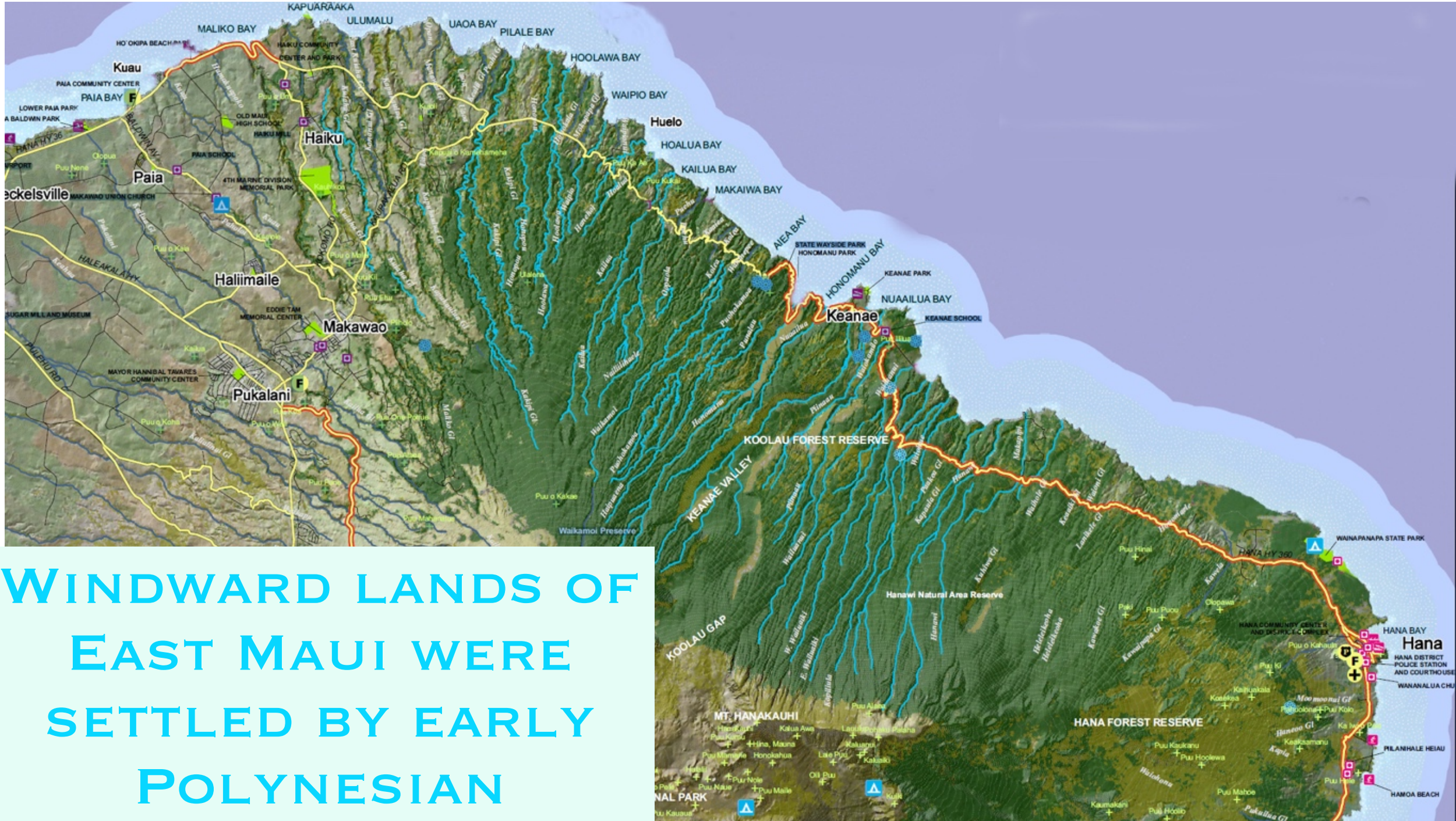


EAST MAUI WATERS, WATERSHED AND WATER SYSTEM

Presentation by Lucienne de Naie,
first offered at 2018 East Maui H2O Roundtable



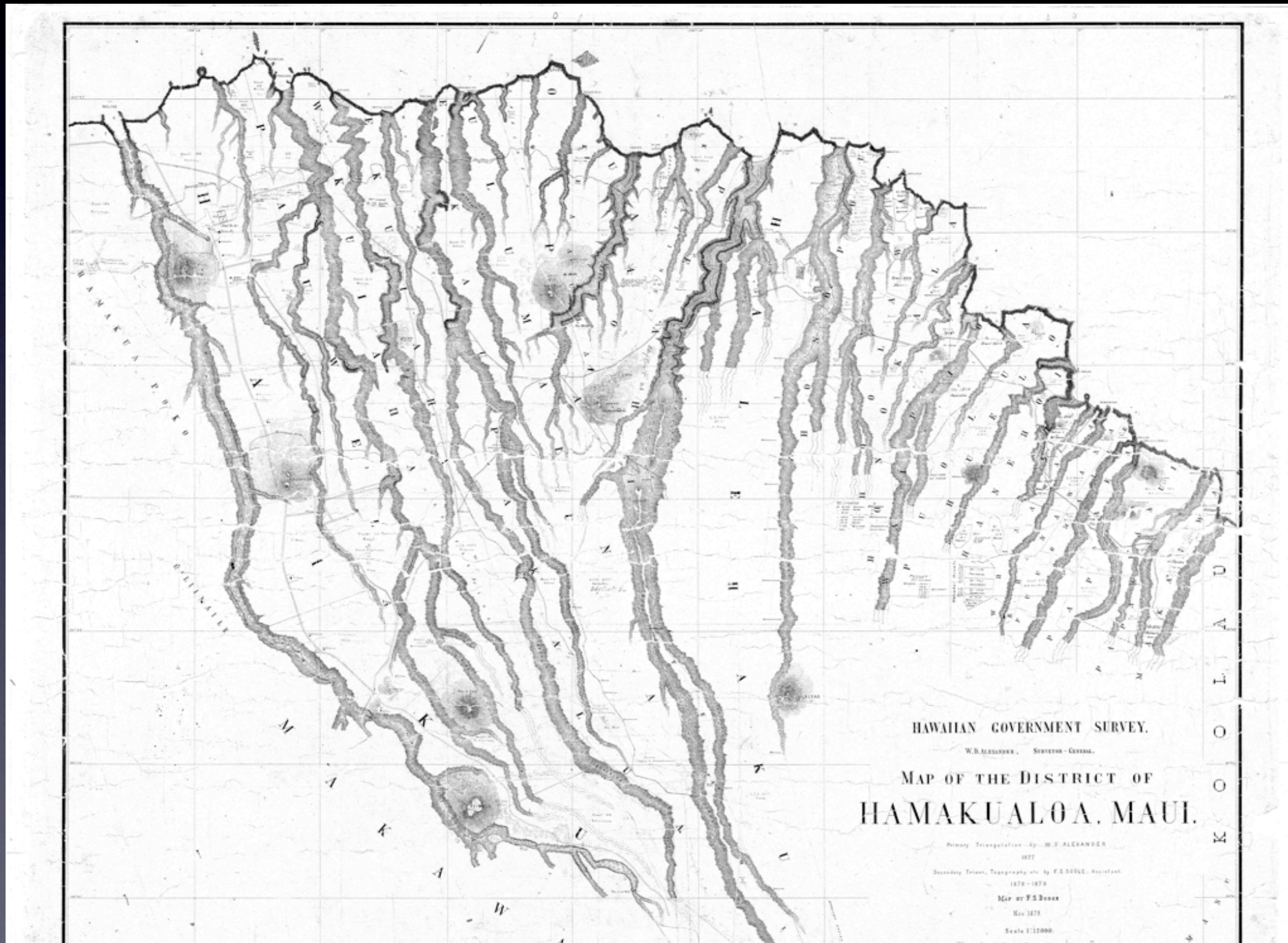


**WINDWARD LANDS OF
EAST MAUI WERE
SETTLED BY EARLY
POLYNESIAN
VOYAGERS**

**FOR HUNDREDS OF YEARS, HAWAIIAN
FAMILIES HAVE LIVED, FARMED AND
GATHERED IN EAST MAUI VALLEYS.**



IN 1876 THE HAWAIIAN KINGDOM SIGNED A RECIPROCITY TREATY FOR SUGAR SALES WITH THE UNITED STATES. TWO SUGAR PLANTATIONS WERE GRANTED 30 YEAR LICENSES FOR PROPOSED IRRIGATION DITCHES IN THE MOKU OF HAMAKUALOA TO CARRY THE EAST MAUI WATER TO FIELDS IN CENTRAL MAUI



Spreckels
Ditch: 1880



A&B Ditch: 1878



The two ditch systems were at very different elevations:
Alexander & Baldwin's "Hamakua ditch" and Claus Spreckels lower ditch
system (" Ha'iku or HC&S Ditch")

By 1925 five more ditches pass through Ha'iku to Nahiku.

Most of the old ones are abandoned over time

**SPRECKELS' DITCH SUPPLIED WATER TO GROW SUGAR
CANE PROCESSED AT HIS MILL JUST OUTSIDE PA'IA.**



**SPRECKELS “HA’IKU DITCH” (CAPACITY 60 MGD) HAD OVER 40-
MILES OF DITCHES, CROSSING 30 GULCHES TO HONOMANU STREAM**



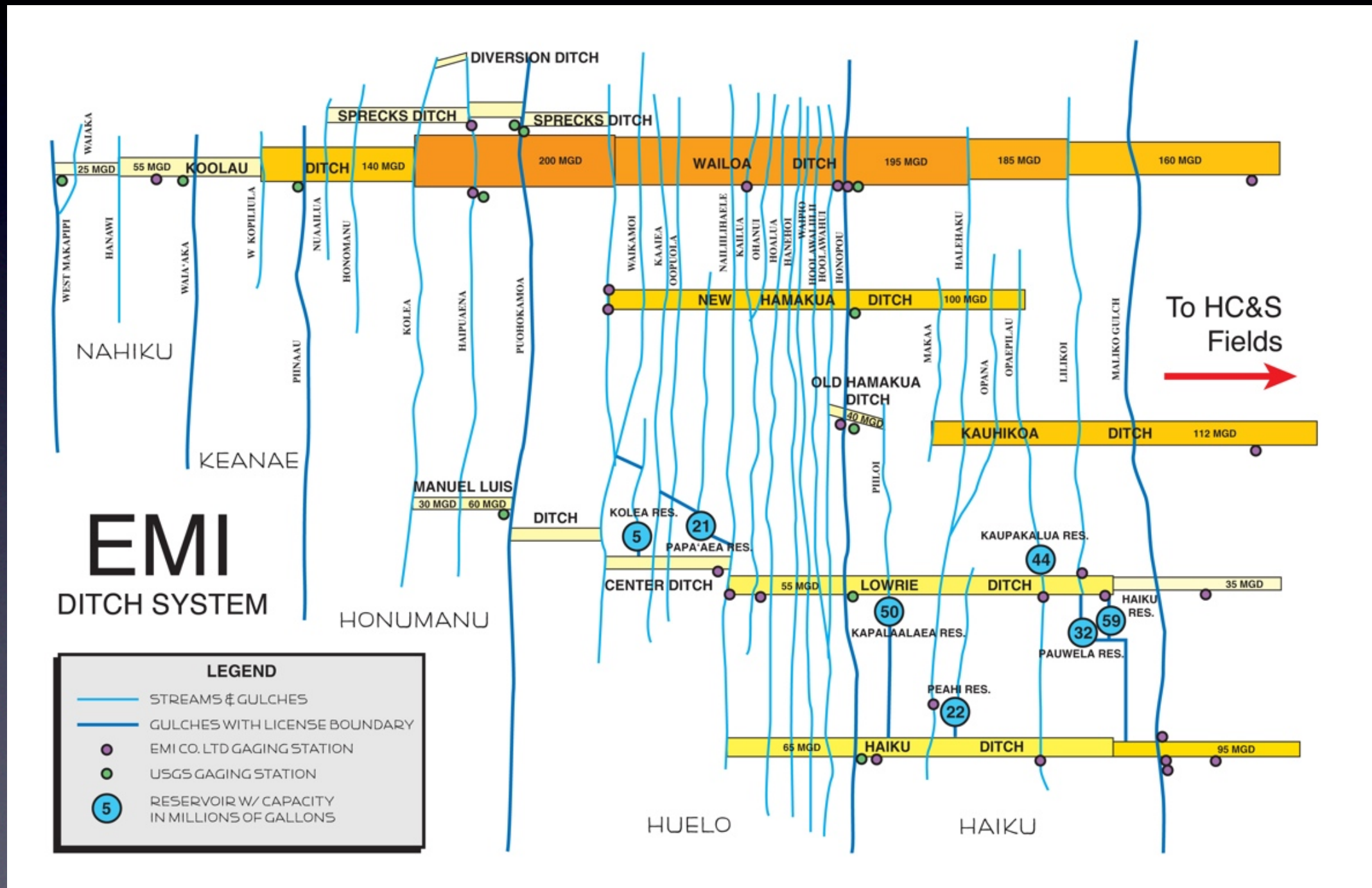
A&B'S 1878 "HAMAKUA DITCH" (CAPACITY 20 MGD) SPANNED 17-MILES FROM HAMAKUAPOKO MILL NEAR MALIKO GULCH, TO JUST PAST HUELO.



**ALEXANDER AND BALDWIN IRRIGATED FIELDS IN HAMAKUAPOKO
MOKU AND PROCESSED THE SUGAR AT THEIR
HAMAKUAPOKO MILL, WEST OF MALIKO GULCH**



