

HAWAI'I WATER WORKSHOPS

WATER RESOURCE PROTECTION PLAN UPDATE

MARCH 2015

Commission on Water Resource Management



Agenda



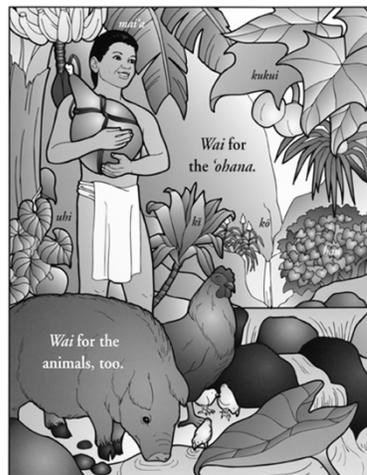
1. **Why Water?**
2. Water Management in Hawai'i
3. Commission on Water Resource Management
4. Where does our water come from?
5. Hawai'i Water Plan
6. Water Resource Issues
7. Water Management Strategies
8. Breakout Discussion
Local Water Issues and Actions
9. Reconvene
Summary of Breakout Discussion
10. Next Steps



WHY WATER?



- The human body is up to 60% water
- All known organisms need at least some water to survive
- Water is essential for:
 - Public health
 - Food production
 - Cultural Practices
 - Recreation
 - Power Generation
 - Fire Protection
 - and much more!



Source: Williams, Julie. 2006. *Wai'anae: Where I Live*. Kamehameha Schools Press.

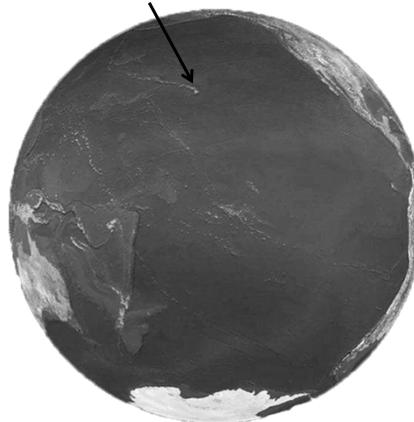
WHY WATER?



Water covers 71% of the Earth's surface!

- The world's oceans contain 332.6 million cubic miles = 366 quintillion (3.66×10^{20}) gallons of water
- That's about 97% of all water on Earth (USGS)

You are here



Source: USGS Water Science for Schools
<http://water.usgs.gov/edu/watercycleoceans.html>

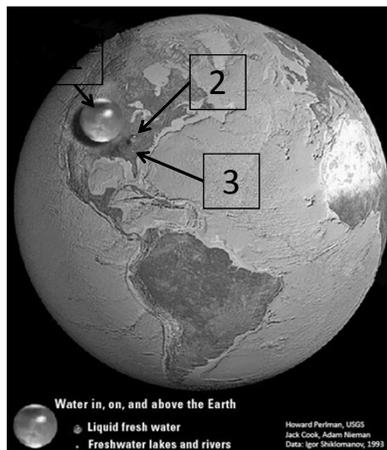
WHY WATER?



Only about 1% **2** of all of the water on Earth is fresh water

All Earth's water, liquid fresh water, and water in lakes and rivers. Spheres showing:

1. All water (sphere over western U.S., 860 miles in diameter) is 0.1% of the size of the entire earth.
2. Fresh liquid water in the ground, lakes, swamps, and rivers (sphere over Kentucky, 169.5 miles in diameter), is 0.00004% of the size of the entire earth.
3. Fresh-water in lakes and rivers (sphere over Georgia, 34.9 miles in diameter) is 0.0000004% of the size of the entire earth.



Source: Woods Hole Oceanographic Institution & USGS Water Science School
<http://water.usgs.gov/edu/earthwherewater.html>

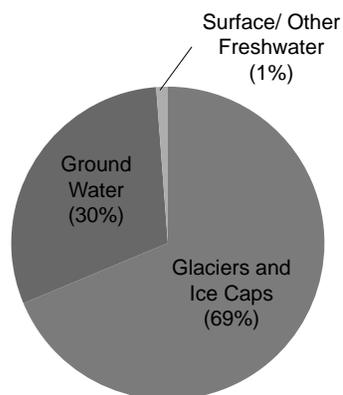
WHY WATER?



Of the fresh water on Earth...

- Most of the fresh water is locked up in glaciers and ice caps and is unusable
- Surface water (streams, rivers, lakes, etc.) serves most of life's fresh water needs, but accounts for only 1% of the fresh water on Earth.

Where is the Earth's Fresh Water?



