



Soil Carbon Inventory and Working Lands Baseline

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Purpose

Development of data resources required to generate a baseline and short/long term benchmarks for increasing GHG sequestration, soil health, and yields in natural and working lands (e.g., pasture, agriculture, agroforests) in Hawaii's AFOLU sector

Scope of Work

- 1.** Collect soil health, yield, and GHG sequestration data from a network of productive lands, farms, and ongoing trials as required for initialization of soil carbon-related planning tools
- 2.** Compilation of available geospatially explicit datasets for soil carbon inventory and other attributes across natural and working lands (e.g., pasture, agriculture, agroforests)

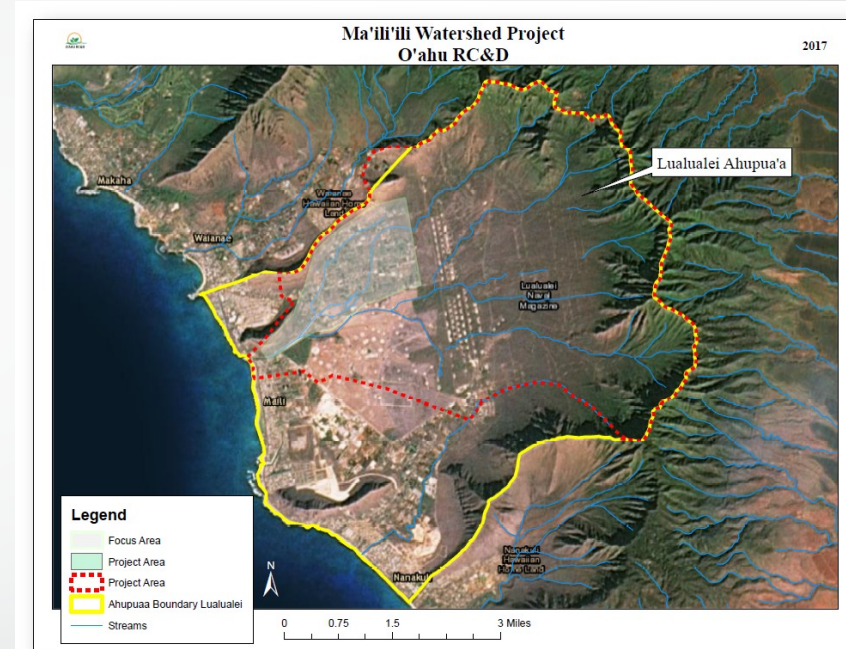
Project Approach: Phase I

1. Partner with ongoing projects to build baseline data network
 - Implementing soil-carbon-building practice
 - Over time
 - Diverse natural and working land types
2. Assist in measuring soil health parameters
 - Physical, chemical, biological

Networking Project Sites

1. Ma`ili`ili-Kaiaka Watershed farms

- Agricultural lands (Conventional, Organic)
- Minimize soil erosion, nutrient loading



Networking Project Sites

2. Kako`o `Oiwi

- Traditional agriculture, Agroecology restoration (400 acres)



