Building Community Capacity Through Education & Outreach to Address Land-Based Pollution in Maunalua Bay

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MĀLAMA MAUNALUA

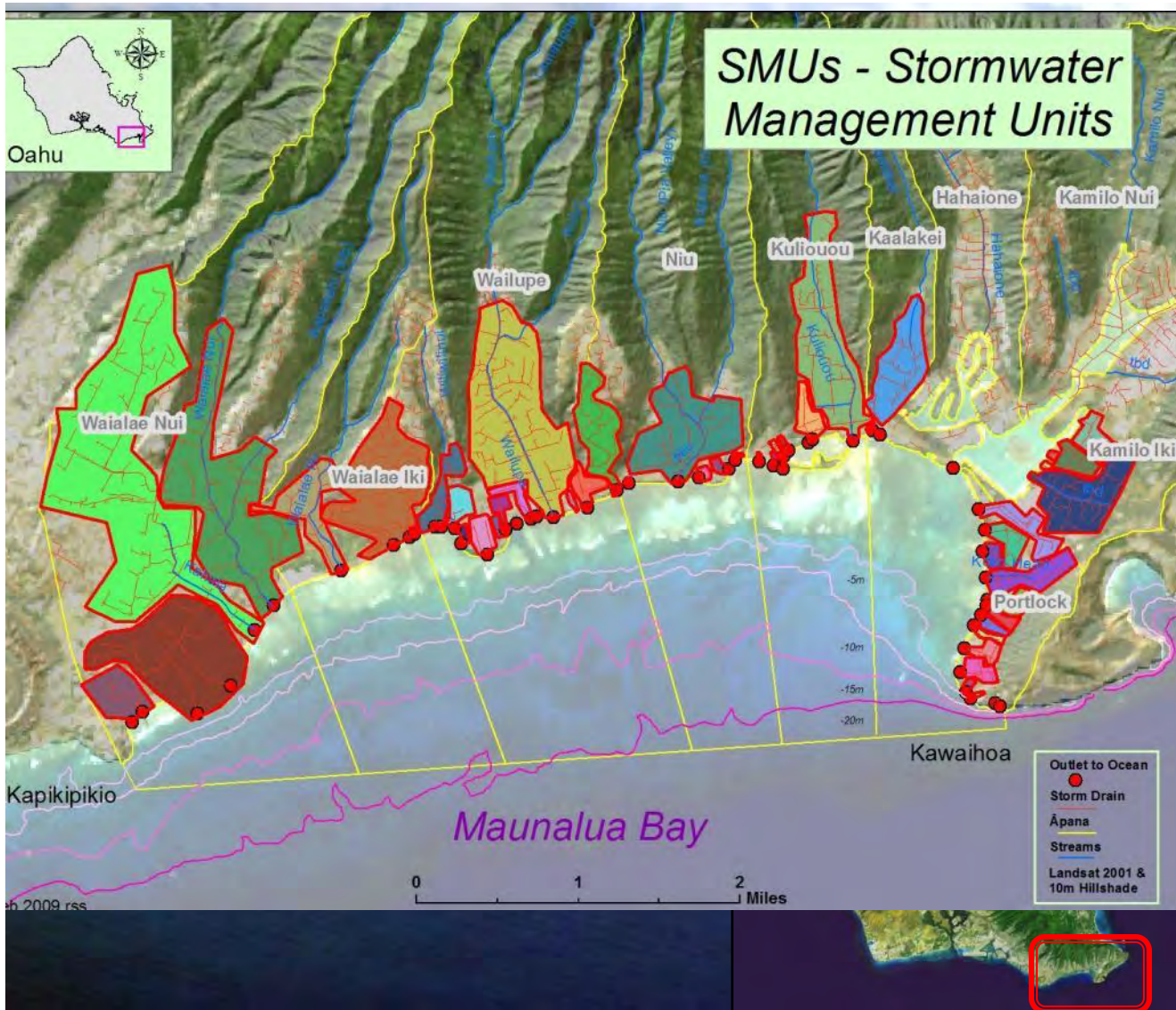
Sea Grant
University of Hawai'i

Hawaii CZM Program
Coastal Zone Management

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

Maunalua Bay
Oahu, Hawai'i

- 28 Sq. mi. area
- 7+ Miles of Shoreline
- Urbanized (60,000 residents)
- 10 Streams
- Plumbed, Highly Impervious Watersheds



Three Primary Threats

What the Community Has Learned

land-based sediment and pollution is killing the Bay

Small, urbanized watersheds with high percent impervious cover = Efficient delivery system.

