



# ZERO WASTE REVOLUTION

2015-2016 School Year

## MONTHLY REPORT • APRIL

### Community connections deepen

April was a month of connections between organizations, across the island, past to present, and present to future.

Early in the month, Ms. Mindy was invited by an former client, **Dr. Patti Isaacs**, to visit a new farm at the very end of Waianae Valley Road recently donated to **Ho'omau Ke Ola**. This Leeward social services agency is well-known for its innovative approach to substance abuse treatment based on Hawaiian cultural and spiritual values.

Dr. Isaacs completed the practicum for her doctorate in clinical psychology at the State Hospital in Kaneohe. Her dissertation was entitled *Aloha 'Aina: Planting the Seeds of Recovery in Persons with Severe and Persistent Mental Illness*. Essentially, Patti worked with patients to expand a small garden into a thriving organic farm. A grant awarded by the USDA included funding for a large vermicomposting system, compost tea brewer, and contract with Ms. Mindy to provide equipment installation and training. The reparative and therapeutic aspects of the project were unprecedented, and Patti was absolutely sold on the value of vermicomposting and biological soil management as well. (Unfortunately, the project failed within a few years, due largely to systemic mistakes that have been corrected.)

Fast forward to today, and Dr. Isaacs heads up an ambitious project in Waianae, with 60 clients currently in residential rehab and 1,001 acres of farmland that includes evidence of lo'i and heiau dating back to pre-contact days. Patti is driven by her knowledge that working the earth can heal even the most hurting and damaged of individuals. She knows, too, that treating the soil with natural inputs such as compost and vermicast, and using vermicast tea as an alternative to chemical fertilizers and pesticides is the only way to truly *malama 'aina*. To see a video of Patti describing this impressive undertaking and enjoy a virtual tour of the Ho'omau Ke Ola farm, check out <https://www.youtube.com/watch?v=60zjjVYae8I>.

Those 60 residents prepare and eat breakfast, lunch and dinner and they create food waste – they need to know how to recover that resource to enrich their soil. That's where Lanikai Elementary PCS was able to lend a hand.



*Dr. Patti Isaacs and staff at the State Hospital in Kaneohe, May 2009, with one of three Pipeline bins whose productive worm colonies supported and nourished their organic farm.*

One of the key lessons learned at Lanikai is that every project *must* start with a waste audit. Lanikai School assisted by loaning buckets and a scale for the simple procedure, as well as inviting one of their staff members, **Marlen Sommers**, to visit our campus to learn hot composting and the basics of vermicomposting.

Once waste data has been collected, Ho’omau Ke Ola managers can make informed decisions on how to design their composting operation to both meet their current residential inputs and to build out their processing capacity in modules as the volume of agricultural waste increases. The former strategy of purchasing as much equipment as the budget allows is no longer recommended. Over-reaching fatally strains infrastructure and staff and leaves worm colonies struggling.

As we have also learned at Lanikai, keeping precise data on all operations is empowering...“if you don’t measure it, you can’t manage it!” Creating protocol to track productivity and efficiency is certainly as important for a 1,001-acre farm deep up a valley in rural Waianae as it is for a schoolyard garden in the suburbs.



*Marlen Sommers from Hoo’mau Ke Ola in Waianae came out to Lanikai for some basic training on vermicomposting and hot composting technologies. Ms. Mindy will be working with this organization over the summer to set up Lanikai-style biological waste management systems.*

### Visit from Rep. Lee & Surfrider Foundation

On April 7th, Lanikai resident **State Representative Chris Lee** made his second visit to Lanikai’s campus this year, this time accompanied by three VIPs from the **Surfrider Foundation**. Founded in 1984, the Surfrider Foundation is a non-profit advocacy organization dedicated to the protection and enjoyment of the world’s oceans, waves and beaches. The alliance maintains over 50,000 members and eighty chapters worldwide.



*Ms. Espie introduces the Mulberry Gang worms to (left to right) State Rep. **Chris Lee**, **Todd Cullison**, President of Lanikai School’s Governing Board, and **Rafael Bergstrom**, **Stuart Coleman** and **Ed Kertis** from the Surfrider Foundation, Oahu Chapter.*

The Oahu Chapter’s mission is to improve water quality, ensure the public’s right to beach access, reduce plastic marine debris, and work for responsible, ocean-friendly development on the island of Oahu. Waste issues directly effect ocean health, which is what put Lanikai School on the radar of this effective lobbying group.



“Lanikai is the model for waste management – all schools on Oahu should operate this way,” everyone agreed, and as Chair of the Committee on Energy and Environmental Protection, Rep. Lee is in a position to introduce legislation that could break through some of the barriers to expansion. He has promised to convene a meeting of interested parties over the summer to draft potential legislation for the next session.

## Hawaii Public Radio goes Zero Waste

Could the knowledge of Zero Waste management and the experience gained at Lanikai School be applied at a completely different venue? Ms. Mindy was invited to serve as an on-air host for Hawaii Public Radio's Spring Pledge Drive slated to start on April 6th and run until \$961,000 was raised, an estimated ten days.

