There remains uncertainty over the number and timing of new meters as well as occupancy.

Providing reliable capacity to satisfy the Priority List could be accomplished in alternative ways:

1. Develop basal wells to provide reliable capacity and assume significantly higher cost of service due to energy required to pump up to 4,000 foot elevation
2. Separate the Priority List by service area and source, so that subsystems with adequate and reliable capacity are prioritized over subsystems reliant on surface water.
3. Public-private partnerships to develop source and infrastructure that benefit end users of the same subsystem.

²² Central WUPD, Page 106-107

III. Strategies for Creating and Conserving Fresh Water Capacity

Hawaii Fresh Water Blueprint for Action:

*Excerpted from website:*²³

Hawai'i has been blessed with consistent rainfall, advantageous geology, and high- quality drinking water stores for centuries. **Recent findings, however, have raised concern about long-term fresh water security for our Islands. University of Hawai'i and other scientists have documented troubling trends including reduced rainfall, higher evaporation rates, and declining stream flows in recent decades.** These findings, coupled with the demand of an ever-increasing population, suggest that Hawai'i is entering an era of fresh water uncertainty.

The Hawai'i Fresh Water Initiative (Initiative) was launched in 2013 to bring multiple, diverse parties together to develop a forward- thinking and consensus-based strategy to increase water security for the Hawaiian Islands. Organized by the independent, nonprofit Hawai'i Community Foundation (HCF), the Initiative relied on a blue ribbon advisory panel of individuals (Hawai'i Fresh Water Council or Council) with deep knowledge of water and a collaborative spirit to articulate a vision for a more secure and sustainable water future based on shared values, and shared sacrifice. This Blueprint is the result of their work, and provides Hawai'i policy and decision-makers with a set of solutions that have broad, multi-sector support in the fresh water community that should be adopted over the next three years to put Hawai'i on a path toward water security. The Blueprint also builds on the good work, findings, and recommendations over the years by preceding stewards of Hawai'i's most important resource.

Goal: The Fresh Water Council distilled nearly two years of research and analysis into a single goal: creating 100 million gallons per day (mgd) in additional reliable fresh water capacity for island by 2030.

To achieve the ambitious goal of 100 mgd in additional fresh water capacity, the group outlined three aggressive water strategy areas and individual targets that the public and private sectors must work together to achieve by 2030:

1. **Conservation:** Improve the efficiency of our population's total daily fresh groundwater water use rate by 8% from the current 330 gallons per day/person to 305 gallons per day/person. By 2030, this goal will provide 40 mgd in increased water availability.
2. **Recharge:** Increase Hawai'i's ability to capture rainwater in key aquifer areas by improving storm water capture and nearly doubling the size of our actively protected watershed areas. By 2030, this goal will provide 30 mgd in increased water availability.

²³ https://www.hawaiicommunityfoundation.org/file/cat/Fresh_Water_Blueprint_FINAL_062215_small.pdf, Page 3

3. **Reuse:** More than double the amount of wastewater currently being reused in the Islands to 50 mgd. By 2030, this goal will provide an additional 30 mgd in increased water availability.

Initiative Principles²⁴

- *Water is a complex issue that demands a comprehensive set of solutions.**
- *Solutions will come from many different sectors, and a good solution in one geographic area may not be appropriate for another area.
- *Solutions should focus on financial sustainability and cost effectiveness.**
- *Better information and access to accurate data facilitates good decision-making.**
- *Entering an era of climate unpredictability argues for more aggressive gathering and monitoring of water data than currently occurs.**
- *"Applied" and/or "targeted" education efforts are more effective than general outreach and awareness campaigns.
- *Water is as important to our economy and culture as it is to our ecology.**
- *The current price of water in Hawai'i does not reflect its "true cost."**
- *Any successful supply solution must provide for Hawai'i's broad spectrum of water uses.**
- *Hawai'i is better-positioned than many other geopolitical bodies to meaningfully address long-term fresh water sustainability.
- *Native Hawaiian cultural traditions place a high value on water and can provide guidance on how best to steward water.**
- *Public Trust doctrine and our state water code provide an adaptable framework.
- *There is an urgency to the fresh water supply issue that is not widely evident to the public.**
- *Costs to address fresh water supply will rise with each year of delay.**
- *The nexus between water and energy is clear and compelling.**

Adapting To Climate Change, State of Hawaii, Office of Planning:

Hawaii's Climate Change Adaptation Policy²⁵

Act 234, Session Laws of Hawaii 2007, established the state's policy framework and requirements to address Hawaii's GHG emissions. In Act 234, the legislature recognized the following: "... climate change poses a serious threat to the economic well-being, public health, natural resources, and the environment of Hawaii. **The potential adverse effects of global warming include a rise in sea levels resulting in** the displacement of businesses and residences and **the inundation of Hawaii's freshwater aquifers**, damage to marine ecosystems."

²⁴ Fresh Water Blueprint, Page 13

²⁵ <https://planning.hawaii.gov/czm/initiatives/adapting-to-climate-change-2/>

Water Use Development Plan Strategies for Addressing Impacts of the Climate Crisis:

Excerpted from the Central ASEA Draft Water Use and Development Plan²⁶:

Issue and Background: Data and research suggest that Hawai'i should be prepared for a future with a warmer climate, diminishing rainfall, declining stream base flows, decreasing groundwater recharge and storage, and increased coastal groundwater salinity, among other impacts associated with drought. Reliance on surface water will become more uncertain in a future of longer droughts and varying rainfall. No streamflow projections are available for the coming century but projections include a decline in base flow and low flows, with stream flows becoming more variable and unstable (flashy), especially in wet years. Groundwater recharge decreases in drought but local impact from climate change has not been projected to date.

The Central ASEA is especially vulnerable due to water resources used:

- Upcountry region and agriculture dependent on surface water as primary resource.
- Irrigation and other non-potable wells in Paia and Kamaole aquifer coastal areas are subject to sea-level rise

In consistency with the *Climate Change Adaptation Priority Guidelines*, water purveyors should increase resilience and reduce vulnerability to risks related to climate change. Chapter 12 Island Wide Strategies in this plan include the following strategies that can mitigate impacts from climate change:

1. Continue Maui County financial support for watershed management partnerships' fencing and weed eradication efforts (Chapter 12.3, Strategy#1). The Central ASEA is heavily dependent on forested watersheds in the Wailuku and Ko'olau hydrologic units to provide fresh water supplies.
2. Demand side conservation measures, such as water conserving design and landscaping in new development, incentives for efficient irrigation systems, landscape ordinance and promoting xeriscaping in dry areas will increase tolerance for prolonged droughts. (Chapter 12.3 Strategies # 13, 14, 15, 17)
3. Promote alternative resource incentives, such as greywater systems and rainwater catchment to supplement conventional resources. Incentives for green infrastructure and use of alternative water sources are needed to ensure such upfront investments in new development. (Chapter 12.3 Strategies# 20 and 21)
4. Diversify supply for agricultural use to increase reliability. Under extended droughts and low stream flows, diversified agriculture on HC&S lands will compete with priority public trust uses for surface water. Planned extension of R-2 recycled water from the Kahului WWTF to HC&S fields can supplement groundwater from the Central aquifer sector. (Chapter 12.3 Strategy #51).

²⁶ Central WUDP, Page 124

5. Expand requirements for new development to connect to recycled water infrastructure, promote closer collaboration between MDWS and MDEM to utilize Drinking Water State Revolving Funds to maximize recycled water use. (Chapter 12.3 Strategies # 61 and 62)
6. Explore and promote opportunities for large volume stormwater runoff for agricultural irrigation. (Chapter 12.3 Strategy # 66)

Excerpted from the Koʻolau ASEA Draft Water Use and Development Plan:

The concerns regarding climate change in the Koʻolau aquifer are more general. References include:

- Improving the understanding of the concepts of "precautionary planning" to reduce and adapt to the effects of drought and climate change upon water resource availability and quality is important. ²⁷
- Understanding potential impact of climate change adds to uncertainty in long-term groundwater availability. The primary responsibility to determine potential impacts on water resource availability lies with the State CWRM who in turn relies on studies and predictions by the scientific community and other agencies. Water purveyors need guidance how to mitigate and adjust to potential changes in groundwater availability. ²⁸
- Strategy #3: Support collaborative hydrogeological studies to inform impact from climate change and future well development on groundwater health for Haiku and Honopou aquifers. ²⁹

Upcountry Conservation:

The Upcountry region has experienced voluntary and mandatory conservation measures for decades, primarily in dry season when the MDWS Upcountry System reservoir levels are low. Reliance on surface water and constraints in developing additional groundwater causes the system to be vulnerable to droughts.

Demand Side Conservation Measures

Demand side conservation strategies recommended in Section 12.2 that would target outdoor uses of potable water include comprehensive water conservation ordinance to include xeriscaping regulations, landscaping and water efficient irrigation system incentives. In evaluating cost-effectiveness, MDWS compared the costs to develop and deliver new sources of water to meet future demand with the savings attributed to conservation.

²⁷ Koʻolau WUDP, Page 4

²⁸ Koʻolau WUDP, Page 104

²⁹ Koʻolau WUDP, Page 105

A preliminary analysis of the proposed conservation measure portfolio outlined in Section 12.2 shows that doubling current investments (MDWS annual FY14 – FY17 conservation budget, excluding leak detection is \$170,000) would result in net capital and operational savings. The potential for a net savings is expected for both the MDWS Central System and the Upcountry System due to the need for new source development.

Recommended demand side conservation measures at all levels and type of use for public water systems are outlined in table 13-1 (strategies # 10 – 25). There is an opportunity to design and implement conservation measures in new housing development throughout planned growth areas. The recommended conservation Strategies #17, 22 and 25 outlined in Table 13-1 are implemented in the design and build phase and are especially appropriate in planned growth areas:

- Revise county code to require high efficiency fixtures in all new construction. Develop a comprehensive water conservation ordinance to include xeriscaping regulations.
- Revise County Code: Water conserving design and landscaping in new development (xeriscaping targets dry areas).
- Revise County Code and/or incentivize water- efficient building design that integrates alternative sources (grey water, catchment).

Supply Side Conservation Measures

The sustainable and efficient use of water resources, as well as the capacity and integrity of water systems, can be improved by accounting for water as it moves through the system and taking actions to ensure that water loss is prevented and reduced to the extent feasible.

A water audit provides a data driven analysis of water flowing through a water system from source to customer point-of-service and is the critical first step in determining water supply efficiency and responsible actions to manage and reduce water loss consistent with available source, operational and financial resources. Public water systems serving a population of 1,000 or more and those within water management areas regardless of population served are required to submit annual water audits beginning July 1, 2020. Except for the MDWS systems, there are no large public water systems in the aquifer sector subject to the requirement. The fiscal year 2017 audit for the Upcountry system revealed that apparent water losses are often due to data gaps between the amount of water withdrawn at the source, treated, stored and billed. The results will guide MDWS data collection, maintenance and repair programs.

Input from the WUDP public process and issues identified in the community plans relate to water shortages and conservation³⁰:

³⁰ Central WUDP, Page 102

- Reliance on surface water Upcountry makes the system vulnerable to drought conditions
- Voluntary and mandatory water use restrictions imposed on residential and agricultural users during droughts often negatively impact the productivity of farmers
- Promote conservation of potable water through use of treated wastewater effluent for irrigation.
- Reuse treated effluent from the County's wastewater treatment system for irrigation and other suitable purposes in a manner that is environmentally sound.
- Provide incentives for water and energy conservation practices.
- Promote energy conservation and renewable energy.
- Incorporate drought-tolerant plant species and xeriscaping in future landscape planting.

Qualitative criteria to evaluate and measure resource strategies against this planning objective include:

- Per capita water use decreased
- Potable and irrigation systems water loss decreased
- Community water education increased
- Incentives for water conservation increased
- Renewable energy use increased

Other Ways of Increasing Availability of Potable and Non-Potable Water:

Reservoirs:	
<p>Central WUDP, Page 123: In summary, reservoir and treatment plant expansion would have multiple benefits:</p> <ol style="list-style-type: none"> 1. Improve reliable capacity 2. Economical water supply that minimizes expensive groundwater pumping costs 3. Defer source development in Haiku aquifer in light of uncertainties related to the East Maui Consent Decree 4. Recharge regional groundwater in wet season when maximizing use of stormflow from rainfall <p>If financing can be secured, raw water storage construction presents an economic strategy compared to basal well development. If a string of basal wells and extensive transmission would be added to the MDWS Upcountry System during the same time frame as a reservoir, the economic benefit would be significantly diminished. Both resource strategies have long implementation time frames and can be adjusted over time. Should development of basal source in the Makawao aquifer produce adequate yield and quality, additional wells in Haiku aquifer OR expanded surface</p>	<p>Central WUDP, Page 124: Strategy #8: Pursue hydrologic studies needed to explore the Haiku aquifer and an updated ditch flow analysis to optimize raw water storage and treatment plant capacity at Kamole Weir in order to expedite the most feasible new source. Raw water storage and Kamole Water Treatment Facility expansion are contingent on a long term agreement with A&B Properties allocating adequate surface water for the MDWS Upcountry System. Lead agency is MDWS.</p> <p>This strategy supports multiple planning objectives, including to seek expanded municipal withdrawal from the lowest cost source to serve the Upcountry region and to increase water storage capacity with a reserve for drought periods.</p> <p>Central WUDP, Page 104, Water Loss Mitigation: Explore funding and conduct a cost benefit analysis of improvements to the EMI non potable conveyance system to mitigate losses and preserve existing reservoirs at risk of decommissioning. County of Maui and A&B Properties/EMI Company in partnership would</p>

<p>water storage and treatment will meet projected demand. Uncertainties in future stream flow must be weighed against increased reliability and cost of basal well development. Maximizing affordable surface water use in wet season must be weighed against “over building” expensive wells and infrastructure that is not used to capacity.</p> <p>On Oahu, the BWS also operates brackish and recycled water nonpotable water systems for irrigation and industrial use in ‘Ewa, Mākaha, and Hālawā Airport. The BWS owns and maintains five dams or open reservoirs. Four reservoirs in Nu‘uanu are now used solely for flood control, and the fifth, Mauna ‘Olu reservoir, stores nonpotable water used for irrigation. The four Nu‘uanu reservoirs may be used for stormwater capture, infiltration, or hydropower in the future.³¹</p>	<p>lead initiatives. Priority components and associated costs TBD.</p> <p><u>Page 3-4, DEIS:</u> EMI Aqueduct System has eight reservoirs, mostly along the lower ditch systems, and the Central Maui field irrigation system has 48 major reservoirs The combined storage capacity of these existing reservoirs is approximately 1,344 mg (Akinaka, 2019). Most of these reservoirs, however, have not been used since the closure of sugar in 2016 and others have not been used because they do not meet dam safety requirements. As a result, many will require extensive upgrades to put them back into service. These upgrades could cost between \$50 – 100 million (Akinaka, 2019). Obtaining permits to upgrade and repair these reservoirs will also be challenging due to current dam safety requirements. Assuming that the existing reservoirs can be restored to their full capacity of 1,344 mg, and the amount of flow available for irrigation under the Proposed Action is approximately 92.32 mgd, then the existing reservoirs could provide about 16 days of storage</p>
<p>Recycled Water:</p>	
<p>The State of Hawai‘i defines R-1 water as the highest-quality recycled water; it has undergone filtration and disinfection to make it safe for use on lawns, golf courses, parks, and other areas used by people. R-2 recycled water can only be used under restricted circumstances where human contact is minimized.</p>	<p><u>Central WUDP, Page 57:</u> Wastewater generated within the Central ASEA is treated at the Kahului Wastewater Reclamation Facility (WWRF), east of Kahului Harbor, and the Kihei WWRF.</p>
<p>Rainwater Catchment:</p>	
<p><u>Ko‘olau WUDP, Page 73:</u> Rainwater catchment is the collection of rainwater from a roof or other surface before it reaches the ground.</p> <p>Rainwater catchment systems are not regulated by the Department of Health, making estimates of their use difficult. No inventory of installed catchment systems throughout the island is available.</p> <p><u>Central WUDP, Page 129:</u> Rain barrel incentive programs are included in recommended demand side conservation strategies and the MDWS conservation program.</p> <p>Catchment systems for agricultural uses have historically played an important role Upcountry. Support for increased adaptation to natural ambient rainfall and climate adapted crops is consistent with the objective to</p>	<p><u>Ko‘olau WUDP, East Maui, Page 28:</u> On average, USGS data indicates rainfall ranges from 101-454 inches per year, making the Ko‘olau ASEA Maui Island's rainiest ASEAs and one of the wettest places in Hawai‘i. The heaviest rainfall is in the Ke‘anae ASYA, where it rains as much as 454 inches per year. The cooler, dryer upper elevations may have as little as 101 inches of rain per year. Rainwater catchment is not as reliable a conventional water resource because it is extremely sensitive to the climate; however, rainwater catchment is a viable option in this region.</p> <p><u>Central WUPD, Upcountry and Central, Page 56:</u> Rainfall averages 15 inches along the southern coastline on Haleakala, and it increases to 70 inches as one moves eastward and into higher elevations. Rainfall catchment systems occur in the eastern part of the hydrologic unit,</p>

use appropriate water quality for appropriate uses.	from Makawao and Olinda and also scattered throughout Kula. There is no official inventory of catchment systems but it is an important supplemental resource for non-potable purposes. Catchments systems using potable treatment technologies have been installed Upcountry due to water meter limitations imposed by the Upcountry Meter Priority List.
Stormwater Reuse:	
<p>The Fresh Water Council believes that a critical element of protecting long-term water security in the Hawaiian Islands is to aggressively increase our ability to capture rainfall and surface storm water. Our underground fresh water supply can be restored with: 1) reduced pumping from the aquifers; 2) increased rainfall; and/or, 3) increased effective recharge. ³²</p> <p><u>Central WUPD, Page 129:</u> Stormwater capture and use can provide multiple mitigating effects on climate change, including off-setting potable supply for irrigation needs; recharging low level and more brackish portions of the region's aquifers; and mitigating sediment runoff reaching the nearshore marine environment and reefs.</p> <p><u>Central WUDP, Page 58:</u> Capture and reuse of stormwater runoff is an under-utilized water resource that provides an opportunity to reduce reliance on groundwater and surface water for landscape irrigation, especially when incorporated into the design of development projects in order to minimize infrastructure costs.</p>	<p>There is no reported stormwater reuse within the Ko'olau ASEA, although a limited number of development projects may have stormwater controls incorporated into project design to reduce runoff and its effects.</p> <p>Stormwater reuse at the parcel scale may also provide an opportunity to offset landscape and other irrigation demand of projects or households.</p> <p><u>Central WUPD, Page 58:</u> There is no reported stormwater reuse in the Central ASEA, although some development projects may have stormwater controls incorporated into project design to reduce runoff and its effects. The <i>Hawai'i Stormwater Reclamation Appraisal Report, 2005</i>, and <i>Study Element 3: An Appraisal of Stormwater Reclamation and Reuse Opportunities in Hawai'i</i>, September 2008, screened and identified four projects on Maui within the final ranking, which might provide opportunities to augment agricultural irrigation water that is diverted currently from Maui streams, in addition to providing other benefits.</p>
Desalinization:	
Desalination of ocean or brackish water was studied as an option in the 2013 MDWS study, Maui Island Water Source Development Options for the Central MDWS system, but an assessment has not been conducted for the Ko'olau ASEA, and there are presently no desalination projects within. There are no desalination projects in the Central ASEA.	One major cost to operate a desalination plant is the high energy demand of the process, and the disposal of the brine liquid byproduct creates logistical and environmental challenges that also increase cost. As desalination technology advances and energy costs decrease, brackish and ocean water desalination should continue to be evaluated for their potential as effective future water supply alternatives.