Invasive alien algae thrives in/ holds sediment

Unsustainable harvesting reduces ability of grazers to manage algae.

EVERY DROP COUNTS

Workshops for Industry and Community

Strategy to reduce land-based pollution in Maunalua will focus on site management.

✓ Commercial Centers

✓ Multi-family Residences

✓ Single-family homes

EVERY DROP COUNTS

Demonstration Projects

Looking to partner with local agencies, schools or landowners to install highly visible demonstration projects

Example: Kaiser High School Bioretention (Rain Garden/ Swale)

Project Objectives:
Partner with Mālama Maunalua and the National NEMO network to conduct informative workshops and develop other educational resources for the community.

Accomplishments

- NEMO Scoping Meeting
- NEMO-U007 Conference
- Rain Garden workshop
- Demonstration rain garden (not funded by CZM grant)
- Site Plans for Kaiser High School.
- Handbook for a Bay Friendly Home (in progress)

NEMO Scoping Meeting

- Initial Scoping Meeting and Discussion gathered partners together to learn more about the National NEMO Network with the Network Coordinator, Dave Dickson from Connecticut.
  Present were representatives from:
  - CZM
  - UH (Sea Grant & CTAHR)
  - SRGII
  - EPA
  - ACOE
  - CCH
  - MM
  - Hui O Koolaupoko
  - DOH

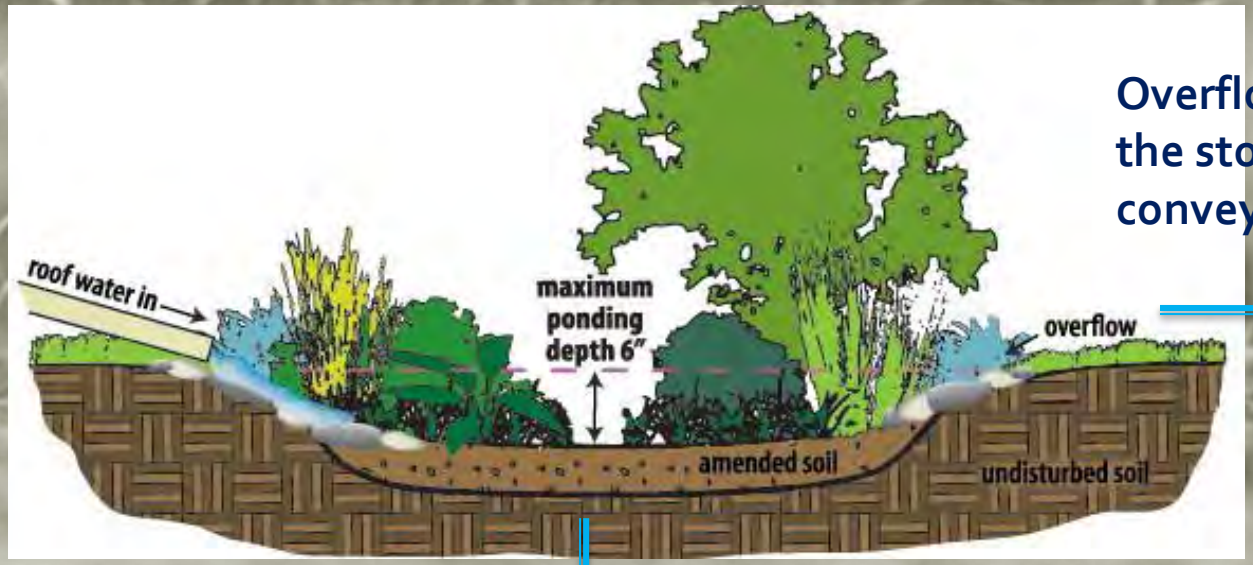
NEMO-U007

- Attended NEMO-U Conference in Maine and Presented on work with Malama Maunalua.
- Great opportunity to network and learn about innovative strategies for watershed management.
- Connected with Rob Emanuel & Derek Godwin of Oregon Sea Grant who offered to come to Hawaii to help us conduct a rain garden workshop.

Capacity Building Workshop

What is a Rain Garden?

Sunken landscaped area that captures runoff from an impervious surface



Source: Oregon Rain Garden Guide

Overflows re-enter the storm water conveyance system

Water soaks into the ground

Soil microorganisms and plant roots break down pollutants.