Photo: Kako`o `Oiwi

Implemented Soil C Promoting Practices



Compost, Organic Soil Amendments



Cover Cropping

Agroecology
Restoration

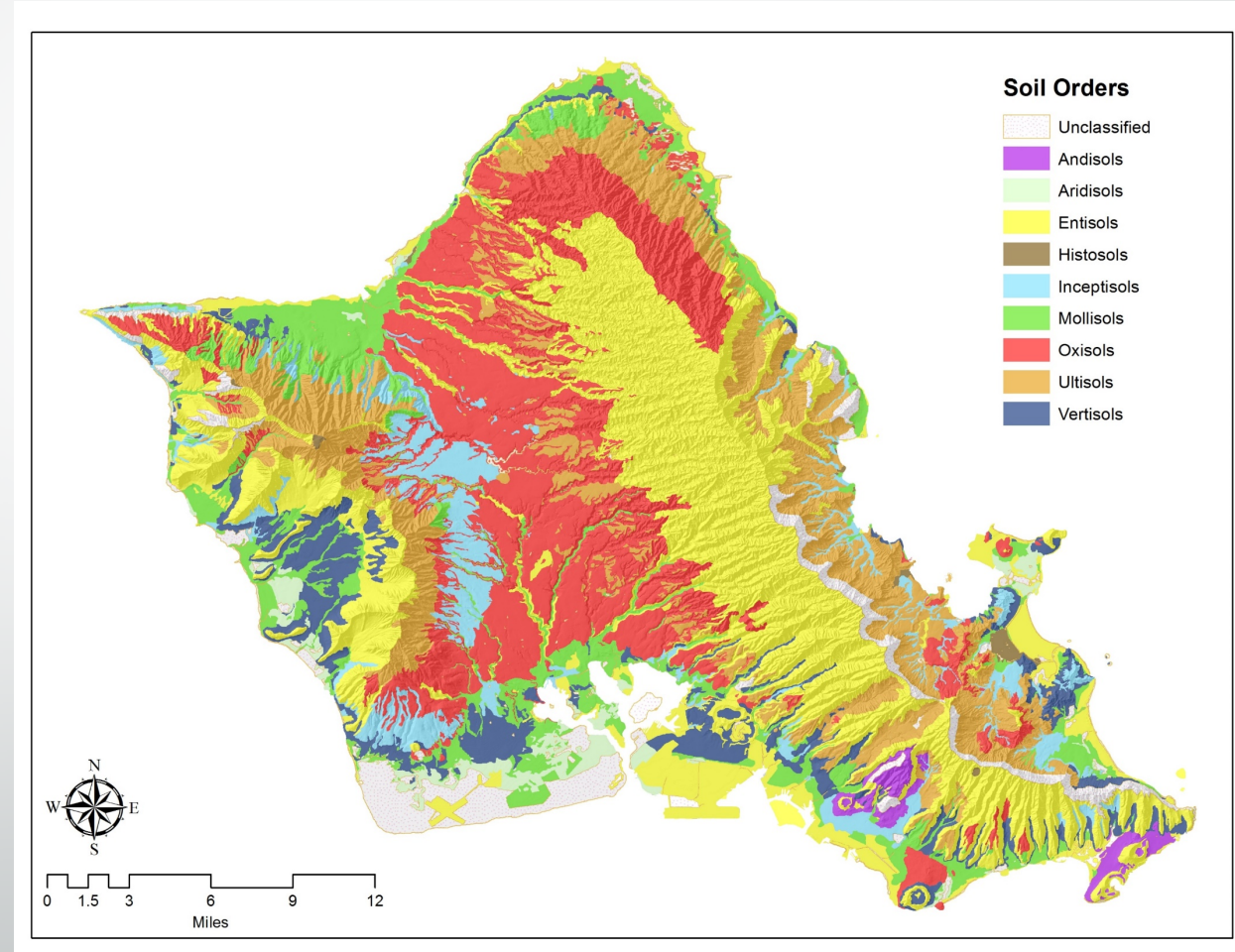


Photo: Kako`o`Oiwi



Samples Collected in Network

- Number collected= 194
- Islands= Oahu
- Soil Types= Vertisols, Mollisols, Ultisols, Oxisols, Inceptisols



Analyses (currently)

	Recommended Indicator	Soil Function(s) Relation
Physical	Water holding capacity	Water infiltration and supply, medium for plant growth, soil life
	% Water-stable mega-aggregates	Carbon storage and cycling, medium for plant growth, water infiltration and supply, soil life
Chemical	% Total organic C	Carbon storage, soil life
	C:N	Soil life, nutrient cycling
Biological	24 hr CO ₂ burst	Soil life, nutrient cycling, carbon storage and cycling
	Hot water extractable organic C	Soil life, carbon storage and cycling
	Potentially mineralizable N	Soil life, nutrient cycling
	Beta-glucosiminidase	Soil life, nutrient cycling
	Beta-glucosidase	Soil life, nutrient cycling, carbon cycling

Next Steps

- Work with researchers to compile available datasets (i.e. National Cooperative Soil Survey, Rapid Carbon Assessment)
- Identify gaps in data → Collect and analyze for soil health parameters
- Spring: Graduate student will develop GIS data layer for AFOLU sector with collaborating agencies and partners
 - Facilitate data decision support, policy tool development specifically for GHG sequestration in Hawaii soils, climate

Mahalo!



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