Source: USGS Water Science School
<http://water.usgs.gov/edu/earthwherewater.html>

Hawai'i's Natural Water Systems



WATER RESOURCE PROTECTION PLAN UPDATE * HAWAII WATER WORKSHOPS * MARCH 2015 * 7

Agenda



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WATER RESOURCE PROTECTION PLAN UPDATE * HAWAII WATER WORKSHOPS * MARCH 2015 * 8

Water Management in Hawai'i



TRADITIONAL MĀUI LAND USES

- HUMAN ACCESS/HABITATION
- RESOURCE ACCESS TRAIL
- COASTAL ACCESS TRAIL
- TEMPORARY HALE
- KAUIHALE
- LO'I
- FRESH WATER STOUCES
- FORESTED AREA
- CULTURAL SITE
- IRRIGATED FARMLAND
- NON-IRRIGATED FARMLAND

WATER RESOURCE PROTECTION PLAN UPDATE
HAWAI'I WATER WORKSHOPS
MARCH 2015
9

Water Management in Hawai'i

The Hawaiian language and culture has hundreds of “WAI” words and place names

<ul style="list-style-type: none"> • Huawai • Kahewai • KawaihaeKauluwai • Kawaihau • Kawaihoa • Kawai Iki • Kawaikini • Kawailena • Kawailoa • Kawaiipapa • Kawaiipoko • Kawai'ula • Kūmelewai • Kunawai • Lo'ipūnāwai • Lokowaiaho • Luawai • Manawai • Muliwai • Nāwaihulili • Nininiwai 	<ul style="list-style-type: none"> • Niuhelewai • Papawai • Piliwai • Pūhāwai • Pu'ukawaiwai • Pu'uwaihu'ena • 'Umiwai • Waiāhole • Waiakamilo • Waiākea • Wai'alalā • Wai'alae • Wai'ale'ale • Wai ali'i • Wai'anae • Wai ani ani • Wai 'apo • Wai au • Wai 'eli • Wai hā • Wai hau 	<ul style="list-style-type: none"> • Waiholomoku • Waihona • Wai hū • Wai kahe • Wai kai • Wailana • Wailele • Waikalua • Waikamoi • Waikāne • Waikapuna • Waikele • Waiki'i • Waikīkī • Waikoloa • Wailea • Waimānalo • Waimea • Waipahu • Waipi'o • Waiwai
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WATER RESOURCE PROTECTION PLAN UPDATE
HAWAI'I WATER WORKSHOPS
MARCH 2015
10

Water Management in Hawai'i



1840 Constitution

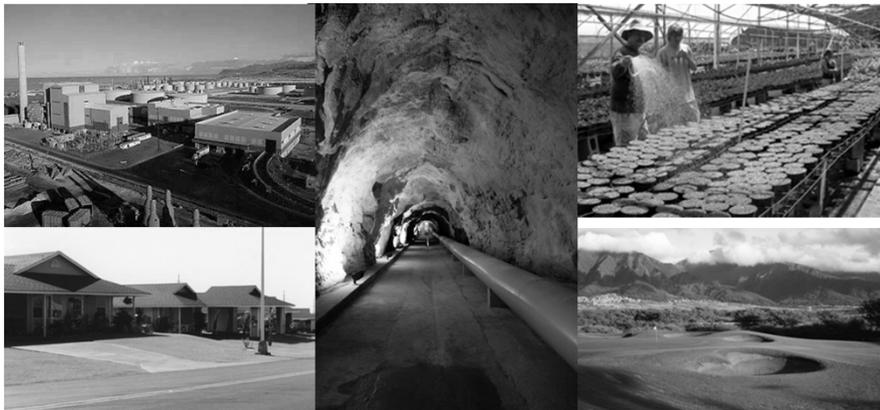
*“Kamehameha I, was the founder of the kingdom,
and to him belonged the land
from one end of the Islands to the other,
though it was not his own private property.*

*It belonged to the people, and the chiefs in common,
of whom Kamehameha I was the head,
and had the management of the landed property.”*

Water Management in Hawai'i



The need for a different type of management



Water Management in Hawai'i



Hawai'i State Constitution, Article XI, Section 7

(emphasis added)

"The State has an obligation to protect, control and regulate the use of Hawaii's water resources for the benefit of its people."

*"The legislature shall provide for a **water resource agency** which... shall set overall water conservation, quality and use policies; define reasonable and beneficial uses; protect ground and surface water resources, watersheds and natural stream environments; establish criteria for water use priorities while assuring appurtenant rights and existing correlative and riparian uses and establish procedures for regulating all uses of Hawaii's water resources."*

WATER RESOURCE PROTECTION PLAN UPDATE * HAWAII WATER WORKSHOPS * MARCH 2015 * 13

Agenda



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WATER RESOURCE PROTECTION PLAN UPDATE * HAWAII WATER WORKSHOPS * MARCH 2015 * 14

Commission on Water Resource Management



- Seven members
 - Five members are appointed by the Governor and confirmed by the State Senate
 - Chairperson of BLNR (Chair of Water Commission)
 - Director, State DOH (ex-officio voting member)
- Water **QUANTITY** is managed by CWRM (i.e. streams and ground water).
- Water **QUALITY** is managed by the Department of Health.



Commission on Water Resource Management



Branches

- Ground Water Regulation
- Stream Protection and Management
- Planning
- Survey



Commission on Water Resource Management



Public Trust Doctrine

*“...all public natural resources
are held in trust by the State
for the benefit of its people.”*

*“The State has an obligation to protect,
control and regulate the use of Hawaii's water
resources for the benefit of its people.”*

State Constitution, Article XI

Commission on Water Resource Management



Precautionary Principle

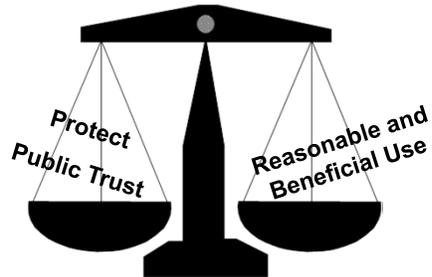
There is a duty to take
anticipatory action to prevent
harm to public resources.