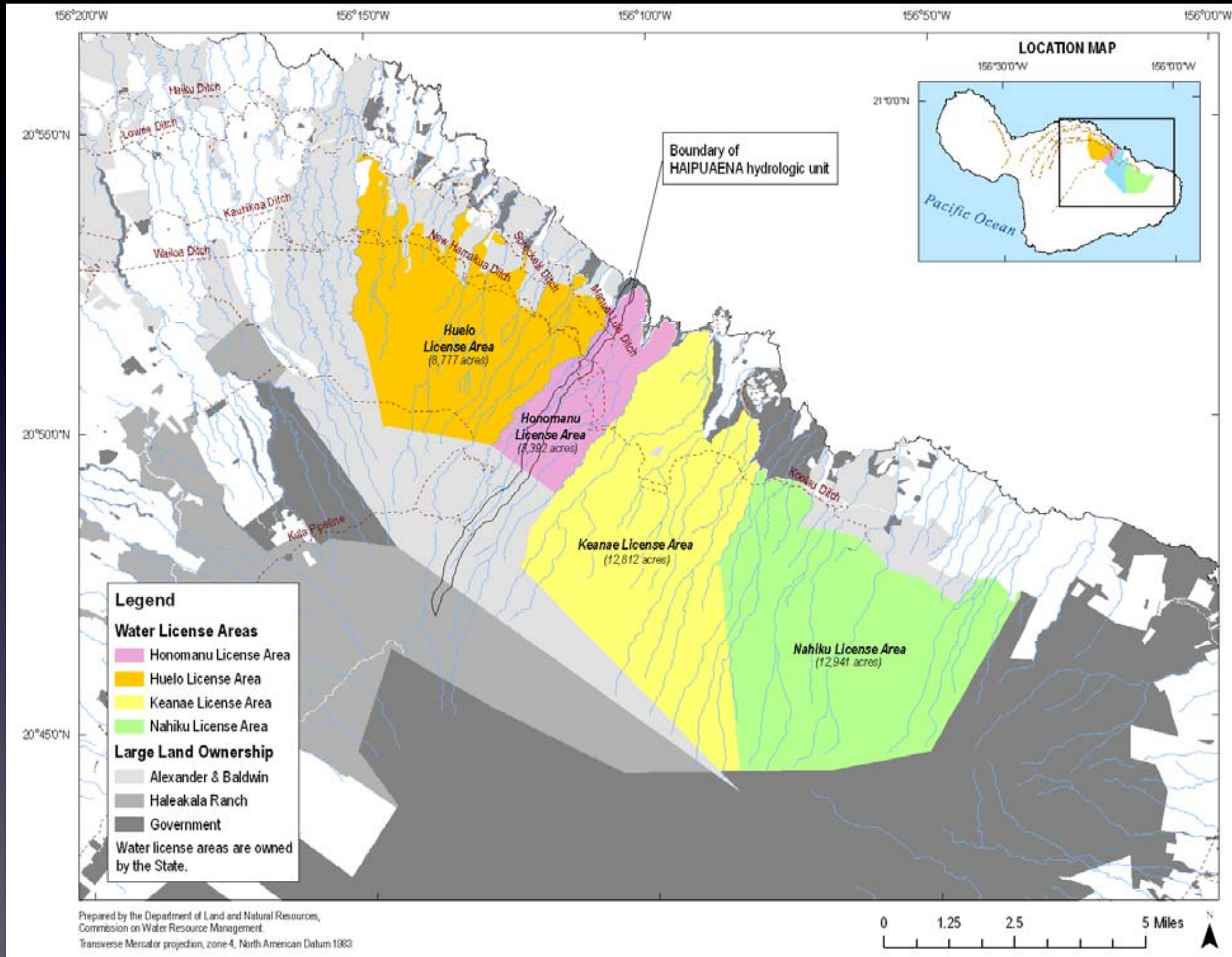
1898: A&B ASSUMED CONTROL OF SPRECKEL'S HC&S LANDS, MILL AND DITCH SYSTEM. A&B ALSO BEGAN BUILDING A SERIES OF NEW DIVERSIONS IN EAST MAUI AT VARIOUS ELEVATIONS.



E.M.I. DITCH SYSTEM

- + **1898-1900:** LOWRIE DITCH BUILT, WITH AN ADDITIONAL CAPACITY OF 60 MGD, AT 800 FT ELEVATION ELEVATION.
- + **EARLY 1900'S:** LOWRIE DITCH IS EXTENDED EAST BY MANUEL LUIS AND CENTER DITCHES 500 FT ELEVATION
- + **1904:** WAILOA AND NEW HAMAKUA DITCHES BUILT, WITH AN ADDITIONAL CAPACITY OF 72 MGD, AT 1000-1200 FT ELEVATION, EXTENDING THE SYSTEM TO WAIKAMOI STREAM
- + **1908:** HC&S AND MAUI AGRICULTURAL CO. FORM EAST MAUI IRRIGATION CO. TO MANAGE THEIR DITCH SYSTEM AND SHARE THE WATER BETWEEN THE PLANTATIONS.
- + **1914:** NEW HA'IKU AND KAUIHIKOA DITCHES BUILT, WITH AN ADDITIONAL CAPACITY OF 100 MGD, AT 400 FT ELEVATION ELEVATION.
- + **1923:** KO'OLAU DITCH BUILT. EXTENDING SYSTEM TO MAKAPIPI STREAM, NAHIKU, WITH AN ADDITIONAL CAPACITY OF 160 MGD, AT 1.200 FT ELEVATION ELEVATION.

EMI DITCH SYSTEM LEASED 30,00 ACRES OF PUBLIC LANDS UNTIL 2023. THE LEASE IS CURRENTLY FOR WATER, NOT LAND



THE STATE ESTIMATED THAT 70% OF WATER COLLECTED AND TRANSPORTED BY THE DITCH SYSTEM WAS FROM PUBLIC LANDS AND 30% FROM A&B/ EMI OWNED LANDS (DARK GREEN AREAS)