³² Fresh Water Council, Page 13

Excerpted from the Maui Island Water Use and Development Plan Draft, Part III Regional Plans, Koʻolau Aquifer Sector Area (ASEA)³³:

Conventional water sources include groundwater (wells and tunnels) and surface water (stream diversions). Region specific planning objectives related to ground and surface water use and development identified and confirmed in the WUDP update public process include:

- Improving the understanding of the concepts of "precautionary planning" to reduce and adapt to the effects of drought and climate change upon water resource availability and quality
- Adapting future populations to local water resource conditions, integrating conservation and the use of alternative resources
- Water needs of DHHL in the Koʻolau should be considered in general and in accordance with the 2017 State Water Projects Plan

Planning objectives related to groundwater and surface water source use and development identified to apply island wide include:

- Manage water equitably
- Provide for Department of Hawaiian Homelands needs
- Provide for agricultural needs
- Protect cultural resources
- Provide adequate volume of water supply
- Maximize reliability of water service
- Minimize cost of water supply
- Increase water storage capacity with a reserve for drought periods.
- Ensure that adequate water capacity is available for domestic needs of the region.
- Ensure that the development of new water sources does not adversely affect in-stream flows.
- Improve the existing potable water distribution system and develop new potable water sources prior to further expansion of the State Urban District boundary or major subdivision of land in the State Agricultural or Rural Districts.
- Ensure adequate supply of groundwater to residents of the region before water is transported to other regions of the island.

³³ Koʻolau WUPD, Page 103

East Maui Watershed Management:

Excerpted Koʻolau Draft Water Use and Development Plan³⁴:

East Maui watersheds are predominately vegetated by native Hawaiian rainforest. The plants there evolved over millions of years into the most efficient water collection system for our island's geography. It works in layers – tall 'ōhi'a and koa trees provide a canopy for shorter trees, while shrubs and ferns fill in underneath, and a thick layer of mosses and leaf litter complete the floor. These layers act like a giant sponge, slowing down heavy raindrops and soaking up water for slow release into underground aquifers. Even during droughts, our watersheds can produce water, pulling water out of the clouds by collecting fog drip. This uniquely evolved, specialized forest is the key to Maui's healthy water supply harbor endemic and rare native plant and bird species. The main threats to the native forest and ecosystems are habitat loss and alterations due to feral ungulates (pigs, deer, goats) and invasive plants. These are detrimental both to biodiversity and water supply.

Active management to ensure protection and preservation of these important watershed lands occur on federal, state and community levels.

Excerpted from the Central Draft Water Use and Development Plan³⁵:

Issue and Background: Most land within this hydrologic unit are water resource "import" areas, rather than "export" areas in the sense that population and agricultural operations rely on water resources from adjacent watersheds. Watershed management in both types of watersheds are important. The Department of Land and Natural Resources has identified "Priority Watershed Areas" which are areas of highest rainfall and resupply, based on climatic conditions that provide high recharge and fog capture. Currently protective measures are focused in these priority areas above the 3,000 foot elevation with direct benefit to makai lands and the nearshore environment. The East Maui Watershed Partnership (EMWP) manages most of the forested upper critical watersheds of Koʻolau aquifer sector. Ongoing efforts include ungulate control through fence construction, retrofitting and regular trap checks weed management, monitoring, and human activities management through outreach and education. On the dry side of Haleakala, the Leeward Haleakala Watershed Restoration Partnership (LHWRP) works towards restoring the disturbed landscape where once dryland forests captured rain and fog that recharged the freshwater supply. The Maui Invasive Species Committee (MISC) targets pest animals and plant species to prevent their influx and establishment in the mauka critical watersheds. Their efforts occur throughout the Central ASEA in rural and agricultural regions as needed.

³⁴ Koʻolau WUDP, Page 99

³⁵ Central, WUDP, Page 100, 101

The Makawao-Pukalani-Kula Community Plan states as objectives:

- ***Recognize the importance of the forested watershed areas and that their health and well-being are vital to all the residents of the Upcountry area.***
 - ***Explore a comprehensive reforestation program to increase and catch more rainwater for the Upcountry area.***
-

The objectives support the ongoing efforts by EMWP, LHWRP and MISC. State and county agencies as well as private purveyors can provide financial support and participation in watershed protection partnerships and reforestation programs. Strategies for watershed management in Koʻolau is addressed in the Koʻolau ASEA Report, Chapter 16.8.1. Management efforts on leeward Haleakala is addressed in the Kahikinui ASEA Report, Chapter 18.8.1

Maui Forest Protection and Cost Savings:

Recent studies underway are showing that investment in the restoration and maintenance of the East Maui watershed will provide financial benefits far greater than the costs being expended. The benefits will come in the form of increase water supply, more dependable water supply, and perhaps even fewer costs in the maintenance of the ditch system itself.

For example: Researchers from the University of Hawaii Economic Research Organization (UHERO) and Water Resources Center partnered with the Nature Conservancy of Hawaii to evaluate how native forest conservation contributes to local water supplies in a water stressed area in East Maui. They found that by preventing the degradation of native forest, conservation efforts could save the local water utility up to 137.6 million dollars over 100 years depending on a range of assumptions. This finding demonstrates that it makes practical sense for water utilities to join collective action efforts to finance watershed conservation, which in turn provides a suite of benefits in addition to water.³⁶

The Department of Water Supply Division of Water Resources and Planning provided \$20,000 to help fund the study through a grant to the Nature Conservancy. The UHERO study limited data to watershed conversion from one native species (ohia) to one invasive species (strawberry guava). DWS is funding a USGS study that addresses complex relationship between hydrologic impact from actual watershed protection/restoration of specific native species and habitats on Maui. This completion date of the study is not yet determined.

³⁶ <https://uhero.hawaii.edu/news/view/356>

Excerpts from a paper titled “Contributions of native forest protection to local water supplies in E. Maui Study”³⁷:

While the direct and indirect benefits of forest conservation efforts are multiple and diverse, we focus on quantifying one key hydrologic service (groundwater recharge) and associated benefit (present value benefit¹ to the water utility), as an important step towards understanding the synergies between land and water management.

We focus on groundwater recharge benefits, as groundwater is an important source of drinking water and was identified by the Maui County Department of Water Supply (DWS) as clearly linked to future costs of meeting water consumption needs into the future. We worked with DWS to estimate future water consumption needs and to calculate the projected benefits (expressed in present value terms) of protecting groundwater recharge via watershed conservation. We also collaborated with the land manager, The Nature Conservancy, to assess management costs of protection.

2.5. Costs of watershed management

In order to compare the benefits of forest conservation in terms of groundwater recharge and cost savings to the water utility to the costs of maintaining native forest through watershed protection and management, we also estimated the management costs covered by the land manager. Watershed management efforts in Waikamoi began over three decades ago. Historical expenditures over the period 1995–2012 were aggregated from The Nature Conservancy's Long-Range Management Plans (The Nature Conservancy of Hawai'i, 1993, The Nature Conservancy of Hawai'i, 1999, The Nature Conservancy of Hawai'i, 2006, The Nature Conservancy of Hawai'i, 2011). Costs were attributed to ungulate control, invasive plant control, invertebrate and small mammal control, monitoring, rare species protection and research, public outreach programs, personnel, equipment, and facilities. Expenditures on fence construction for the exclusion of ungulates were estimated based on the total length of regularly inspected fence line in Waikamoi (30.6 km) and unit costs of \$124,275/km and \$246,064/km for pig and deer fences respectively. Recent expenditures (2013–2017) were obtained through discussions with TNC Maui staff. Future annual watershed protection costs for the period 2018–2117 were projected based on average historical maintenance costs, i.e. not including costs associated with initial fence construction and major ungulate removal drives.

³⁷ <https://www.sciencedirect.com/science/article/pii/S0048969719327937>

3.2. Monetary benefits of avoided loss of groundwater recharge/reduced water costs

Present value benefits for the benchmark scenario (assuming a 10% spread rate, 3% discount rate and 2035 shortfall year) totaled \$37.2 million. Reducing the non-native forest spread rate from 10% to 5%, while keeping the discount rate and shortfall assumption unchanged, substantially reduced benefits to \$11.1 million. However, benefits appear fairly robust to changes in the shortfall year for both counterfactual scenarios. Varying the date of initial supplementation of existing groundwater sources to 2030 and 2040 resulted in benefits of \$38.5 million and \$35.7 million respectively for the 10% spread rate scenario and \$11.3 million and \$10.9 million for the 5% spread rate scenario. Benefit estimates were much more sensitive to the discount rate. Assuming a 10% spread rate, decreasing the discount rate to 1% increased benefits to \$137.6 million, while increasing the discount rate to 5% reduced benefits to \$11.3 million. In the 5% spread case, reducing the discount rate raised benefits to \$52.1 million, while increasing the discount rate lowered benefits to \$2.7 million.

Nexus Between EMI Delivery System & East Maui Watershed:

A detailed environmental and cost analysis of Watershed Management and Restoration building on the Water Use and Development Plan and UHERO study above is needed.	Watershed Restoration has proven water production results. In order to ensure optimum water value realization based on research and data, public and private entities must be required to make the necessary investments.
The Hawaii Fresh Water Initiative calls for investment in watershed protection statewide as a crucial step for water security. Consistent, reliable public funding is the most difficult and important part of watershed protection and storm water capture. ³⁸	One recent University of Hawai'i Economic Research Organization (UHERO) study estimated that <u>investing \$43.2 million</u> in watershed restoration work in the Ko'olau mountains could result in over <u>\$900 million in actual realized water value</u> for O'ahu. ³⁹
Current commitments to management and restoration by Maui County represent 1/3 of total investment. Fiscal Year 2020: \$900,000	Watershed Partnership Annual Investment in East Maui Watershed Restoration. Fiscal Year 2020: \$1,781,000
There appear to be no specific commitments to Management and Restoration of the East Maui Watershed by Mahi Pono/EMI in the Draft EIS. <u>Page 2-2, DEIS</u> : Under the Proposed Action, it is anticipated that EMI and/or Mahi Pono will continue to pursue watershed management activities."	HRS § 171-58(e) requires that any new lease of water rights "shall contain a covenant that requires the lessee and the department of land and natural resources to jointly develop and implement a watershed management plan. The board shall not approve any new lease of water rights without the foregoing covenant or a watershed management plan."
Commitments to providing water for taro farming are crucial to the care of the watershed.	... Native Hawaiians divided the land into <i>ahupua'a</i> — subdivisions running from the ocean to the mountains, roughly defined by their watersheds. Fresh water flowed through complex ditch systems called <i>'auwai</i> , often toward taro <i>lo'i</i> , where it supported the cultivation of hundreds of variety of taro—a dietary mainstay for the population. Intact native forests in the <i>wao akua</i> , along with diversion systems of <i>'auwai</i> and <i>lo'i</i> in the lowland areas slowed down water down and increased aquifer recharge in each watershed. ⁴⁰
Various computer climate models predict divergent precipitation futures for Hawai'i, although there seems to be common agreement that our rainfall future will be increasingly extreme and inconsistent. There is also high variation throughout the islands in terms of each watershed's ability to catch and hold water. In sum, the question is not whether Hawai'i will have water in the future, but rather will Hawai'i continue to have an affordable, predictable supply in the places we need at the times that we need for a growing population?" ⁴¹	<ul style="list-style-type: none"> • Rainfall in Hawai'i decreased by 18% over a 30 year period in Hawai'i from 1978 to 2007. • Annual "tradewind days" have declined 28% from 291 days in 1973 to 210 days in 2009, resulting in less rain and recharge of aquifers. • Hawai'i has been feeling the impact of prolonged drought. In the summer of 2013, 75% of Hawai'i's land area was "Abnormally Dry." • Groundwater provides 99% of the state's domestic water use and in several key areas groundwater levels have been dropping. • Increased temperatures associated with global warming mean increased evaporation for surface water and soil moisture. • Certain invasive plant and tree species have higher evapotranspiration rates than native species in Hawai'i. Hawai'i forests are increasingly encroached on by invasives.⁴²

³⁸ Fresh Water Blueprint, Page 13

³⁹ Fresh Water Blueprint, Page 7

⁴⁰ Fresh Water Blueprint, Page 9

⁴¹ Fresh Water Blueprint, Page 5

⁴² Fresh Water Blueprint, Page 5

Stream Restoration:

A separate but related issue for watershed management and repair and maintenance of the EMI Water Delivery System is restoration of the streams, due in part to changes in stream diversions.

In 2020, the State Department of Agriculture is providing \$4.5 million to support local agriculture. This is currently a one-time allocation, which will support the plans, design and construction to rebuild auwai in Ke'anae-Wailuanui and similar rural water infrastructure projects. This allocation is considered to be a fraction of what is truly needed to support taro farmers, and is limited somewhat because funds can only be used on public lands (county or state) and expenses for each project are high due to accessibility and dangerous conditions. The goal is to maintain and hopefully increase funding in the future. Further, it indirectly helps the watershed by supporting lo'i (see above).

Environmental and Social Impacts of Agriculture:

Per the November 2018 Impact investing in the global food and agricultural investment space, Investing profitably whilst fostering a sustainable and thriving agriculture⁴³:

It is now acknowledged that agriculture is a strong contributor to climate change, with a sector contribution of 19-29% of total global greenhouse gas emissions. According to the Food and Agriculture Organization (FAO), Agriculture, forestry and other land uses (AFLOU) have emitted a total of 10.6 gigatonnes of CO2 equivalent in 2010. The main direct sources of GHG emissions in agriculture are not only carbon dioxide (CO2), but also nitrous oxide (N2O), mostly through the application of fertilizers, and methane (CH4), essentially from livestock and rice cultivation. Deforestation and land degradation have also reduced the sector's capacity to absorb or sequester carbon dioxide from the atmosphere.

Moreover, as has been stated in the report on "Strategies for mitigating climate change in agriculture" by California Environmental Associates and Climate focus, April 2014, while governments, bilateral development agencies, and multilateral financial institutions are dedicating significant resources to increasing agricultural yields globally, less emphasis has been placed on making agriculture environmentally sustainable. Croplands and pasturelands already cover nearly 40 percent of the earth's land area, and agriculture consumes 70 percent of freshwater used by humans.

⁴³ <https://www.valoral.com/wp-content/uploads/Valoral-Advisors-Impact-Investing-November-2018.pdf>

Agriculture is also the world's largest driver of species loss and habitat conversion and is a major contributor to toxic and nutrient pollution, soil degradation, and invasive species introductions. These pressures on our resources will only continue to grow as global population and income levels rise. It is important that the agriculture sector transforms itself and implements sustainable agricultural practices that allow it to become more caring of nature and of the environment that surrounds us.

At the same time, climate change is already affecting the agriculture sector in a multitude of ways, which can vary from region to region. For example, we have started to observe rising temperatures, loss of biodiversity, increased prevalence of extreme weather events such as floods, cyclones and hurricanes and increased unpredictability of weather patterns.

...All these changes have deep consequences in the agriculture sector, and can be translated into harmed crops and reduced yields, reduced feed supply and carrying capacity of pastures and increases in animals' vulnerability to disease, which reduces fertility and milk and meat production, reduced fish stocks due to warmer water temperatures and reduced capacity of forests to provide crucial goods and services.

According to its DEIS, Mahi Pono intends to use 65.88 mgd of water from the EMI aqueduct for agriculture, and while the EIS acknowledges the negative impacts of agriculture on the climate crisis, there are no specific estimates of how Mahi Pono's farm activities will impact climate, only the statement that ranching activities will be "negligible." The following section is excerpted from the Draft EIS⁴⁴:

The Proposed Action will allow for the continued conveyance of water through the EMI Aqueduct System to allow for the transition of the agricultural fields in Central Maui to a diversified agricultural operation. Various studies indicate that agricultural activities can be a source of GHGs that aggravate climate disruption. Agriculture creates both direct and indirect emissions. Direct emissions come from fertilized soils and livestock manure. While indirect emissions come from runoff and leaching of fertilizers, emissions from land-use changes, use of fossil fuels for mechanization, transport and agro-chemical and fertilizer productions. Various management practices in the agricultural land can lead to production and emission of GHGs, which range from fertilizer application to methods of irrigation, tillage and cattle and feedlots.

However, the agricultural sector has large potential to mitigate climate change. According to the Intergovernmental Panel on Climate Change (IPCC) (2013), mitigation is an intervention to reduce the emissions sources or enhance the GHG sinks. GHG emissions through energy conservation, lower levels of carbon-based inputs, lower use of synthetic fertilizer and other features that minimize GHG emissions and sequester carbon in the soil.

⁴⁴ DEIS, P. 4-74 and 4-75

As Mahi Pono's farm plan becomes operational, GHG emissions from internal combustion engines in farming equipment, and transportation related to crop production and workers will increase over the current fallow conditions. When fully operational, the amount of GHG emissions compared to former sugarcane operations does not suggest that one would be significantly greater than the other. There will be seasonal differences in emissions with a sugar monocrop generating more emissions during seasonal harvests while diversified agriculture would likely be distributed due to differences in crop cycles. Sugar also involved burning but such emissions were not from fossil fuels. Sugar also involved transporting products overseas for processing and distribution while diversified agriculture could reduce the amount of food crops imported from overseas as it increases the amount of local food production.

Mahi Pono's farm plan proposes livestock operations on the agricultural fields in Central Maui. The livestock sector requires a significant amount of natural resources and has a role in GHG emissions, especially methane and nitrous oxide. Methane, mainly produced by enteric fermentation and manure storage, is a gas which has an effect on global warming 28 times higher than carbon dioxide. Nitrous oxide, arising from manure storage and the use of organic/inorganic fertilizers, is a molecule with a global warming potential 265 times higher than carbon dioxide (IPCC, 2013). However, in comparison to other livestock operations on the island, such as Ulupalakua Ranch, which operates on approximately 18,000 acres, Mahi Pono's livestock operation will be negligible. Additionally, Mahi Pono's farm plan also includes a utility scale solar farm to supply power to the public power grid, and will also use power from two existing hydro- electric facilities to provide power to pumps and wells, and other infrastructure.

However, the exact nature of how the climate will change and impacts from any changes is unknown. As research into this area continues, there will be increased knowledge of the most effective ways to focus efforts toward adaptation strategies to address climate change.