Commission on Water Resource Management



Protect the Public Trust and Ensure Reasonable and Beneficial Uses

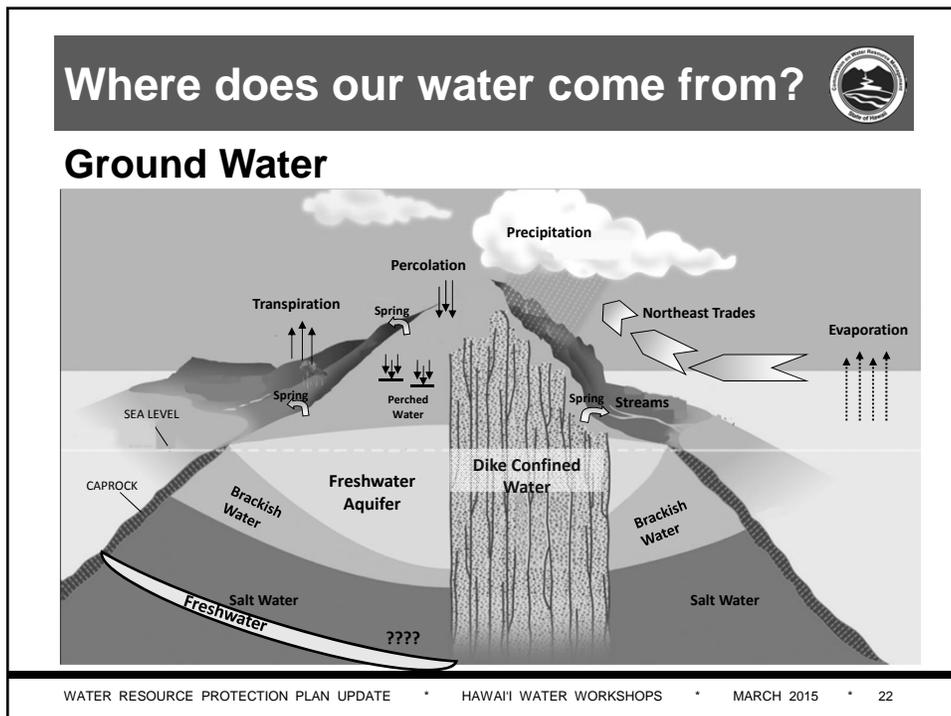
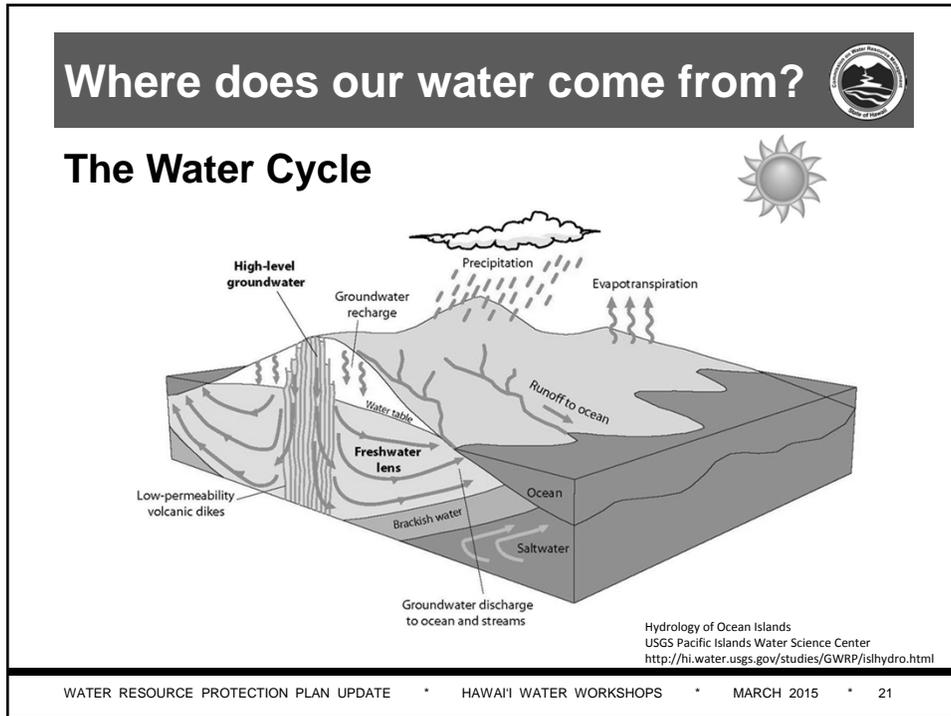


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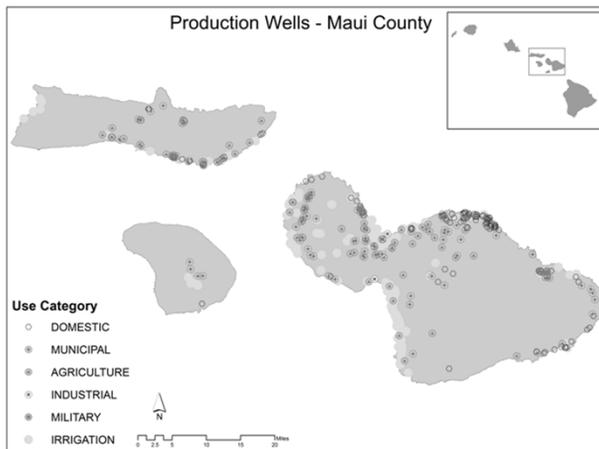




Where does our water come from?