Rain gardens keep our watersheds healthy by…

- Reducing flooding by absorbing rain water from hard surfaces
- Filtering oil, grease, and toxic materials before they can pollute streams, lakes, and bays
- Recharging roundwater aquifers by allowing water to soak into the ground

Rain Garden Workshop

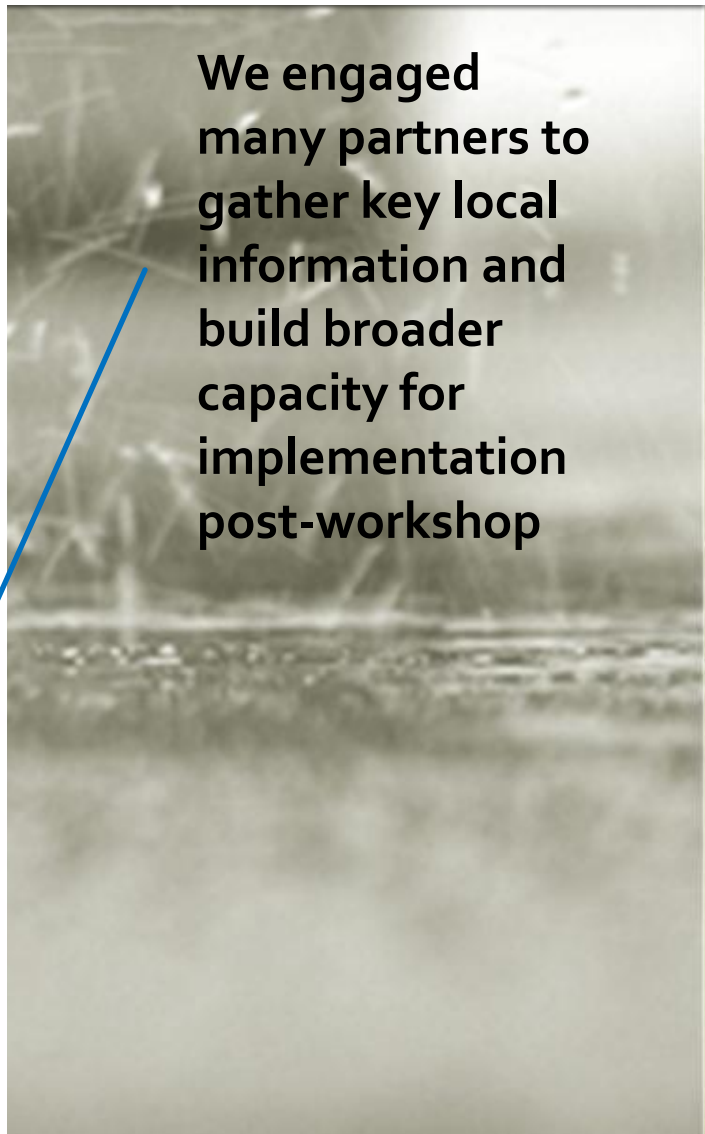
38 PARTICIPANTS (With 3 Canceling Last-Minute) Including Representatives From:

- O`ahu RC&D
- UH CTAHR
- Hawaii Dept of Health
- Master Gardener Association
- American Society of Landscape Architects
- Private Landcsape Architecture Firms
- Hawaii Dept of Transportation
- Hawaii Coastal Zone Management Program
- UH Sea Grant
- Malama Maunalua
- Honolulu Botanical Gardens
- Landscape Industry Council of Hawaii
- NOAA
- The Green House
- Kaulunani Urban & Community Forestry Program
- University of Hawaii – Facilities and Grounds
- Hui o Koolaupoko
- Honolulu Dept. of Env. Services (Canceled)
- Ho'omau Ke Ola

Rain Garden Training Agenda

Thursday March 24th, 2011
NOAA Marine Sanctuary Conference Room
6600 Kalaniana`ole Hwy, #300, Honolulu, HI 96825

8:30 AM	**Registration and Sign-In**
9:00 AM	**Welcome and Introductions**
9:20 AM	**Rain Garden Overview** What is a rain garden, how does it function, and why are they important?
9:50 AM	**Rain Garden Site Assessment Part I** Learn what it takes to assess the site and create a preliminary design.
10:10 AM	**Break** and gather outside and head to site
10:25 AM	**Rain Garden Site Assessment Part II** Discuss site conditions and percolation test.
11:15 AM	**Rain Garden Design** Locate and size rain gardens based on soils, rainfall, surfaces and site characteristics. Discussion of local precipitation patterns.
12:00 PM	**Lunch**
12:45 PM	**Design - Construction** Design issues and construction techniques and how they vary
1:45 PM	**Group Rain Garden Design Exercise** Draw a rain garden plan using the site assessment information.
2:30 PM	**Plants** How to choose plants based on site conditions, desired characteristics – "right plant, right place"
3:00 PM	**Local Plants and Invasive Species** Local plants that work and invasives that don't
3:30 PM	**Break and Group Rain Garden Design Exercise** Choose plants and plan for maintenance for your rain garden
4:00 Pm	**Operations and Maintenance**
4:15 PM	**Presentations, Discussion, Wrap up** Group presentations and discussion, train-the-trainer follow-up plans (let's build one)
4:30 PM	**Questions & Next Steps** for adapting this for Hawaii
5:00 PM	Travel home safely!