General Resource Management:

Planning objectives related to resource management identified in the WUDP update public process include: ⁴⁵

- Watershed protection and its prioritization, including invasive alien plant control, ungulate control, and reforestation via watershed partnership programs
- Maintaining access to lands for gathering, hunting and other native Hawaiian traditional and customary practices
- Improving the understanding of the concepts of "precautionary planning" to reduce and adapt to the effects of drought and climate change upon water resource availability and quality

⁴⁵ Ko'olau WUDP, Page 99

- Consultation and coordination with Native Hawaiian community/moku and local experts on resource management and invasive species removal

The Hāna Community Plan reflects regional issues expressed at the community WUDP meetings. Policies related to water resource management include:

- Protect, preserve and increase natural marine, coastal and inland resources, encouraging comprehensive resource management programs
- Ensure that groundwater and surface water resources are preserved and maintained at capacities and levels to meet the current and future domestic, agricultural, commercial, ecological and traditional cultural demands
- Recognize residents' traditional uses of the region's natural resources which balance environmental protection and self-sufficiency
- Discourage water or land development and activities which degrade the region's existing surface and groundwater quality
- Encourage resource management programs that maintain and re-establish indigenous and endemic flora and fauna
- Protect, restore and preserve native aquatic habitats and resources within and along streams
- Ensure that the development of new water sources does not adversely affect in-stream flows
- Increase water storage capacity with a reserve for drought periods.
- Improve the existing potable water distribution system and develop new potable water sources prior to further expansion of the State Urban District boundary or major subdivision of land in the State Agricultural or Rural Districts.
- Ensure adequate supply of groundwater to residents of the region before water is transported to other regions of the island.

Key issues for the Koʻolau region were identified in public meetings held in Hāna over 2016. Community concerns overlap with those of the Hāna aquifer sector and relate to watershed management and participation by the local community; maintenance of traditional resource management using the ahupuaʻa system and ensuring that traditional and customary practices are safe guarded. Community members state that younger generations are returning to Koʻolau and Hāna to establish taro loʻi. Other key issues for the region focus on providing affordable water for future needs, providing for taro loʻi and other public trust uses during droughts, and managing resources in a sustainable way.

Due to resource interdependencies, East Maui (Hāna and Koʻolau ASEAs) community concerns are also related to the primary concerns of Makawao-Pukalani-Kula residents, which center on the limited development of water resources and a distribution system to meet the needs of the region. The proper allocation of water resources is considered essential to, in order of priority:

- (1) preserve agriculture as the region's principal economic activity, promote diversified agricultural activities, and effectively encourage the development of Department of Hawaiian Home Lands (DHHL) parcels; and
- (2) However, water use in the Upcountry region is recognized as having impacts on the streams of East Maui and the agricultural activities of the central valley.

A comprehensive water management strategy must be developed to strike a balance between the various interests and accommodate environmental, agricultural and on Upcountry and East Maui water issues as they relate to each other and the Central Maui ASEA.⁴⁶

⁴⁶ Ko'olau WUDP, Page 98

IV. Native Hawaiian Land & Water Rights

Hawaiian Homes Commission Act, 1921:

(Bold added for emphasis):

[§101. Purpose.] *[Text of section subject to consent of Congress.]*

(a) The Congress of the United States and the State of Hawaii declare that the policy of this Act is to enable native Hawaiians to return to their lands in order to fully support self-sufficiency for native Hawaiians and the self- determination of native Hawaiians in the administration of this Act, and the preservation of the values, traditions, and culture of native Hawaiians.

b) The principal purposes of this Act include but are not limited to:

- 1) Establishing a permanent land base for the benefit and use of native Hawaiians, upon which they may live, farm, ranch, and otherwise engage in commercial or industrial or any other activities as authorized in this Act;
- 2) Placing native Hawaiians on the lands set aside under this Act in a prompt and efficient manner and assuring long-term tenancy to beneficiaries of this Act and their successors;
- 3) Preventing alienation of the fee title to the lands set aside under this Act so that these lands will always be held in trust for continued use by native Hawaiians in perpetuity;
- 4) **Providing adequate amounts of water and supporting infrastructure, so that homestead lands will always be usable and accessible; and**
- 5) Providing financial support and technical assistance to native Hawaiian beneficiaries of this Act so that by pursuing strategies to enhance economic self- sufficiency and promote community-based development, the traditions, culture and quality of life of native Hawaiians shall be forever self-sustaining.

c) In recognition of the solemn trust created by this Act, and the historical government to government relationship between the United States and Kingdom of Hawaii, the United States and the State of Hawaii hereby acknowledge the trust established under this Act and affirm their fiduciary duty to faithfully administer the provisions of this Act on behalf of the native Hawaiian beneficiaries of the Act.

d) Nothing in this Act shall be construed to:

- 1) Affect the rights of the descendants of the indigenous citizens of the Kingdom of Hawaii to seek redress of any wrongful activities associated with the overthrow of the Kingdom of Hawaii; or

- 2) Alter the obligations of the United States and the State of Hawaii to carry out their public trust responsibilities under section 5 of the Admission Act to native Hawaiians and other descendants of the indigenous citizens of the Kingdom of Hawaii. [L 1990, c 349, §1]

§220. Development projects; appropriations by legislature; bonds issued by legislature; mandatory reservation of water.

- a) Subject to subsection (d), the department is authorized directly to undertake and carry on general water and other development projects in respect to Hawaiian home lands and to undertake other activities having to do with the economic and social welfare of the homesteaders, including the authority to derive revenue from the sale, to others than homesteaders, of water and other products of such projects or activities, or from the enjoyment thereof by others than homesteaders, where such sale of products or enjoyment of projects or activities by others does not interfere with the proper performance of the duties of the department; provided that roads through or over Hawaiian home lands, other than federal-aid highways and roads, shall be maintained by the county in which the particular road or roads to be maintained are located.
- b) The legislature is authorized to appropriate out of the treasury of the State such sums as it deems necessary to augment the funds of the department and to provide the department with funds sufficient to execute and carry on such projects and activities. The legislature is further authorized to issue bonds to the extent required to yield the amount of any sums so appropriated for the payment of which, if issued for revenue-producing improvements, the department shall provide, as set forth in section 213.
- c) To enable the construction of irrigation projects which will service Hawaiian home lands, either exclusively or in conjunction with other lands served by such projects, the department is authorized, with the approval of the governor, and subject to subsection (d), to:
 - 1) Grant to the board of land and natural resources, or to any other agency of the government of the State or the United States undertaking the construction and operation of such irrigation projects, licenses for rights-of-way for pipelines, tunnels, ditches, flumes, and other water conveying facilities, reservoirs, and other storage facilities, and for the development and use of water appurtenant to Hawaiian home lands;
 - 2) Exchange available lands for public lands, as provided in section 204 of this Act, for sites for reservoirs and subsurface water development wells and shafts;
 - 3) Request any such irrigation agency to organize irrigation projects for Hawaiian home lands and to transfer irrigation facilities constructed by the department to any such irrigation agency;
 - 4) Agree to pay the tolls and assessments made against community pastures for irrigation water supplied to such pastures; and

- 5) Agree to pay the costs of construction of projects constructed for Hawaiian home lands at the request of the department, in the event the assessments paid by the homesteaders upon lands are not sufficient to pay such costs;

provided that licenses for rights-of-way for the purposes and in the manner specified in this section may be granted for a term of years longer than is required for amortization of the costs of the project or projects requiring use of such rights-of-way only if authority for such longer grant is approved by an act of the legislature of the State. Such payments shall be made from, and be a charge against the Hawaiian home operating fund.

- d) For projects pursuant to this section, sufficient water shall be reserved for current and foreseeable domestic, stock water, aquaculture, and irrigation activities on tracts leased to native Hawaiians pursuant to section 207(a). [Am Jul. 10, 1937, c 482, 50 Stat 507; Nov. 26, 1941, c 544, §6, 55 Stat 786; Jun. 14, 1948, c 464, §7, 62 Stat 393; Aug. 1, 1956, c855, §1, 70 Stat 915; am L 1963, c 207, §§2, 5(a); am L 1986, c249, §4; am L 1991, c 325, §2]

Cross References

Bond issues, see Organic Act, §55 and HRS chapters 39, 47, and 49.

Water or irrigation projects, see §§167-13, 167-14; §174-13.

Attorney General Opinions

Lien on lands as security for improvement bonds is not authorized. Att. Gen. Op. 63-25.

Law Journals and Reviews

Native Hawaiian Homestead Water Reservation Rights: Providing Good Living Conditions for Native Hawaiian Homesteaders.25 UH L. Rev. 85.

Case Notes

Pursuant to article XI, §§1 and 7 of the Hawaii constitution, subsection (d) of this Act, and §174C-101(a), a reservation of water constitutes a public trust purpose.103 H. 401, 83 P.3d 664.

Where commission on water resource management failed to render the requisite findings of fact and conclusions of law with respect to whether applicant had satisfied its burden as mandated by the state water code, it violated its public trust duty to protect the department of Hawaiian home lands' reservation rights under the Hawaiian Homes Commission Act, the state water code, the state constitution, and the public trust doctrine in balancing the various competing interests in the state water resources trust.103 H. 401, 83 P.3d 664.

Where commission on water resource management refused to permit cross examination of water use applicant's oceanography expert regarding the limu population along the shoreline, in effect precluding the commission from effectively balancing the applicant's proposed private commercial use of water against an enumerated public trust purpose, the commission failed adequately to discharge its public trust duty to protect native Hawaiians' traditional and customary gathering rights, as guaranteed by this section, article XII, §7 of the Hawaii constitution, and §174C-101.103 H. 401, 83 P.3d 664.

§221. Water.

(a) When used in this section:

- 1) The term "water license" means any license issued by the board of land and natural resources granting to any person the right to the use of government-owned water; and
- 2) The term "surplus water" means so much of any government-owned water covered by a water license or so much of any privately owned water as is in excess of the quantity required for the use of the licensee or owner, respectively.

b. All water licenses issued after the passage of this Act shall be deemed subject to the condition, whether or not stipulated in the license, that the licensee shall, upon the demand of the department, grant to it the right to use, free of all charge, any water which the department deems necessary adequately to supply the livestock, aquaculture operations, agriculture operations, or domestic needs of individuals upon any tract.

- c) In order adequately to supply livestock, the aquaculture operations, the agriculture operations, or the domestic needs of individuals upon any tract, the department is authorized (1) to use, free of all charge, government-owned water not covered by any water license or covered by a water license issued after the passage of this Act or covered by a water license issued previous to the passage of this Act but containing a reservation of such water for the benefit of the public, and (2) to contract with any person for the right to use or to acquire, under eminent domain proceedings similar, as near as may be, to the proceedings provided in respect to land by sections 101-10 to 101-34, Hawaii Revised Statutes, the right to use any privately owned surplus water or any government-owned surplus water covered by a water license issued previous to the passage of this Act, but not containing a reservation of such water for the benefit of the public. Any such requirement shall be held to be for a public use and purpose. The department may institute the eminent domain proceedings in its own name.
- d) The department is authorized, for the additional purpose of adequately irrigating any tract, to use, free of all charge, government-owned surplus water tributary to the Waimea river upon the island of Kauai, not covered by a water license or covered by a water license issued after July 9, 1921. Any water license issued after that date and covering any such government-owned water shall be deemed subject to the condition, whether or not stipulated therein, that the licensee shall, upon the demand of the department, grant to it the right to use, free of all charge, any of the surplus water tributary to the Waimea river upon the island of Kauai, which is covered by the license and which the department deems necessary for the additional purpose of adequately irrigating any tract.

Any funds which may be appropriated by Congress as a grant- in-aid for the construction of an irrigation and water utilization system on the island of Molokai designed to serve Hawaiian home lands, and which are not required to be reimbursed to the federal government, shall be deemed to be payment in advance by the department and lessees of the department of charges to be made to them for the construction of such system and shall be credited against such charges when made.

4. **All rights conferred on the department by this section to use, contract for, or acquire the use of water shall be deemed to include the right to use, contract for, or acquire the use of any ditch or pipeline constructed for the distribution and control of such water and necessary to such use by the department.**
5. Water systems in the exclusive control of the department shall remain under its exclusive control; provided that the department may negotiate an agreement to provide for the maintenance of the water system and the billing and collection of user fees. If any provision or the application of that provision is inconsistent with provisions contained in this section, this section shall control.

Water systems include all real and personal property together with all improvements to such systems acquired or constructed by the department for the distribution and control of water for domestic or agricultural use. [Am Aug. 1, 1956, c 855, §§2, 3, 70 Stat 915; am L 1963, c 207, §§2, 5(b); am Const Con 1978 and election Nov. 7, 1978; am L 1981, c 90, §10; am L1984, c 36, §1; am L 1990, c 24, §1]

Cross References

Board of land and natural resources empowered to prepare irrigation plans, see §§174-5, 174-6.

Law Journals and Reviews

Native Hawaiian Homestead Water Reservation Rights: Providing Good Living Conditions for Native Hawaiian Homesteaders 25 UHL. Rev. 85.

Case Notes

Although the Hawaii administrative rules denominate aquifer- specific reservations of water to the department of Hawaiian home lands, such a limitation for purposes of water resource management does not divest the department of its right to protect its reservation interests from interfering water uses in adjacent aquifers. 103 H. 401, 83 P.3d 664.

Insofar as the commission on water resource management, as the agency authorized to administer the state water code, determines the contents of the Hawaii water plan, which includes the designation of hydrologic units and sustainable yields, and the commission's "interpretation of its own rules is entitled to deference unless it is plainly erroneous or inconsistent with the underlying legislative purpose", it is within the commission's authority to limit reservations of water to specific aquifers. 103 H. 401, 83 P.3d 664.

Where commission on water resource management failed to render the requisite findings of fact and conclusions of law with respect to whether applicant had satisfied its burden as mandated by the state water code, it violated its public trust duty to protect the department of Hawaiian home lands' reservation rights under the Hawaiian Homes Commission Act, the state water code, the state constitution, and the public trust doctrine in balancing the various competing interests in the state water resources trust. 103 H. 401, 83 P.3d 664.

Where commission on water resource management's findings supporting its conclusion that the proposed use of water would not interfere with department of Hawaiian home lands' reservation rights under this section failed to address whether the proposed user had adduced sufficient evidence with respect to the impact of the proposed use on the department's reservation in the adjacent aquifer system, commission erred in concluding that proposed user had met its burden under §174C-49 to obtain a water use permit. 103 H. 401, 83 P.3d 664.

Excerpt from the Ko`olau Water Use and Development Plan, DHHL Maui Island Plan:

The Hawaiian Homes Commission adopted its Maui Island Plan as the overarching planning document in 2004. The Department of Hawaiian Homelands (DHHL) East Maui planning region encompasses three tracts totaling 985 acres: Ke`anae, Wākiu, and Wailua. All three tracts are within the Haña Community Plan designated Area. However, only Ke`anae (150.6 acres) and Wailua tracts are within the Ko`alau ASEA, covering 242 acres the State Land Use Commission has mostly zoned Agriculture, with a very small percentage zoned Conservation. The County zoning and Community Plan designations for the lands is Agricultural. For the Ke`anae tract, Two acres of community use is proposed on the makai property, and 32 three- acre agricultural lots are proposed on 57 acres of the mauka property. The chosen DHHL project for the Wailua tract proposes 28 acres of subsistence agricultural use, 52 acres of General Agricultural use and 10 acres of Conservation.⁴⁷

Excerpt from the Central Water Use and Development Plan DHHL Water Resources:

Due to the extensive Department of Hawaiian Homelands (DHHL) land holdings and their plans to further develop the area for Native Hawaiian habitation and farming activities; adequate water supply is becoming increasingly important for Native Hawaiians to resettle and facilitate their cultural practices in the area. DHHL lands are occupied by Native Hawaiians who are assumed to live the full-range of traditional Native Hawaiian cultural practices based on their ability to implement the knowledge of their heritage. Upcountry Maui (Keōkea/Waiohuli, Ulupalakua, Kualapa) has over 6,000 acres of DHHL lands.

The Makawao-Pukalani-Kula Community Plan section, "Identification of Major Problems and Opportunities of the Region Problems," cites "limited development of water resources and distribution system to meet the needs of the region as a primary concern," and notes that "The proper allocation of water resources is considered essential to encourage the development of Department of Hawaiian Home Lands (DHHL) parcel."⁴⁸

Keōkea/Waiohuli – Priority Tract

According to the DHHL Maui Island Plan, with adequate water and funding, this area has the potential to be the largest homestead region on Maui. Over 6,000 acres of DHHL land are

⁴⁷ Ko`olau WUDP, P. 43

⁴⁸ Central WUDP, Page 30

located below Kula Highway on the slopes of Haleakala. A 70-unit farm lot subdivision at Keōkea was planned prior to the *Maui Island Plan*. A second phase of 343 residential lots can be implemented using allocations from the existing water system if planned in the mid-section of the tract between existing residential lots and the Keōkea farm lots. An additional 768 residential lots are proposed for future residential homesteads at Waiohuli pursuant to the development of an on-site production well.

Kualapa

Located along Kula Highway south of Ulupalakua near Kanaio, this tract does not have immediate development potential due to infrastructure constraints. The water system is old and undersized and is not able to accommodate any further growth; and extensive off-site improvements would be needed to support residential development.

Kula Residence Lots

The Kula Residence Lots subdivision is located in the northern portion of the Keōkea-Waiohuli homestead area (yellow on the accompanying map). The subdivision will include a total of 420 lots developed to Rural Residential half-acre standards.

Future DHHL Development

DHHL has long range conceptual plans for about 1,100 more residential lots in the area below the latest developments. The future subdivisions are envisioned to include community facilities, a school site, parks, archaeological preserves, and open space. These future plans are dependent on the development of water, wastewater, road improvements, and funding. The timeframe for these developments is beyond 2020.

Excerpts from Draft EIS Relating to DHHL Lands:

The DHHL staff has identified 11,455,510 gpd (10,428,000 gpd for K kea-Waiohuli + 1,027,510 gpd for Pulehunui) of water as their recommendation for a reservation of water rights sufficient to support current and future homestead needs related to this proposed Water Lease.

The DHHL has indicated that reserved water may be available for other purposes until the DHHL has an actual need for the water. For its K kea-Waiohuli and Pulehunui lands, the DHHL will be dependent on the EMI Aqueduct System collecting and transporting East Maui stream waters, in order to get waters to its lands. Until actual need materializes, the DHHL would receive payments related to lease rents paid by the lessee for those waters should EMI use a portion/all of the DHHL's Water Reservation, and the DHHL could receive other possible compensation or consideration.⁴⁹

⁴⁹ DEIS, Page 2-4

Failure of the State to Fulfill Fiduciary Responsibility:

Whether the State of Hawaii is meeting its fiduciary responsibility to Native Hawaiians regarding their claim to revenue sharing as granted by the State Constitution needs to be resolved.

In *Nelson v. the Hawaiian Homes Commission*, six individual plaintiffs filed a first amended complaint alleging that the State Defendants and DHHL had violated Article XII, Section 1 of the Hawai'i State Constitution. That constitutional provision states the following:

The legislature shall make sufficient sums available for the following purposes: (1) development of home, agriculture, farm and ranch lots; (2) home, agriculture, aquaculture, farm and ranch loans; (3) rehabilitation projects to include, but not limited to, educational, economic, political, social and cultural processes by which the general welfare and conditions of native Hawaiians are thereby improved; (4) the administration and operating budget of the department of Hawaiian home lands; in furtherance of (1), (2), (3) and (4) herein, by appropriating the same in the manner provided by law.

Plaintiffs alleged that the State had failed to make sufficient sums available to DHHL for the four purposes enumerated above. In Count 2, the Plaintiffs alleged that DHHL breached its trust duties to its beneficiaries by failing to request sufficient sums from the State. The progress of this case and the appeals provides insight into the dissatisfaction of beneficiaries with regard to revenue sharing.