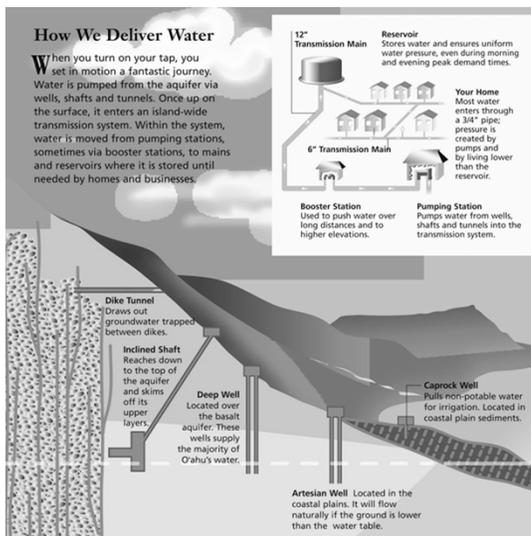
Ground Water



Where does our water come from?

Ground Water

- Wells
- Shafts
- Tunnels

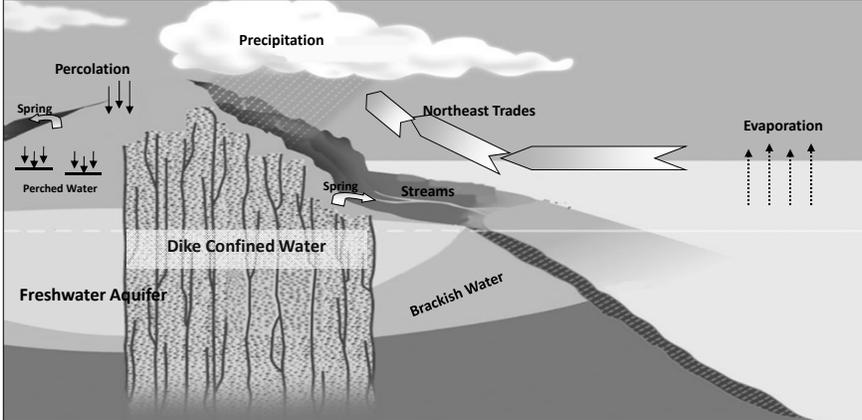


Source: Honolulu Board of Water Supply

Where does our water come from?



Surface Water



WATER RESOURCE PROTECTION PLAN UPDATE * HAWAI'I WATER WORKSHOPS * MARCH 2015 * 27

Where does our water come from?



Surface Water



Pump near an auwai



Collection box along stream channel



Irrigation ditches carry water to agricultural fields



Pipe intake



Beginning of an auwai



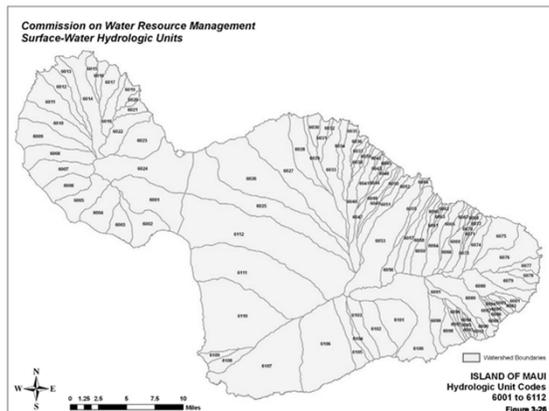
Measuring stream flows

WATER RESOURCE PROTECTION PLAN UPDATE * HAWAI'I WATER WORKSHOPS * MARCH 2015 * 28

Where does our water come from?



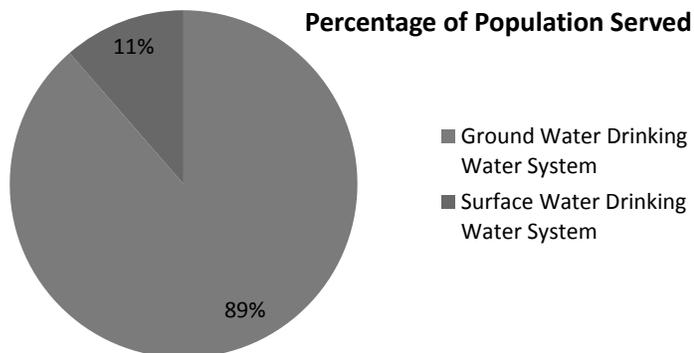
Maui's Surface Water Hydrologic Units



Where does our water come from?



In Hawai'i most of our drinking water is ground water.