We engaged many partners to gather key local information and build broader capacity for implementation post-workshop

Workshop Elements

- Stormwater Management/LID Introduction
- Rain Gardens Overview
- Site Assessment (hands-on demos)
- Design (hands-on group exercise)
- Plant Selection
- Operation and Maintenance

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Hawaiian Rain Garden Plant List

Dry Conditions											
	Hawaiian Name	Scientific Name	Type	Distribution	Moisture					Climate/ Height (ft)
					Dr	Mo	SW	PW	Su	
	Akia http://nativeplants.hawaii.edu/plant/view/Wikstroemia_uva-ursi	*Wikstroemia uva-ursi* http://plants.usda.gov/java/profile?symbol=WIUVU	sprawling shrub	endemic	x				x	Dry 4 TO 6
	ilie`e http://nativeplants.hawaii.edu/plant/view/Plumbago_zeylanica	*Plumbago zeylanica* http://plants.usda.gov/java/profile?symbol=PLZE	sprawling shrub	indigenous	x					Dry 1
Mixed planting w/akia 	Hinahina http://nativeplants.hawaii.edu/plant/view/Heliotropium_anomalum_argenteum	*Heliotropium anomalum* http://plants.usda.gov/java/profile?symbol=HELIO3	small shrub	endemic	x					Dry 1

Moisture **Dr** Dry **Mo** Moist **Sw** Seasonal Wet **Pw** Perennial Wet **Su** Tolerate Submerged conditions

Wetland Status: **OBL** Obligate Wetland *almost always occur in wetlands* **FACW** Facultative wetland *occur in wetlands 67-99% of time* **FAC** Facultative *equally likely to occur in wetlands or non-we*