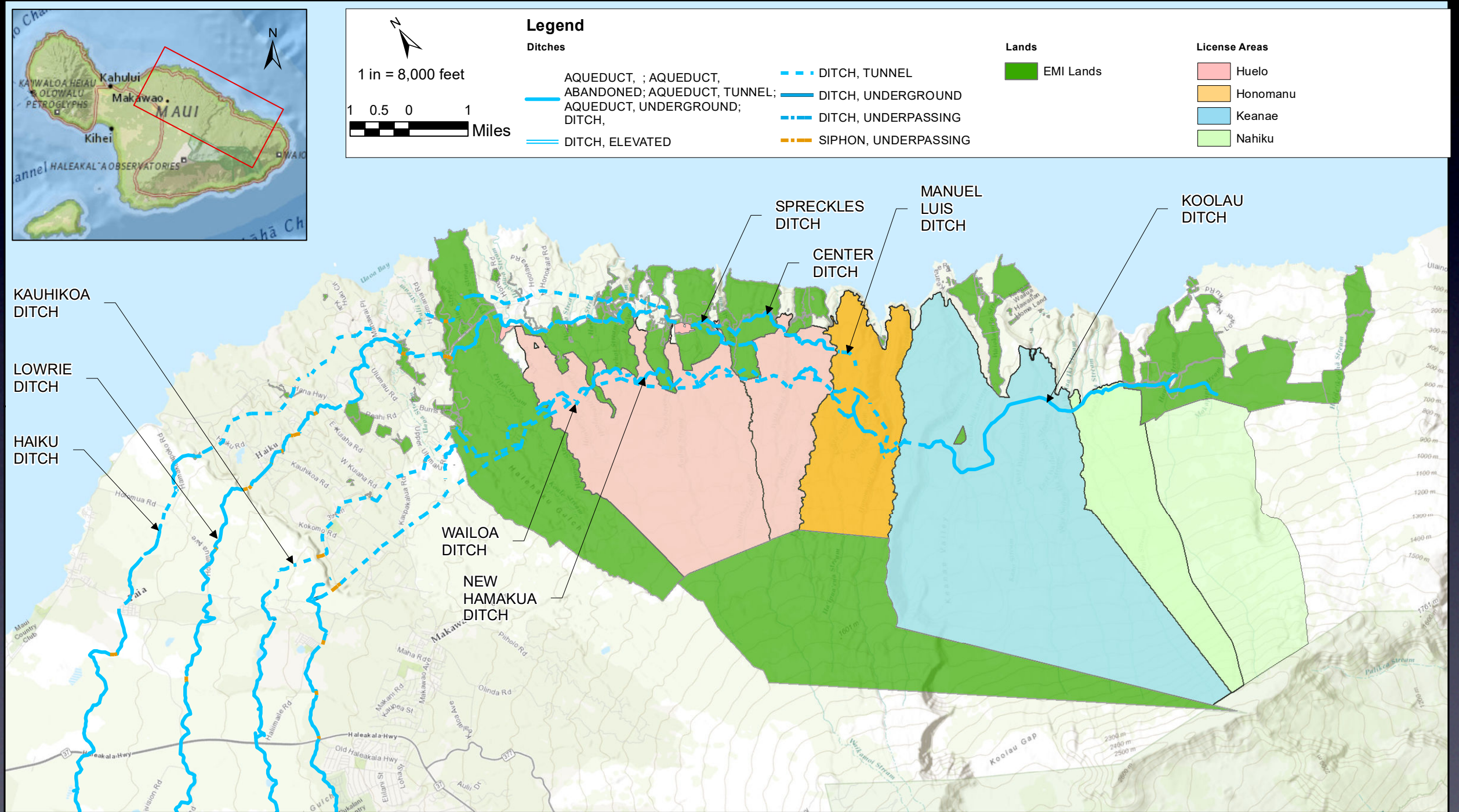


FIGURE 1-1
EMI Aqueduct System

Proposed Lease for the Nahiku, Ke'anae, Honomanu, and Huelo License Areas

EAST MAUI WATER LEASE HISTORY

1876: KINGDOM OF HAWAII GRANTS 30 YEAR LICENSES TO A&B AND CLAUS SPRECKELS TO BUILD ORIGINAL DITCHES

1908: EMI FORMED, CONSOLIDATING ALL EAST MAUI SYSTEMS, LEASES AND EXTENDING AGREEMENTS

1938: A&B/EMI AND TERRITORY OF HAWAII SIGNED LICENSE AGREEMENTS TO DIVERT THE EAST MAUI WATERS FROM FOUR “LICENSE AREAS” ON PUBLIC LANDS. EACH PARTY GRANTED PERPETUAL EASEMENTS OVER THE OTHER’S LANDS. WATER RIGHTS OF KULEANA AND DOMESTIC USERS DOWNSTREAM ALSO ACKNOWLEDGED AND GUARANTEED

1950-1962: LICENSE AGREEMENTS EXTENDED, AS EACH EXPIRED

1965: HRS 585-R9, AS AMENDED, REQUIRED WATER RIGHTS TO BE LEASED THROUGH PUBLIC AUCTION OR PERMITTED ON A MONTH-TO-MONTH BASIS UP TO ONE YEAR.

1986: THE LAST LONGTERM LICENSE AGREEMENT FROM EXTENSION OF 1938 LICENSE EXPIRES AND LEASES BECOME MONTH-TO-MONTH.

1985: A&B SEEKS A 30-YEAR LEASE FOR ONE CONSOLIDATED AREA.

1986-87: EAST MAUI NATIVE HAWAIIAN FARMERS AND STREAM USERS ASKED FOR AN EIS. SUPREME COURT SENT MATTER BACK TO STATE TO WORK WITH ALL PARTIES. **EAST MAUI WATERSHED MANAGEMENT PARTNERSHIP** WAS FORMED FROM ALL LANDOWNERS, EXCEPT NATIVE HAWAIIAN PLAINTIFFS. MONTH-TO-MONTH PERMITS CONTINUED

2017: A&B/EMI SUBMITTED AN EIS PREP NOTICE FOR A 30-YEAR LEASE IN THE FOUR EAST MAUI LICENSE AREAS. **2018:** A&B SELLS 41K ACRES TO MAHI PONO PARTNERSHIP

2021: FINAL EIS FOR 30 YEAR LEASE ACCEPTED BY STATE LAND BOARD

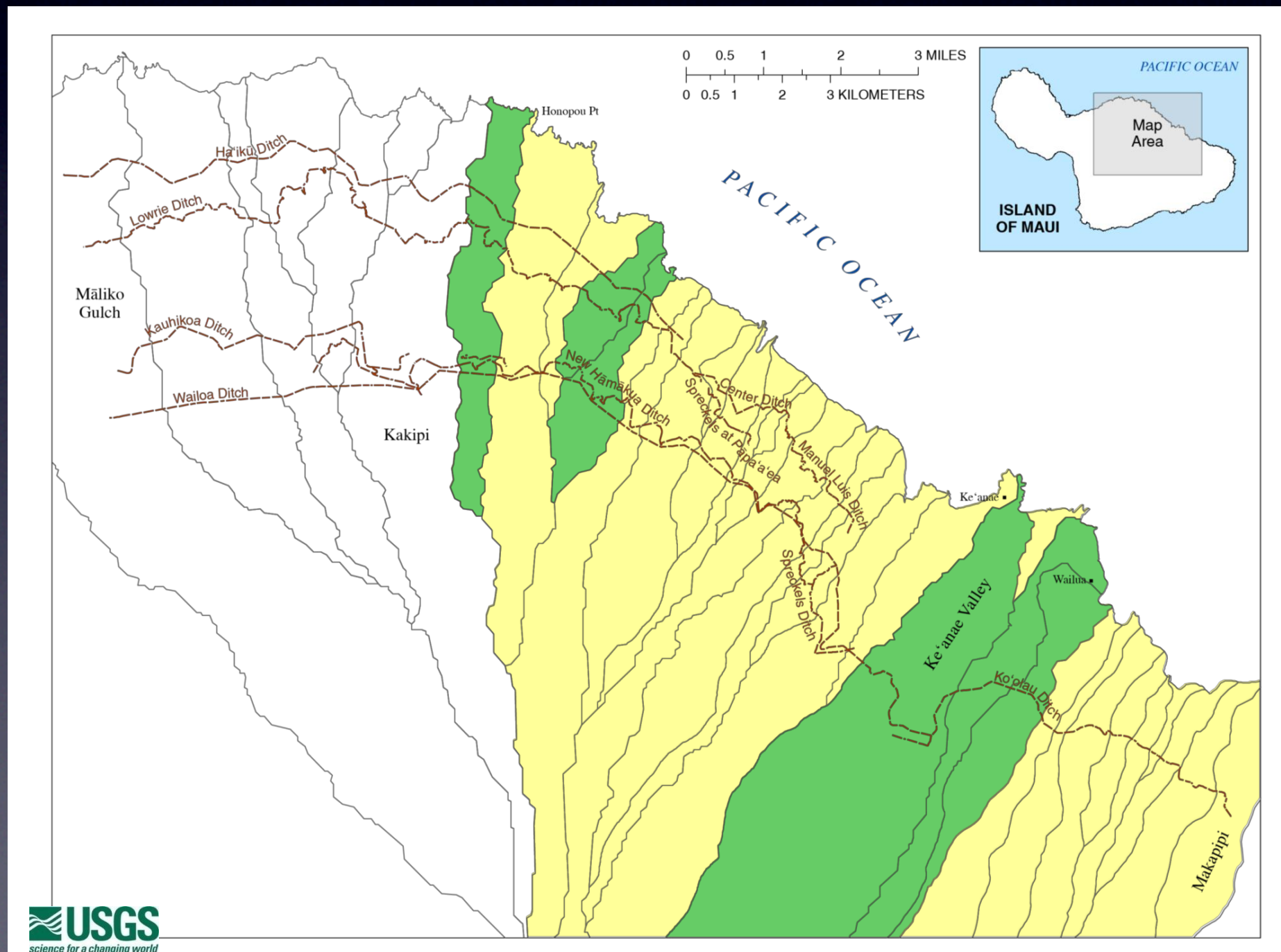
2022: MAUI COUNTY PASSES CHARTER AMENDMENT AUTHORIZING E. MAUI WATER AUTHORITY

2024: NEGOTIATIONS AMONG STATE LAND BOARD/MAHI PONO AND MAUI WATER AUTHORITY BEGIN.

