

Kauai/Maui County First Brownfields Redevelopment Workshop



Brownfields Success Stories

- ▶ Kakaako Makai Development
- ▶ Department of Hawaiian Homeland
Mango and Taro Farm Project - Areas
adjacent to the Former Pesticide Mixing
Area
- ▶ East Kapolei Former Agricultural Land

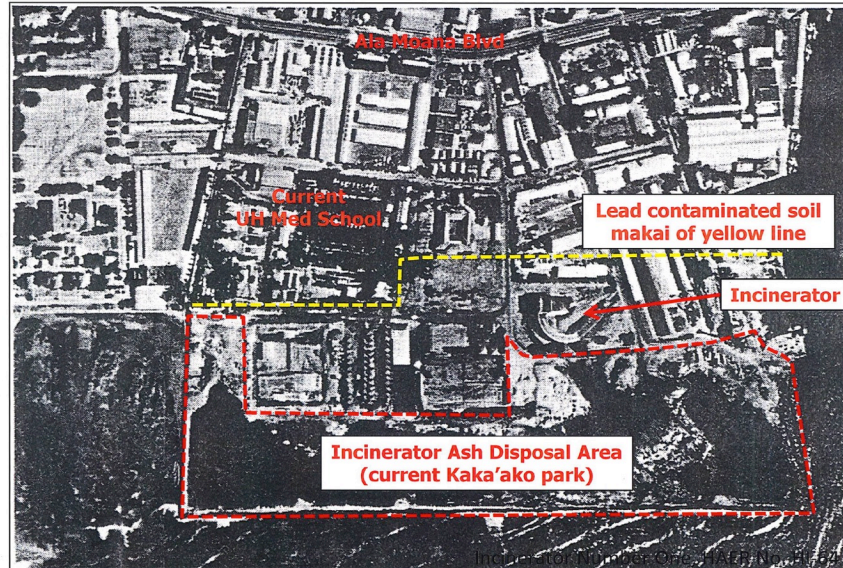
Kakaako Makai Development

- ▶ Brownfields Grants Recipient
 - ▶ Targeted Brownfields Assessment Grant - 2005
 - ▶ Site Assessment Grant - DBEDT Pilot Assessment , 2003
 - ▶ Office of Hawaiian Affairs - 2013

Kakaako Makai 1950



Kaka'ako Incinerator Landfill with seawall, circa 1956



Recognized Environmental Concerns

- ▶ Incinerators = ash materials (total metals)
- ▶ Base yards, maintenance and shops = totals metals, TPHs, PAHs,
- ▶ Warehouse and distribution center =
- ▶ Animal Quarantine = dieldrin
- ▶ Shipyard = arsenic



Multi-agency Partnership

- ▶ Department of Health
- ▶ Hawaii Community Development Authority
- ▶ DBEDT
- ▶ University of Hawaii

Kakaako Incinerator - State of the art Children Museum and Discovery Center



Kakaako Makai - Former warehouse and distribution Center, and Animal Quarantine - UH John A. Burns School of Medicine and Cancer Center Research