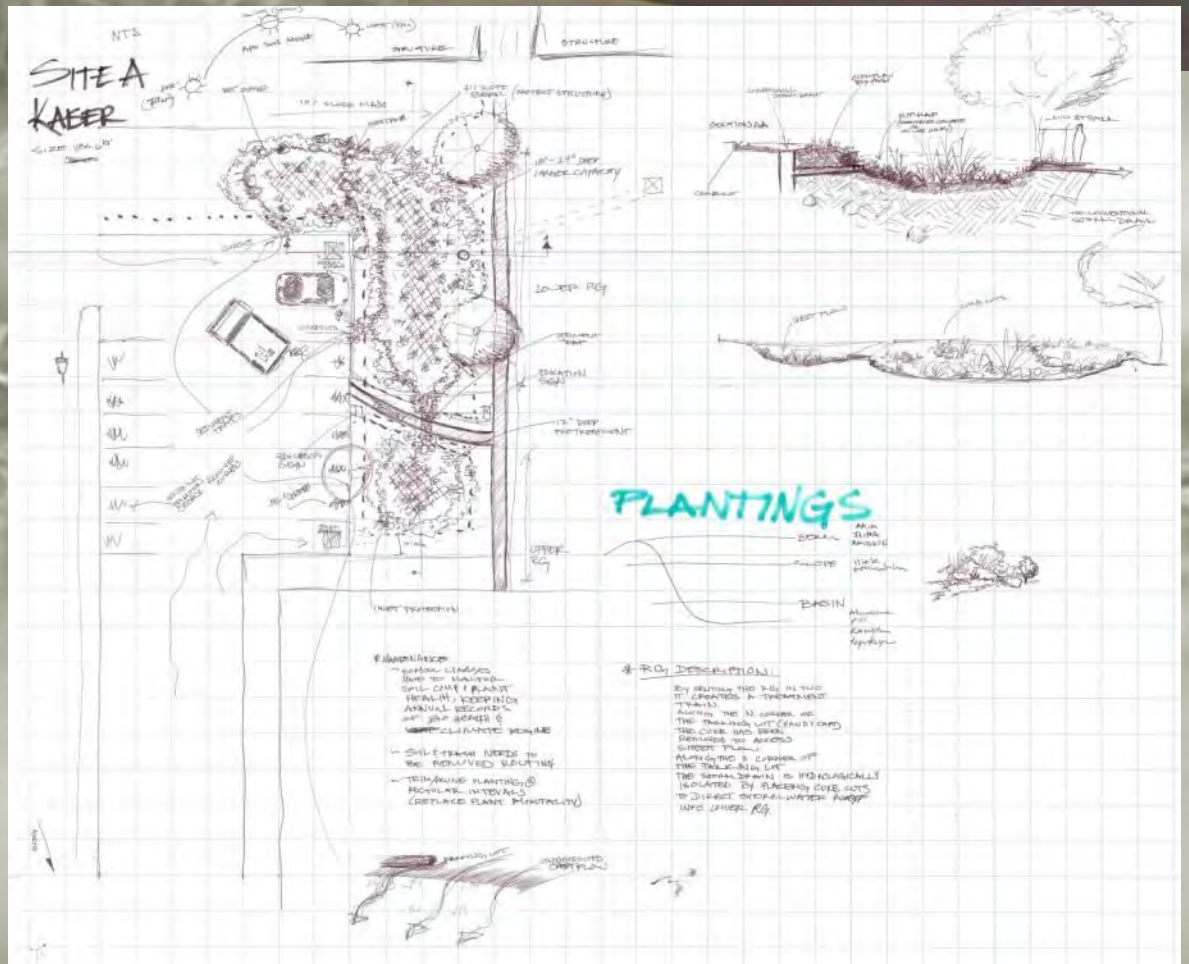
Demonstration Rain Garden

Taking advantage of our expert guests, we built a demonstration rain garden at He`eia State Park on the day following the workshop (not paid for by CZM/ORMP funds.

Participants applied the training and gained hands-on experience, a crucial element in the learning process.

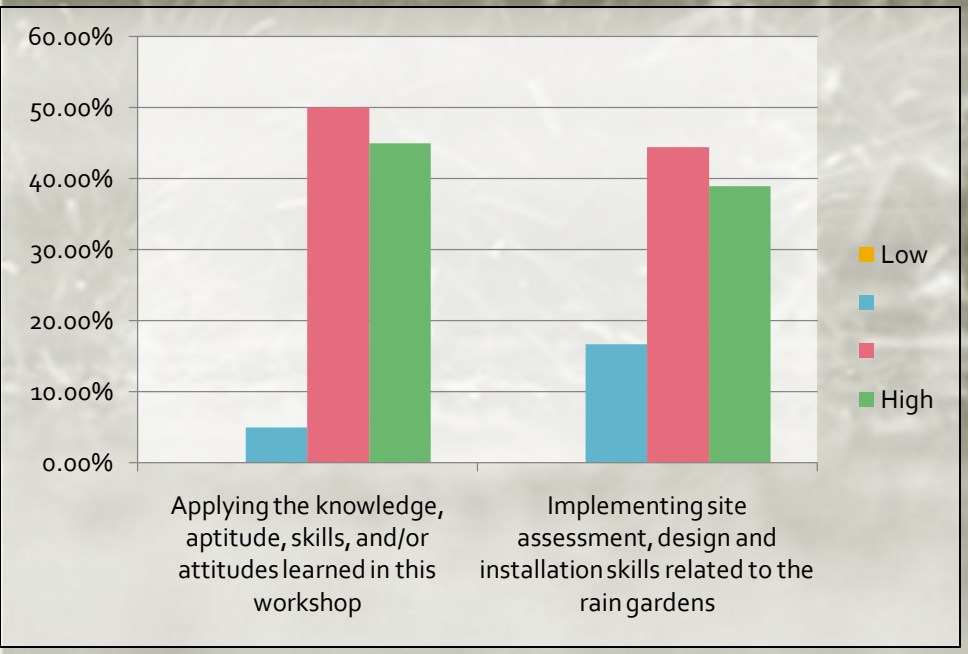
Maunalua Bay Outcomes

- Three Malama Maunalua staff were trained
- Participants at workshop used sites at Kaiser H.S. as hands-on example for site design portion.
- Resulted in four possible designs
- Currently Malama Maunalua is working with Kaiser to implement a rain garden/ bioretention project (install summer '11)
- Partnering with PBR Hawaii, New Hope Hawaii Kai and possible Rotary Club of Hawaii Kai