She offered to Zero Waste the event courtesy of Lanikai School. The drive involves about 1,000 people from dozens of organizations who enjoy breakfast, lunch, dinner, two snacks, and an ocean of coffee and other beverages. With only a few purchases and a loan of reusables from Kahala Elementary, Lanikai had enough equipment and supplies to set up three Separation Stations, position bokashi buckets that would ferment in the parking garage for a few weeks afterward, and gave everyone instructions on how to sort and separate.

Even among educated and environmentally-aware adults, mindlessly discarding everything in a rubbish can is a hard habit to break. It took several days and consistent reminders for even the staff to comply with the sort-and-separate system. Zero Waste is a very foreign concept – it requires no less than rewiring neurons. In any case, the new regime was a big hit and got many mentions on the air, as well as expressions of gratitude and compliments from volunteers, local luminaries coming in to pitch, and HPR staff. Mr. Noh, Mr. Sawyer, Ms. Espie and Mr. Tom represented Lanikai and did their stint on the phone bank – plus signed themselves up as HPR Sustaining Members.



Separation Stations presented a whole new experience for HPR volunteers, used to 100% disposables at similar events.



These colorful IKEA plates got a heavy workout during the HPR event and can now be highly recommended for classroom party sets.


Hawaii Public Radio Celebration 2016 Spring Pledge Drive • A Zero Waste Event Courtesy of Lanikai School Wednesday, April 6th – Saturday, April 15th													
LANDFILL DIVERSION REPORT													
	Wed 4/6	Thurs 4/7	Fri 4/8	Sat 4/9	Sun 4/10	Mon 4/11	Tues 4/12	Wed 4/13	Thurs 4/14	Fri 4/15	TOTAL	average	peak
Edible food	0	15 lbs	20 lbs	0 lbs	0 lbs	75 lbs	40 lbs	30 lbs	0 lbs	30 lbs	210 lbs	21 lbs	75 lbs
Food Waste (includes coffee grounds)	21 lbs	20 lbs	21 lbs	22 lbs	16 lbs	26 lbs	25 lbs	25 lbs	30 lbs	21 lbs	227 lbs	22.7 lbs	30 lbs
Coffee/cold drink cups	92	89	90	92	49	82	99	82	91	86	852	85.2	99
Large Plates	38	42	44	45	13	46	41	46	44	24	383	38.3	46
Small Plates	52	81	122	61	63	70	91	76	69	75	760	76.0	122
Bowls	0	25	0	0	0	0	0	0	0	0	25	2.5	25
Forks	56	58	90	78	57	80	78	71	72	77	717	71.7	90
Spoons	1	2	1	3	3	7	3	2	4	4	30	3.0	7
Knives	2	0	9	29	2	8	7	8	16	8	89	8.9	29
Cardboard/paper	4 lbs	4 lbs	3 lbs	2 lbs	2 lbs	2 lbs	2 lbs	2 lbs	3 lbs	4 lbs	28 lbs	2.8 lbs	4 lbs

Total food recovered was 437 pounds. Two hundred and ten pounds was surplus donated to Aloha Harvest for distribution to Hawaii's hungry. Aloha Harvest was also kind enough to take all the big aluminum and plastic serving containers for re-use. Two hundred and twenty-seven pounds was prep waste (e.g. pineapple rinds), post-consumer waste (plate scrapings) and coffee grounds. This material was collected in bokashi buckets which were transferred nightly to an approved site in the parking garage where the food can ferment.

After a few weeks, the pickled bokashi pre-compost can be removed and when buried, will break down and make an excellent nutrient-rich soil amendment. Total single-use items diverted – cups, plates, forks, etc. – added up to 2,856 pieces. Cardboard and limited paper removed to shred for worm bin bedding totaled 28 pounds. HPR contracts the shredding of pledge sheets to professionals, who we presume also responsibly recycle that material. Any stray HI-5 cans and bottles were sorted for usual collection/redemption.

What was left was paper napkins (Dept of Health issues), creamer containers, plastic wrapping and containers associated with food service, backs of name tags, plastic and styrofoam food/drink packaging brought in from the outside by individuals.

Landfill diversion rate is estimated at 90% – excellent for a first-time Zero Waste experience! With more time and preparation for the Fall Pledge Drive, we can do even better.



Forging a solid relationship with Hawaii Public Radio pays off in many ways. Ms. Mindy was asked to be a guest on *The Conversation* and *Town Square* to talk about recycling issues and Noe Tanigawa offered to produce a story about Lanikai School's Zero Waste achievements next school year.

It's catching on! **Friends of the Library** called with a request to assist with Zero Waste for their Book Sale in June.

## Oahu Food Waste Summit

Nicole Chatterson, the RISE (Rewarding Internships for Sustainable Employment) Program Manager of Kupu, announced the first **Oahu Food Waste Summit** for April 21st, to be held at the Kupu offices in downtown Honolulu. The purpose of the meeting was, 1) “to continue to nurture the network of movers and shakers focused on healthy food systems/food recovery, and 2) to connect our activities here in Hawaii with the food recovery conversation at the regional and national levels.”