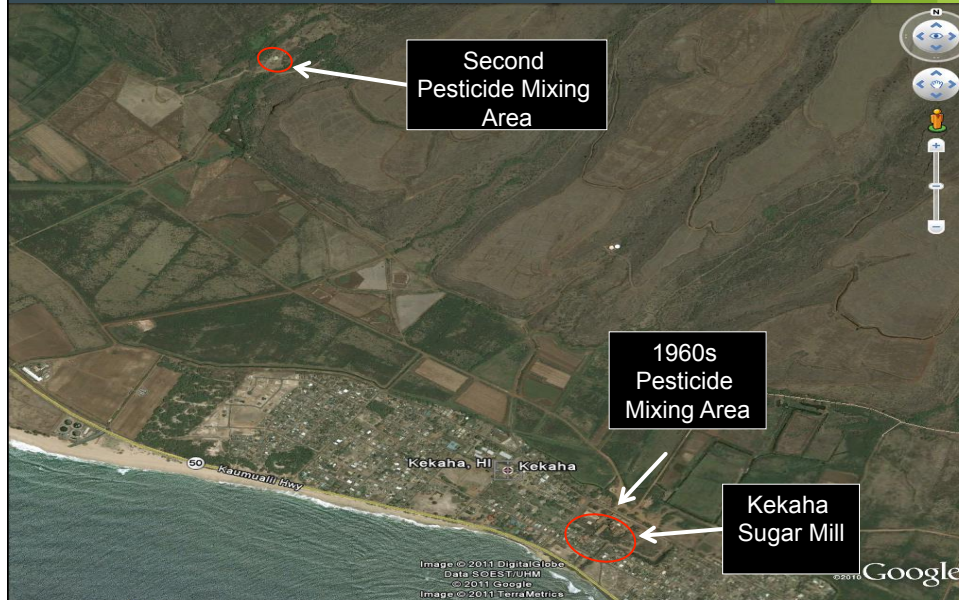
Piano Lot - Parking Area



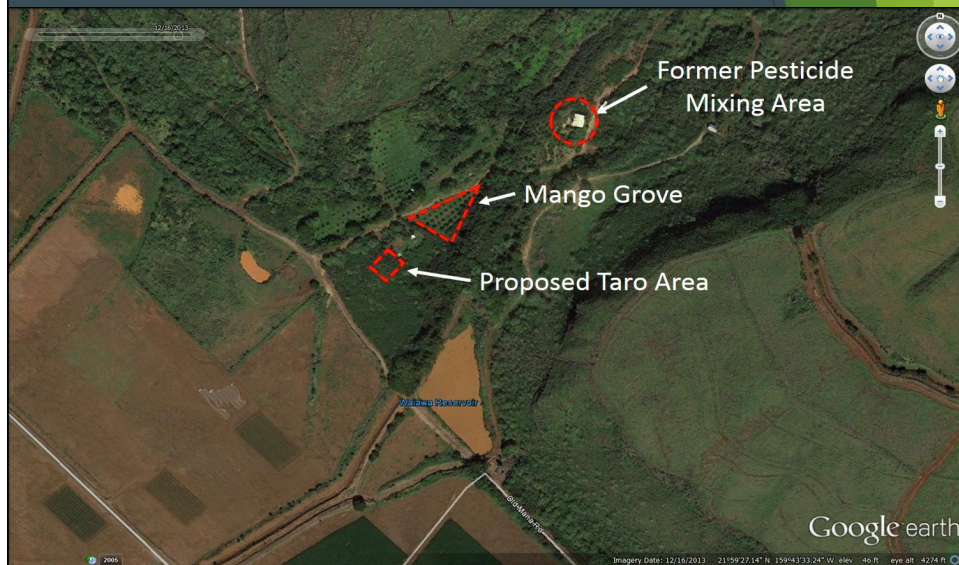
Department of Hawaiian Homeland Mango and Taro Farm Site - Areas adjacent to the Former Pesticide Mixing and Loading area

- ▶ Objective:
 - ▶ To determine if the area adjacent to the Kekaha Former Pesticide Mixing and Loading Area are safe for mango and taro production
 - ▶ To determine if mango fruits and taro plants currently planted in the areas adjacent to the Former Pesticide Mixing Area are safe for human consumption