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WATER RESOURCE PROTECTION PLAN UPDATE
HAWAI'I WATER WORKSHOPS
MARCH 2015
31



Hawai'i Water Plan

*“There is a need for a program of **comprehensive water resources planning** to address the problems of supply and conservation of water.*

*The **Hawaii water plan**...is accepted as the guide for developing and implementing this policy.”*

*(§174C-2(b) HRS)
(Emphasis added)*

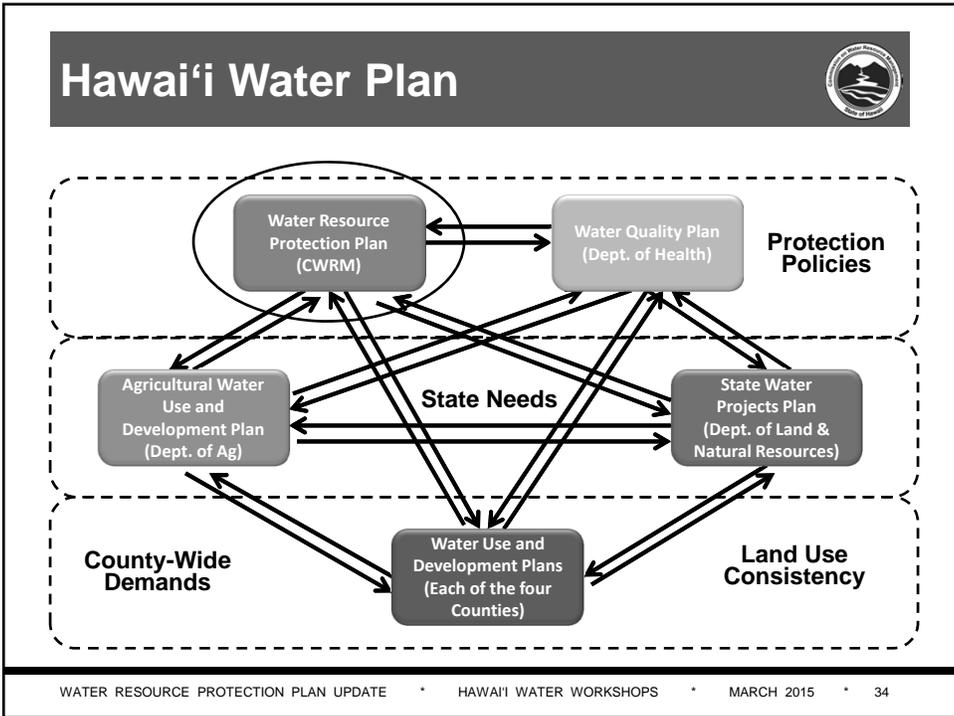
WATER RESOURCE PROTECTION PLAN UPDATE
HAWAI'I WATER WORKSHOPS
MARCH 2015
32

Hawai'i Water Plan

Objectives

- Set water resource policies
- Proper conservation and development of water
- Reasonable and beneficial use of water
- Ensure adequate water quality
- Control water for public purposes
- Provide for DHHL needs
- Recognize county home rule

WATER RESOURCE PROTECTION PLAN UPDATE
HAWAII WATER WORKSHOPS
MARCH 2015
33



Hawai'i Water Plan

Water Resource Protection Plan (2008)

1. Introduction
2. General Water Resource Management Principles and Policies
3. Inventory and Assessment of Resources
4. Monitoring of Water Resources
5. CWRM Regulatory Programs
6. Existing and Future Demands
7. Resource Conservation and Augmentation
8. Drought Planning
9. Watershed Protection
10. Water Quality
11. Priority Recommendations and Implementation Plan
12. References

WATER RESOURCE PROTECTION PLAN UPDATE
HAWAII WATER WORKSHOPS * MARCH 2015 * 35

Hawai'i Water Plan

WRPP Update (current)

Table of Contents

1. Introduction
2. Summary of Water Resource Trends and Issues
3. Action Plan
4. Plan Implementation

Appendices

- A. Planning Context for the WRPP
- B. Legal Authorities and Guidance
- C. Stakeholder Outreach Process
- D. Inventory and Assessment of Resources
- E. Monitoring of Water Resources
- F. CWRM Regulatory Programs
- G. Existing and Future Demands
- H. Resource Conservation and Augmentation
- I. Drought Planning
- J. Watershed Protection
- K. Water Quality
- L. Five-Year Action Plan Project and Program Descriptions
- M. Long-Term Actions
- N. Water Resource Agencies

WATER RESOURCE PROTECTION PLAN UPDATE
HAWAII WATER WORKSHOPS * MARCH 2015 * 36

Hawai'i Water Plan



WRPP Update Process to Date



WATER RESOURCE STATUS

- Organize the project team
- Update 2008 WRPP chapters with new information
- Analysis of data and status of programs
-
- Water Commission Briefings
- Water Professionals Group Meetings
- Meetings with Agencies and Non-Governmental Organizations

DRAFT WRPP UPDATE

- Hold public "Water Workshops" to brief communities on water and hear their issues
- Develop an Implementation Plan and Schedule
- Compile the Draft WRPP Report
-
- Water Commission Briefing

WATER RESOURCE PROTECTION PLAN UPDATE * HAWAI'I WATER WORKSHOPS * MARCH 2015 * 37

Agenda



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3. Commission on Water Resource Management
4. Where does our water come from?
5. Hawai'i Water Plan
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7. Water Management Strategies
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9. Reconvene
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10. Next Steps