Ms. Espie suggested to Nicole that the Summit should be held instead at Oahu’s single most successful food recovery site, Lanikai School, with a tour offered afterward, and Nicole immediately agreed. The timing of the Summit was to accommodate **Wendi Shafer**, coming in from San Francisco. Wendi is the Pollution Prevention and Sustainable Materials Management Coordinator with the US Environmental Protection Agency, Region 9.

The US E.P.A. and USDA have recently announced the first ever US food waste reduction goal, which is a 50% reduction by 2030. Hawaii also has an overall waste reduction goal of 70% by 2030. The Summit hoped to focus on ways to leverage these

goals into action and tangible results using the collective power of our various projects and interests.

Wendi was known to Ms. Mindy and Ms. Espie as our contact for the national Food Waste Reduction Challenge. Data for 2015 was recently submitted, and Wendi suggested after the Summit that we also compete for an award in the Narrative category, which we did before the end-of-month deadline.

With the exception of Ku’ulei Williams of Aloha Harvest, Ari Patz of Styrophobia, and a trio of UH students who formed a Food Recovery Network chapter to pick up surplus food on the Manoa campus daily and deliver it to IHS, most of the Summit attendees were people who do not actually *do* waste reduction projects. They are the “office people” of the movement – academics, bureaucrats, employees of government agencies, executive directors and staff of non-profits and associations, etc., who put up websites, track compliance, scrutinize policy papers, sit in on hearings, submit testimony, collect and analyze data, negotiate private/public partnerships, study legal briefs, organize and conduct meetings, write brochures, design marketing campaigns, and lobby legislators.



*Everybody who was anybody in the field of food waste reduction gathered at the Oahu Food Waste Summit at Lanikai School. Robyn Pfahl, Farm to School Coordinator, is in the center of the photo in the back row; Nicole Chatterson from Kupu is on the far left in the first row; Wendi Shafer from the EPA is the redhead on the right.*

While most of the Summit attendees would not have a clue what to do with a bucket of lunch waste, it is their professional positions, high-level expertise and experience that is essential to move food waste reduction from isolated small projects to public policy.

The take-away from the Summit was a rough plan to organize all the various local stakeholders in food reduction and create an advocacy entity under the umbrella of an existent non-profit. More meetings will be scheduled.

Among the 24 attendees, **Robyn Pfahl**, Farm to School Coordinator under the State Department of Agriculture, emerged as the person with the knowledge and authority to parse the dense bureaucracy and navigate the morass of procurement, civil service, and contract laws that make progress so difficult in the State of Hawaii.

Robyn stayed an extra hour for our post-Summit tour and was duly impressed with Lanikai's fully-functioning Zero Waste operation. She had some suggestions for moving forward and asked that we contact her over the summer to continue the discussion.

## School Garden Conference

The first **We Grow Hawaii** student-led garden conference was held on April 30th at the Sullivan Center at Iolani School. Sixth graders from the Green Team submitted an application to attend and were accepted to be presenters.

This got everyone thinking about how to describe Lanikai's Zero Waste program to others when we are off site. There are three major components to the operation: The first is to locate and collect resources including food scraps, paper, cardboard, and tree mulch. The second is to engage special recovery technologies such as worm bins, compost piles, and bokashi blasters. The third involves proper processing and harvesting of recovered resources, learning and understanding how best to use them. From our "waste" we make compost, vermicast, vermicast tea and other products to nourish plants, enrich the soil, and raise funds to support Lanikai's expanding garden program. Everything is interrelated and connected – an ecosystem. Lanikai School's *We Grow Hawaii* presentation was entitled "**How Zero Waste Creates Magnificent Gardens.**"

## Recovering surplus food to feed Hawaii's hungry

Wendi Shafer from the EPA made it clear that surplus food donated to needy people was the top priority for all food waste reduction projects and that it would be "weighted" much higher in calculating Food Recovery Challenge awards.

Because One Love Cafe is so efficient, Lanikai does not generate any surplus lunches. But what about on the other source of food on campus, our uber-productive extraordinary gardens? We grow far more beans, eggplants, squash, lettuce, kale, corn. etc. than we can use. A lot of nutritious food was left this year to sit on the vine, in the ground, go to seed, or end up in the green waste tumbler.

*Next year, let's get organized and pack a box of our beautiful fresh produce every week during the growing season for Aloha Harvest to pick up.*

Feeding Hawaii's hungry is a far better choice for our garden surplus than the compost pile.