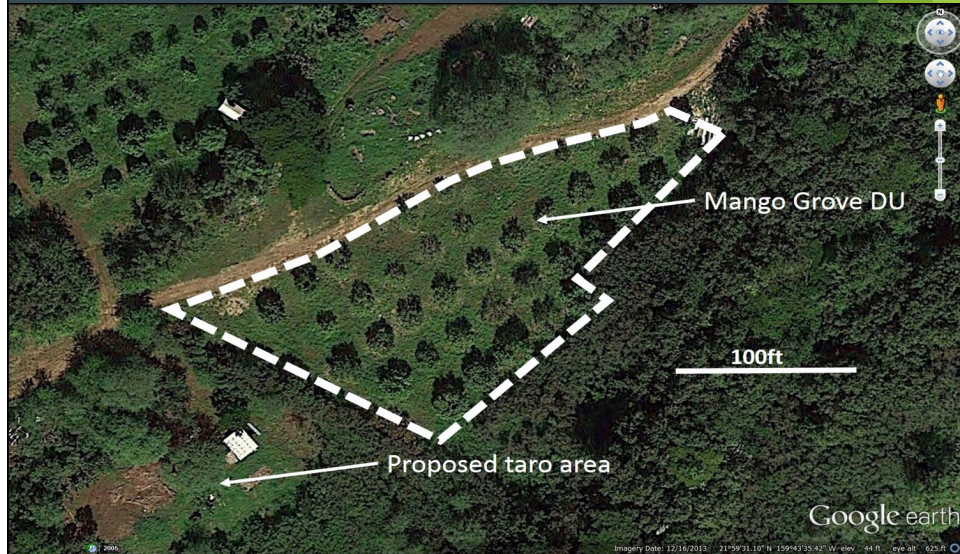
DHHL Mango and Taro Farm Site



Location of Mango Grove and Proposed Taro Area



Proposed Decision Units for Mango Grove Area



Proposed Decision Unit for Taro Area



Background Taro Plant



Background Mango Tree



Mango Grove



Mango Tree Bearing Fruit



Mango Fruit Sampling



Taro plant Sampling



Taro Plant Sampling



Mango Grove Soil Sampling



Results of the Investigation

- ▶ Soil Sample Results
 - ▶ Total Metals (Arsenic, Total Mercury, dioxin, silver, selenium, silver, cadmium, chromium, barium) below the HDOH EAL for residential land use. However, lead was detected at 340 mg/kg, above residential land use but below commercial and industrial use of 800 mg/kg).
- ▶ Mango Fruit analysis Result
- ▶ Taro Plant

Laboratory Results of Mango Fruit

Analytes	Background	Mango I	Mango II (Ave.)	USFDA Market Basket
Total Metals				
Aluminum	ND	ND	ND	
Antimony	ND	0.077	ND	
Arsenic	ND	ND	ND	
Barium	0.054	0.12	0.061 (0.09)	
Cadmium	ND	ND	ND	
Calcium	64	82	45 (63.5)	117 avocado
Cobalt	ND	ND	ND	
Copper	0.86	0.53	0.62 (0.70)	0.70 potato
Iron	2.3	1.9	2.1 (2.0)	
Lead	ND	ND	ND	
Magnesium	85	120	84 (102)	
Manganese	0.28	0.47	0.33 (0.40)	
Selenium	ND	0.062	ND	
Strontium	0.37	0.47	0.23 (0.35)	
Tin	0.84	1.1	0.99 (1.05)	
Titanium	ND	ND	ND	
Vanadium	ND	ND	ND	
Zinc	0.84	0.63	0.67 (0.65)	5.14 avocado
Mercury	ND	ND	ND	
Boron	ND	0.83	ND	
Total TEQ dioxin/furans, (ng/kg)	0.00077	0.0021	0.0013	0.0000 to 0.0039 for avocado, 0.000 apple