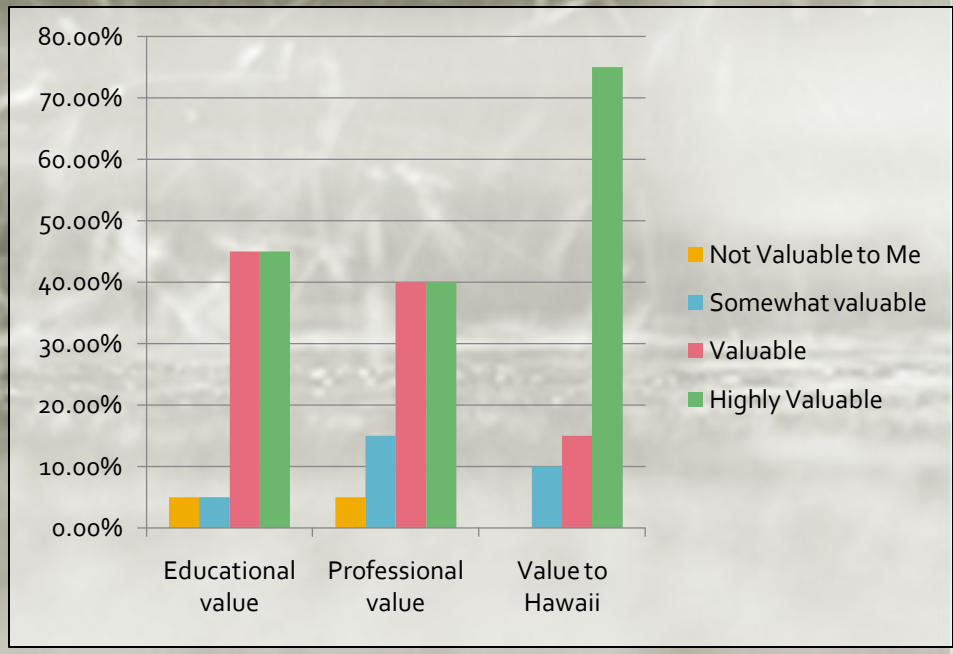


Workshop Evaluation
(n=20/ 52% response)