*Green Team members Tiana Alfsen, Emma McDonald, Lily Bachl, and Ella Gimon check out the view from the lanai at the Sullivan Center during a break at the We Grow Hawaii Garden Conference at Iolani School.*

# How ZERO WASTE creates magnificent gardens

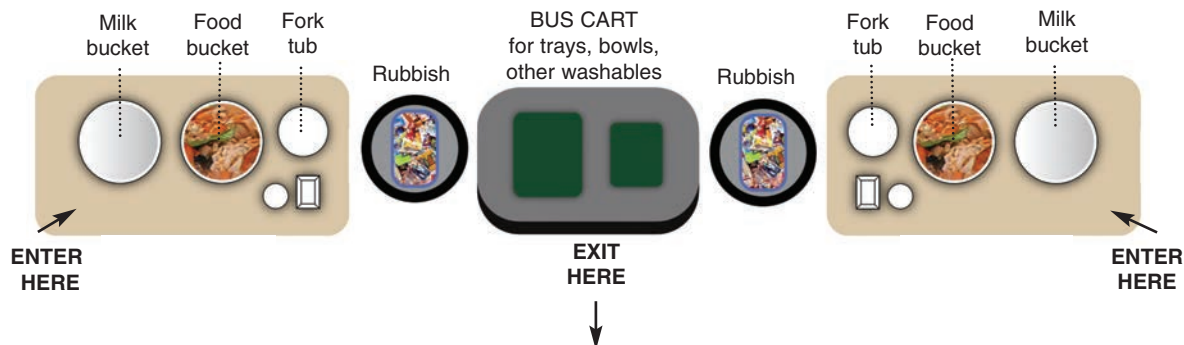
## Sort and Separate – COLLECTION IS CRUCIAL

The Zero Waste philosophy recognizes that there is no waste in nature – all discarded materials are recovered as resources for others to use. In practice, this means that all the energy and nutrients trapped in campus “waste products” are channeled away from the dead-end dumpster and put back into the cycle of life as soil or fertilizer. To begin this process, we first have to devise a reliable system for **collecting**.

## Collect Cafeteria & Kitchen Food Waste

Food waste is the most valuable of all resources at Lanikai School, and it is mostly generated at lunch. At lunchtime, we have a double-line **Separation Station** at the cafeteria (see diagram below) that is run by a team of three 6th graders under the supervision of Mr. Sawyer. This Zero Hero Activity is a community service requirement to complete 6th grade so everyone has to do it at least once for five days, one full week.

Prep waste from the kitchen is collected in Worm Food buckets by our lunch provider. She prepares fresh food so we have plenty of banana and orange skins, melon and pineapple rinds, potato peelings, and salad trimmings for our worm colonies.



## Collect Food Waste From All Locations

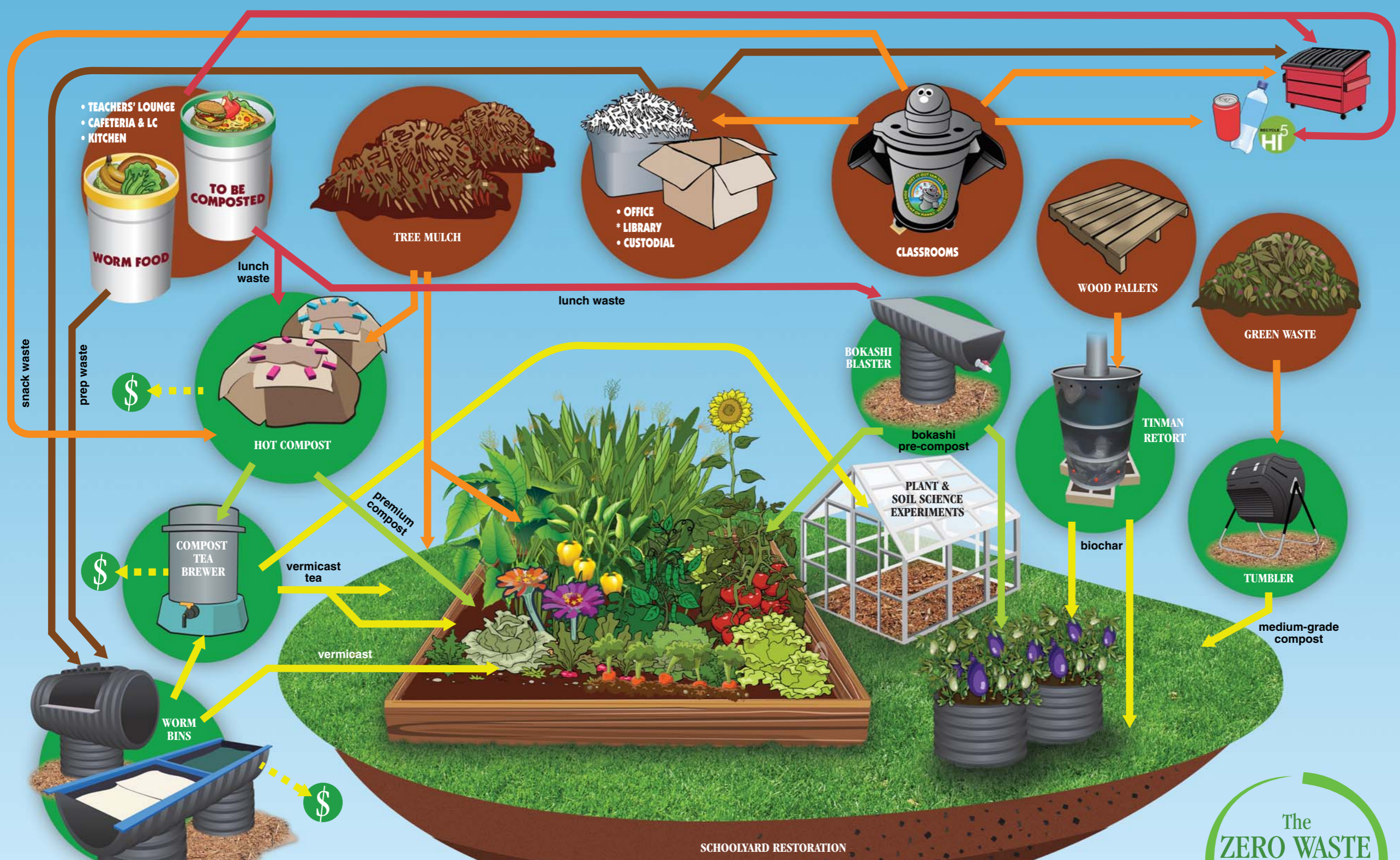
Kindergartners and 1st graders have their own modified Separation Stations at the LC. Lunch monitors collect this food and milk waste every day, too. **Sort-It-Out Sam** is our satellite recycling guy on duty to gather snack waste from eleven classrooms. At the end of the day, one student from each classroom – designated the Sort-It-Out Samurai – delivers snack waste to Sam’s Collection Station for consolidation. Food waste is also picked up daily from the Teachers’ Lounge.