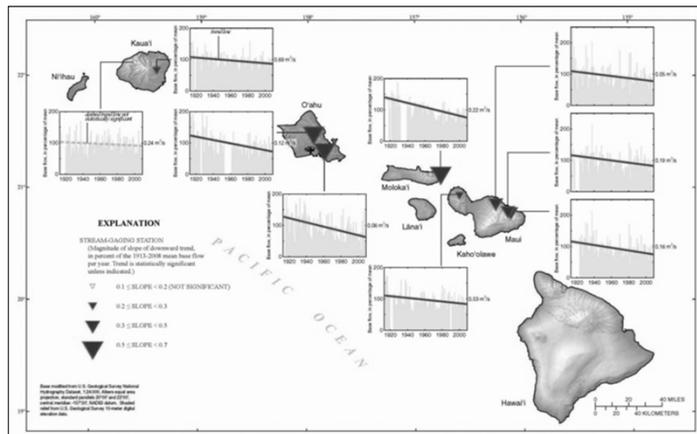


WATER RESOURCE PROTECTION PLAN UPDATE * HAWAI'I WATER WORKSHOPS * MARCH 2015 * 38

Water Resource Issues



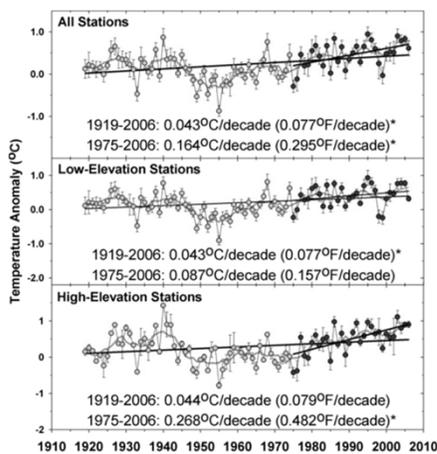
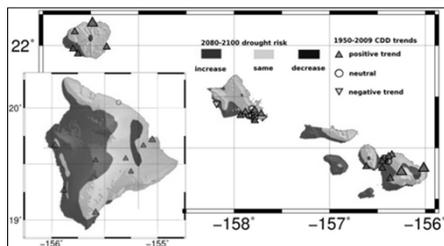
Climate Change

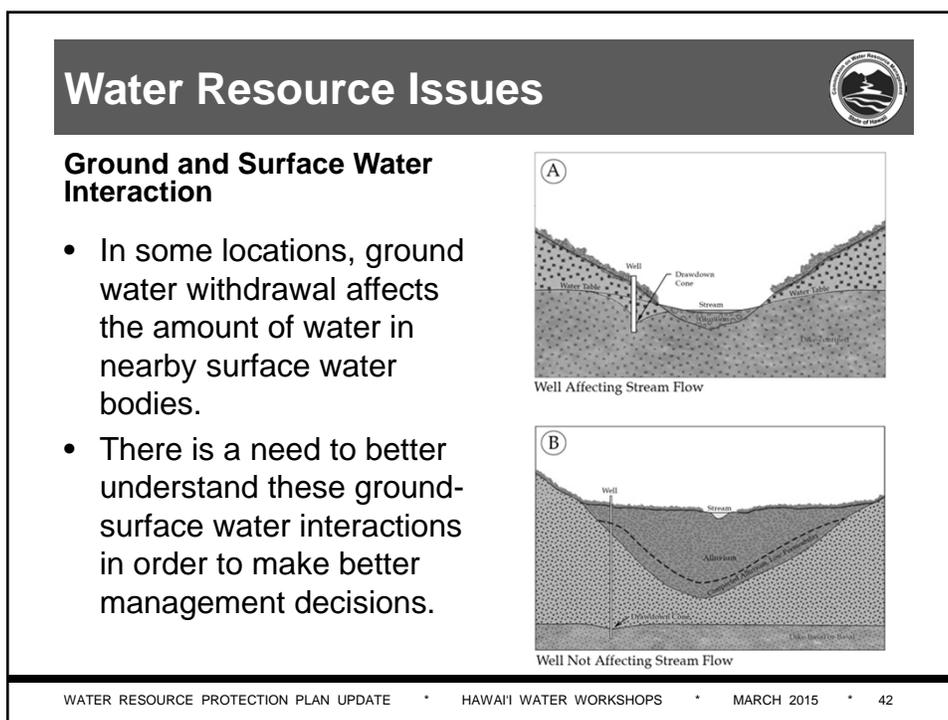
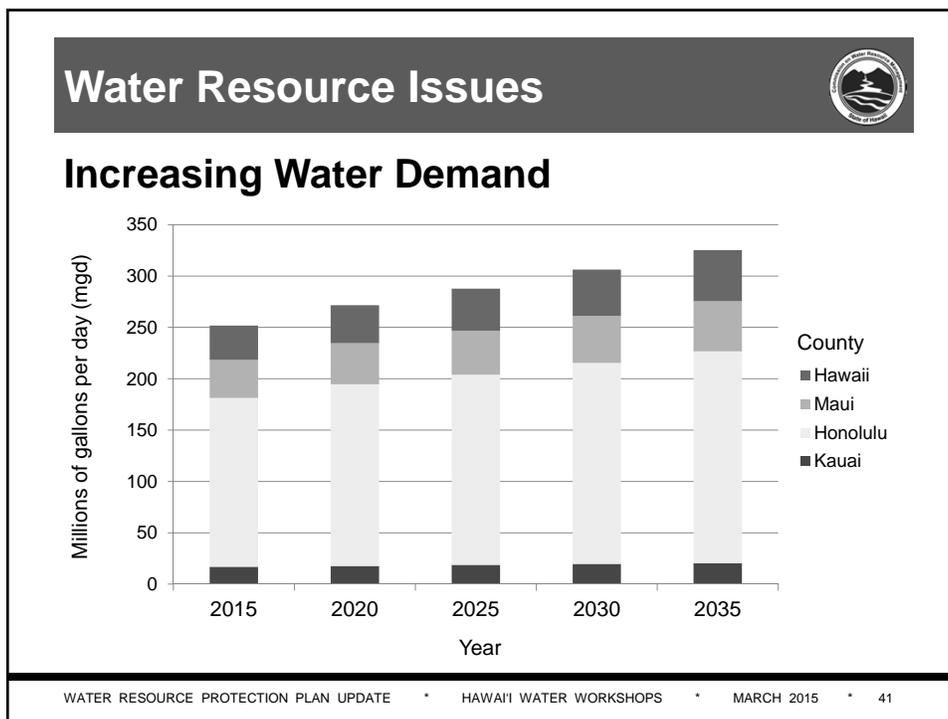


