



WAIMEA VALLEY

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Aloha Teachers,

Mahalo for participating in Waimea Valley's ***E mālama i ka wai*** (Take care of the water) school program. Students will have the rare opportunity to investigate the dynamic watershed of Waimea. While exploring from Kamananui Stream to the estuary, students discover the zones of an ahupua`a and take a closer look at the resources found in fresh water. A water management game will help students better understand that, in Hawaiian tradition, people depended on the responsible use of water and everyone took an active part in maintaining and conserving water.

The information provided here includes:

- Program Overview with HCPS III
- Pre-visit Checklist
- Safety Concerns
- Sample Letter to Parents
- Sample Letter to Chaperones
- Vocabulary List

We are very excited about the activities we have planned and are confident that the experience will be educational and fun for all involved! If you have any questions or concerns about our program, please don't hesitate to contact the Education Department at 638-7766.

Mahalo,

Waimea Valley
Education Department
638-7766

E mālama i ka wai **“Take care of the water”** School Program



Overview

Students have the rare opportunity to investigate the dynamic watershed of Waimea. While exploring from Kamananui Stream to the estuary, students discover the zones of an ahupua`a and take a closer look at the resources found in fresh water. A water management game will help students better understand that, in Hawaiian tradition, people depended on the responsible use of water and everyone took an active part in maintaining and conserving water.

Hawai`i Content & Performance Standards (HCPS III) **HCPS III Benchmarks in Science met by *E mālama i ka wai***

- SC 2.5.1 Identify distinct environments and the different kinds of organisms each environment supports
- SC 2.8.2 Identify the limited supply of natural resources and how they can be extended through conservation, reuse, and recycling
- SC 3.1.2 Collect and analyze data to answer a question
- SC 3.1.1 Pose a question or develop a hypothesis based on observation
- SC 4.5.2 Describe the roles of various organisms in the same environment
- SC 4.5.3 Describe how different organisms need specific environmental conditions to survive
- SC 4.1.1 Describe a testable hypothesis and an experimental procedure

HCPS III Benchmarks in Social Studies met by *E mālama i ka wai*

- SS 4.7.3 Analyze the consequences of human modification of the physical environment in Hawaii using geographic representations (including lo'i kalo and loko i'a)
- SS 3.7.3 Describe the physical and human characteristics that make different regions unique
- SS 2.7.3 Describe a variety of earth's natural resources, and the ways in which people use them.
- SS 2.7.4 Analyze and demonstrate ways to protect and preserve the local environment

Program Schedule:

9:00-9:15 Arrival
9:30-10:00 Activity One-Introduction

Group A

10:00-10:45 Activity Two - Kaha wai Survey
10:45-11:00 Clean up site/ Walk to Estuary
11:00-11:45 Activity Three - Water Management
11:45-12:00 Walk to lunch area/wash-up
12:00 Lunch
12:30 Walk to Visitor's Center

Group B:

10:00-10:45 Activity Two – Water Management
10:45-11:00 Clean up site/ Walk to Stream Site
11:00-11:45 Activity Three - Kaha wai Survey
11:45-12:00 Walk to lunch area/wash-up
12:00 Lunch
12:30 Walk to Visitor's Center

Schedule subject to change depending on bus arrival and departure

Activity 1: Introduction to Ahupua`a O Waimea (25 minutes)

At the bridge overlooking Kamananui Stream, students will be introduced to the ahupua`a of Waimea. An interactive group activity helps students identify the characteristics of an ahupua`a, including three main zones. While matching natural resources with specific zones, students will learn that Hawaiians had a complex system of managing all of these resources, including fresh water.

Key Concepts: An ahupua`a is a section of land running from the mountains to the sea. It contained all the range of products and resources that Hawaiians needed to survive. The ahupua`a was organized into multiple zones; each zone had natural resources that were traditionally used by Hawaiians. These zones include:

- Uka: Mountains and uplands
- Kula: Plains and fields

- Kai: The sea and the area nearby, including *kaha wai*, or freshwater streams, and *muliwai*, or estuaries. (Students will be working near the stream and estuary.)

What happened in upland zones influenced the lower elevations, just like today. One way Hawaiians took care of all the zones was to manage water use. Water was a part of each zone.

Objectives: Students will be able to...