## Collect Woody Materials – Mulch, Paper, Cardboard

To make soil and fertilizer from food waste, you must also collect **cellulose**, a carbon-rich constituent of wood. Neighborhood tree trimmers deliver truckloads of woody mulch for us to use in hot composting. Sort-It-Out Sam collects school paper daily. All kinds of cardboard boxes and more paper is rounded up from around the campus for sheet mulching and shredded for worm bin bedding and cover. Once you have assembled these key ingredients, the Zero Waste ecosystem can be set in motion....

**Open this fold-out page to see how it all comes together!**





• TEACHERS' LOUNGE  
• CAFETERIA & LC  
• KITCHEN

TO BE COMPOSTED

WORM FOOD

TREE MULCH

• OFFICE  
• LIBRARY  
• CUSTODIAL

CLASSROOMS

WOOD PALLETS

GREEN WASTE

lunch waste

lunch waste

snack waste

prep waste

HOT COMPOST

BOKASHI BLASTER

bokashi pre-compost

TINMAN RETORT

PLANT & SOIL SCIENCE EXPERIMENTS

biochar

TUMBLER

\$

\$

premium compost

vermicast tea

vermicast

medium-grade compost

WORM BINS

\$

SCHOOLYARD RESTORATION

Large boxes and heavy sheets of cardboard are buried under layers of mulch for soil restoration – this is called **sheet mulching**. Mulch is also often used directly on garden beds to protect the soil, reduce erosion, and retain moisture.

Sheet mulching under worm bins and other equipment mitigates mud and weeds. Smaller, softer cardboard is torn into bits to make worm bin bedding. Shredded paper is used for worm bed covering.

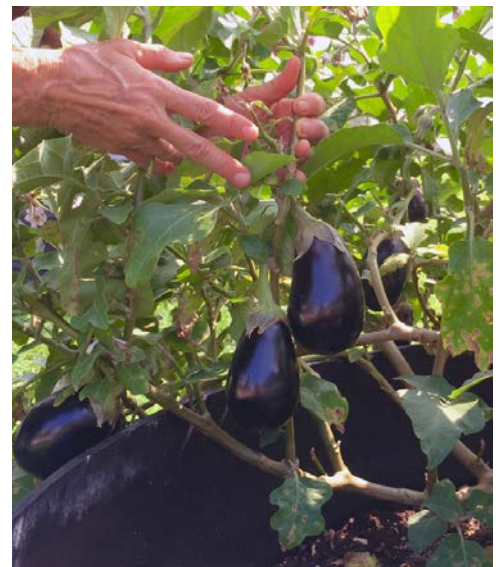
Biochar added to soil – especially when inoculated with vermicast tea – increases moisture retention and microbial habitat. Biochar sequesters carbon for thousands of years.

The  
**ZERO WASTE**  
Campus  
Ecosystem

LANIKAI ELEMENTARY  
Public Charter School • 2015-2016

*“Gardening SURE IS FUN when you have good soil!”*

**Parker Sawyer**



*This single plant produced well over 100 delicious eggplants before we lost count. When this photo was taken, there were 18 fruits and over 50 blossoms. It's still going strong!*





## The Mentor Tour

Lanikai's Zero Waste operation and astonishing soil creation program did not happen overnight. Its evolution has a long history going back many years before Ms. Mindy came to Lanikai School.