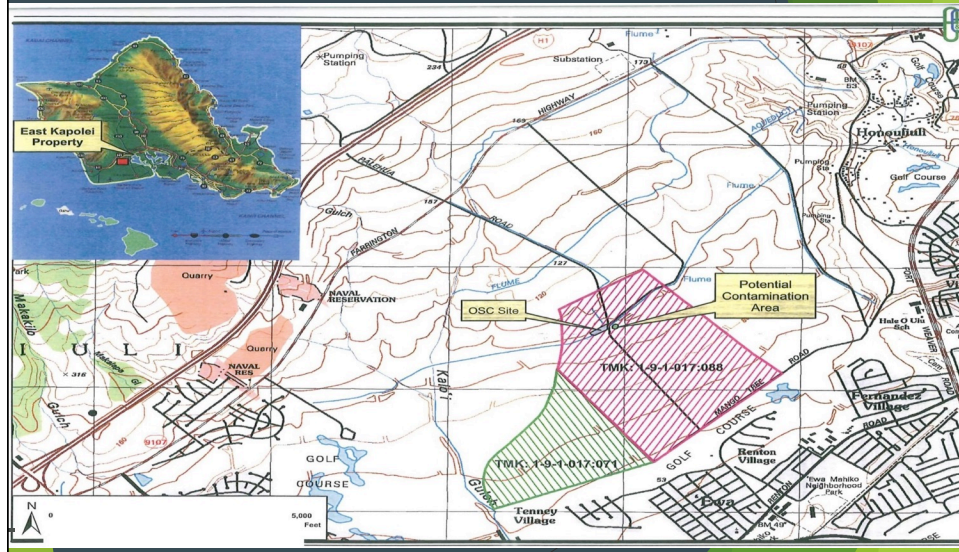
Laboratory Results of Taro Plant

Analytes	Background			Taro Plot			FDA Market Basket Max. Conc.
	Corn	Stalk	Leaves	Corn	Stalk	Leaves	
Aluminum	ND	1.5J	27	ND	1.65	15.5	
Antimony	ND	21.5	ND	ND	ND	ND	
Arsenic	ND	ND	ND	ND	ND	ND	
Barium	0.16	0.12	0.58	0.45	0.21	0.42	
Cadmium	ND	ND	ND	ND	ND	ND	
Calcium	230	360	2000	200	180	1600	
Cobalt	0.005	0.011	0.052	0.060	0.025	0.035	
Copper	0.85	0.27	0.79	0.56	0.38	0.56	0.70 potato
Iron	6.9	47.9	42	12.5	7.35	25.5	
Lead	ND	0.026	0.026	ND	ND	ND	0.004 Lettuce, raw
Magnesium	425	265	595	340	185	700	
Manganese	0.53	1.09	6.95	4.8	8.05	56.5	
Selenium	ND	ND	ND	ND	ND	0.12	
Strontium	2.4	3.4	8.25	2.65	1.85	7.9	
Tin	2.1	0.94J	1.25	ND	1.15	1.65	
Titanium	ND	2.4	1.14	ND	0.12	0.68	
Vanadium	ND	0.16	ND	ND	ND	ND	
Zinc	2.8	2.9	4.6	2.75	1.35	4.65	5.14 avocado
Mercury	ND	ND	ND	ND	ND	ND	
Boron	ND	1.4	9.8	ND	1.29	7.5	
Total TEQ Dioxin/furans ng/kg	0.0278	0.0073	0.00389	0.0019	0.0017	0.0039	Apple = 0.0000 Lettuce = 0.0000

Recommendations:

- ▶ Soil sample from the proposed taro area indicated slightly elevated level of lead above residential but below commercial land use.
- ▶ The mango fruit grown in the mango orchard are safe for human consumption
- ▶ Based on the results of the investigation taro plant (corm, stalks and leaves) planted in the sampled area is safe for human consumption.