Case is attached as Appendix 11.

Ownership Considerations & Reversion of Crown Lands with Cessation of Sugar Cane:

Excerpts from: Wai o ke Ola He Wahi Mo'olelo no Maui Hikina, A Collection of Native Traditions and Historical Accounts of the Lands of Hāmākua Poko, Hāmākua Loa and Ko'olau, Maui Hikina (East Maui), Island of Maui, Kumu Pono Associates⁵⁰

At the request of Garret Hew, Manager of East Maui Irrigation Company, Ltd. (EMI), Kumu Pono Associates conducted a two phased study of cultural historical resources in the lands of Hāmākua Poko, Hāmākua Loa, and Ko'olau, in the region of Maui Hikina (East Maui), Island of Maui (an area that includes some 73 individual ahupua'a or native land divisions). The study included— conducting detailed research of historical records in public and private collections (Volume I); and conducting oral history interviews with individuals known to be familiar with the cultural and natural landscape, and history of land use in the Maui Hikina study area (Volume II). This study was conducted in conjunction with the Water License Application of the East Maui Irrigation Company, Ltd., to the Board of Land and Natural Resources of the State of Hawai'i.⁵¹

Page 444-445 (Appendix 8)

In 1928, J.H. Foss (Chief Engineer, East Maui Irrigation Company), submitted a paper to the Public Lands Commission as a part of the appraisal process associated with General Lease No.'s 1134 (Honomanu), 974 (Hamakua), and 276 B (Spreckels). In the paper, Foss provided readers with a historical summary of the history of the East Maui Ditch System and Water Licenses:

A brief history of Government Water Licenses on East Maui will give a background for the details to be considered in these three appraisements. There are in all five such licenses, two in addition to the above three. All of them are now somewhat interwoven due to the fact that the transportation of water from each is handled by one and the same general ditch system; accordingly, the two additional ones...are Keanae, No. 1706; and Nahiku, No. 520 B...

...Honomanu License, No. 1134, is a new license which replaced the original lease on Honomanu lands. At the expiration of said lease all improvements thereon, and in connection therewith, reverted to the Government. The present Honomanu License also provides that improvements thereon and in connection therewith revert to the Government...

The present ownership of the ditches transporting water from the Honomanu and Spreckles Hamakua Licenses is somewhat involved. The original ditches on the Honomanu lease are the Spreckels and M. Louis, which are to a great extent still in use. They reverted to the Government at the expiration of the Honomanu lease in 1908. The Koolau Ditch which also crosses the Honomanu License, but which was built under the Keanae License in 1903 1904, reverted to the Government at the expiration of that license in 1925. Thus all the aqueducts in the land of Honomanu are now, and have been for several years, the property of the Government.

⁵⁰ <http://www.ulukau.org/elib/collect/maly6/index/assoc/D0.dir/book.pdf>

⁵¹ Wai o ke Ola He Wahi Mo'olelo no Maui Hikina, Page 3

The Spreckels, Center, Lowrie and New and Old Haiku Ditches are still the property of East Maui Irrigation Co^[19]. Those portions of those ditches located on Government land may automatically become the property of the Government at the expiration of the Spreckels License in 1938, although the Spreckels License does not provide for reversion of improvements.

Those portions of the new and old Hamakua Ditch, located upon Government land, reverted to the Government with the expiration of the Hamakua (1916) and Keanae (1925) Licenses respectively; and accordingly have been the property of the Government for some time. The Wailoa Ditch, which is located on the Spreckels Hamakua License, is still the property of East Maui Irrigation Co., but those parts which are on Government land will revert to the Government at the expiration of the Spreckels Hamakua License in 1938...

Page 448-449 (Appendix 9)

September 7, 1876

C.T. Gulick, Interior Department;

to Messrs. Castle and Cooke, Agents Haiku Sugar Co. : .

..I am directed by His Excellency the Minister of the Interior to say in reply to your Application of the privileges, that the Government will grant to the Haiku Sugar Co., Alexander and Baldwin, James M. Alexander, The Grove Ranch Plantation and Thomas Hobron, and their respective and several successors heirs and assigns the license to take water from the streams named in the application and to carry the same over all Govt. lands intervening between the said Streams and the remotest of the lands to which it is now desired to carry said water for the period of twenty (20) years from date of acceptance at the rate of One Hundred Dollars (\$100.) pr Annum, upon condition:

1st: That a sufficient ditch, canal or other waterway shall at once be commenced and finished in a reasonable time.

2nd: That this grant shall in no way interfere with the rights of tenants upon said Government streams or lands.

3rd: Nor shall it in any way affect the right of the Government to grant to any person or persons the right to take water (not to interfere with the water herein granted) from the same or other streams to be carried over the same land or lands for any purpose whatsoever, and if need be through the ditch or canal to be constructed by these grantees, provided however that during the said twenty years the supply of water, a right to take which is herein granted, shall not be diminished by act of the Government.

4th: That at any time during the said period the government may purchase the said ditch canal or other water way, * (* upon payment of the actual cost thereof only) and in case of said

purchase will continue to furnish water to these grantees and their respective and several successors, heirs and assigns at a just and reasonable rate not to exceed that paid by other parties taking water from such ditch or waterway.

Page 486-489 (Attached Appendix 10)

[Extension of Lease from the 30th of Sept. 1893, to the 30th of Sept. 1916]

August 10, 1893 J.A. King, Minister of the Interior; to Haiku Sugar Company and Paia Plantation Company]

An Indenture made this 10th day of August, A.D. 1893, by and between His Excellency, James A. King, Minister of the Interior of the Hawaiian Islands, acting with the advice and consent of the Executive Council of the Provisional Government of said Islands, of the first part, and The Haiku Sugar Company and the Paia Plantation Company, Corporations established and existing under and by virtue of the laws of the said Islands, of the second part;

Whereas said parties of the second part hold a certain grant of the right to take water for purposes of irrigation from certain streams on the Island of Maui, and the right of way across certain Government Lands for a ditch to convey such water, which said grant is contained in an Indenture made by and between W.L. Moehonua, Minister of the Interior, acting with the consent of the King in Cabinet Council, of the first part, and the Haiku Sugar Company, James M. Alexander, Alexander and Baldwin and T.H. Hobron, of the second part, dated Sept. 30th, 1876, of record in the Hawaiian Registry of Deeds in Lib. 49, Fols. 167 172, which said grant is for the term of twenty years;

And Whereas said Indenture was, on the 7th day of Oct. 1878, modified by agreement of the parties, of record in said Registry in Lib. 57, Fols. 343 345, the parties of the second part, then associated under the name of the Hamakua Ditch Company, on consideration of the waiver by the party of the first part of the right reserved to purchase said ditch and appurtenances, agreeing to pay the sum of Five hundred Dollars (\$500.00) per annum rental;

And Whereas the Paia Plantation Co. has acquired all of the rights of said James M. Alexander, Alexander and Baldwin, and T.H. Hobron in said Indenture;

And Whereas said indenture contains a covenant for renewal for a further term of twenty years, provided the rights therein granted should be granted to any person or corporation...

Honolulu, July 25, 1898. Senator Hocking; to J. F. Brown Esq., Agent of Public Lands:

...Mr. H. P. Baldwin, Mr. W. F. Pogue and myself have entered into a preliminary agreement to erect a sugar mill at Nahiku, Island of Maui, for the purpose of manufacturing sugar from cane grown and furnished by parties who have taken up government lands at Nahiku, Island of Maui, and also to pipe and ditch water along the heads of said lands, providing we can acquire the right from the Government to do so.

Therefore providing the Company be incorporated under the law of Hawaii, will you grant it a license to use the water on said lands for the above named purpose, providing it be used for the benefit of all parties owning land in said tract, and depriving no person of their rights to water, we would necessarily like the privilege for a long term of years if you should decide to grant this license will you please state the terms... [HSA, F.O. & Ex, Public Lands Commission – 1898]

August 2, 1898 Land License No. 520 B Public Lands Commission;

The water from this tract shall be used for the general benefit of the owners and occupiers of lands within the Nahiku tract of Public Lands Map No. 20, for irrigation and domestic purposes, and for cane fluming and general Mill and Plantation purposes, and no person or persons shall be deprived of the use of any water to which they would have been entitled in the absence of this License.

...The right as regards the use of the land to be occupied under this license, is limited to such operations as are required for ditching, building dams, flumes and for the utilization and conveyance of water, no rights of taking timber except for construction of such dams, flumes and c, and no rights of using the said tract for other purposes being granted.

At the expiration of the term of this license all flumes, pipes and improvements for conducting said water shall remain upon said land and shall revert to the Government.

Per the Office of Hawaiian Affairs, Kipuka database, of the 30,000 acres of land on the Tax Map Key numbers listed in the Draft EIS, 18,000 are crown lands.⁵²

<u>TMK</u>	<u>Acres</u>
2/1-2-004-005	1576.07
2/1-1-004-007	3821
2/1-1-002-002	13007.1
2/1-1-001-044	3371.97
2/1-1-001-005	2121.85
<u>2/2-9-014-001, 005, 011, 012, 017</u>	<u>6630.84</u>
Total acres	30,528.83

⁵² <http://kipukadatabase.com>

TMK: 2/1-1-002-002

- 35,740 acres owned by the State DLNR-DOFAW considered Ko'olau Forest Reserve
- 13,518 acres of Crown Land

1895 Land Use: Kalo Iaukea Description⁵³:

These three lands adjoin each other and extend along the coast from Makoloaka point where Wailua joins the government land of Waiohue on the east, to a ravine called Napuumaohenui at the extreme westerly end of Honomanu, a distance of about 6 1/2 miles. These tracts are mostly mountain and wood land, and full of deep and precipitous gulches. At Keanae there is quite a stretch of low table land where considerable taro is cultivated and where the most of the natives reside. Has a very good landing. In the Wailua valley all of the lower portion is rice land, about 75 acres. On these lands there is at all times a great abundance of water. The land of Honomanu is valuable for its water, from which a large section of the Hawaiian Commercial and Sugar Co.'s land is supplied. Wailua contains about 3000 acres, Keanae 11,148 and Honomanu 3260.

- Land Patent Grant 10879 from the Territory of Hawaii to Amalia K. Bodnar 7.75 acres dated 9/4/40.
- Royal Patent Grant #3223 awarded to Kaakuamoku and Kailiau for 120 acres in 1879, Book 15

TMK: 2/1-1-001-044 Honomanu

- 4270 acres of Crown Land
- Same description as above
- 1895 Land use: Valuable Water Rights

⁵³Source: Iaukea, Biennial Report, 1894

V. Considerations RE: Purchasing & Maintaining EMI System

The Maui County Board of Water Supply Temporary Investigative Group has conducted interviews and discussions with various individuals in the community with knowledge, expertise and experience who have increased TIG members' understanding of the scope, operations and maintenance of the EMI Water Delivery System as well as the costs related to the purchase or condemnation of the EMI water delivery system and the cost of its maintenance, and the purchase or condemnation of relevant Mahi Pono lands.

The BWS TIG has also reviewed various documents related to the above.

General Considerations:

In response to community research, the BWS TIG learned that there are many members of the community who have been considering the option of purchasing the East Maui water delivery system and/or watersheds and had already begun their own analyses prior to the establishment of the TIG.

For example the East Maui H2O Roundtable discussed the following:

<p>East Maui H2O Roundtable, convened by Sustainable Living Institute of Maui, June 2018, Break-out group on Financing strategies for East Maui Watershed and Water systems.</p>	<p>Participants: <i>ALLISON COHEN (Nature Conservancy)</i> <i>GLADYS BAISA (DWS DIRECTOR at the time)</i> <i>CARL FREEDMAN (economic analyst on water and energy policy)</i> <i>DAVID FISHER (Economist and business advisor)</i> <i>CAROL REIMAN- A&B Public relations head</i> <i>WARREN WATANABE- Maui farm bureau</i> <i>LUCIENNE DE NAIE - Sierra Club Maui/ east Maui resident</i> <i>HUGH STARR- ag property specialist/ water researcher</i></p>
<p>Price tag depends on needed systems improvements and community priorities. Costs associated with watershed and ditch system (not County water treatment systems) include:</p> <ul style="list-style-type: none"> • ditch system upkeep and maintenance • watershed management and restoration activities • monitoring gear / programs • alternative water sources • needed studies and plans • system modifications/ expansions • OHA/DHHL share 	
<p>Funding Sources:</p> <ul style="list-style-type: none"> • System users • Private sector funding • International & local bonds • Social impact investors interested in : <ul style="list-style-type: none"> • sustainability • education • carbon offset • adopt a tree programs 	<ul style="list-style-type: none"> • NGO investors (charitable foundations) • Corporate sponsors • County • Federal appropriations (climate impact mitigation funds?) - USFWS/ USDA/ EPA- GRANTS • USGS programs and projects • State - Legislature plus CWRM/ OHA/DHHL

Determine pricing structure for portion of funding coming from potential water system users:

- DWS: potable system & ag parks
- A&B or successor- farming leases /hydropower
- taro farmers/ kuleana farmers
- Hui partition holders in Huelo
- Maui Gold pineapple
- Ranches
- Recreational users PUC would need to regulate the prices set & PUC bases decision on cost, not "value"

SIDEBAR: AG WATER RATES

- Charging 3 cents per 1000 gal , 100 mgd would cost \$1 million
- Upcountry farmers currently pay \$1.10/ 1000 gal at the County Ag park
- State irrigation district (Hawaii Island) charges 20 cents/ 1000 gal.

Condemnation Requirements (Per Maui County Corp Counsel):

In an August 2, 2017 transmittal from then-Corporation Counsel Pat Wong to then-Council Member Elle Cochran, advice is provided on the process for initiating condemnation proceedings by the County of Maui. Mr. Wong cites the following sections of the Hawaii Revised Statutes (HRS):

§46-1.5 (6) Each county shall have the power to exercise the power of condemnation by eminent domain when it is in the public interest to do so;

§46-61 Eminent domain; purposes for taking property. Each county shall have the following specific powers: To take private property for the purpose of establishing, laying out, extending and widening streets, avenues, boulevards, alleys, and other public highways and roads; for pumping stations, waterworks, reservoirs, wells, jails, police and fire stations, city halls, office and other public buildings, cemeteries, parks, playgrounds and public squares, public off-street parking facilities and accommodations, land from which to obtain earth, gravel, stones, and other material for the construction of roads and other public works and for rights-of-way for drains, sewers, pipe lines, aqueducts, and other conduits for distributing water to the public; for flood control; for reclamation of swamp lands; and other public uses within the purview of section 101-2 and also to take such excess over that needed for such public use or public improvement in cases where small remnants would otherwise be left or where other justifiable cause necessitates the taking to protect and preserve the contemplated improvement or public policy demands, the taking in connection with the improvement, and to sell or lease the excess property with such restrictions as may be dictated by considerations of public policy in order to protect and preserve the improvement; provided that when the excess property is disposed of by any county it shall be first offered to the abutting owners for a reasonable length of time and at a reasonable price and if such owners fail to take the same then it may be sold at public auction.

§46-62 Eminent domain; proceedings according to chapter 101. The proceedings to be taken on behalf of the county for the condemnation of property as provided in section 46-61, shall be taken and had in accordance with chapter 101, as the same may be applicable.

§101-13 Exercise of power by county. Whenever any county deems it advisable or necessary to exercise the right of eminent domain in the furtherance of any governmental power, the proceedings may be instituted as provided in section 101-14 after the governing authority (county council, or other governing board in the case of an independent board having control of its own funds) of the county has authorized such suit by resolution duly passed, or adopted and approved, as the case may be. The resolution, in the case of the city and county of Honolulu or an independent board thereof, shall, after its introduction, be published in a daily newspaper with the ayes and noes, once (Sundays and legal holidays excepted) at least three days before final action upon it, and in the case of any other county or an independent board thereof, be published in a newspaper with the ayes and noes, at least one day (Sundays and legal holidays excepted), before final action upon it.

§101-14 Plaintiff. The attorney general of the State may, at the request of the head of any department of the State, or as otherwise provided by law, institute proceedings for the condemnation of property as provided for in this part. Any county may institute proceedings in the name and on behalf of the county for the condemnation of property within the county for any of the purposes provided in this part which are within the powers granted to the county.

Section 4-2(7) of the Revised Charter of the County of Maui (1983) states: "Resolutions authorizing in eminent domain shall be adopted as provided by law."

Maui County Code Section 3.44.O15(E) states: "The council may authorize proceedings in eminent domain by resolution. Any proceedings so authorized are subject to the requirements of chapter 101, Hawaii Revised Statutes."

The remainder of HRS chapter 101 sets forth the process for completing condemnation proceedings. In summary, after the Council passes a resolution, the County is required to file a complaint in Circuit Court and provide notice of the action to all owners of the property. The County will be required to compensate the property owners for the property taken, and if the parties cannot agree on compensation, the Court will hold a trial on the issue.

Prior to drafting the resolution, the County should obtain a title report for the property, as well as an appraisal of the property's value. The appraised value of the property should be included in the County's budget. The resolution itself should authorize the Department of Corporation Counsel to initiate condemnation proceedings, specifically describe the property, state the public purpose proposed for the property, and authorize Corporation Counsel to deposit money equivalent to the estimated value of the property to obtain immediate possession, if applicable. It is also advisable for the Council work closely with the County department that will be responsible for oversight of the property throughout the condemnation proceedings.

In your request, you discuss the possibility of condemnation of the structures but not the land within the proposed property. Owning the structures without owning the land would limit the County's control of the land to effectuate the purpose of the condemnation.

Please see Appendix 5 for a copy of the transmittal.

In an email request from Board of Water Supply Chair and TIG Vice Chair Shay Chan Hodges, Corporation Counsel Caleb Rowe, stated the following:

"In general, when a condemnation occurs, the governmental body undertaking the condemnation must pay "fair market value" of the property taken. The Hawaii Supreme Court in its decision in Honolulu v. Collins (attached) specifically states that the value of use of water derived from the land shall be considered in a determination of fair market value ("this land has a special value as water producing land. The owners, therefore, are entitled to compensation according to its value as such.")

The calculation of damages would be a little weird for this one since the system is technically on state land and the rights to the water are entirely speculative (dependent on the RP from BLNR). Still, some consideration of the value of water would likely be deemed appropriate in a determination of fair market value."

See Appendix 6 for a copy of Honolulu vs. Collins.