- Describe the features and purpose of the ahupua`a land division
- Explain three zones of an ahupua`a and the natural resources found there
- List at least one natural resource that was managed by Hawaiians
- Understand the ahupua`a as both a watershed and a traditional division of land

Activity 2: Kaha wai Survey (Freshwater Zone) (50 minutes)

While taking a closer look at Kamananui Stream, students will investigate the resources found in part of the *kai*, the zone that includes freshwater streams. Student teams will create transects to survey a particular section of the stream water and stream bank. A worksheet will help students record their observations. Educators will ask students to think of ways Hawaiians might have used and managed the resources we observed in the *kaha wai*.

Key Concepts: Water was one of the most important resources in an ahupua`a. The *kaha wai*, or freshwater zone, in an ahupua`a is host to an array of natural resources, including animals that Hawaiians harvested as part of their diet and plants that had many uses. Some animals that can be found in Kamananui Stream include *o`opu* (native gobies) and *`opae* (native shrimp). Important plants growing near ocean lowlands include coconut trees and *hau*. Maintaining a clean stream upland helps keep this part of the stream healthy.

Objectives: Students will be able to...

- Describe the natural resources observed in and near the stream
- Give an example of how Hawaiians managed freshwater resources in the *kaha wai*
- Describe one way the *kaha wai* is different than another zone.

Activity 3: Water Management (at the *muliwai* or estuary) (50 minutes)

Students will participate in a role-playing game to manage water in an ahupua`a. A water distribution game will require students to prioritize the use of fresh water to complete tasks needed to survive in Waimea hundreds of years ago. The activity encourages stewardship of the *muliwai*, or estuary, by providing an opportunity for students to plant native plants. Students must conserve enough water during the distribution game to end by providing much needed water to the newly planted native species.

Key Concepts: In Hawaiian tradition, people depended on the responsible use of water and everyone took an active part in maintaining and conserving water. Strict rules governed the responsible use of water to make sure enough water was available for daily water distribution. Water managers coordinated the use of water throughout the ahupua`a, from upland areas to the lower elevations like the *kai*, or sea and nearby areas. Today at Waimea, a healthy watershed continues to provide a healthy environment for plants and animals.

Objectives: Students will be able to...

- List at least three Hawaiian practices that required freshwater
- Describe one way water was managed in Hawaiian tradition
- Give one example of how we can help give back to the *kai* zone and take care of water, or *E mālama i ka wai*

Conclusion

Students have had a special opportunity to explore part of the *kai* zone in the ahupua`a O Waimea, including the freshwater stream and the estuary. They have learned about the plants and animals found in freshwater. They have learned about how Hawaiians managed water so that everyone had what they needed. When they leave Waimea, we hope that each student will remember to *E mālama i ka wai*, take care of the water.

Pre-Visit Checklist:

- ✓ Preview the Field Trip Site: If you would like to arrange to see the activity sites before your field trip, please call ahead to arrange a free visit to Waimea Valley. Call 638-7766 and ask for the Education Department.
- ✓ Confirm Field Trip Date: Sign and return confirmation letter to verify that the date noted on your Confirmation Letter matches your date. If there is a discrepancy, please call the number listed above.
- ✓ Organize Groups: Divide students into two groups of equal size before leaving school. Please advise us ahead of time if either group exceeds 25 students.
- ✓ Prepare Chaperones: We require one adult chaperone for every ten students. Prepare Chaperones by explaining to them their roles and responsibilities. **See attached "Chaperone Letter" that can be sent out ahead of time.**
- ✓ Prepare your students: After reviewing Safety Concerns on page 5, please take a few moments to tell your class about the field trip and review proper field trip behavior. We've included reminders in the attached "Letter to Parents," but it is helpful to review the following points with students as well:
 - Lunches:** Students must carry their own lunches in a backpack. Remind students to pack lightly (no heavy plastic containers).
 - Make Nametags:** Students, chaperones, and teachers should all be wearing nametags
 - Water Bottles:** Each person must bring a full water bottle.
 - Clothing, etc.:** The weather is unpredictable in Waimea Valley, dress accordingly.
 - Shoes:** Students must wear closed-toe shoes (no slippers).
 - Mosquito repellent:** Students who are bothered by mosquitoes may wish to bring repellent along.
- ✓ Prepare Parents: Send home attached "Letter to Parents" so families know how to prepare their children for the day of the field trip.
- ✓ Organize Field Trip Supplies:
 - **Trash Bags:** Bring garbage bags to collect lunch litter. We pack in and pack out lunch trash.