EAST MAUI WATER LICENSE FEE STRUCTURE

- ✦ ORIGINAL LEASE RATES VERY LOW, TO OFFSET DITCH CONSTRUCTION COSTS
 - ✦ FOR MANY YEARS, LEASE RATES BASED UPON SUGAR PRICES
 - ✦ LEASE TERMS RENEGOTIATED EVERY 20-35 YEARS.
 - ✦ A&B/EMI REQUIRED AT ONE TIME TO PAY FOR FIXED AMOUNT OF WATER, REGARDLESS OF USE.
- ✦ FROM 1986 TO 2018, THE FIXED FEE A&B/EMI PAID FOR THE STATE WATER LICENSE FOR 30,000 ACRES OF EAST MAUI LAND HAS BEEN AROUND \$160,000 /YEAR FOR ALL THE WATER DIVERTED.
- ✦ BY 2022, LEASE RATE HAD INCREASED TO \$230,00/YR PLUS \$179.2 K YEARLY WATERSHED MANAGEMENT FEE
 - ✦ A&B/EMI BILLS MAUI COUNTY FOR WATER DELIVERED TO COUNTY TREATMENT PLANTS
- ✦ IF THE COUNTY WATER AUTHORITY ASSUMES A MANAGEMENT ROLE OF E. MAUI STREAM DIVERSIONS, IT IS EXPECTED THAT STATE FEES WILL BE WAIVED, BUT WATER AUTHORITY WILL INVEST IN SYSTEM IMPROVEMENT

FROM MALIKO GULCH TO HONOMANU THE EMI SYSTEM HAS DIVERSION DITCHES AT MULTIPLE ELEVATIONS INTERCEPTING EACH STREAM'S FLOW SEVERAL TIMES. FROM HONOMANU TO NAHIKU THERE IS A SINGLE DITCH INTERCEPTING EACH STREAM



EMI SYSTEM INCLUDES 50 MILES OF TUNNELS AND 25 MILES OF DITCH, SIPHONS, FLUMES. THERE WERE 6 RESERVOIRS ALONG THE DITCH DIVERSION SYSTEM (NOW ONLY 2), OVER 30 MORE IN CENTRAL MAUI AG FIELDS AND 62 MILES OF DITCH ACCESS TRAILS.

Partially Lined Open Ditch



Lowrie Ditch,
concrete on right wall (repaired)
and earthen material on left wall



Center Ditch,
stacked rocks on right wall
and bedrock on left wall

Tunnel

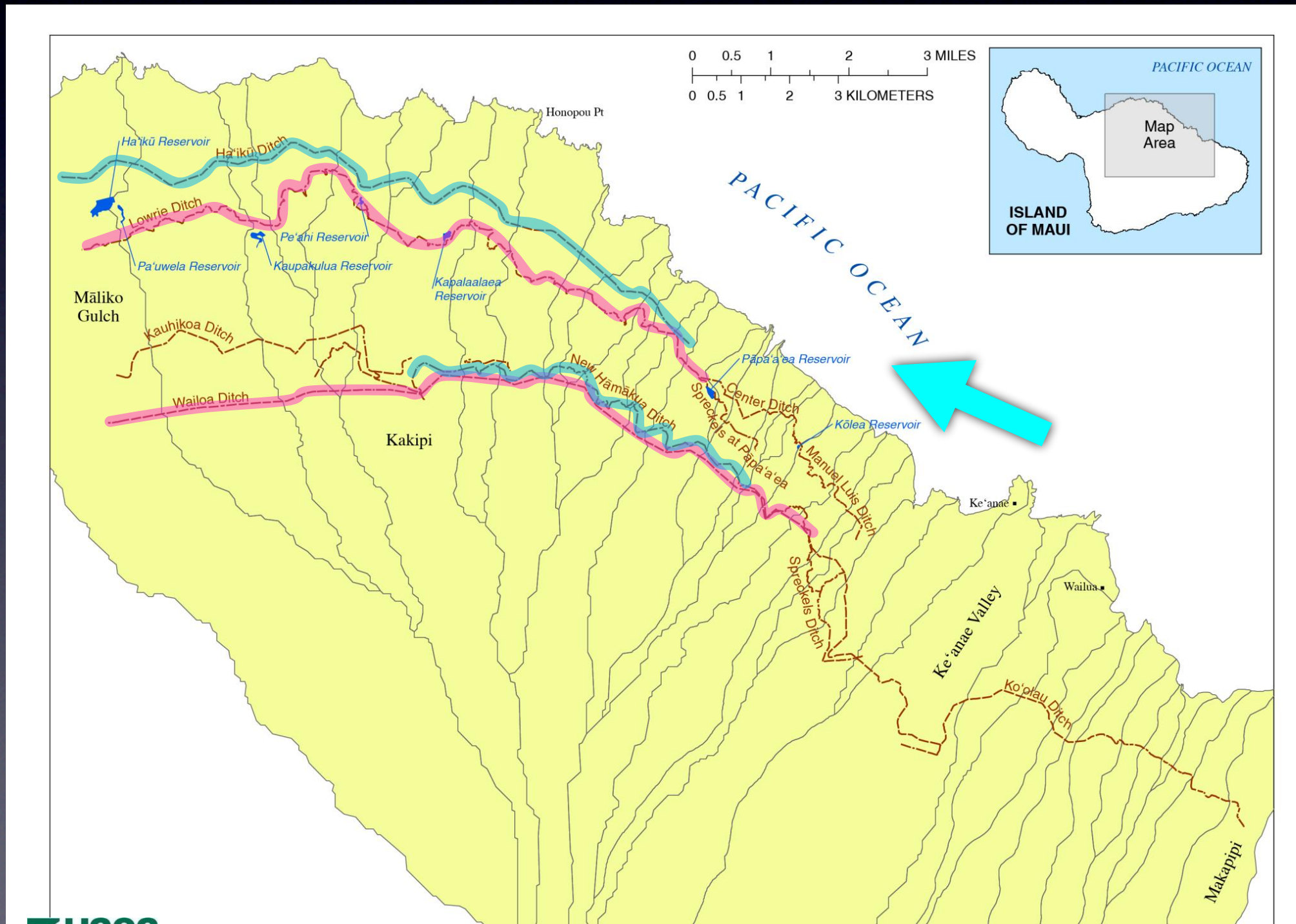


Lowrie Ditch,
pipe section of the ditch



Manuel Luis Ditch,
typical tunnel

A&B/EMI RESERVOIRS WERE DESIGNED TO STORE HIGH FLOWS FROM VARIOUS DITCH SYSTEMS ALLOWING FLEXIBILITY. SINCE HC&S SUGAR PRODUCTION ENDED IN DEC. 2016 ONLY THE DITCH INTAKES WEST OF KE'ANAE PENINSULA, IN MAUI HIKINA ("EAST MAUI") ARE IN USE.



1912: HC&S INSTALLS ITS FIRST HYDROELECTRIC PLANT IN PA'IA, PROVIDING 800 KWT OF ELECTRICITY TO POWER THE PLANTATION'S MILLS AND 15 IRRIGATION WELLS.