In March of 2005, **Betty Gearen** invited Waikiki Worm Company to present a lesson on vermicomposting for adults as part of a series of Sustainable Practices workshops that Betty had organized for the Sierra Club, held downtown at the YWCA. That first Worm Workshop was awful, but 40 people showed up, and it gave Betty the inspiration to create a school for green practices at her eco-friendly home in Pauoa. **The Green House Center for Sustainability** scheduled Saturday classes including – among many fun and useful offerings – organic gardening, rainwater catchment, soap making and natural cleaning products, paper making, organic pest control, growing medicinal herbs, building a solar oven, refining biofuel, vermiculture (taught by Ms. Mindy), and a class in hot composting presided over by a most remarkable woman, **Evelyn Giddings**.

Evelyn is an artist by profession – primarily a metal enamelist – familiar to 1970's Hawaii schoolchildren from the Artists in the Schools program. She is also a devoted and highly skilled gardener with a deep connection to the process of making soil.

Evelyn's approach to the compost pile is distinctly sculptural. "Don't worry about the carbon-to-nitrogen ratio or anything else you may have read in books," she would say. "Do this by feel." Evelyn layered food waste and tree mulch, moistening and shaping a perfect mound with her hands, carefully blanketing the pile with burlap bags. "Mostly people are *not* building compost piles," she would scoff, "just rubbish heaps." Most everyone successfully composting today on Oahu learned at the feet of Evelyn Giddings.

For the 2009-2010 school year, Betty Gearen was awarded a grant to create a gardening program at Palolo Elementary School. The program was called **Growing Green Schools** and Betty told Ms. Mindy that they were going to Zero Waste the campus, using all of the food waste to create soil. Ms. Mindy could vouch for the productivity of her worms, but sincerely doubted that such an ambitious goal could be achieved. School recycling efforts prior had been minimal.

Against all odds, Palolo composted all their food waste on site that year – 20 tons – and made mountains of rich soil for their gardens. Most of the structure and technologies used today at Lanikai were designed and implemented first at Palolo School by Betty Gearen.

Lanikai's Zero Waste Revolution stands squarely on the shoulders of



*Betty Gearen, founder of The Green House and designer of Oahu's first Zero Waste operation at Palolo School.*



*Composting guru and community treasure, Evelyn Giddings, age 91.*

these two creative and innovative pioneers who have been generous mentors and longtime supporters

Ms. Mindy was thrilled that both Evelyn and Betty came to tour Lanikai School on April 19th to see the seeds they had planted in full flower. The debt of gratitude we owe can best be expressed by our commitment to extend their ideas, knowledge, and vision forward into the future and throughout the State.

## Update on Palolo & Kainalu worms

**Palolo Elementary's** Pipeline worm colony recovered from near-fatal collapse this year, but it's been quite a struggle for the teachers involved. In March, the decision was made to relinquish the bin following the April vermicast harvest and to pass it on to another school. However, with the recent hire of a new STEM Coordinator to start next year, the decision was reversed. The bin stays. Unfortunately, STEM expertise does not matter. Palolo's persistent on-going challenge has been acquiring an adequate quantity of nutrient-dense foods from the cafeteria every week – very difficult to accomplish without the formal infrastructure of a Separation Station or Resource Recovery staff.



*In spite of a troubled history, Palolo Elementary's principal wants to give faculty **one last chance** to sustain a robust and healthy vermicomposting system.*

**Kainalu Elementary** faces the same situation, although they are at a much earlier stage in the process of developing a large-scale vermicomposting system. Parent volunteers **Dyana ten Berge** and **Fe Bailey** have been working diligently to build up the two new colonies established following their AINA harvest in February. The worms in their box bins have clearly been multiplying, and although food quantity was good, the nutritional value was low. Just like Palolo, the kitchen provides little more than cabbage, lettuce, and maybe a little apple – not enough to sustain continued vigorous growth. It was recommended that more nutrient-dense

foods including any and all canned or fresh fruits, potatoes, bread, rice, starchy veggies like peas and corn, make up the bulk of each feeding.

We know these items are generated by the ton, but how can we address the collection conundrum in schools where only a portion of lunch waste is recovered? Not every school can commit to daily collection, nor do they have storage capacity. What system



can be devised that will guarantee delivery of 25-50 pounds of good worm food for a weekly feeding and more importantly, *who will be responsible for doing it?*

Probably the Number One Fantastic Worm Food is banana peels. It was Fe's son **Zen Bailey**, 8, who stated the obvious: "We kids can collect peels at lunch from students on the days we have bananas." What a great idea – *students* can take on the task of collecting worm food on days when the pickings are prime. No one has ever tried this! It would involve studying the menu, assigning a bucket brigade, designing and implementing a strategy for lunchroom collection, and some adult supervision. If Zen and his mom can organize the 3rd grade to make lunchtime food waste collection a school community service next year, it might be the key to assuring their wormies get what they need to fulfill their destiny as world-class composters. If a student-led initiative works at Kainalu, it could work at Palolo and at other schools as well.