Safety Concerns:

Many of the day's activities will take place in the estuary's environment. Please be aware that students will be exploring an area that includes water, mud, rocks, and other elements found in nature, all of which can be unpredictable depending on weather. Our educators will review the rules for these areas before students are allowed to explore. Students who fail to follow safety rules will be asked to remain in designated areas.

The above information is presented to inform you of possible safety concerns and to help you prepare your class for a safe, enjoyable visit. Our staff and volunteers are well trained and prepared to handle most emergencies. First aid kits and communication radios are close at hand at all times. Please don't hesitate to call if you have any questions or concerns with regard to this information.

Sample Letter to Parents

Dear Parent,

On _____, our class will be visiting Waimea Valley to participate in the *E mālama i ka wai* school program. . Students will have the rare opportunity to investigate the dynamic watershed of Waimea. While exploring from Kamananui Stream to the estuary, students discover the zones of an ahupua`a and take a closer look at the resources found in fresh water. A water management game will help students better understand that, in Hawaiian tradition, people depended on the responsible use of water and everyone took an active part in maintaining and conserving water.

On the day of the field trip, you can help ensure your child has an enjoyable day by sending your child to school on time and by making sure your child has the following:

- 1. A backpack filled with the following items:** (Your child will be carrying this filled pack on his/her back for much of the field-trip. Please do all you can to keep items light-weight).
 - A full lunch and drink
 - Raingear
 - A cap or hat
 - Mosquito repellent
 - A full water bottle (in addition to the drink in lunch)
- 2. Clothing that can get dirty**
- 3. Closed-toe shoes that can get muddy**

We look forward to a day filled with fun and discoveries in the great outdoors. Please call the school or Waimea Valley (638-7766) if you have any questions about the field trip.

Sincerely,

Sample Letter to Chaperones

Dear Field Trip Chaperone,

On _____, our class will be visiting Waimea Valley to participate in the ***E mālama i ka wai*** school program. I'd like to thank you for donating your time and effort to make sure we could take this trip.

Here's a general idea of what you can expect:

- This field trip involves a lot of walking. **Plan to get dirty.** Wear clothes and shoes that can get muddy.
- The entire field trip will be outdoors. Please be prepared for rainy or sunny weather and **bring a water bottle** to keep hydrated.
- Prepare a lunch for yourself that can be transported in a backpack. (Do not bring coolers, heavy containers, etc.)
- Once we arrive we will be given an opportunity to visit the restrooms before our adventure begins.
- Students will be separated into their groups and field guides will walk them to their estuary site.
- We will all re-group at lunchtime, and return to the Visitor's Center in time for one more bathroom break before boarding the bus.

It is important that you help facilitate a good field trip by ensuring proper behavior throughout the tour so that the guides can deliver a quality educational program.

If you have any questions, please feel free to ask me! Thanks again for donating your time and effort to make this trip a success!

Sincerely,

Vocabulary:

Ahupua`a: A Hawaiian land division that runs from the mountain to the sea and contains all the resources needed to sustain a community

Brackish: A mix of fresh water and salt water.

Invasive: An organism that is brought to an area, and has the potential to out compete native organisms.

Kaha wai: Fresh water zone of an ahupua`a, including the *muliwai* and streams

Kai: The sea and the area nearby, including *kaha wai*, or freshwater streams, and *muliwai*, or estuaries. (Students will be working near the stream and estuary.)

Kula: Plains and fields

Luna wai: Manager of daily water distribution in traditional ahupua`a management

Muliwai: An estuary; where fresh water meets salt water; part of the *Kaha wai*

Natural Resource: An element of the natural world that is used by humans.

Native: An organism that evolves in an area on its own.

O`opu: Native freshwater fish

`Opae: Native shrimp

Uka: Mountains and uplands

Wai: Water

Watershed: An area that drains water from the land into a larger body of water, such as a stream, pond, estuary or ocean. Waimea's watershed begins at the tops of the Ko`olau Mountains and empties into Waimea Bay.