CONFIDENCE LEVEL AFTER THE WORKSHOP

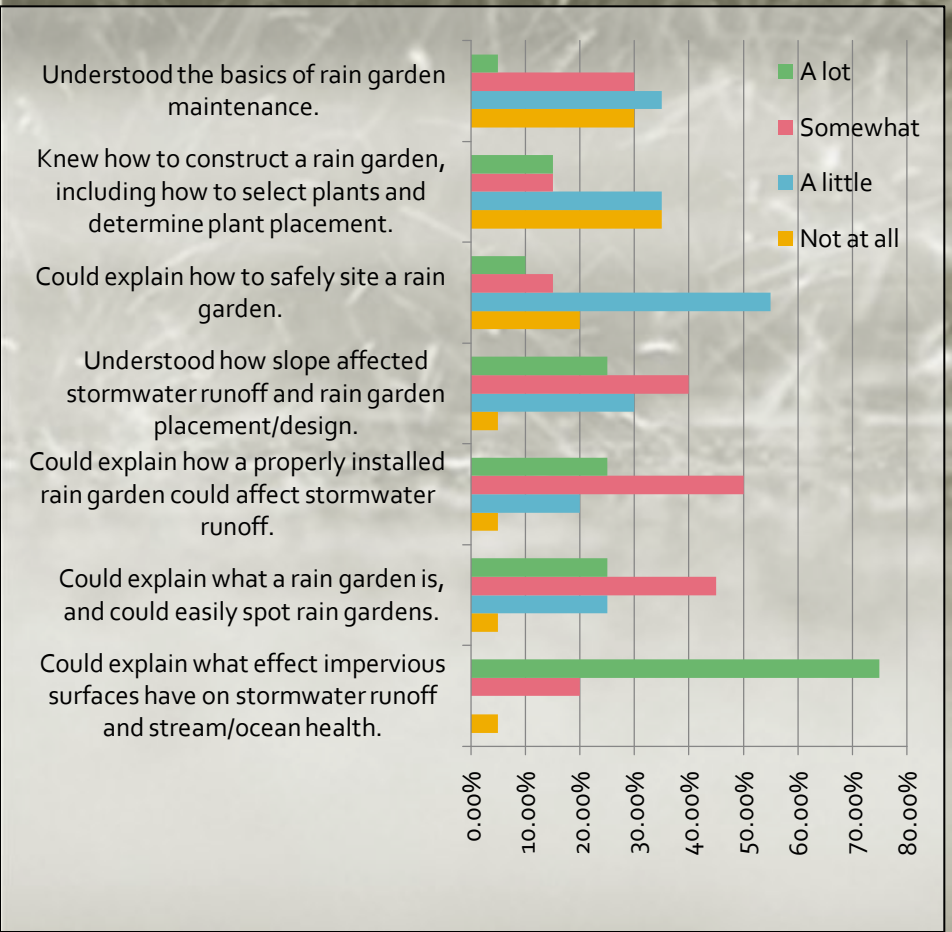


THE OVERALL VALUE OF THE WORKSHOP

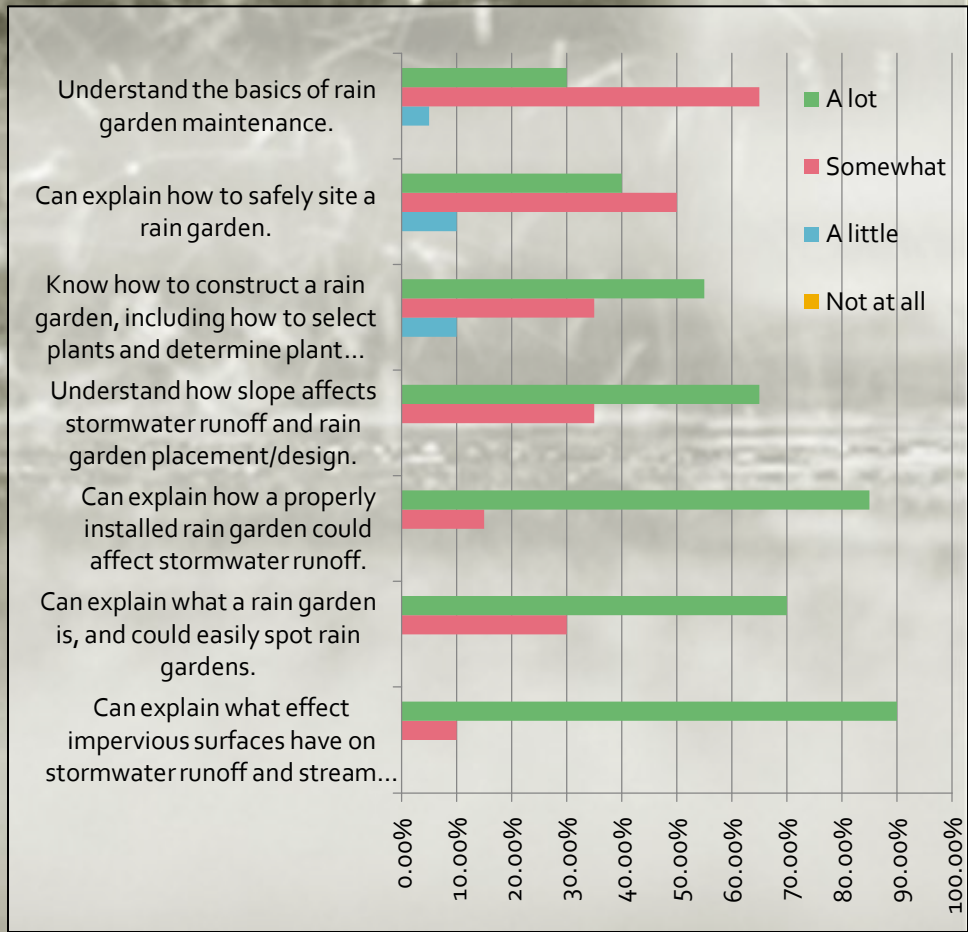


Knowledge and Comfort with Material Before/Since

BEFORE ATTENDING THE WORKSHOP:



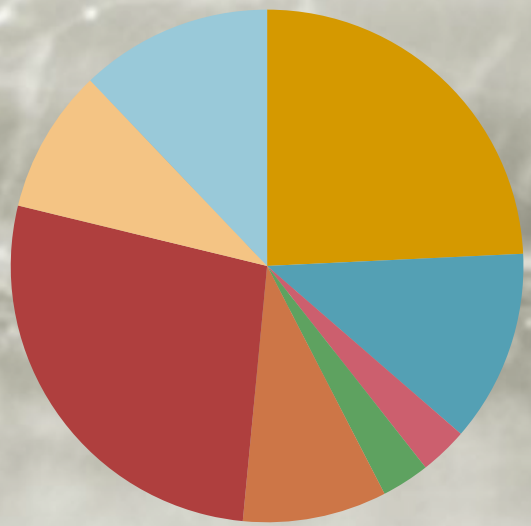
SINCE ATTENDING THE WORKSHOP:



Rating the Workshop Topics

MOST USEFUL OR INTERESTING TOPICS

LEAST USEFUL OR INTERESTING TOPICS



Participant Feedback

"I thought the Rain Garden workshop was great. That's exactly the kinds of thing (i.e. training, skill development, knowledge sharing) I believe is going to need to be done more if the community hopes to restore Maunalua Bay, and other coastal regions."

"I just wanted to say that was an awesome class. Thank you, thank you!"