East Kapolei Former Agricultural Field DHL East Kapolei II Development

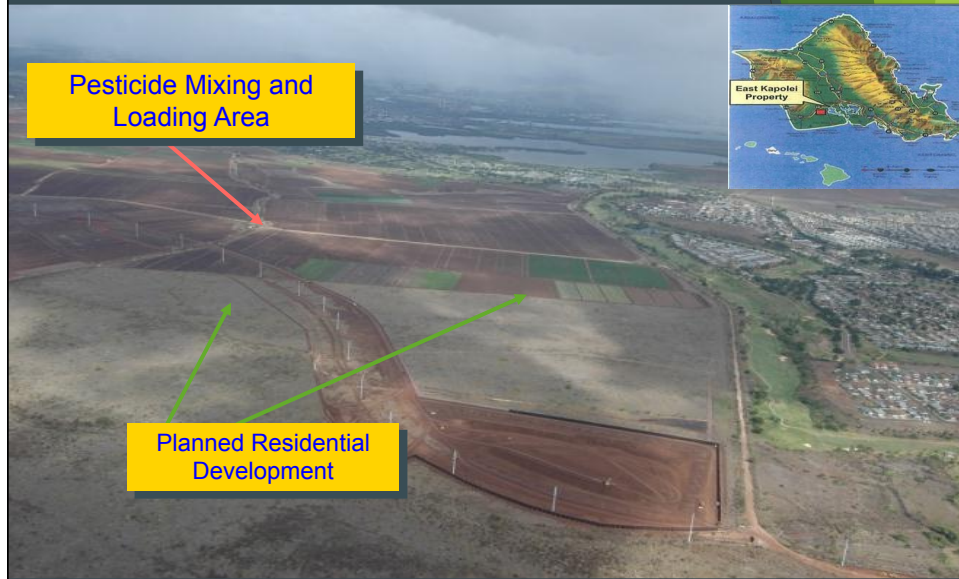


Brownfields Success Story DHL East Kapolei II Development

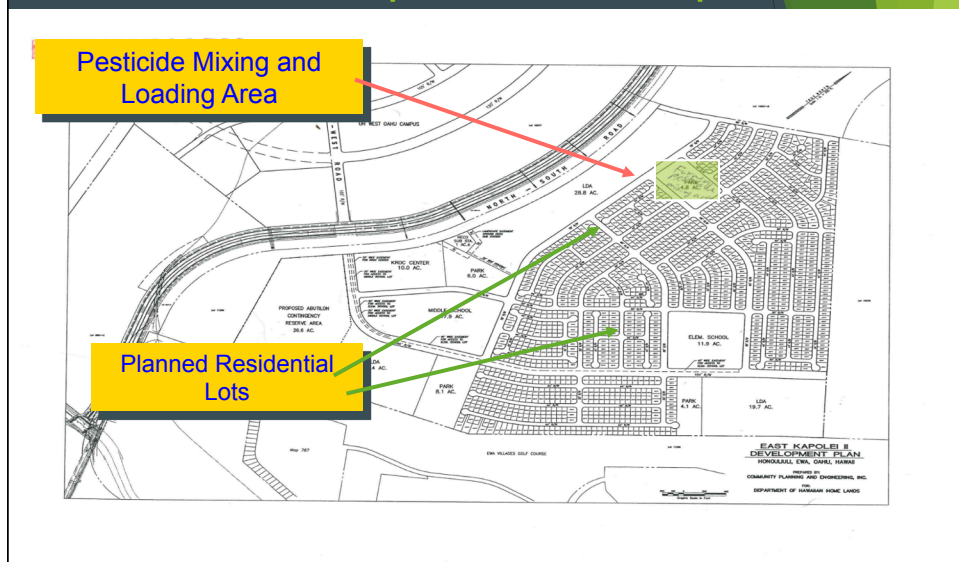
Former Agricultural Lands:

- Department of Hawaiian Homelands (DHHL) East Kapolei Development (Second City)
- Former 400-acre sugarcane field area and 1.5-acre pesticide mixing area
- Investigated separately

Brownfields Success Story DHHL East Kapolei II Development



Brownfields Success Story DHHL East Kapolei II Development



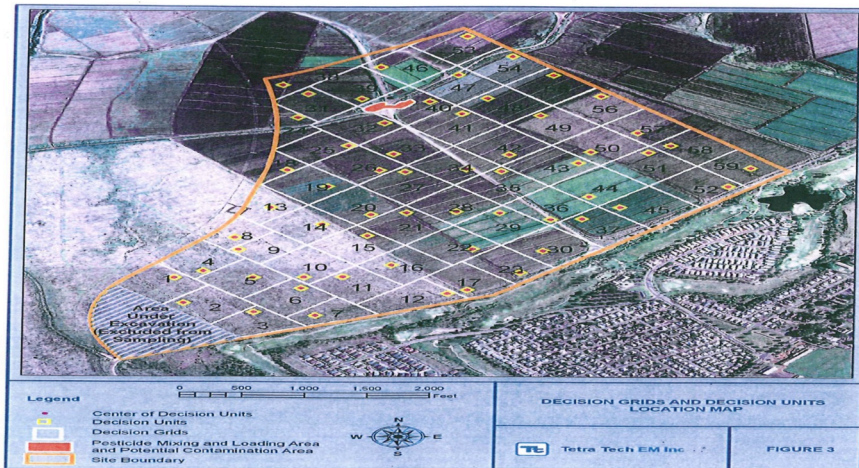
Historical Use

- ▶ Sugarcane area used from early 1900s to mid 1990s

Primary Contaminants of Concerns

- ▶ Dioxins
- ▶ Arsenic
- ▶ Pentachlorophenol
- ▶ Triazine pesticides

Success Story : East Kapolei II Development Former Agricultural Area



EPA-funded Site Investigations for the Sugarcane Agricultural Fields

- ▶ 2006 = EPA Targeted Brownfields Assessment Grant for the Sampling and Analyses Plan
- ▶ 2009 = State Response Program for the Site Investigation

Results of the Investigation

- ▶ Triazine pesticides, dieldrin, pentachlorophenol, were non-detect
- ▶ Dioxin was below the EAL for residential development
- ▶ Arsenic levels are considered natural background levels
- ▶ No Further Action Determination was issued for the site. The site is safe for residential development

Success Story: DHHL East Kapolei II Development Former Agricultural Fields



Former agricultural fields

Kroc Center & future residential housing development

Success Story: DHHL EAST KAPOLEI II Development - Kroc Center



Success Story: East Kapolei II Development (Second City)



Contact Information:

DOH Brownfields Program Website:

[http://hawaii.gov/health/environmental/hazard/
brownfields.html](http://hawaii.gov/health/environmental/hazard/brownfields.html)

State of Hawaii Brownfields Program

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HBCRLF Cleanup Loans

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Brownfields Sites = Voluntary Response Program

- ▶ Costco Site - Kahului
- ▶ Molokai Electrical Power Plant