Fair Market value of the EMI System:

Market Value in 2018	Based on one-year old purchase price
1. Price paid by Mahi Pono:	\$5,442,333.48 per the purchase and sales agreement with Mahi Pono. Only 50% paid to date. ⁵⁴
2. Assuming that Mahi Pono did its due diligence and assuming that A&B did not sell the EMI System to Mahi Pono for a concessionary price at less than fair market value contrary to the interests of its shareholders, \$5.4 million was a fair price for the system last year. Has the value increased or decreased since the time of purchase?	Due to the reduction in agriculture, there has been reduced use of the aqueduct system over the last three years, and thus a reduction in EMI staff (as confirmed by Kamole Treatment Plant staff). It is likely that changes in delivery system use combined with less maintenance of ditches and the watershed would have a negative impact on the overall condition of the system.
Increased Value if EMI/Mahi Pono Receives 30-Yr Lease	A&B/Mahi Pono Purchase and Sale Agreement
1. The sale by A&B of its property and EMI interest to Mahi Pono required that A&B shareholders be informed of material details of the transaction through the filing of SEC Form 8-K. A&B's 8-K filing prescribes a minimum value of \$62 million of Mahi Pono obtaining state water leases with sufficient water to fully implement its plan through a requirement that Mahi Pono be rebated this amount to reflect the diminished value of the property purchased from A&B if the water leases with sufficient allocation are not granted. As false and misleading statements made in SEC filings are prohibited by law, it is reasonable to assume that the information provided in A&B's 8-K regarding Mahi Pono's acquisition is accurate	Seller will make a one-time rebate to Buyer of \$31,000,000 of the Purchase Price if at any time prior to the earlier of (i) the date State Leases are obtained as provided in Section 2.7(d) below or (ii) eight (8) years after the Closing Date: (x) EMI or Seller is legally prohibited from delivering the Minimum Water Amount (defined below) to Buyer, and (y) the amount of water that EMI is then not legally prohibited from delivering to Buyer is less than Buyer's actual surface water need at that time, as determined by Buyer in its sole discretion, exercised in good faith, to meet the irrigation requirement of its then existing crops or crops planned for the upcoming 24 months in the area served by East

⁵⁴ A&B/Mahi Pono, Purchase and Sales Agreement and Escrow Instructions, Page 4, <https://www.sec.gov/Archives/edgar/data/1545654/000119312518354682/d664171dex101.htm>

and based on proper due diligence.	Maui surface water (a " <u>Productivity Loss Event</u> ." On the date one year after the initial Productivity Loss Event described in subsection (a) (the " <u>Initial Productivity Loss Event</u> "), Seller will rebate to Buyer an additional \$31,000,000 of the Purchase Price for a total reduction in the Purchase Price of \$62,000,000, unless by that date the Initial Productivity Loss Event is cured. ⁵⁵
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Legal Ownership of the EMI System:

As noted under "Ownership Considerations" on Page 32, per the contractual agreements between EMI and the Hawaiian government, the East Maui Irrigation System should have reverted back to the Hawaiian government. **A thorough legal analysis of the current ownership needs to take place immediately.**

Assessed Value of the EMI System Relative to Repairs Needed:

Per the Central WUPD: Public concerns were voiced over the EMI system falling into disrepair, inefficiencies due to unlined storage reservoirs and system losses. In the East Maui Streams Contested Case, system losses were assessed to about 22 percent. As sugarcane cultivation is transitioned to other uses, EMI continues to maintain the system and keeping the main ditches functional even with reduced volume flow. CWRM in its June 2018 decision encourages HC&S to seek to make its storage and delivery of water to its fields more efficient to increase the productive yield of the irrigation water from East Maui.⁵⁶

On December 20, 2016, the Department of Water Supply commented on the early consultation for the preparation of the EIS for the proposed 30-year lease. Some comments included:

The costs of the EMI System management, capital improvement, system operation and maintenance are important in assessing the future viability of the system and should be disclosed by the applicant. Relevant information include[s]:

The current and projected costs of the EMI system management, capital improvements, system operation and maintenance.

Although the DEIS, Page 548, refers to some repair and maintenance, there does not appear to be any explicit plans or expenditures cited in the EIS:

⁵⁵ <https://www.sec.gov/Archives/edgar/data/1545654/000119312518354682/d664171dex101.htm>, Page 6

⁵⁶ Central WUPD, Page 104

Implementation of the CWRM D&O may require modification or complete removal of specific diversion in the EMI Aqueduct System. Mason Architects prepared a Historic Structure Assessment report for the subject Water Lease. It was determined that the EMI Aqueduct System is eligible to be placed on the NRHP. Historically significant structures to be modified or removed will be documented photographically and with location sketch plans conforming to the Historic American Engineering Survey (HAER) standards. Any future developments will need to be in conformance with the goals, policies, and objectives of the State of Hawai'i CZMP⁵⁷.

Assessing the current condition of the EMI System and the costs of appropriate repairs:	How would a fair appraisal be conducted?
<p>1. Comprehensive information from EMI/Mahi Pono about the condition of the delivery system would be extremely useful to the community, not just for the purposes of determining market value, but for assessing overall impacts on the ecosystem, health, safety, and traditional and customary practices.</p> <p>The BWS TIG requested a copy of a safety analysis conducted by Oceanit from EMI that might have provided valuable information about the state of the system, as well as recommended improvements. EMI/A&B declined to provide a copy of the report.</p> <p>BWS TIG requested a tour; which has not been scheduled by EMI yet.</p>	<p>Based on the draft EIS, it is unclear what the current condition of the EMI system is. One statement indicates that there WILL be maintenance but does not clarify what the current maintenance is.</p> <p><u>Page 3-15, Draft EIS:</u> "ongoing maintenance and operation of the EMI Aqueduct System is expected to take place under all alternatives, to the extent operations and maintenance of the system is financially feasible."</p>
<p>2. Appraisal Process</p> <p>Scope of Work includes details of the property to be evaluated, reason for appraisal, who is ordering, who will receive report and how it will be used. Appraiser then identifies parcels, makes physical inspection, takes measurements, pictures and creates field notes. The appraiser then makes adjustment calculations to compare subject property to similar size, zoned, special features (in the case of vacant land - it is important to note the useable land area, the utilities available on the property, road access) Appraiser identifies any and all improvements on the parcels.</p>	<p>In the case of condemnation for purposes of obtaining a water storage and distribution system for the public trust, the appraiser will need to have an MAI designation (a professional certification) in order to be able to appear in court.</p> <p>Only a handful of appraisers in Hawaii are MAIs. Hiring the appraiser with court experience would probably cost from \$25,000 to \$50,000.</p>
<p>3. From US Department of the Interior, Fish and Wildlife Service.</p> <p>Dan Pohlhemus of USFWS attended June 2018 East Maui H2O Roundtable offered the following observations on the E. Maui ditch system from recent experiences he has had doing stream surveys:</p>	<p>Dan Pohlhemus: "At the present time, there is also no water being diverted from any stream east of the Koolau Gap by the Koolau Ditch, because in that sector at least as far west as Wailuanui Stream it is stagnant or dry. EMI and Mahi Pono are only diverting what they currently need to serve Maui County, fire control, and a few limited ag customers, which all amounts to less than 30 mgd. This is easily supplied by diversions on the Wailoa Ditch</p>

⁵⁷ CZMP=Coastal Zone Management Plan

<p>" ... due to lack of maintenance, the various ditch systems other than the Wailoa Ditch (which has the highest elevation alignment and is thus of greatest use to Maui County Water) are gradually falling apart, with numerous treefalls and land slips beginning to obstruct them, and their headgate machinery rusting and deteriorating.</p> <p>"As far as I can see, neither the Lowry Ditch nor the New Hamakua Ditch are currently functional, and with each passing day it will take progressively more work and money to bring them back into service.</p>	<p>from Puouhokamoa westward, a fair number of which are still active to some degree. But there seems to be no master plan here, just EMI taking the limited amount of water they still need from whatever are the easiest diversions to maintain. Everything else will go back to the forest, as has already happened to many diversions and access roads associated with the Waiahole Ditch on Oahu. Essentially, the system is downsizing itself, although that is not all bad."</p>
<p>4. Community Members provided feedback about the condition of the EMI Delivery System and the impacts on safety at focus groups convened for the Draft EIS.</p> <p><u>Page 4-121, DEIS:</u> Mr. Hau states that the EMI Aqueduct System requires mapping that shows the 388 intakes, ditches, dams, pipes, and flumes. Each diversion should be located and identified accurately with GPS coordinates. Elevations should also be recorded. The amount of water moving through the system should be measured at specific locations within the EMI Aqueduct System as well.</p>	<p><u>Page 4-135, DEIS:</u> As landowners and farmers downstream of the EMI Aqueduct System, two major concerns emerged among participants. First, many reported that the EMI Aqueduct System is not maintained in a manner that was safe for people in the area and located downstream. Focus group participants said that portions of the ditch area are so overgrown with vegetation that people visiting the area are injured if they stumble upon or fall into ditches and flumes that are not readily visible. Two bridges on State land often flood in this wet season, and people cannot drive to their residences until the water level subsides. It was felt that the bridges are unsafe because of a lack of maintenance.</p> <p>Also, people who visit popular areas in the vicinity of the State Forest Reserve, such as Twin Falls (which is partially within License Area; the upper falls are within the License Area but, the area that is frequently visited is outside the License Area), and area trails, noted that these areas are subject to overgrown landscaping and flash flood conditions. Participants noted that neither EMI nor the State has participated in maintenance of the EMI Aqueduct System and trails in this area, even though this area attracts residents and visitors alike.</p>
<p>5. Examples of repairs and modifications:</p>	<p>Replace old diversion apparatus with modern diversion devices (solar powered, plus batteries) that allow established minimum flows to pass through, mauka to makai, and divert only excess water, and which allow migrating aquatic animals, plants can pass under device unimpeded both up and downstream.</p> <p>Install 24" pipes as used in mainland fracking water transport, laying the pipe in existing ditches, tunnels, flumes. This will reduce leakage to a minimum and save many mgd.; and prevent contamination of one stream with snails and other biota unique to each stream,</p>
<p>6. A formula for estimating initial repair costs is utilizing 3% of Replacement Asset Value (RAV) per year, over two years, which would total of \$12 million.</p>	<p><u>Page 802, DEIS:</u> "The development and improvement of the EMI Aqueduct System over time has cost nearly \$5,000,000, compared to its modern assessment of nearly \$200,000,000 to create a comparable system."</p>

Operating Costs and Management Considerations:

In the Draft EIS, EMI provides specific current and anticipated operations costs. If a public entity purchases the EMI Water Delivery System, these figures would represent the cost of operating the system with current EMI staff in place, which would be the most efficient plan at least in the short-term. Given that the EMI system is a relatively small operation with regard to personnel, taking over management and administration of the system would be relatively straightforward.

Breakdown of Operations Per EMI/A&B:	Page 2-1, 4-150, Draft EIS: \$2.5 M Annually
In the DEIS, EMI provided total operational costs for Mahi Pono, which are quoted here. Specific operational costs are also listed, though not enough information is available to confirm how final calculations were reached.	<u>Page 2-1, DEIS:</u> Total costs for labor, fringe benefits, materials, professional services, taxes, maintenance, anticipated rental payments to the State for the Water Lease, and other expenses are projected to be approximately \$2.5 million per year (Munekiyo, 2019).
1. Personnel	EMI is expected to employ a staff of 17 people with a payroll of \$0.8 million. Total direct and indirect jobs is 24, with an associated payroll of \$1.1 million.
2. Operations	EMI's operating cost (including personnel above) under the Proposed Action would be \$0.068 per kgal, for a total of \$2.2 million. (Table 4. EMI Water System Economic and Fiscal Impacts, DEIS Page 18)
3. Taxes	GET revenue would be estimated at \$37,000 while payroll tax would be \$45,400 per year
4. Payments to DHHL and OHA	\$169,300 would be disbursed to OHA and \$254,000 would be set aside for the DHHL
5. State Leases	Based on appraisal

Opportunities for Direct Cost Savings Through Improved Maintenance:

Engineering study of the EMI system that assesses the cost-benefit of mitigating 20% losses is needed.	What are the funding options available for environmental assessments?
1. Given the amount of water that is lost through leakages on a regular basis, what would the savings be of proper repair and maintenance to the owner of the system, and would that savings offset any of the R&M costs?	Ko'olau WUDP, Page 121: "...water losses due to leaks, seepage, evaporation and other inefficiencies in the treatment, conveyance, distribution and storage of water range widely depending on storage and source transmission system age, length, type and many other factors...To account for water losses and determine source needs for Upcountry, water produced, rather than water billed is used as basis to determine source needs. For the Upcountry system, water losses average 20%."
2. What would the estimated increased availability of water to Upcountry residents be as a result of proper repair and maintenance?	
3. What would the impact be on overall East Maui stream restoration if less water needed to be diverted to supply Upcountry Maui?	

Liabilities:

Prior to the current sale of the EMI system to Mahi Pono, EMI has been operating under a “status quo” mentality with various grandfather clauses in effect. There are numerous liabilities and additional legal obligations that any new owner will need to address such as issues related to abutting landowners:

- Trespass and safety issues related thereto;
- Risks of extra water flow in storms; and
- Trees falling and other natural and man-made dangers encroaching on abutting land.

The DEIS does not contemplate a risk management plan that will be necessary to address these liabilities that Mahi Pono will be assuming when it takes full ownership of EMI and when the various grandfather clause exemptions currently enjoyed by EMI are no longer in effect.

Opportunities for Indirect Cost Savings through Mitigating Health and Safety Risks:

Health and Safety Considerations and Concerns, including Climate Crisis Impacts	In addition to direct costs, the County should look at other considerations that affect the well-being of Maui residents.
1. What are the safety concerns that would affect the community at large if the system is not properly maintained, regardless of ownership?	<u>Page 3-14, DEIS:</u> Impact to historic properties. Components of the aqueduct system that deteriorate and begin to fail, such as broken ditch walls or collapsed tunnels, have the potential to alter natural drainage patterns and increase erosion in downstream areas that are outside of established stream channels. These areas have the potential to contain surface and subsurface historic properties that could be affected by flooding and erosion. (Mason Architects, 2019).
2. What are the health and social effects on East Maui residents, including community benefits for intergenerational farmers returning to the valleys that have been without water for over a hundred years, if EMI Delivery system is not maintained optimally?	This would require a thorough study of the impacts of access to water on farmers and communities from a socio-economic perspective, looking at potential impacts of returns to East Maui.
3. How does maintenance of the EMI Delivery System impact Climate Crisis safety concerns with regard to flooding? (Steps to be taken regarding climate crisis mitigation over the next thirty years were not found in the DEIS although climate change is mentioned as a factor.)	<u>Page 4-72, DEIS:</u> Climate change trends suggest increased potential for East Maui, including the License Area, to experience periods of intense, episodic rainfall where several inches of rain can fall in a matter of a few hours. With several streams being within East Maui, greater, episodic rainfall could increase stream flows and possible exceed the capacity of the EMI Aqueduct System as discussed in Section 4.3.1. The Modified Lease Area alternative could present risks to public safety if unfettered public access within the License Area meant more people could be put at risk due to stream flooding.

Opportunities to Support Culturally and Community-Based Economic Development As Defined by the Community:

The EMI Delivery System and Economic Development	The County should look at how public ownership would further support value-aligned economic options as defined by East Maui residents.
1. An analysis of the economic and social value of a well-maintained aqueduct system that supports local farming beyond state laws governing stream flow standards would allow the public to support multiple stakeholder needs from a variety of perspectives.	<u>Summary, Page 58, DEIS:</u> At full development, East Maui farms would produce about 1.0 million pounds per year of taro and about 400,000 pounds per year of other crops, resulting in \$2.9 million in direct and indirect sales per year. Farms would support a total of 21 direct and indirect jobs. (Munekiyo, 2019).
2. The impact of eliminating water loss on streams and waterfalls could be looked at from the perspective of impacts on the visitor industry.	What would loss of waterfalls impact be on tourism dollars? How would a managed tourism plan that acknowledges the contributions of and impacts on residents and the natural environment look?

Economic and Other Benefits of Accountability Regarding Streams Flows:

Although legal decisions have supported the return of water to streams, there is a lack of funding for monitoring and enforcement	Public ownership of the water delivery system would provide transparency, accountability, and multiple remedy options to the public if laws are not followed.
1. As noted previously, maintaining water in the streams has an impact on the watershed. There are also local and global environmental, community, tourism, energy, food security, and cultural imperatives for being able to ensure that streams are being restored as mandated by law.	<p>The Code (HRS § 171C-3) defines “instream use” as: beneficial uses of stream water for significant purposes which are located in the stream and which are achieved by leaving the water in the stream. Instream uses include, but are not limited to:</p> <ol style="list-style-type: none"> 1. Maintenance of fish and wildlife habitats; 2. Outdoor recreational activities; 3. Maintenance of ecosystems such as estuaries, wetlands, and stream vegetation; 4. Aesthetic values such as waterfalls and scenic waterways; 5. Navigation; 6. Instream hydropower generation; 7. Maintenance of water quality; 8. The conveyance of irrigation and domestic water supplies to downstream points of diversion; and, 9. The protection of traditional and customary Hawaiian rights.
2. If the water delivery system were publicly owned and/or controlled, there could be more opportunities and motivation for pursuing robust and authentic engagement with East Maui families regarding care of watershed and ahupua’a, including a community-based system of repair and maintenance (kuleana) to support ongoing communication and relationship building, as well as potential sources of funding for community	<p><u>Ko’olau WUDP, Page 15:</u> There are 36 streams in the Koolau ASEA, that are classified as perennial. Of these streams, 31 are considered continuous and 5 are considered intermittent. The CWRM database indicates that there are 323 declared stream diversions in the Ko’olau ASEA and 11 gauges, of which, only three are “active.” Most of these diversions belong to the East Maui Irrigation Company (EMI).</p> <p>Developing an East Maui community-based/owned system of</p>

appropriate technology, including installing monitoring devices that can withstand heavy storm floods with wireless data broadcast that accurately measure stream flow and diversion amounts.	watershed stewardship could be an economic and educational driver from Keanae to Kaupo, based on generations of knowledge combined with environmental and climate change educational opportunities.
3. If EMI/Mahi Pono is granted a 30-year lease, there will be very limited opportunities for the community to demand accountability until 2050, long after intense effects of climate change have impacted Maui.	Page 4-121, DEIS: Mr. Hau relayed via email that he recommends a five-year lease with constant updates due to the fact that the project description lacks information on the amount of water flowing through the EMI Aqueduct System and the actual amount of water collected at each diversion and/or ditch without the factor of climate change accounted for.

Safeguarding Public Health & Community Security:

In addition to weighing the cost/benefits of owning/controlling the EMI Aqueduct System in the context of providing domestic water to Maui residents, the County needs to consider the long-term benefits of having control over its water supply over the next 30 years.	How does control of the delivery system combined with the fact that water is a public trust support pro-active access to water and system improvements?
If the County of Maui owns the EMI Delivery system, given that Act 126 specifically allows for the continued diversion of water to serve Upcountry Maui domestic needs, the County would be in a strong position to receive a long-term lease from DLNR. Having its own long-term lease would release the County from dependence on a private company, thereby ensuring that the County can safeguard the public health of Upcountry and East Maui residents.	Issuance of a long-term lease of State land from the Board of Land and Natural Resources pursuant to Hawai'i Revised Statutes (HRS) Section 171-58(c) would provide the "right, privilege, and authority to enter and go upon" state-owned license areas "for the purpose of developing, diverting, transporting, and using government-owned waters" including the right to go upon those State lands to maintain and repair existing access roads and trails used in connection with the privately owned water aqueduct system.
According to DWS Director Jeff Pearson at the September 19, 2019 Meeting of the Board of Water Supply, the County of Maui would not be able to apply for a revocable permit or lease unless it owned the "diversion." If he is correct in his assertion, ownership of the EMI delivery system would allow the County or another public entity such as a Public Trust Water System to be able to apply for a lease.	Director Pearson made this statement in response to a recommendation by Hawaii State Senator Kai Kahele that Maui County apply for a Revocable Permit and lease immediately. Per Senator Kahele, the county is a domestic water provider, its rights are constitutionally protected. If they have an RP or a long-term lease, no matter who runs the transmission system, they can always get water for Kamole. See attached Appendix #3
Having ownership of the system and its own lease, the County of Maui or "Public Trust Water System" would be able to protect the public interest and support public access to the area as needed. Beyond access to domestic water, there are also health and safety issues related to Climate Change for Upcountry Maui. As noted by the State of Hawaii, Office of Planning, "the potential adverse effects of global warming include a rise in sea levels resulting in ... the inundation of	Page 473, DEIS: Changes in precipitation may affect Upcountry Maui's ecosystems and communities include flooding, erosion, drought, and fire. In addition, the ability to support smaller, local farmers and increased food security would be enhanced. Page iii, DEIS: The Water Lease will enable the lessee to enter upon lands owned by the State of Hawai'i in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System, and will allow continued operation of the EMI Aqueduct System.