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After considering how difficult it would be to manage the two oversized donated bins at Kainalu – even if extensive modifications were made – everyone agreed they would serve better as storage units for vermicomposting supplies and equipment. This way the integrity of the student artwork on the lids and trim will be preserved. Kainalu will seek funding for a Pipeline system more appropriate for their needs.

## Dishwasher funded

The Lanikai School Ohana (LSO) has approved funding for a commercial dishwasher to be installed under the bucket-washing sink at the back of the kitchen. An plumber’s inspection revealed that a new grease trap would also have to be installed down the line, but this was anticipated and is covered in the budget.

An on-site dishwasher will relieve Shannon of One Love Cafe from hauling heavy washable trays, ramekins, bowls, forks, etc., from her kitchen to the school and back again, and then spending hours hand washing them. She will be able to justify purchasing washable “boats,” finally eliminating the last of the single-use disposable food service items.

Best of all, a dishwasher opens the door to the acquisition of a refrigerated milk dispenser, since it would be feasible to use washable cups in lieu of 1/2-pint milk cartons. A milk dispenser means a switch to locally-sourced organic milk instead of the commodity stuff shipped in from the mainland. Ice-cold fresh milk tastes great and because students can dispense their own and see it in the cup, they are more likely to drink it. Our current volume of wasted milk is 16 pounds (2 gallons) per day. Data shows that schools that use dispensers not only cut down on wasted milk but also

cut purchasing costs. Lastly, milk cartons are horrific waste items that will not be missed. Plasticized, they don’t break down and they are shaped to take up maximum air space in the rubbish. They harbor and drip milk residue that sours, oozes out on to every surface and draws ants and flies.

The dishwasher will definitely mean more work. Loading and unloading, putting items away... Shannon made it clear that it would be up to Lanikai to deal with the dishes, and we agreed to do so. LeJardin Academy recently installed a dishwasher and switched to washables and they are engaging students to help as a school community service.

This would be great experience Lanikai Learners! Six graders on lunch duty were observed lacking basic life skills – like washing buckets or wiping off a table. When required and trained to do so, they enjoyed mastering and performing useful tasks.

Hopefully, the dishwasher will be installed over the summer. The look, smell, and workings of our cafeteria underwent great change this past year as the Zero Waste Revolution progressed – the dishwasher will initiate another significant round of change.

## New greenhouse goes up

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Lanikai School’s fancy new greenhouse, funded by a grant from Kokua Hawaii Foundation, was erected in just two days thanks to Mr. Tom and Ms. Espie’s cousin, Ludwig Manuel, who was visiting from Las Vegas and offered to help. It displaced the Green Waste operation, which was relocated around the corner.

## Parents go for tea

Disappointingly – but not surprising – Lanikai parents have shown little enthusiasm for helping out with daily Zero Waste processes, nor have they responded to several invitations to learn home composting technologies. This is understandable given that parents of multiple small children have quite enough on their plates.

So it was very gratifying that an announcement in the e-newsletter encouraging parents to try vermicast tea (right) elicited immediate feedback. Bingo! Ten gallons were brewed for pick-up every Friday in April and all or most of the batch sold out each time. Several parents became repeat customers after observing their gardens perk up after even one application. Lanikai grandma and gardener Lily Pu reported, “It’s like magic!”

Due to popular demand, vermicast tea will be available every Friday through May.

## Try VERMICAST TEA to help your garden grow!



- Available every **FRIDAY** after school
- \$5 per gallon
- Pick up and pay at the office

Contact the office at 266-7844 to reserve your bottle of tea today!

You can't help but notice that Lanikai School's garden is the finest in the land! Our robust, productive vegetables, flowers, and trees benefit from the compost and vermicompost we create from recycling food waste from lunch.

Our worm colonies process fruit, vegetable, and grain waste and produce vermicast (worm poop).

This is a nutrient-rich organic fertilizer that our students make into an aqueous extract, or tea. We use a special compost tea brewer, pictured above, to brew ten gallons at a time. You can dilute one gallon up to seven times and use it to water your plants. Vermicast tea is perishable and should be used within 24 hours for best results.

For more information on **compost tea**, visit [www.growingsolutions.com](http://www.growingsolutions.com).

For more information on **Lanikai's Zero Waste Revolution**, visit [www.waikikiworm.com](http://www.waikikiworm.com).



## How is Lanikai School like a coral reef?

Coral reefs are often compared to cities, an analogy that captures both the variety and the density of life they support....Coral reefs are home to a least a million and possibly as many as nine million species.

This diversity is even more remarkable in light of what might be called the reef's environs. Tropical seas tend to be low in nutrients like nitrogen and phosphorus. Since most forms of life require nitrogen and phosphorus, tropical seas also tend to be barren; this explains why they're often so marvelously clear. Ever since Darwin, scientists have been puzzled by how reefs support such richness under nutrient-poor conditions. The best explanation anyone has come up with is that on reefs – all the residents enthusiastically recycle.

“In the coral city there is no waste,” Richard C. Murphy, a marine biologist who worked with Jacques Cousteau, has written. “The byproduct of every organism is a resource for another.”