Water Resource Issues



Climate Change





Water Resource Issues



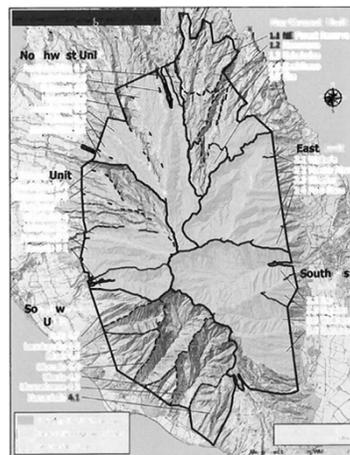
Protection of Water Rights

- Correlative
- Riparian
- Appurtenant
- Traditional and Customary
- Department of Hawaiian Home Lands

Water Resource Issues



Watershed Management

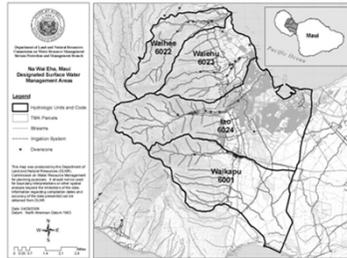


Water Resource Issues



Maui Island Issues

- Na Wai Eha
- East Maui
- Drought Impacts
- Lahaina Wastewater



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8. Breakout Discussion
Local Water Issues and Actions
9. Reconvene
Summary of Breakout Discussion
10. Next Steps

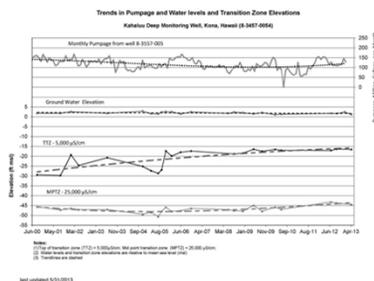
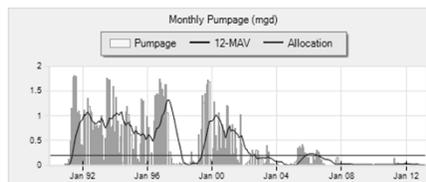


Water Management Strategies



Resource Monitoring

- Water Use Reporting
- Deep Monitor Wells
- Water Level Observation Wells
- Climate
- Chlorides
- Streamflow



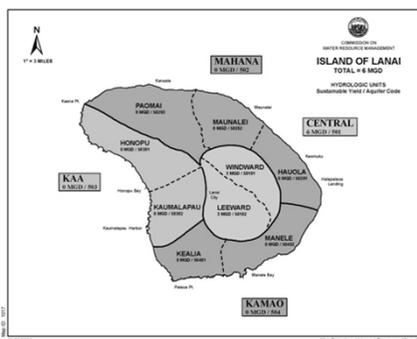
Water Management Strategies



Resource Assessments

Sustainable Yields

Instream Flow Standards



Water Management Strategies



Permitting

- Water Use Permit
- Well Construction and Pump Installation Permit
- Stream Diversion Works Permit
- Stream Channel Alteration Permit

Water Management Strategies



Long-Range Planning

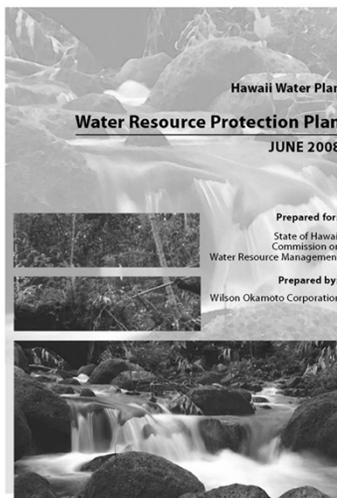
- Hawaii Water Plan
- Drought Planning
- Water Conservation Planning
- Resource Augmentation Planning
- Research and Studies
- Coordination and Outreach