Hawaii's freshwater aquifers."	
Any publicly-owned entity that entity owned and/or controlled the system would have access to public funding for maintenance of the system and restoration of wetlands that a private owner can't access.	A current example of this kind of benefit for public entities is the \$4.5 million currently allocated by the Dept of Agriculture to help restore stream access in East Maui. The DoA cannot use the funds on private lands, such as EMI/Mahi Pono property. Similarly, USDA and other funding that could be used to repair the EMI delivery system could only be accessed if the system were owned by a public entity.
Public ownership of the delivery system – particularly if combined with lands owned by the County of Maui – would allow for more comprehensive systems-oriented solutions to water needs by combining renewable energy, farming plans that are tailored to community needs, and efficient water systems.	Water and farming plans that integrate analysis of use of curtailed wind energy for water pumping in agriculture and municipal systems can reduce agricultural water needs, lower energy costs for pumping water upcountry, and potentially increase stream flows. (Examples: A Systems Approach for Investigating Water, Energy, and Food Scenarios in East-Central Maui ⁵⁸)
Public ownership would also allow for mechanisms that require a Water Management Plan, building on the Water Use and Development Plan, but with enforcement mechanisms and funding allocations.	Page 4-145, DEIS: Interviewees stressed that Mahi Pono should implement a Water Management Plan. The Plan should outline improvements to the EMI Aqueduct System, including brush fire prevention and relate water needs to specific crops.
Public control over water delivery systems and watershed areas would support proactive and integrated efforts to ensure an affordable and predictable supply of water.	Board of Water Supply, City and County of Honolulu, 2016 Master Plan, 6.2 Sustain ⁵⁹ The BWS manages thousands of acres of watershed area on O'ahu to protect and preserve 212 separate potable water sources, the combination of 194 individual groundwater wells, 13 active potable water tunnels, and 5 shafts. The BWS's proactive efforts to manage and protect the watersheds include limiting access and development, combatting invasive animals and plants, promoting healthy forests, and encouraging customer water conservation to reduce the amount of water withdrawn from the environment. These BWS efforts are discussed in more detail in Section 4, Water Supply Sustainability.
Public or quasi-public ownership of the water delivery system would enable the public to ensure that workers are paid a living wage.	Jobs resulting from the use of a public trust resource such as water should pay enough for Maui residents to support their families.
As noted at the beginning of this document, the impetus for forming the Temporary Investigative Group grew out of the fact that Mahi Pono has been minimally responsive to community concerns and has been unresponsive to requests by the Board of Water Supply for engagement. Water Department Director Jeff Pearson has stated that his continued attempts to encourage Mahi Pono representatives to respond to the Water Board have	Page 4-141 of the DEIS: It is recommended that interest groups, or stakeholder groups, are clearly defined so that there is recognition of who will be affected by the proposed Water Lease. Groups should include geographic communities, environmental, agriculture and business interests, and public agencies. Each group would be encouraged to reach consensus on their own needs, concerns, opportunities and possible solutions. It is recommended that interest groups are equitably

⁵⁸ <http://ulupono.com/media/W1siZiIsIjIwMTQvMTEvMTgvMjNmMjI0NDJfOTQxX0FfU3IzdGVtc19BcHByb2FjaF9mb3JfSW52ZXN0aWdh dGluZ19XYXRlc5wZGYiXV0/A%20Systems%20Approach%20for%20Investigating%20Water.pdf?sha=eea0a5f3>

⁵⁹ <https://boardofwatersupply.com/bws/media/files/water-master-plan-final-2016-10.pdf>

<p>been unsuccessful.</p> <p>Even though Director Pearson and the Maui County Administration have lobbied the State Legislature and will be lobbying the Department of Land and Natural Resources to support EMI/Mahi Pono application for a long-term lease, Mahi Pono has not been compelled to meet with the only volunteer board that advises the Mayor and County Council on matters related to water.</p> <p>Given that Mahi Pono is funded through PSP (Public Sector Pension), which "capture[s] value by integrating environmental, social and governance (ESG) factors throughout the investment process and across all asset classes," it is surprising that community engagement, which is a key ESG value, has not been a priority for Mahi Pono.</p> <p>According to PSP's Responsible Investment Report: "Through engagement, one can assess a community's perceptions of the acceptability of a company's project or local operations. In this context, community can be broadly defined to include stakeholders and interested parties well outside the immediate areas of operations, or any group or individual that can affect or is affected by the achievement of a company's project. In other words, companies cannot operate sustainably without community support." ⁶⁰</p>	<p>represented in a "Core Working Group" that would serve as a forum for exchanging ideas and collaborative efforts, as well as provide feedback and suggestions to Mahi Pono. Each member of the Core Working Group would be expected to reach out to their own networks to extend the discussion beyond the Core Working Group. While there would likely be strong differences in perspectives and opinions, the Core Working Group would need to find ways to establish core principles, common ground and manageable solutions.</p> <p>The fundamental value that will help bring people to the same table is trust. The Proposed Action has elicited skepticism and distrust over many decades, and these feelings prevent willingness for participating in mediation and collaboration. While developing trust among the various groups will be challenging, the first step is transparency. Being open about intent, plans, and activities can begin to establish credibility and open the door to dialogue.</p>
<p>Public ownership of the EMI water delivery system would provide an opportunity to move towards reparations for the Native Hawaiian families who have not had access to their streams for over 100 years. Unlike local government, which exists to meet the needs of its citizens, a private entity – particularly one that is funded by an institutional investor with obligations to pension fund beneficiaries -- would need to develop a business plan that both maximizes revenues, while addressing environmental and cultural considerations. While this is possible, the DEIS does not describe such a plan.</p>	<p><u>Ko'olau WUDP</u>: Historically, great efforts were made to allocate water for all needs on Maui. Today, native Hawaiians are challenged with the negative consequences of resource "ownership," with "owners" sometimes lacking sensitivity or requirements to share with others. Perhaps past strategies of sharing distribution and timing of water flows can be adopted in order for all water users to be supplied with this important resource. Consortiums of water partners have been discussed as options to ownership and management of the East Maui Irrigation water system.⁶¹</p>

Potential Sources of Public and Environmental and Infrastructural investment funds:

As noted in the table, any publicly-owned water delivery entity, whether the County or a "Public Trust Water System" would have access to public funding for maintenance of the system and restoration of wetlands that a private owner can't access.

⁶⁰ https://www.investpsp.com/media/filer_public/documents/PSP-2018-responsible-investment-report-en.pdf

⁶¹ Ko'olau WUDP, Page 39

For example, grants and loans are available through the US Department of Agriculture, Rural Development agency for water and environmental programs. These grants are focused on populations of 10,000 or less so they could possibly apply to East Maui.⁶² The USDA's Rural Utilities Service (RUS) provides much-needed infrastructure or infrastructure improvements to rural communities. These include water and waste treatment, electric power and telecommunications services. The US Bureau of Reclamation also provides funding for large scale water management, efficiency, and development.⁶³ There are other federal revolving loan funds with favorable terms that are designed to finance these types of water projects. And as noted in the table above, the State of Hawaii can be a source of funding, as it was in the \$11.2 million CIP Waikamoi flume replacement project. There are also a number of charitable foundations that have an interest in funding feasibility studies for municipal bond financing of environmentally beneficial projects.

Risks of Leaving Access to the Public Trust in Private Hands:

The County also needs to consider the risks of an outside private equity firm with a "2 and 20" compensation structure and whose institutional funding source is seeking a net annualized return in excess of 10% controlling a significant amount of Maui water supply for 30 years.	Unless the existing owners make legally binding commitments, the community is at risk.
The DEIS is very clear that if EMI does not receive a 30-year long-term lease, EMI/Mahi Pono will not guarantee water for Upcountry Maui even though EMI/Mahi Pono has other sources of water that can be accessed for Upcountry (up to 30 mgd based on their reporting).	Page xiii, DEIS: Without the Water Lease, even if EMI could find it economically feasible to continue maintaining the EMI Aqueduct System to divert non-governmental water for diversified agriculture in Central Maui, there may not be enough water to allocate much or any to the MDWS. This lack of water would exacerbate the effects of drought when other surface water sources are unreliable for the KAP and the Nahiku, this could eliminate their primary source of water. Insufficient water delivered to the County through the EMI Aqueduct System could have significant effects on health and safety of those who currently rely on that water delivery.
As climate change creates more uncertainty and extreme impacts on residents, based on statements made in the DEIS and the record of Mahi Pono's parent company Trinitas in California during the California drought in 2015 ⁶⁴ , it is imprudent to assume that Mahi Pono will be a responsible community citizen, if extreme weather reduces water availability and/or if community groups request more investment in sustainable farming and/or water conservation practices.	Page 3-11, DEIS: Climate change may cause a decline in rainfall in Upcountry Maui. Any alternative that may result in less water being delivered through the EMI Aqueduct System to the MDWS for use in the Upcountry Maui Water System could increase periods of intense water shortages in Upcountry Maui.
As the climate crisis creates more uncertainty and extreme	A current and very dramatic example of a corporate

⁶² <https://www.rd.usda.gov/about-rd/agencies/rural-utilities-service>

⁶³ <https://www.usbr.gov>

⁶⁴ <https://www.businessinsider.com/the-65-billion-almond-crop-is-driving-the-sharp-debate-about-california-water-use-2015-4>

<p>impacts on residents, it would be imprudent to assume that a private equity firm such as Mahi Pono with a financial incentive structure which is not aligned with the long-term public interest will take responsibility for addressing potential infrastructure damage and resource losses which will have significant impact on Maui. The DEIS makes it clear that if Mahi Pono does not receive all the public resources to which it believes that it is entitled, it may cut some or all of its water allocation to upcountry residents "which could pose long-term risks to health" (DEIS 7-5) as well as abandon agricultural fields (DEIS 6-4) and the EMI Aqueduct System. "Under such a scenario, the aqueduct system's historic resources may be found at risk for neglect from reduced or lack of maintenance, and/or possible demolition."</p>	<p>entity not taking responsibility for the potential long-term public impact of neglecting prudent infrastructure and resource management is Pacific Gas & Electric which earlier this month was forced to cut power to 800,000 households causing well over a billion dollars in economic losses in a matter of days.</p> <p>In the case of PG&E, regulatory bodies such as the California Public Utilities Commission have broad authority to implement and enforce corrective action. If Mahi Pono is granted a 30-year water lease under the proposed action, it is unclear what, if any, resourced mechanisms for accountability would be available to ensure that the public interest continued to be served for full term of the lease.</p>
<p>As noted above, PSP is likely seeking an annualized return in excess of 10% on its investment in Mahi Pono. A common approach to increasing return among private equity firms is to leverage an acquisition with a high amount of debt. As highly leveraged deals can rapidly lead to a crisis when financial projections are not met, it is important for stakeholders to have adequate knowledge of the debt structure. The DEIS does not provide this.</p>	<p>Page 3-6, DEIS: "[A] lease term shorter than 30 years could limit the ability of Mahi Pono or a lessee to obtain financing for the needed investment in <u>establishing</u> successful diversified agricultural operations and crops that may take years to reach economic viability."</p>
<p>Perpetuation of a narrative that supports water scarcity, where one has to choose between returning water to the streams and Upcountry domestic water use and/or water in the streams versus agriculture, as opposed to one that promotes collective pro-active measures to support increasing recharge, conservation, and collaborative sharing of water resources has the potential to divide a community that currently is supportive of diverse interests and needs.</p>	<p>Page 4-137, DEIS: "Balance" was a frequent theme among interviewees. They acknowledged that various groups need water originating from East Maui State watershed lands and felt that users should have access to water they truly need. Of note is that, regardless of one's own interest in the Water Lease, no one wanted water withheld from other groups.</p> <p>Page 4-140, DEIS: A common theme with the Upcountry Maui residents was the continuation of reliable water service to Upcountry Maui residents, businesses and farmers. There was general appreciation for water provided by the EMI Aqueduct System. It is noted that these Upcountry Maui residents felt that East Maui agricultural and cultural practitioners should also have the water they need for their activities. They understood the need for flowing cold water in kalo cultivation.</p>
<p><u>March 2019 WUDP Draft, Water Resource Management, Strategies And Recommendations, Page 231-234:</u> #29 Research, support and use of less water consumptive crops and climate adapted crops" #30 Improve irrigation management and efficiency #32 Augment agricultural water supplies with alternative resources, #47 Diversify supply for agricultural use to increase reliability #50 "Balance existing diversions with alternative sources for agriculture to mitigate low-flow stream conditions #51 Maximize efficiencies in surface water transmission, distribution and storage</p>	<p>In terms of supporting agriculture, it is important to differentiate between export and crops for local consumption; how specific agricultural practices impact the climate crisis; whether the specific economic activity results in good jobs for Maui residents; and or whether it will exacerbate the housing crisis by importing workers.</p> <p>While Mahi Pono is technically governed by pension fund PSP's ESG (Environmental, Social, Good Governance) principles, there has been no explanation of how those principles impact decision making, nor has the company been transparent (Good Governance is the "G" in ESG).</p>

In Summary: Determining Costs and Benefits of Purchasing EMI System

- 1) Determination of legal ownership of all aspects of the EMI Water Delivery System is necessary, regardless of what the County/public decides to do.
- 2) A thorough engineering and cost analysis of the current EMI Delivery system is needed to determine the EMI System's true value as a stand-alone or partial system (and the various permutations thereof), in conjunction with improvements. This analysis needs to provide reliable information about:
 - What parts of the system are usable and what is the cost and value of repair, particularly in light of the "natural downsizing" currently taking place as a result of neglect;
 - Based on the domestic water use needs in Upcountry Maui and the condition of various aspects of the EMI system, what would be the most cost-effective strategy for partial purchase and use of the EMI system if there is one?
 - What are the options for condemning parts of the system and/or small tracts of land?
 - What are the benefits, if any, of purchasing specific ditch systems, such as only the Wailoa Ditch System?
- 3) Annual costs of maintaining the EMI System; including an assessment of liability issues;
- 4) Potential revenues based on domestic water and agricultural water sales;
- 5) Potential positive impacts of control of the revenue stream of Wailoa Ditch and/or the entire EMI system, such as:
 - Estimates of socio-economic benefits of increased farming in East Maui based on stakeholder control of instream flows;
 - Estimates of potential cost savings from improved health, safety, and other socio-economic indicators for East Maui residents who rely on the streams for farming and other cultural and recreational practices;
 - Estimates of the value of improved environmental stewardship based on modifications to the appurtenances and increased stream flow;
 - Estimates of potential increased water production from substantial watershed investments, combined with analysis of socio-economic benefits to East Maui of such an investment (with ancillary cost savings to other county departments as a result thereof);
 - Estimates of economic development and support of farming based on decreasing water rates for local farmers and reducing infrastructure costs for local residents with regard to water meters and subdivision outlays.
- 6) Risk of allowing a private equity firm and foreign pension fund to control a significant amount of Maui's water, which is a Public Trust, and to have outsized influence over Maui's water, agricultural industry and food security for 30 years.

VI. Alternative Water Sources

In addition to considering the viability and costs of purchasing parts or all of the EMI Aqueduct System, the TIG was tasked with assessing alternatives to ownership of the system that might also provide water security for Maui residents.

Pi'iholo and Olinda Water Treatment Facilities:

It is important to remember that with regard to Upcountry Maui, the Maui Department of Water Supply relies on three surface water sources:

- Wailoa Ditch, which is on state lands, and for which the current 30-year land lease is being sought by EMI/Mahi Pono, and
- Two MDWS higher elevation aqueducts that transport water to Olinda and Kula, owned by the County but maintained by EMI, under a contractual agreement originated under the 1973 East Maui Water Agreement and subsequent agreements.

MDWS and EMI diverts water from Ko'olau ASEA, conveyed to treatment plant facilities located in Ko'olau ASEA (Pi'iholo Water Treatment Facility) and the Central ASEA (Olinda and Kamole Weir Water Treatment Facilities. (See page 15 of this report)

The two upper aqueducts are owned by the County and provide the majority of the water to Upcountry Maui. In 2018, they provided a total of 4.61mgd, compared to 1.5mgd at Wailoa.

Per the DEIS, the other two surface water sources are not supplied by the EMI Aqueduct System, but are fed by streams located on lands previously owned by A&B and now owned by Mahi Pono. Under a contractual agreement with EMI, these waters are diverted and transported by two MDWS high-elevation aqueducts (Upper and Lower Waikamoi Flumes) that are also situated on land that was previously owned by A&B and now owned by Mahi Pono, located above the License Area (Ha'iku Uka Watershed). These aqueduct systems deliver water to the MDWS' Olinda and Pi'iholo Water Treatment Plants (See Figure 2- 4). These two high elevation aqueducts are maintained by EMI. However, these sources are not part of the proposed Water Lease being addressed by this DEIS as they are outside the License Area. The water received at the higher elevation is preferred by the MDWS because it can be delivered to users at higher elevations without the cost of pumping from a lower elevation source like the Wailoa Ditch.⁶⁵

⁶⁵DEIS, Page 2-10

Potable Groundwater Development:

From Koʻolau WUDP:

The amount of groundwater that can be developed is limited by the amount of natural recharge and aquifer outflow that contribute to streamflow and to prevent seawater intrusion, established as sustainable yield. Because delineation of aquifer sectors and systems in some cases are based on limited hydrologic information, areas for potential groundwater development must be assessed on its own merits to determine any additional needs for hydrologic studies and interaction with surface water and other sources.

Understanding potential impact of climate change adds to uncertainty in long-term groundwater availability. The primary responsibility to determine potential impacts on water resource availability lies with the State CWRM who in turn relies on studies and predictions by the scientific community and other agencies. Water purveyors need guidance how to mitigate and adjust to potential changes in groundwater availability.

Other constraints on groundwater availability include access and cost. Conveyance from high yield aquifers in remotely located watersheds to growth areas can be difficult and expensive due to topography and distance. Basal well development at high elevations, such as Makawao aquifer above 1200 feet would result in high pumping costs, just in terms of pumping water from the water table to ground elevation.