✦ 3 HYDRO-PLANTS ON THE EMI SYSTEM-DESIGNED TO BE POWERED BY FLOWS FROM WAILOA DITCH.

✦ MAHI PONO REPORTS NO HYDRO PLANTS CURRENTLY IN USE



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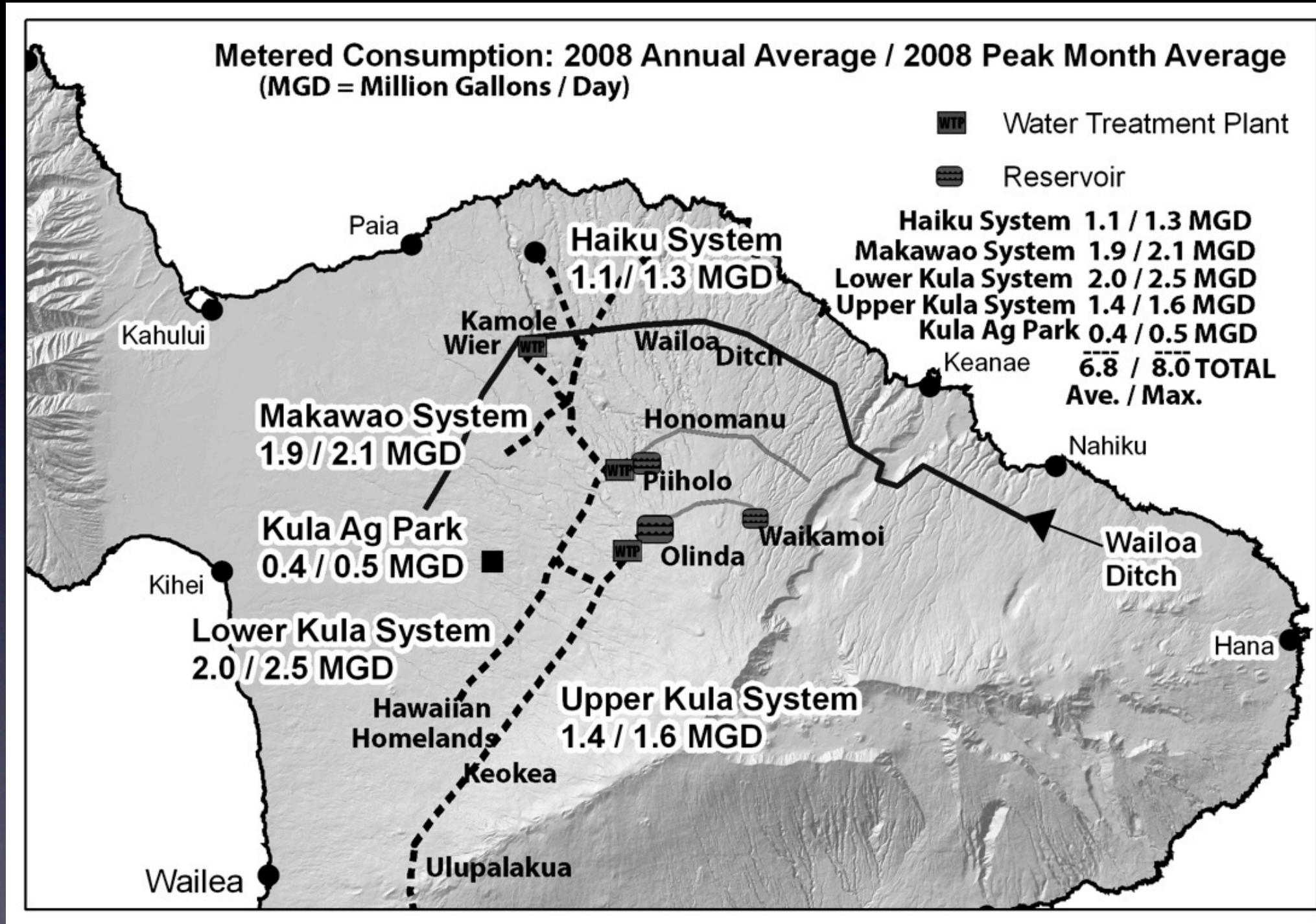
73% OF THE DITCH SYSTEM IS TUNNELS AND 27% IS OPEN DITCHES, SOME LINED, SOME NOT. THE YOUNGEST SECTION OF THE DITCH SYSTEM IS OVER 100 YEARS OLD, BUT SOME SECTIONS AND INTAKES HAVE BEEN UPGRADED OVER THE YEARS



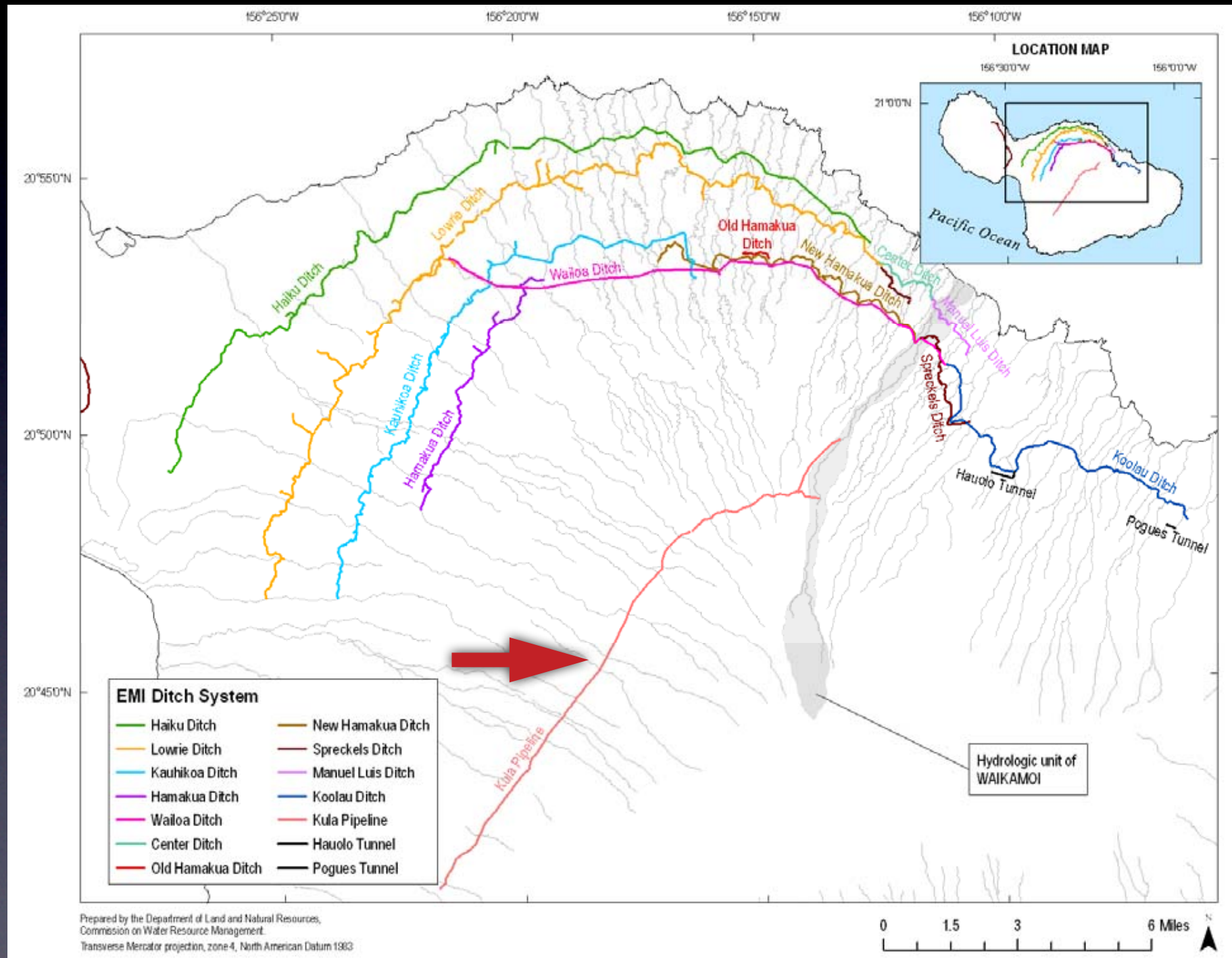
SINCE HC&S SUGAR GROWING ENDED IN 2016 DIVERSIONS ON STREAMS EAST OF KE'ANAE HAVE BEEN LEFT OPEN, AND PLANS ARE UNDERWAY TO PERMANENTLY RESTORE FLOWS TO 10 EAST MAUI STREAMS AND TRIBUTARIES, WITH PARTIAL FLOWS TO 5 MORE. IMPLEMENTATION IS SLOW