*Excerpted from an article entitled “Unnatural Selection” by Elizabeth Kolbert that appeared in The New Yorker, April 18, 2016.*

**The rewards of a Zero Waste practice whether in the ocean or on Lanikai's campus ecosystem include cleanliness, economy, efficiency, and diversity that lead to balance, stability, and health. When we seek to emulate natural processes – like recycling – we reap countless benefits.**

## Sam's birthday was Earth Day

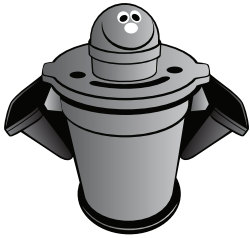
That intrepid Recycling Guy, **Sort-It-Out Sam**, celebrated his first year of service at Lanikai School on Earth Day, April 22nd. Sam's job is to collect snack waste, school paper, and HI-5 cans and bottles generated in classrooms to be consolidated daily for processing. This takes a lot of effort to make work, but a year of practice has seen much improvement.

Sam's very presence makes the statement that recycling is dominant over trashing. Between twelve Sams and the Separation Station at lunch, *seventeen* 32-gallon campus rubbish bins have been banished forever, along with their plastic liners.

The ambiguity about what packaging can go into Sam's belly will be resolved when a resource for

mylar recycling is found.

With Sam limited to recyclable items only, non-recyclable waste must be reduced, since there will be only small classroom trash receptacles available to receive dumpster rubbish.



## E2U interns express interest

Mr. Noh and Ms. Espie met with **Pa'ahana Kincaid**, manager of E2U, Kupu's environmental education internship program. It would be very helpful to have additional paid staff to work with students on projects outside the scope – and available time – of Resource Recovery operations.

Next year we hope to implement **Waste-Free Wednesdays** in the cafeteria. Cutting down on all non-recyclable packaging (see above) that includes rigid plastic containers, ziplock bags, and, for now, ever-ubiquitous mylar, would take a powerful campaign that might include video production, poster contest, skit presentations, etc. Students signed up for a Le Kukui elective or even student government kids could design and implement such a campaign with the help of an E2U intern. There's other good projects as well!

Lanikai will apply for an intern or two for the upcoming school year.

## Sunflower Patch bursts into bloom!

Everyone on campus loved watching the tiniest of seedlings sprout and grow into ten-foot monster sunflowers practically overnight! The **Steve and Marilyn Katzman Perpetual Sunflower Patch** has been such fun and added so much wonder and beauty, replacing forever a dead, dreary strip of dirt and weeds. It has been especially exciting for students to watch the bees and butterflies at work, dusty with yellow pollen; a big hatching of baby praying mantises scampering around elicited a lot of shrieks and giggles.

We also learned a thing or two about sunflower beds. Several varieties were planted to bloom at low, medium, and sky-high heights. What we didn't realize is that you have to stagger the timing of the plantings so that they will all bloom simultaneously to get that choked-with-blossoms, filled-in look. Ah, experience. We'll do better next time!

## Bottom line for April

The best summary of this busy month that marked the end of the gardening season was expressed in an e-mail entitled **Mahalo for a great year of AINA for 4th grade** from Rachel Victor, a parent docent:

*Mahalo nui loa for a fantastic year. I am slightly prejudiced, but I think we have a wonderful team of docents and staff. Everyone worked so well together and epitomized laulima, working together as a community.*

*The oli for every lesson gave me “chicken skin” when Kumu Lilinoe did it and brought tears to my eyes when the keiki were able to step up and do themselves when she was unable to attend.*

*Mr. Sawyer along with his Green Team made it their kuleana to malama all the plants at Lanikai. Mr. Sawyer is usually at the garden every day, yes weekends too! Ms. Mindy’s knowledge and hard work gave us the best soil on island for the plants to thrive with her beautiful compost and vermicast.*

*And, of course, Espie who is our own Lanikai “glue” to hold everything together. She has the best hiki no (can do) attitude and we all appreciated how she was always there to support and facilitate AINA lessons.*



*Lastly, I want to say how blessed we were to have Ms. Evelyn with us for the last lesson. I was proud of the respect and attention both classes gave her. In that lesson ho‘omau was our Hawaiian value which means to perpetuate, and to continue in a way that causes good or to be long-lasting. Ms. Evelyn is the personification of that value. She has passed down her knowledge through Ms. Mindy and the classes. It was priceless to see how much she loved the kalo and looked upon it as if it were her own special child. It takes a village to raise a child...and a garden.*

Best,  
Rachel

This report covers the period from April 1 – April 30, 2016. There were 20 school days during this period.

During this interim **1,931 pounds** of food waste was collected and processed via vermicomposting and hot composting technologies. The school year total to date is **13,018 pounds** of food waste recovered, representing a 100% landfill diversion rate.

- 100% of all HI-5 cans and bottles were collected and redeemed.
- 90% of all paper and cardboard waste was collected and processed.
- 100% of all green waste was recovered.





*To assure a new beginning...*