Potential effects of groundwater development on streamflow and on the quality of water pumped from existing wells in a region can be evaluated by robust hydrologic studies and models. Joint funding and collaboration between the municipal and private purveyors, CWRM and the U.S. Geological Survey would focus studies to maximize benefits and prevent conflicts in water development and designation. Aquifer systems in Koʻolau are not extensively studied, as indicated by CWRM's confidence rating in establishing sustainable yield. Haiku aquifer has sufficient yield to serve regional demand and support development of planned growth areas outside Koʻolau. It is recommended that CWRM prioritize hydrological studies and groundwater modeling in Haiku and Honopou regions to guide private and public well development and ensure potential impacts on surface water is addressed first.⁶⁶

Additional points from Central WUDP:

Other constraints on groundwater availability include access and cost. Conveyance from high yield aquifers in remotely located watersheds to growth areas can be difficult and expensive due to topography and distance. The Central ASEA consists of the driest regions on Maui, with annual rainfall generally less than 50 inches. Population centers and growth rely on groundwater imports from the Wailuku ASEA and the Koʻolau ASEA where rainfall and groundwater recharge are substantially higher.⁶⁷

⁶⁶ Koʻolau WUDP, Page 104

⁶⁷ Central WUPD, Page 105

<p>In order to determine whether development of wells in East Maui should be considered as an alternative to surface water, yield, aquifer capacity, and energy cost need to be studied.</p>	
<p>Ko'olau WUPD, Page 46: The Ko'olau ASEA includes 149 wells, of which 131 are considered "production" wells, the remainder (18) are classified as "unused" (9), observation (2), and seven classified as "other" that do not produce water. The 131 production wells include County municipal (4), private public municipal (3), domestic (59), agricultural (crop use [39]), agricultural (1), agricultural (aquatic plants & animals use [1]), one agricultural (livestock and pasture use), three agricultural (ornamental & nursery plants use), 15 irrigation, and seven irrigation (landscape/water features use).</p> <p>CWRM pumpage reports for 2014 show that pumpage for the Ko'olau ASEA was approximately 0.92 MGD with County Municipal wells accounting for 0.878 MDG (95.81 percent of total sector pumpage), Municipal Private Public wells accounting for 0.015 MDG (1.63 percent of total sector pumpage), Agriculture wells accounting for 0.014 MGD (1.53 percent of total sector pumpage), Domestic wells accounting for 0.008 MGD (0.86 percent of total sector pumpage), and irrigation wells accounting for 0.0017 MGD (0.19 percent of total sector pumpage). However, it is likely that domestic use is underreported.</p>	<p>Page 4-59, DEIS: While no groundwater is transferred from the Ko'olau Aquifer Sector, surface water is conveyed from the sector to the Central Aquifer Sector via the EMI Aqueduct System. Since surface and groundwater interchange depends on the underlying geology, the increase in surface flow since the cessation of sugar cultivation in 2016 also contributes to an increase in groundwater in East Maui.</p> <p>Central WUDP, Page 112: Strategy #4 Explore East Maui well development in combination with Makawao aquifer basal groundwater to meet projected demand on the MDWS Upcountry System. Initiate a hydrologic study to determine any negative impact on existing ground and surface water sources, stream flow and influences from dikes. Potential yield is more than the needed 6.3 mgd (potentially in addition to development for the MDWS Central System). Lead agencies would be CWRM and MDWS and hydrologic study to be completed by USGS.</p> <p>Page 3-9, DEIS: There may be a connection between decreased stream diversions and increased groundwater. However, the current pumpage of wells in the four aquifers in East Maui (Ha'iku, Honopou, Waikamoi, and Ke'anae of the Ko'olau Aquifer Sector) is well below the SY (Sustainable Yield.)</p>
<p>Wells are more expensive than surface water due to energy costs for development and pumping, but costs can be mitigated with solar, wind, hydro-pumped storage, particularly if the Department has access to land.</p> <p>In order to comprehensively compare costs, all factors described previously in this report related to repair and maintenance of the EMI Aqueduct System, combined with the environmental, safety and cultural benefits of EMI ownership would need to be compared to well development costs.</p> <p>Any well development plan should include scenarios that utilize renewable energy, the costs of the development of which would also need to be calculated. However, agreements with MECO and the benefits of bringing the State to its goal of 100% renewable energy by 2045 would also need to be factored in.</p> <p>Per DWS comments on early consultation for EIS on 12/16/16: Although the non-consumptive use of water</p>	<p>Page 3-2 to 3-3, DEIS: "a single well is normally allowed to pump about 1 mgd within its area"</p> <p>Given current figures regarding Kamole Treatment Plant needs, 3 to 7 wells would need to be developed. Each well site would have an estimated development cost of \$6 million. (Akinaka, 2019).</p> <p>The cost of planning, obtaining permits for, and constructing 7 wells would be approximately \$13 million. Added to this cost would be transmission pipes, additional pumping and related energy consumption to reach higher elevations, and reservoirs.</p> <p>Central WUDP, Page 110: The 2013 MDWS study estimated well development at 2,050 foot elevation and related booster pump and transmission line to about \$8.4M and a 20-year cost of \$2.90 per 1,000 gallons for development of 1.2 mgd pump capacity, normally run at 0.8 mgd source capacity. The study only evaluated a scenario with one well in Makawao aquifer and in</p>

<p>involved in hydroelectric uses is likely difficult to appraise, the EIS should describe the extent to which hydroelectricity is generated, including the associated costs and revenues.</p>	<p>combination with well development outside Makawao aquifer.</p> <p><u>Central WUDP, Page 110:</u> Explore new basal well development in the Makawao aquifer to accommodate growth Upcountry and add reliable new source. Potential yield is up to 3 mgd. Lead agency is MDWS, DLNR and/or public/private partnerships.</p>
<p><u>Central WUDP, Page 109:</u> Adding 20% to projected 2035 demand of 8.53 mgd for Upcountry is 10.23 mgd. With the addition of the Priority List demand of 7.3 mgd, total demand is 17.54 mgd. Available source capacity is 11.2 mgd, which would require the balance 6.34 mgd to be developed. (includes 7.0 Surface Water)</p>	<p><u>Page 3-17: DEIS:</u> If the MDWS has to replace the 7.1 mgd supplied by the EMI Aqueduct System, and in addition develop to the 7.95 mgd projected to be needed to meet future water demands, the MDWS would need to develop 15.05 mgd of new water source. It is estimated that the life- cycle unit cost to develop those necessary wells and reservoirs for Upcountry Maui is \$38 per kgal. This would translate to \$2.6 billion, compared to \$1.2 billion under the Proposed Action.</p>

VII. Alternatives to Purchasing the EMI System

While community ownership of parts or the full EMI Delivery System, as well as ownership of key land parcels are straightforward avenues for ensuring that the Maui community benefits from and controls Maui water as a public trust, other remedies should also be explored.	What are the legal actions that can be taken besides condemnation? Are there other vehicles for accomplishing community goals?
<p>Negotiate new Domestic water use Agreements with EMI/Mahi Pono:</p> <p>As noted in the DEIS, "EMI agreements with the MDWS provide that water supplied to the MDWS is contingent upon the Water Lease being issued...Currently the MDWS is being charged 6¢ per 1,000 gallons to receive East Maui surface water for the KAP and other Upcountry Maui farm areas."</p> <p>In the past, EMI was required to maintain the roads and trails, maintain the delivery system, and leave enough water in streams for downstream domestic water users and Kuleana users, and they were required to post a \$100,000 performance bond.⁶⁸</p>	<p>One key way to safeguard the public is to negotiate new agreements with EMI/Mahi Pono that:</p> <ol style="list-style-type: none"> 1. Remove contingency of access to the public trust on a private company receiving permits/leases from BLNR. 2. Require a minimum level of repair and maintenance of the Ditch System by EMI/Mahi Pono to ensure the health and safety of the community. 3. Require that EMI/Mahi Pono reduce leakages in the delivery system to optimize water availability, thereby increasing amount of water going to the Kamole Treatment Plant, and decrease the amount of water diverted from streams, and increase amount of water for agriculture. 4. Require a minimum investment in the care of the watershed and other environmental responsibilities, that includes partnerships with stakeholders. 5. Require EMI/Mahi Pono to address liabilities.
<p>State Irrigation System</p> <p>The Agricultural Resource Management Division manages state irrigation systems at Hoolehua, Kahuku, Waimanalo, Waimea and Honokaa-Paauilo, two on Oahu, two on the island of Hawaii, and one on Molokai. The ARMD also manages Honokaia, Paauilo, Puu Pulehu, Waimea, Waimanalo, and Kualapuu Reservoirs. Arguments in favor of a state irrigation system include the fact that much of the system is on state land, and the state has the bonding to fund big capital improvements.</p>	<p>Concerns re: limited funding of Dept. of Agriculture and the requirement of requesting funding from the state legislature every year, particularly since Molokai Rep Lynn DeCoite is the only farmer in the legislature.</p> <p>However, due to the diversity of stakeholders and the potential revenue sources, the state would be managing a different kind of economic water system.</p> <p>To adequately study this model, legislators, stakeholders, and the Department of Agriculture would need to research this option in the context of the various issues raised in the report.</p>
<p>Partnership with Current Owners</p> <p>The Board of Water Supply is interested in exploring a partnership agreement between Dept of Water Supply and the current owners.</p>	

⁶⁸ Land Lease Bearing, General Lease #3578, 1959, Pages 3,4, 15,16, Contracts under Native Hawaiian Land and Water Rights

VIII. Calculations for Initial Purchase Price, Estimated Expenses, and Potential Revenues for a Public Trust Water System

There are numerous variables to consider with regard to acquisition costs, maintenance, and potential revenues. These calculations are presented to provide a framework for beginning the process of determining a financial structure that would feasibly allow a Public Trust Water System to provide the best service to Maui residents in the short- and long-term based on the various considerations already presented in this report. While the purchase price of \$5.4 million is very clear, an appraisal could affect the condemnation price and would provide a better estimate of short-term improvements.

Initially, the TIG was interested in considering the cost of acquiring just the Wailoa Ditch System, which feeds into the Kamole Treatment Plant. However, given the number of variables in determining the percentage of the system represented by Wailoa, which could be as high as 70%, this analysis is focusing on the entire system, where numbers are more readily available, specifically the total purchase price and the expected water used by Mahi Pono.

Initial Purchase Price and Cost to Restore EMI Ditch System:

Initial Purchase Price	Amount	Notes
Includes 15,000 acres ⁶⁹ of land parcels and ditches utilized for the EMI system.	\$5,442,333.48 (possibly less any depreciation since 12/17/18 purchase due to neglect.)	Based on MP purchase price for full system, (only half has been paid.) ⁷⁰
Estimated costs to restore the EMI ditch system and to correct deferred maintenance.	\$12 million over two years.	Based on 6% of Replacement Asset Value (RAV) of \$200 million, which is the modern system replacement cost cited in the EMI Draft EIS
Total Purchase Price plus substantial improvements:	\$17.4 million	Improvements from the beginning

Bond Payments:

If the EMI System is acquired by the County or State, properly structured bond financing could be utilized for acquisition and restoration of the system. Borrowing \$17.4 million at 3.75% over thirty years would require debt service payments totaling \$966,985 annually.

Value of Purchasing System Prior to Mahi Pono Obtaining a Long-Term Lease:

If Mahi Pono is able to obtain a 30-year lease, the company will likely try to argue that the EMI aqueduct system has a higher value with a long-term lease than its purchase price of \$5.4 million. There are clear indications from the December 17, 2018 purchase agreement with

⁶⁹ <https://mauitime.com/news/business/mahi-pono-purchase-agreement-lots-of-legalese-with-a-few-tasty-nuggets/>

⁷⁰ <https://www.sec.gov/Archives/edgar/data/1545654/000119312518354682/d664171dex101.htm>

Alexander & Baldwin that a core component of Mahi Pono's investment strategy is the monetization of public trust water resources as evidenced by A&B's obligation to rebate Mahi Pono \$62 million of the purchase price if Mahi Pono does not obtain a water lease allocation of at least 30 mgd. (See sales agreement)

Value of the System Based on Water Delivery Rights:

Maui County Department of Water Supply potable water rates for agricultural users: **\$1.10 per 1,000 gallons for use over 15,000 gallons per month.**

Maui agricultural users who use less than 15,000 per month pay residential rates (\$2.05 to \$3.90 per 1,000 gallons.)

Agricultural Use rates per 1,000 gallons on the Big Island are assessed as follows:

In addition to standby, power cost, and energy CIP charges, a consumption charge will be applied to all agricultural use customers as follows:

Up to 5,000 gallons, .93 cents

5,001-15,000 gallons: \$2.01

Over 15,000 gallons: \$1.27

State Agricultural Rates range from .20 to .50 cents per 1,000 gallons with an additional acreage assessment fee from .36 cents to \$9.37 cents per acre per month.

Per the Organisation for Economic Co-operation and Development report on Water Pricing in the United States⁷¹:

In summary, irrigation costs and prices are rising in most regions of the United States, due to a combination of increasing scarcity, changes in public preferences regarding water allocation among competing uses, increasing budget scrutiny in the national and state legislatures, rising energy prices, and increasing awareness of climate change and the potential implications for rainfall and the availability of surface water resources. These issues likely will continue encouraging public officials to utilize water pricing and other market-based incentives to motivate further improvements in water use efficiency in agriculture and other sectors.

Some of the public investments in irrigation in the United States and other countries have involved large expenditures that governments have not fully recovered from project beneficiaries over time. The subsidies implicit in the lack of cost recovery have gained the attention of citizens and legislators concerned with public budgets, resource allocation, and the off-farm impacts of irrigation and drainage in some areas.

⁷¹ <https://www.oecd.org/unitedstates/45016437.pdf>

Many observers agree that irrigation will play a major role in providing sufficient food for the world's increasing population, but many also wish to see the full costs of irrigation reflected in farm-level irrigation water prices (Merrett, 2002). Accurate prices can promote irrigation efficiency within agriculture and increase the likelihood of achieving economic efficiency across the sectors that compete for limited water resources.

...Looking forward, farmers in the United States and elsewhere must adjust to rising energy costs and increasing water scarcity. While the outlook for agricultural prices is uncertain, recent increases in food prices suggest that crop prices might be notably higher in some years. Higher crop prices will contribute to higher land prices, just as subsidies for irrigation water have done historically. From a water management perspective, higher land prices are helpful in promoting farm-level crop and technology decisions that generate higher values per unit of irrigation water. Thus the impacts of irrigation subsidies that once encouraged farmers to plant low-valued crops and to minimize water management efforts, likely will be negated in future by rising land prices and increasing water scarcity.

According to the Draft EIS, Page 2-8:

With the issuance of the Water Lease under the Proposed Action, the EMI Aqueduct System would divert only the maximum allowable amount under the CWRM D&O from streams within the License Area, which is estimated to be approximately 87.95 mgd. The EMI Aqueduct System is estimated to divert an additional 4.37 mgd from the point that it leaves the License Area at Honopou Stream and collects water from streams on privately owned land to its last diversion at Maliko Gulch. Thus, an estimated total of approximately 92.32 mgd would be conveyed to supply the MDWS for users in Upcountry Maui, Nahiku, and the agricultural fields in Central Maui.

According to the Draft EIS, Page 2-18:

The Mahi Pono farm plan assumes the following: **The total surface water available for use after system losses is estimated to be approximately 65.88 mgd.**

Based on maximum delivery of water and current agricultural and domestic water rates charged to Maui County farmers and residents, the highest potential annual agricultural revenue that can be derived from the 65.88 mgd is:

Convert 65.88 mgd to kgal (1,000 gallons)	Convert to kgal per year (365 days)	If water were delivered at current agricultural rates (\$1.10 per 1,000 gallons)
65,880 kgal	24,046,200 kgal per year	\$26,450,820

Water System Operations Costs:

There will be variances in operational costs depending on whether the water delivery system is managed by a private, public, non profit, or quasi-public entity.

Or estimates below for maintenance and total expenses are calculated at \$10 million higher than Mahi Pono's expenses, based on how they are described in the EMI DEIS.

Per the DEIS, Mahi Pono's \$2.5 million in operations costs includes maintenance as well as water leases, but does not appear to include annual monitoring and restoration of the watershed. We calculate an additional \$3 million per year for maintenance and \$6 million for the watershed.

Estimated Annual Expenses	Amount	Notes
Annual Operating Costs	\$2.5 million	Per the Draft EIS, \$2.5M includes labor, fringe benefits, materials, professional services, taxes, maintenance, anticipated rental payments to the State for the Water Lease, and other expenses
Annual Improvements, maintenance, and system risk management	\$3 million	1.5% of Replacement Asset Value (RAV) of \$200 million (EMI DEIS estimate of full system replacement cost)
Annual Watershed Monitoring, Maintenance, and Restoration	\$6 million	In 2020, DWS and nonprofits allocated a total of \$2.69 million to East Maui watersheds. We recommend adding \$6 million to bring total watershed expenditures to \$8.69 million annually.
Debt Service on \$17.4 million 30-year municipal bond (3.75% interest)	\$1 million	Annual \$966,985 payment
Total Estimated Annual Expenses	\$12.5 million	

Annual operations cost, including yearly improvements, maintenance and risk management along with watershed monitoring and restoration, plus annual debt service results in an estimated \$12.5 million in total annual expenses.

As noted above, watershed monitoring is not accounted for by EMI/Mahi Pono and annual improvements are minimal (included in \$2.5 million in operations) so totals for both expense categories could be reduced somewhat if needed.

Potential Revenue Streams:

In terms of estimating revenues, factors such as stream restoration, seasonal water flow variations, the actual payments to the state for four leases, plus additional needs by Upcountry residents, the Kula Ag Park and the new Kula Ag Park, and the water meter list would impact how much of the maximum \$26 million in water value could and should be recouped.

Additionally, grants and other support that a public or quasi-public entity could access from public and private sources could impact expenses. Furthermore, a pro-active entity could seek out additional private investment or municipal investment in renewable energy systems to address electricity costs associated with Upcountry pumping and domestic water treatment, thereby impacting expenses.

The table below therefore only provides an example of how revenues could be collected to pay for the \$12.5 million in annual expenses, which includes the 30-year municipal bond debt service payment. As noted above, there are many variables, including water rates and stakeholder interests that would affect how the revenue streams should be structured in order to be of the highest benefit to the community in the short- and long-term.

Thus, the example below is NOT a recommendation on how revenues should be collected, but instead one example of how the purchase and operation costs could be recouped.

Notes on Assumptions:

Light Grey Column:

- For this scenario, it is assumed that the Public Trust Water System would continue to contract with the Maui County Department of Water Supply to deliver water from the Kamole Treatment plant/Wailoa Ditch at the same rates estimated by EMI in the DEIS. Thus, "2030 water service fee rate is estimated to be \$0.10, which has been calculated based on the ratio of operational cost to the MDWS service fee for 2008 to 2013. Under this assumption, EMI would receive an estimated \$268,000 in 2030 from the MDWS."
- The total number of gallons per day currently being contracted by MDWS from EMI is already excluded from the 65.88 that Mahi Pono stated that it needs in the DEIS.
- Thus, neither the revenues nor the water use are included in the total calculations.

Dark Grey Column

- The 5.5 mgd shown for new Upcountry water meter users is the average of the additional 3.7 – 7.3 mgd estimated demand on the Upcountry system as a whole if the full water meter list were fulfilled, per the Central Water Use and Development Plan. However, since significant amounts of Upcountry water come from the higher elevation aqueducts that transport water to Olinda and Kula, 5.5 mgd is a high estimate.