"I'm so glad I went to the Rain Garden Workshop. Thanks so much to Jolie Wanger and folks who put it together. I'm all revved up now to use their materials to put together an advanced training workshop for Master Gardeners."

"Thank you for putting together the seminar. It was very informative. Presentation was very useful and practical."

"Thanks for this great practical learning experience. We need more classes like these to get Hawaii up to speed on stormwater management."

"I liked the resource on the various native plants developed for the workshop."

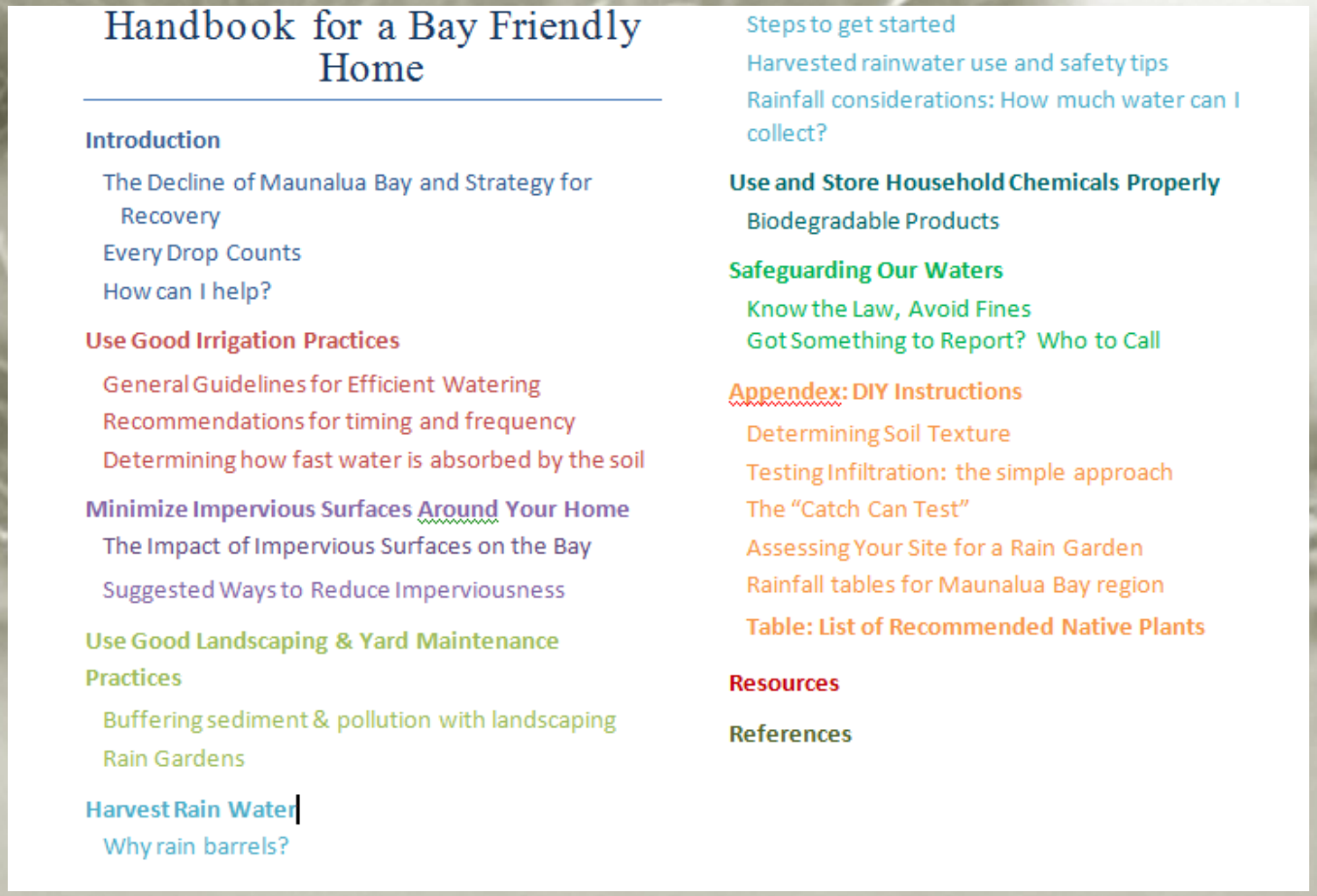
Handbook for a Bay Friendly Home

Lastly,

Working on a publication for the Maunalua resident target audience.

Detailed reference manual for best practices around the home to reduce runoff and land-based pollution.

Should be printed in June.



Handbook for a Bay Friendly Home

Mahalo!

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