MAUI COUNTY UPCOUNTRY SYSTEM RECEIVES A PORTION OF ITS WATER FROM THE EMI WAILOA DITCH AND ALSO HAS TWO PIPELINES OF ITS OWN. KULA AG PARK RECEIVES WATER DIRECTLY FROM THE KAUHIKOA DITCH



MAUI COUNTY'S UPCOUNTRY SYSTEM HAS UPPER AND LOWER PIPE LINES LOCATED SEVERAL THOUSAND FEET HIGHER THAN THE EMI SYSTEM



There are nine active ditches on the EMI System, some of which are essentially the same ditch with different names designated to different sections of the ditch. Refer to Figure 13-3 for a general system map or Figure 13-21 for a simplified schematic of the EMI system. The diversion system west of Maliko Gulch is not depicted in the schematic; however, that part of the system will be included in the following

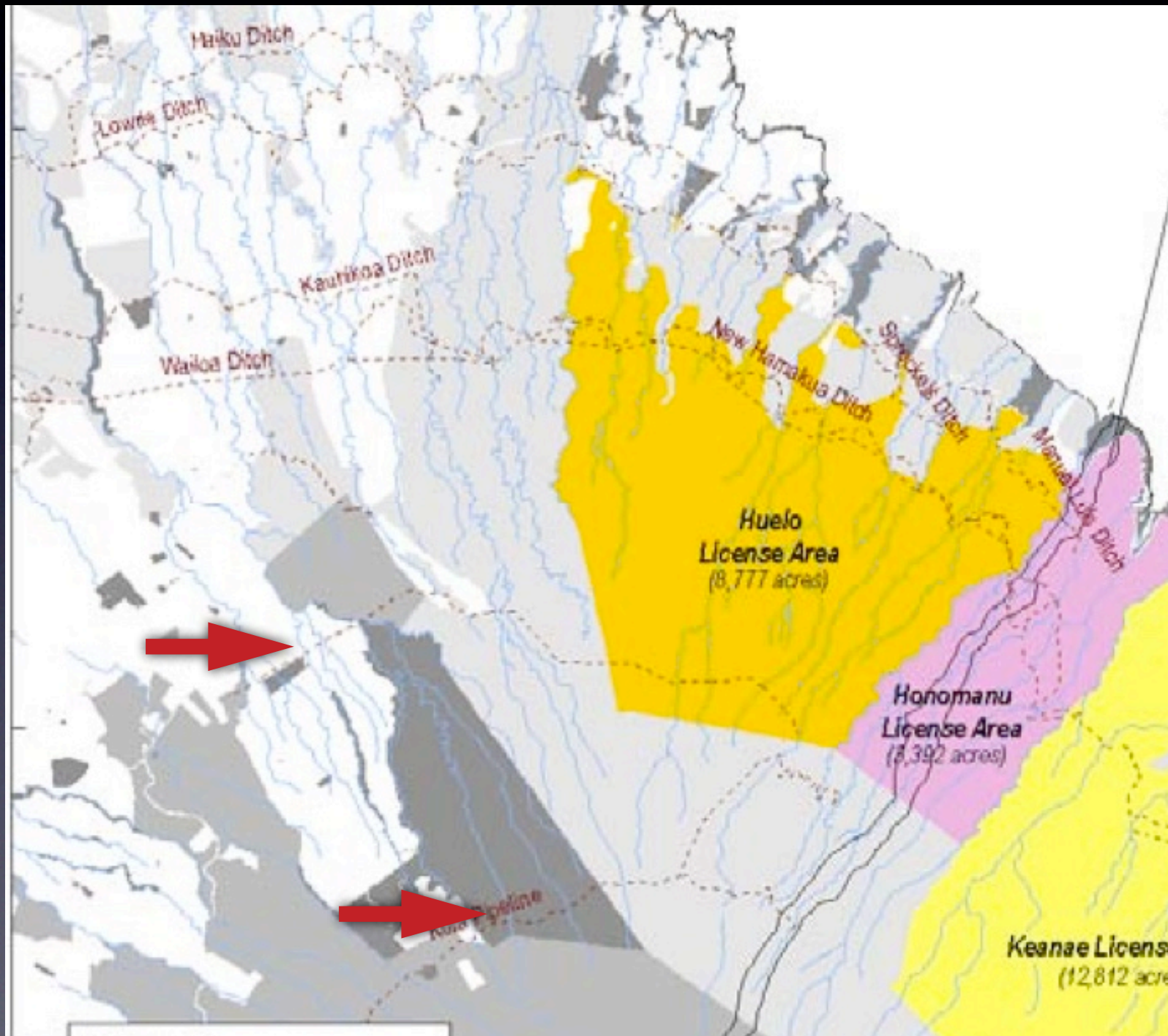
✦ MAUI COUNTY'S UPCOUNTRY SYSTEM'S KULA PIPE LINES LEAD TO 2 COUNTY WATER TREATMENT PLANTS.

✦ THE UPCOUNTRY SYSTEM ALSO HAS SEVERAL WELLS.

✦ SERVES OVER 10,000 SERVICE CONNECTIONS INCLUDING UPCOUNTRY HAWAIIAN HOMELANDS



- ✦ MAUI COUNTY'S UPCOUNTRY SYSTEM PIPE LINES ONLY INTERCEPT A FEW STREAMS, AND ARE MOSTLY LOCATED ON A&B LAND.
- ✦ PROVIDE UP TO 4 MGD OF WATER TO THE COUNTY SYSTEM.
- ✦ A&B/MAHI PONO WAILOA DITCH PROVIDES UP TO 6.5 MGD OF WATER TO MAUI COUNTY. A&B/COUNTY HAVE A MOU TO OPERATE THE SYSTEM.