Water Management Strategies



Implementation of 2008 WRPP

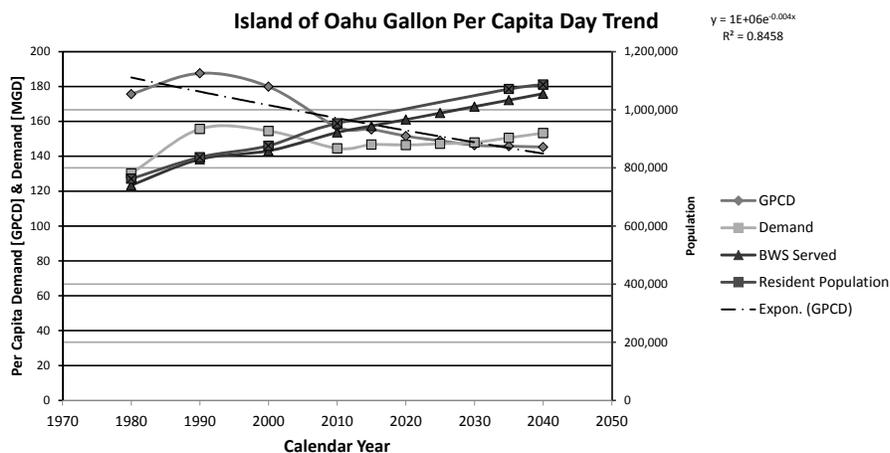
- 86 Actions Identified
- 58 Actions Implemented
- Focused on:
 - Monitoring and Data Collection;
 - Resource Investigations and Assessments; and
 - Water Conservation and Water Shortage Planning



Water Management Strategies



Conservation



Water Management Strategies



Resource Augmentation

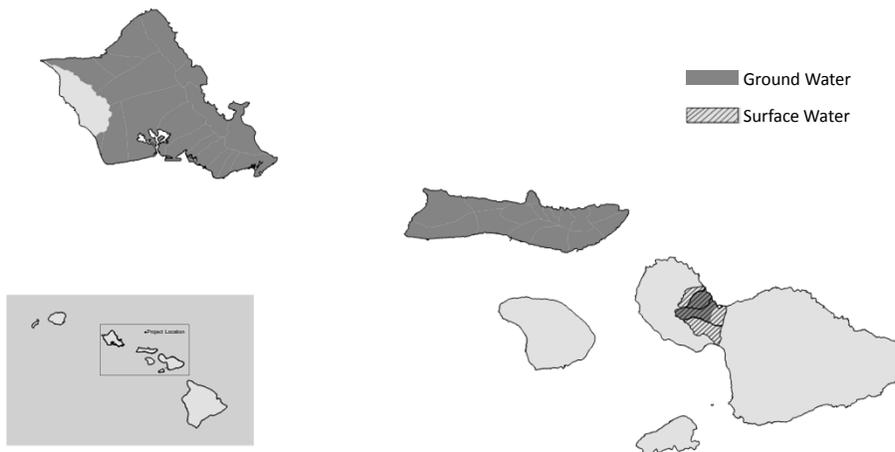
- Recycled Water
- Desalinated Water
- Storm Water
- Grey Water



Water Management Strategies



Water Management Areas



Agenda



1. Why Water?
2. Water Management in Hawai'i
3. Commission on Water Resource Management
4. Where does our water come from?
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- 8. Breakout Discussion**
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10. Next Steps



Breakout Discussion



45 minutes

Break out into small groups to allow for more detailed discussions on specific topics. We will reconvene after 45 minutes to share the top issues from each group.



Photo: Honolulu BWS

Breakout Discussion



What is your #1
water resource issue?

What can/should we do about it?



Reconvene Large Group



What were the top three
water resource issues for your group?



Next Steps

Hawai'i Water Workshops 6:30 pm – 8:30 pm

March 3 - O'AHU
DLNR Board Room
1151 Punchbowl Street

March 19 - KAUAI
Planning Commission Meeting Room
4444 Rice Street

March 11 - LANA'I
Lana'i Senior Center
309 Seventh Street

March 24 - KONA
West Hawai'i Civic Center
Community Meeting Hale
74-677 Kealahkehe Parkway

March 12 - MAUI
Wailuku Community Center
395 Waena Place

March 30 - HILO
Aupuni Center
101 Pauahi Street, Suite 1

March 17 - MOLOKA'I
DHHL/OHA Conference Room
600 Mauna Loa Highway, Suite D-2

WATER RESOURCE PROTECTION PLAN UPDATE * HAWAII WATER WORKSHOPS * MARCH 2015 * 59

Next Steps

WATER RESOURCE STATUS

- Organize the project team
- Update 2008 WRPP chapters with new information
- Analysis of data and status of programs

- Water Commission Briefings
- Water Professionals Group Meetings
- Meetings with Agencies and Non-Governmental Organizations

DRAFT WRPP UPDATE

- Hold public "Water Workshops" to brief communities on water and hear their issues
- Develop an Implementation Plan and Schedule
- Compile the Draft WRPP Report

- Water Commission Briefing

PUBLIC REVIEW

- Distribute Public Review Draft WRPP
- Solicit and respond to public comments

- Water Commission Briefing
- Public Hearings
 - Kona
 - Hilo
 - Maui
 - Lana'i
 - Moloka'i
 - O'ahu
 - Kaua'i

FINAL WRPP UPDATE

- Revise Draft WRPP Update Report
- Finalize WRPP Update Report

- Water Commission Briefing

WATER RESOURCE PROTECTION PLAN UPDATE * HAWAII WATER WORKSHOPS * MARCH 2015 * 60

Water Resource Protection Plan



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<http://dlnr.hawaii.gov/cwrm/planning/hiwaterplan/wrpp/>

Water Resource Protection Plan



Thank you!