- Upcountry agricultural users are often impacted by drought restrictions. An additional 2 mgd allocated to them is added to this table in consideration of the need for dependable water availability. This is a somewhat arbitrary number as studies would need to be conducted to determine how best to support these farmers.
- Since the delivery of the additional Upcountry Water would be added to the current delivery by MDWS, revenues from both of these columns would be absorbed by MDWS, from which appropriate operational, pumpage, and water treatment expenses would be allocated.
- Therefore, although 7.5 mgd of the water volume is subtracted from the 65.88 mgd available water supply, the revenues would be the same rate that EMI/Mahi Pono will be charging for the current water delivery to upcountry users, and thus would only add \$273,750 to the Public Trust Water System revenue stream.

Upcountry Users, including domestic, agriculture, and Ag Parks, based on MP estimate for 2030 (.10 per Kgal ⁷² per DEIS)	Additional water delivery to Upcountry Ag users, based on MP estimate for 2030 (.10 per Kgal per DEIS)	Priority List water meter users, based on MP estimate for 2030 (.10 per Kgal per DEIS)	Central Maui Ag Users – Recommended reduced rate of \$.95 per kgal (DWS charges \$1.10 per kgal presently) MGD is low end for large ag user	Total Water Delivery Revenues (Excludes \$268K Upcountry Ag and domestic use already allocated to WDS). MGD total includes added upcountry water delivery	Increased Stream Flow (In addition to current CWRM D&O)	Net Annual Income (Subtract \$12.5 Million Annual Expenses)
7.3465 mgd	2 mgd	5.5 mgd	40 mgd	47.5 mgd	(18.38)	
\$268,000	\$73,000	\$200,750	\$13,870,000	\$14,143,370	\$0	\$1,643,750

As stated in the Draft Water Use and Development Plan and the Draft EIS, if repair and maintenance are conducted at proper levels, available water could increase by at least 20% or 13.18 mgd. This additional water could be returned to the stream or added to the water supply for farmers, increasing revenues.

Purchase of the whole EMI Delivery System and Mahi Pono land:

Access to Mahi Pono land in addition to the EMI Water System would allow the Maui community to implement a comprehensive Water Management Plan that includes care of the watersheds, comprehensive support for East Maui cultural practices, renewable energy options, supporting proactive and integrated efforts to ensure an affordable and predictable supply of water combined with flexibility with regard to revenue generation that is not dependent on water consumers. Various regulations relating to renewable energy production, as well as issues such as affordable housing, and how best to ensure that agricultural practices do not negatively impact climate, while also providing food security, provide justifications for purchasing substantial land parcels in addition to the EMI Water Delivery System.

⁷² kgal=1,000 gallons

IX. County Bidding on a Long-Term Lease

On May 2, 2019, Hawaii State Senator Kaiali'i Kahele wrote to Maui County Mayor Michael P. Victorino, and stated the following:

In light of these developments, I would highly recommend that the County of Maui and DWS immediately submit a water lease application to the DLNR. A copy of the Request for State Lands Application Form is attached for your convenience. Doing so now will provide the Board of Land and Natural Resources ample time to review and issue a revocable permit to the County of Maui and DWS by the end of this year so that Maui County secures its own, independent authority to continue to provide its residents with access to diverted surface water imported from state lands in East Maui via the EMI aqueduct system. Domestic water use is a protected "public trust purpose" and I am confident that as the necessary application requirements are satisfied, the County of Maui and DWS will secure a long-term water lease from the State of Hawai'i.⁷³

HRS 171-58 c describes the bidding (Auction) process, which includes an Environmental Impact Statement and the joint creation of a watershed management plan. A state lease is subject to Chapter 343 (requiring EIS) and HRS 171-58 describes the jointly created (Lessee/Lessor) watershed management plan prescribed by the BLNR.

Excerpts below (full section attached as Appendix 12)

§171-58 Minerals and water rights. (a) Except as provided in this section the right to any mineral or surface or ground water shall not be included in any lease, agreement, or sale, this right being reserved to the State; provided that the board may make provisions in the lease, agreement, or sale, for the payment of just compensation to the surface owner for improvements taken as a condition precedent to the exercise by the State of any reserved rights to enter, sever, and remove minerals or to capture, divert, or impound water.

...(c) [Repeal and reenactment on June 30, 2019. L 2016, c 126, §4(1).] Disposition of water rights may be made by lease at public auction as provided in this chapter or by permit for temporary use on a month-to-month basis under those conditions which will best serve the interests of the State and subject to a maximum term of one year and other restrictions under the law; provided that:

⁷³ Appendix 3

...(2) Any disposition by lease shall be subject to disapproval by the legislature by two-thirds vote of either the senate or the house of representatives or by majority vote of both in any regular or special session next following the date of disposition; and

(3) After a certain land or water use has been authorized by the board subsequent to public hearings and conservation district use application and environmental impact statement approvals, water used in nonpolluting ways, for nonconsumptive purposes because it is returned to the same stream or other body of water from which it was drawn, and essentially not affecting the volume and quality of water or biota in the stream or other body of water, may also be leased by the board with the prior approval of the governor and the prior authorization of the legislature by concurrent resolution.

... (e) Any new lease of water rights shall contain a covenant that requires the lessee and the department of land and natural resources to jointly develop and implement a watershed management plan. The board shall not approve any new lease of water rights without the foregoing covenant or a watershed management plan. The board shall prescribe the minimum content of a watershed management plan; provided that the watershed management plan shall require the prevention of the degradation of surface water and ground water quality to the extent that degradation can be avoided using reasonable management practices.

(f) Upon renewal, any lease of water rights shall contain a covenant that requires the lessee and the department of land and natural resources to jointly develop and implement a watershed management plan. The board shall not renew any lease of water rights without the foregoing covenant or a watershed management plan. The board shall prescribe the minimum content of a watershed management plan; provided that the watershed management plan shall require the prevention of the degradation of surface water and ground water quality to the extent that degradation can be avoided using reasonable management practices.

X. Example Governance Structures

Page 4-140, DEIS: Another theme, expressed primarily in the Kula / Pukalani focus group, was that water is a public trust, and should not be controlled by a single private corporation. They suggested a restructuring of public utilities to include a water utility that would be administered similar to the current electricity in the public utility structure. Further, profit made from use of this public trust should be invested in public need.

In addition to the various considerations described in the last 70-plus pages, consideration of the pros and cons of the various governance structures is recommended.

For example:

Governance structure	Pros	Cons
Shareholder owned (Example, A&B)	<ul style="list-style-type: none"> • Significant access to capital and human resources 	<ul style="list-style-type: none"> • Objectives of shareholders are often not aligned with the public interest
Private Equity controlled (Example, Mahi Pono)	<ul style="list-style-type: none"> • Potential to facilitate growth and innovation • Access to various sources of capital 	<ul style="list-style-type: none"> • Relatively high cost of capital • Financial incentive structure which is misaligned with the long-term public interest • Potential financial distress with broad impact if acquisition is heavily leveraged. • Absentee ownership and foreign governance
Co-op	<ul style="list-style-type: none"> • May have access to Rural Development funding • Align stakeholder interests 	<ul style="list-style-type: none"> • Strength of leadership may vary based on outcome of board elections. • Local population might be unengaged or uninterested in water co-op management
Municipal Water Authority	<ul style="list-style-type: none"> • Low cost of capital • May benefit from access to tax exempt debt financing • Public accountability • Could lower rate water rates for local farmers and fund watershed restoration and management 	<ul style="list-style-type: none"> • Potential difficulties in recruiting employees with adequate technical skills needed to run water authority • May be subject to political interference.
Hybrid (private sustainable business corporation with majority government ownership)	<ul style="list-style-type: none"> • Public / private ownership could provide "best of both worlds." • Government ownership can present "halo" effect for raising capital • Potential for both equity and debt • Exempt from civil service restrictions 	<ul style="list-style-type: none"> • Potential political interference. • Possible conflicting incentives between entities on the board. <p>Uncommon ownership structure may result in greater legal complexity and stakeholder confusion</p>

Independent Public Water Authority	<ul style="list-style-type: none"> • With well designed and implemented governance structure, would allow for optimized delivery and system reliability, coordinated planning in sync with public interest. 	<ul style="list-style-type: none"> • Requires establishment of independent entity. • Possible need for charter amendment • Potential challenges in raising capital
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Given the amount of information needed to serve the public purpose, and the importance of coordinating various public entities (Department of Water Supply, Wastewater, Environmental Management, and Energy Commissioner) with the activities of private purveyors, Department of Hawaiian Homelands (DHHL) and Office of Hawaiian Affairs (OHA), as well as diverse stakeholders, from native Hawaiian taro farmers to Upcountry domestic and agricultural water users, this Temporary Investigative Group recommends that Maui County thoroughly research how best to create a public governance model with bonding authority, hereinafter referred to as the "Public Trust Water System (PTWS)."

The TIG has researched some of the steps necessary for creating a Public Trust Water System. These steps include, but are not be limited to:

- 1) Outlining the legal requirements for creating the PTWS with bond authority and determining whether it would be regulated by the Public Utilities Commission (PUC);
- 2) Determining whether a charter change would be necessary and how such a change fits into the overall timeline of purchasing EMI and obtaining bidding rights;
- 3) Identifying potential private and public partners, if appropriate, including investors, public funders, and foundations;
- 4) Developing a design for the governance infrastructure that embeds transparency, accountability, and commitment to environmental, cultural, and community values, with a focus on decision-making taking place in the affected communities.

The County will need access to:

- ✓ Legal expertise about how to create new water utility with bonding authority,
- ✓ Financial and real estate expertise to evaluate feasibility and to estimate a fair cost of acquisition,

In order to ensure maximum accountability, the Public Trust Water System would need to include very strong mechanisms for ensuring oversight by diverse stakeholders, with priority given to DHHL, kuleana water rights, riparian rights, and traditional and customary native Hawaiian access rights. Furthermore, hearings and other engagement processes need to take place in the affected communities.

XI. Recommendations and Conclusion:

At the conclusion of its investigation, the Temporary Investigative Group shall:

- a. Present recommendations to the Board of Water Supply regarding the feasibility of the purchasing or condemnation of the EMI Water Delivery System and, if necessary, the purchase or condemnation of relevant Mahi Pono lands, including the structure of the governing entity that would have authority over the system, and/or
- b. Other strategies for ensuring that the people of Maui County have authority over the delivery of water, which is a public trust.

1. Primary Considerations with Regard to the Public Trust:

As noted in the Scope of the Temporary Investigating Group, the primary objective of this body was to determine how best to ensure that the people of Maui have authority over the delivery of water, which is a public trust.

In making this determination, TIG members examined:

- Needs of East Maui residents and taro farmers and
- Needs of upcountry domestic and agricultural water users.

The TIG also considered short-term needs as well as long-term impacts of climate change, including ensuring maximum availability of water within the context of the realities of climate crisis impacts in the next 5, 10, 15, 20 years and longer; and how those impacts would affect water supply and the safety of residents, thereby affecting **the public's access to water in the future, specifically:**

- 1) Watershed Protection;
- 2) General storage, wastewater, and other conservation options;
- 3) Renewable Energy and battery storage, including solar, wind, and hydro (including wastewater use);
- 4) Improved maintenance of water systems to reduce and eliminate water loss;
- 5) Integration of the above with agricultural recommendations that support food security and soil regeneration (with labor and affordable housing considerations).

2. Other Considerations Re: Serving the People of Maui:

- Environmental Considerations Not Directly Related to Water Security;
- Native Hawaiian Land and Water Rights;
- Support of Beneficial Agriculture;
- Community Control of Where the Water Goes;

- **Maintaining a Reasonable Cost of Delivered Water;**
- **Support of Economic Development for Residents.**

Hawaiian land and water rights also included examining:

- 1) Complying with DHHL requirements, including intent as well as the letter of the law;
- 2) Supporting Native Hawaiian customary practices for social justice and environmental reasons in addition to DHHL requirements.

It was determined that in order to ensure that all of these considerations are taken into account and integrated into a comprehensive, binding, and well-funded water plan that balances source development, surface water use, support of Hawaiian communities, and long-term maintenance of the aquifer, the following principles need to be followed:

- **Communication among and within government entities;**
- **Utilization of existing research and data, as well as funding of additional up to date research;**
- **Transparency by all government and private entities involved in water production and delivery;**
- **Accountability of all government and private entities involved in water production and delivery;**
- **Mechanisms that ensure accountability to ALL stakeholders, including decision-making in and by affected communities.**

3. Recommended Immediate Actions:

Based on all the information available to the TIG at this time, the Temporary Investigative Group is convinced that in order to protect the public's health, safety, and well-being in the short- and long-terms, actions need to be taken immediately to utilize legal and financial vehicles to secure the public's control of the EMI Water Delivery System.

A. County Application for a Long-Term Lease:

Maui County should immediately apply for a long-term (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, situated at TMK Nos. (2) 1-2- 004:005, 007 (por.), 1-1-002:002, 1-1-001:044, 1-1-001:050, 2-9-014:001, 005, 011, 012, 017 in the Makawao and Hana Districts, on the island of Maui.

The above action would be valuable on its own, in terms of supporting the next step, as well as working in tandem with "Recommended Near-Term Actions" below.

B. Re-negotiate Current Contracts with EMI/Mahi Pono

Maui County should immediately re-negotiate a new contract with EMI/Mahi Pono that does not require that EMI/Mahi Pono obtain a Revocable Permit or Lease in order for the Kamole Treatment Plant to access Wailoa Ditch waters. This lease could also include requirements that address the various issues raised in this document from repair and maintenance of the system to native Hawaiian stream rights to investment in watershed protection and addressing liability issues.

By applying for a long-term lease, the County would be better positioned to re-negotiate the contract with EMI/Mahi Pono. Excluding corporation counsel personnel costs, this option would be relatively straightforward and would not be cost prohibitive. (See current Lease Appendix 13.)

However, this option would require enforcement on the part of the County, which would only be realistic if the County were willing to fully utilize its powers and responsibilities to protect the public interest. Furthermore, long-term solutions are needed to ensure the well-being of Maui residents.

4. Recommended Near-Term Actions:

As outlined under “Governance Structures” and described in more detail previously, because the financial incentive structure of a private equity-controlled water delivery system is misaligned with the long-term public interest, it would be imprudent to assume that the “Primary” and “Other Considerations” described above will be addressed by Mahi Pono.

Therefore, the TIG recommends that the County of Maui exercise its powers of eminent domain as soon as possible to begin the process of supporting acquisition of the system.

Furthermore, if the County of Maui is interested in facilitating community control of the EMI Aqueduct system and meeting the multiple needs of stakeholders, acquiring the system at a price close to the \$5.4 million paid by Mahi Pono in December 2018 is essential. As noted previously, if Mahi Pono obtains a 30-year water lease, the private equity fund will likely argue that the EMI aqueduct system has a value higher than the original purchase price. (Mahi Pono’s sales agreement with A&B states that the water lease is worth a minimum of \$62 million.) Acquiring the system in the near term will thus increase the chances of minimizing long-term debt.

5. Additional Recommendations for Long-Term Stewardship of the Public Trust:

In order to evaluate the most cost-effective and comprehensive solutions that address the urgent issues described in this report and to facilitate purchasing the EMI Aqueduct by a Public Trust Water System, the Temporary Investigative Group recommends that the Maui County Council and Mayor plan on taking the following steps:

Evaluate Capital Expenses Of Acquisition And Modernization

- ✓ Contract engineering studies of the current condition of the EMI Delivery System;
- ✓ Obtain a formal appraisal by a designated Master Appraisal Institute (MAI) appraiser.
- ✓ Obtain reliable data regarding elevations and the amounts of water moving through the 388 intakes, ditches, dams, pipes, and flumes;
- ✓ Obtain cost estimates for repair and maintenance as well as alternate modifications, such as installing pipes in open ditches and flumes and modern diversions that support connectivity for streamlife;
- ✓ Determine the amount of the EMI Aqueduct and possibly other water systems that are connected to the Kamole Weir, as well as watershed lands that would be optimal for the most efficient short- and long-term delivery of water to the public, with maximum sustainability of the aquifer;
- ✓ Draft a plan for the County to acquire existing land, easements, and infrastructure by eminent domain, using bond financing.

Research Forward-Thinking Revenue and Expense Models

- ✓ Contract additional studies that build on current research regarding the measurable impact of watershed restoration on increased availability of water;
- ✓ Develop models and estimates regarding potential costs of installation of renewable energy systems to support treatment facilities, uphill transmission, and/or well pumping, along with energy savings;
- ✓ Develop models and estimates of hydro-pumped energy creation and storage utilizing water and wastewater;
- ✓ Determine the water rate fee structure that allows a reasonable rate of return to the investors, estimates of fees collected from the Department of Water Supply, Mahi Pono, A&B, residents, farms, and other commercial users. (If the structure created is regulated by the Public Utility Commission (PUC), the PUC will approve a fee structure that allows a reasonable rate of return to the investors to recover the capital expenses of acquisition and modernization, plus operating costs, and watershed restoration.)
- ✓ Develop a risk management plan that addresses liabilities that a new owner will assume when the various grandfather clause exemptions currently enjoyed by EMI are no longer in effect.
- ✓ Work with the East Maui community to create models for community stewardship and educational programs that operate the EMI system in the long-term.

Philanthropic support is available for the funding of some of these studies and models.

6. In Conclusion:

Determining the most efficient and effective way to ensure that the public water trust is managed and controlled by stakeholders is of the utmost urgency, given the current stressors on the water systems that serve Maui residents, residents' diverse needs, and the impending realities of the climate crisis.

Furthermore, because of the risks that will be borne by Maui residents and the County of Maui if a private entity controls the EMI Aqueduct for thirty years (which is the current stated goal of Mahi Pono/EMI), combined with the benefits of purchasing the system before any private owner has obtained a long-term water lease, the benefit of purchasing the EMI water delivery system in the near-term is much higher than it would be further in the future.

It is therefore incumbent on those who represent the interests of Maui residents to determine the most cost-effective way to achieve true control of access to water by the public as soon as possible.

This TIG believes that ownership of the EMI Water Delivery system by the people of Maui or a partnership – in the form that is most cost-effective, accountable, environmentally responsible, transparent, and meets the needs of the island's diverse stakeholders, in particular native Hawaiians – will ultimately be the only way to guarantee that the public trust is maintained and remains safely in community hands.

The TIG therefore recommends that the County of Maui take immediate steps to secure community ownership and control of the EMI water delivery system, or a partnership.

XII. Final Statements

This report has been approved by all three members of the Temporary Investigative Group (TIG).

The TIG members would like to mahalo the many community members, experts in their fields, and government employees who provided valuable information for this report, including those who worked on the studies and reports referenced herein.

In all, TIG members volunteered approximately 30 hours in meetings as a group, more than 25 additional hours each on research, and 50-70 hours in report preparation.

The TIG was not provided with a budget to complete this work. As a result, all research was based on existing documentation, interviews, and a tour of the Kamole Weir.

Please note that TIG members are volunteers whose professional knowledge is not in the environmental or engineering spheres. Feel free to contact us through the Department of Water Supply to relay any corrections to data or information, or to submit questions.

The members learned a great deal, enjoyed their time learning from experts, and appreciate the time that they spent working together.