HAWAII STATE WATER CODE PROVIDES FOR BOTH INSTREAM AND OFF-STREAM USES OF PUBLIC STREAM WATERS



Instream Uses

- Traditional Hawaiian rights
- Conveyance of water supplies
- Fish and wildlife habitat
- Ecosystem maintenance
- Recreation
- Aesthetics
- Water quality



OFFSTREAM USES INCLUDE

- ✦ PUBLIC POTABLE WATER SUPPLY
- ✦ HAWAIIAN HOMELANDS WATER SUPPLY
 - ✦ HYDROELECTRIC GENERATION
 - ✦ PRIVATE POTABLE WATER SYSTEMS
- ✦ PUBLIC NON-POTABLE AGRICULTURAL USE
- ✦ PRIVATE NON-POTABLE AGRICULTURAL USE

Native Flora and Fauna Face Steep Competition

Hawaiian Freshwater Biota

Native Amphibians	0	
Introduced Amphibians		5
Native Reptiles	0	
Introduced Reptiles (Turtles)	3	
Native Fish Species	5	
Introduced Fish Species	60	
Native Crustaceans	2	
Introduced Crustaceans	3	
Native Aquatic Insects	200+	
Introduced Aquatic Insects	73+	
Native Mollusks	5-6	
Introduced Mollusks	9+	

In June 2018 UH Maui's Sustainable Living Institute Maui (SLIM) & Malamalama Maui co-sponsored: "East Maui H2O Roundtable"

- Two-day event. Around 60 participants
- Focus on East Maui water challenges, opportunities and priority actions.



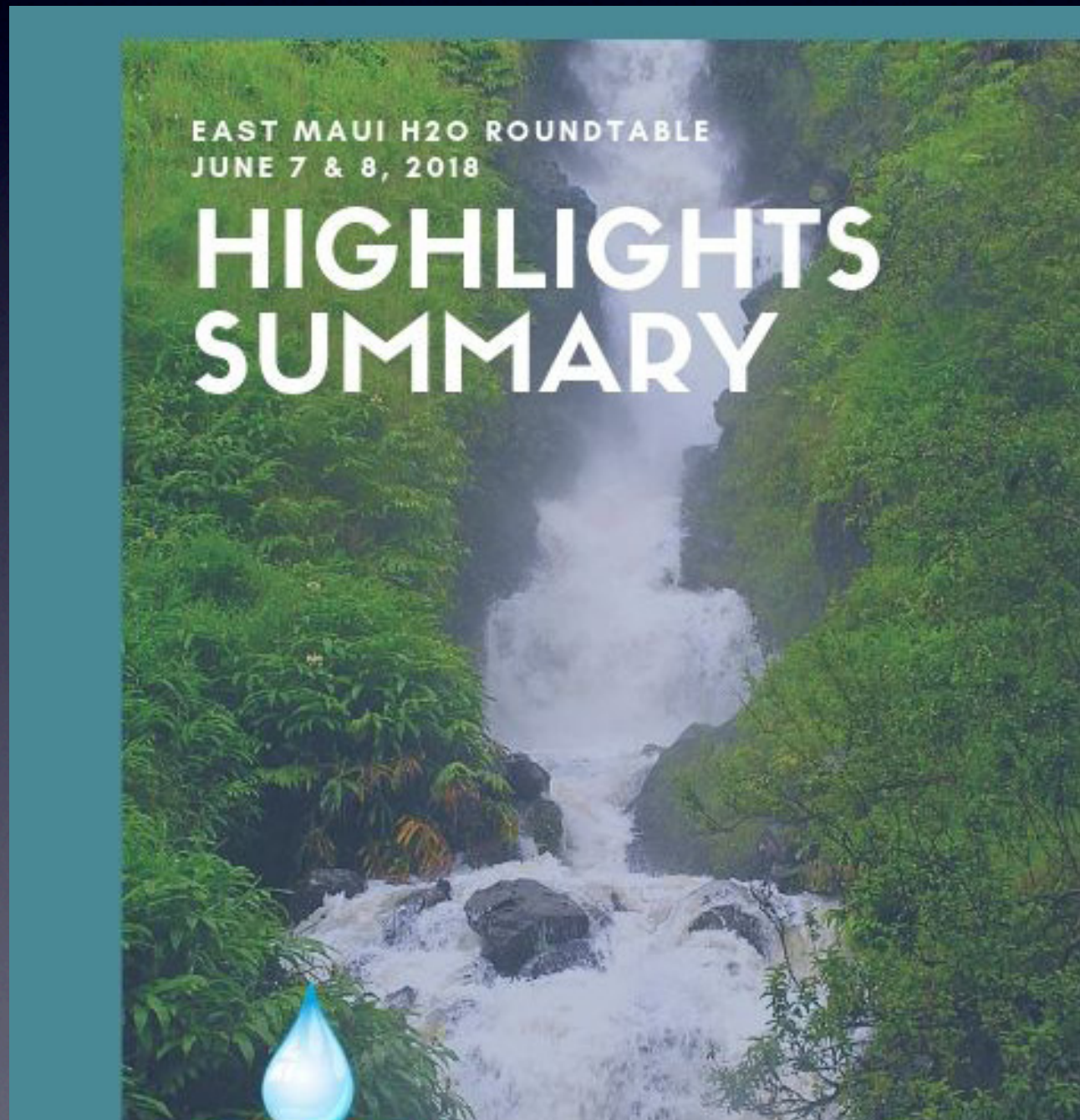
- **2020- Highlites Summary of East Maui H2O Roundtable Event released**

- **Six topic areas discussed by participants- including:**

- **“Optimal Restructuring of East Maui Irrigation and Watershed Systems”**

- **Key findings of that discussion: ”Explore alternative operating entities for EMI system: > Public benefit corporation? Cooperative? Non-profit? County? State?”**

- **2019 County Board of Water Supply volunteers set up “ Investigative Group” to consider alternative ownership/management models for East Maui stream diversion system, and released a report.**



YOUR VOTE HELPS DECIDE MAUI'S WATER FUTURE!

VOTE YES ON CHARTER AMENDMENT #12 FOR MAUI COUNTY COMMUNITY WATER AUTHORITIES

WHAT ARE THE MAUI COUNTY COMMUNITY WATER AUTHORITIES?

A new county agency to manage and acquire water collection and delivery systems for the benefit of the people	Regional advisory boards that incorporate local communities into decision making and watershed management
Builds water security for Maui County	Community-based resource management

WHY IS THIS NEEDED?

Fills a gap in Maui's water management
 The century-old water systems we depend upon are not being adequately maintained to promote water security - leading to **water waste** and unreliability for our future

Climate change is leading to more frequent droughts and uncertain rainfall

Investors are **privatizing water systems** across the world as global water scarcity increases

Unless we take action, a **foreign pension fund** is on track to control East Maui water for an entire generation

HOW WILL WE BENEFIT?

Water authorities put us in control of our own water future:

- Use federal grants and low interest loans to invest in aging infrastructure
- Use water delivery revenues for operations, infrastructure maintenance, and watershed restoration
- Harness the expertise of our communities and top professionals to make these systems work for the 21st century
- Provide job opportunities in sustainable resource management for Maui County residents
- Achieve greater transparency, accountability, and efficiency in water resource management
- Enhance local food security
- Shift public water resources out of corporate control**

LEARN MORE AT WATERISLIFEMAUI.COM

SIERRA CLUB MAUI GROUP

- Guided by BWS TIG report and Roundtable event input Maui County Council discussed charter Amendment for 2022 Ballot.
- November 2022 Maui County first in state to establish Community Water Authority via charter amendment
- Water Authority board in appointed in 2023- majority East Maui community members
- Water Authority Director confirmed October 2024
- July 2024- Water Authority asks State to set up negotiations for County management of East Maui stream water systems
- Historic first step to transition Maui's largest water resource from private to public management.

Will Maui's New Water Authority return Public Water Resources to Community Management? This History is Still Being Written



**MAHALO to UH !
for all its work in our East Maui Communities**