

Monsanto Company

Petition to Designate 1,550 acres at Kunia, O'ahu as Important Agricultural Lands (IAL)

LAND USE COMMISSION
STATE OF HAWAII

2017 OCT -9 P 3:45



State of Hawai'i Land Use Commission
October 11, 2017

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Monsanto Serves Farmers Around the World

Working with Growers Large and Small



100% Agriculture

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Row Crop Seeds

- High-quality seeds are at the center of our business.
- Monsanto helps farmers achieve better harvests while using natural resources more efficiently.

Eight Row Crops



Sugarbeet



Corn



Soybean



Cotton



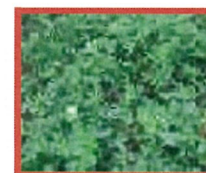
OSR/Canola



Sorghum



Wheat



Alfalfa

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Vegetable Seeds

- **Over 2,000 seed varieties covering 22 vegetable crops.**
- **Develop and provide seeds** in all major markets globally, including conventional and organic farmers.
- **Deliver quality vegetable seeds** under the Seminis brand to many Hawaii farmers, both conventional and organic.



Seed Industry in Hawaii

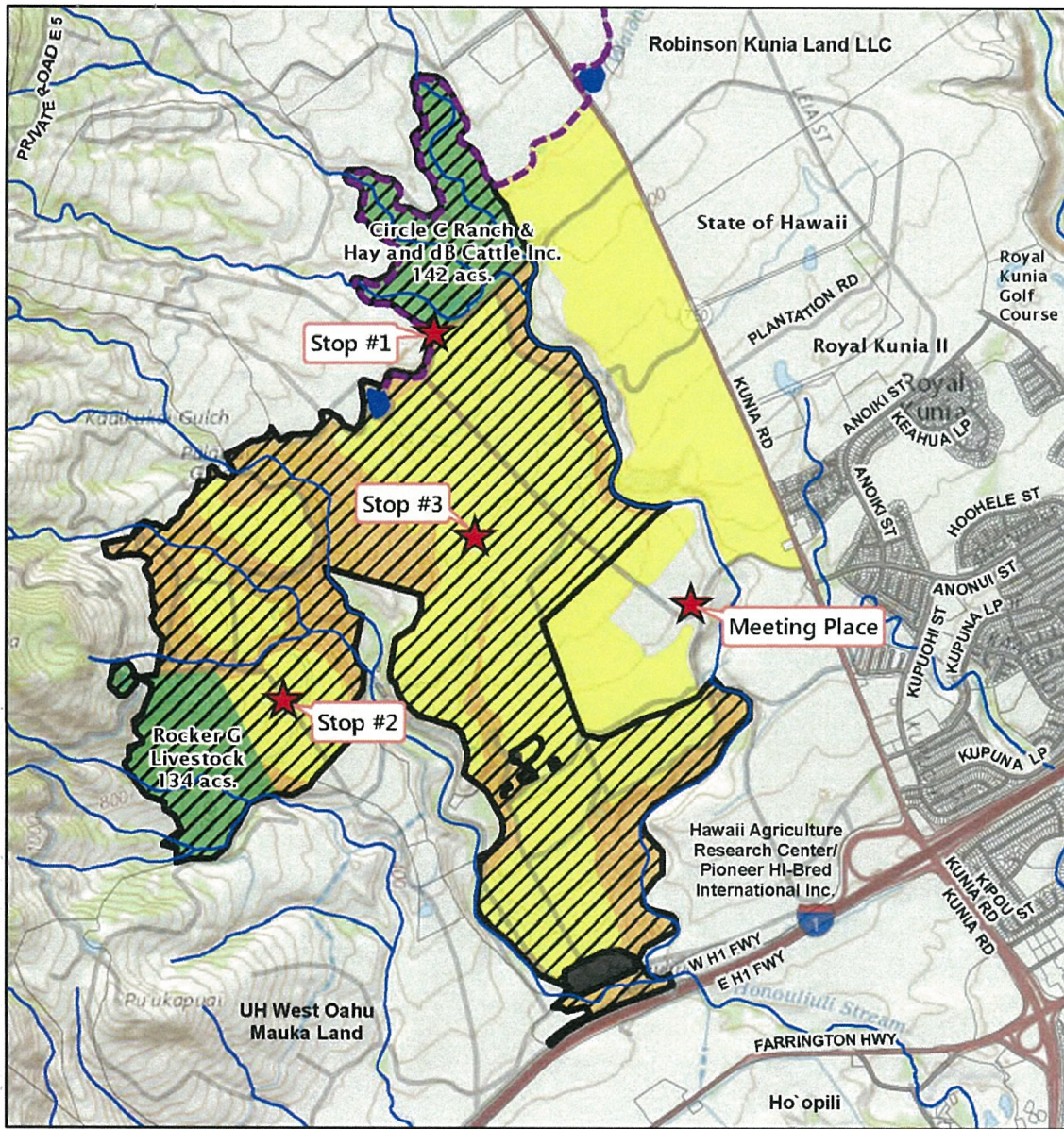
- Contributes to the State's economic base.
- 1964, University of Hawaii College of Tropical Agriculture and Human Resources, Seed Industry Council.
- 1969, \$500,000 agricultural industry.
- One of the most valuable agriculture crops grown in the State today.
- Today, \$323 million total economic impact including multiplier effects.
- 20% of ag workers in Hawaii are seed industry employees.
- 258 employees at Kunia Farm.

Source: Fifty Years of Seed in the Fiftieth State Economic Report of the Hawaii Crop Improvement Association

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Agricultural Areas & Site Visit Viewing Points



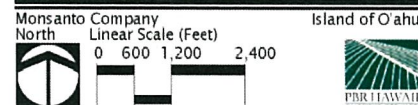
DATE: 9/19/2017

LEGEND

- Proposed IAL
- Owned by Others
- TMK Parcels
- Reservoirs
- Waiahole Ditch
- Streams / Gulches
- Roads
- Current Agricultural Use
- Crop Production
- Cattle Ranching
- Other (agricultural infrastructure, soil conservation, gulch)
- Site Visit Viewing Points

Figure 2
Agricultural Areas
(9/22/17 Site Visit Viewing Points)

Monsanto IAL

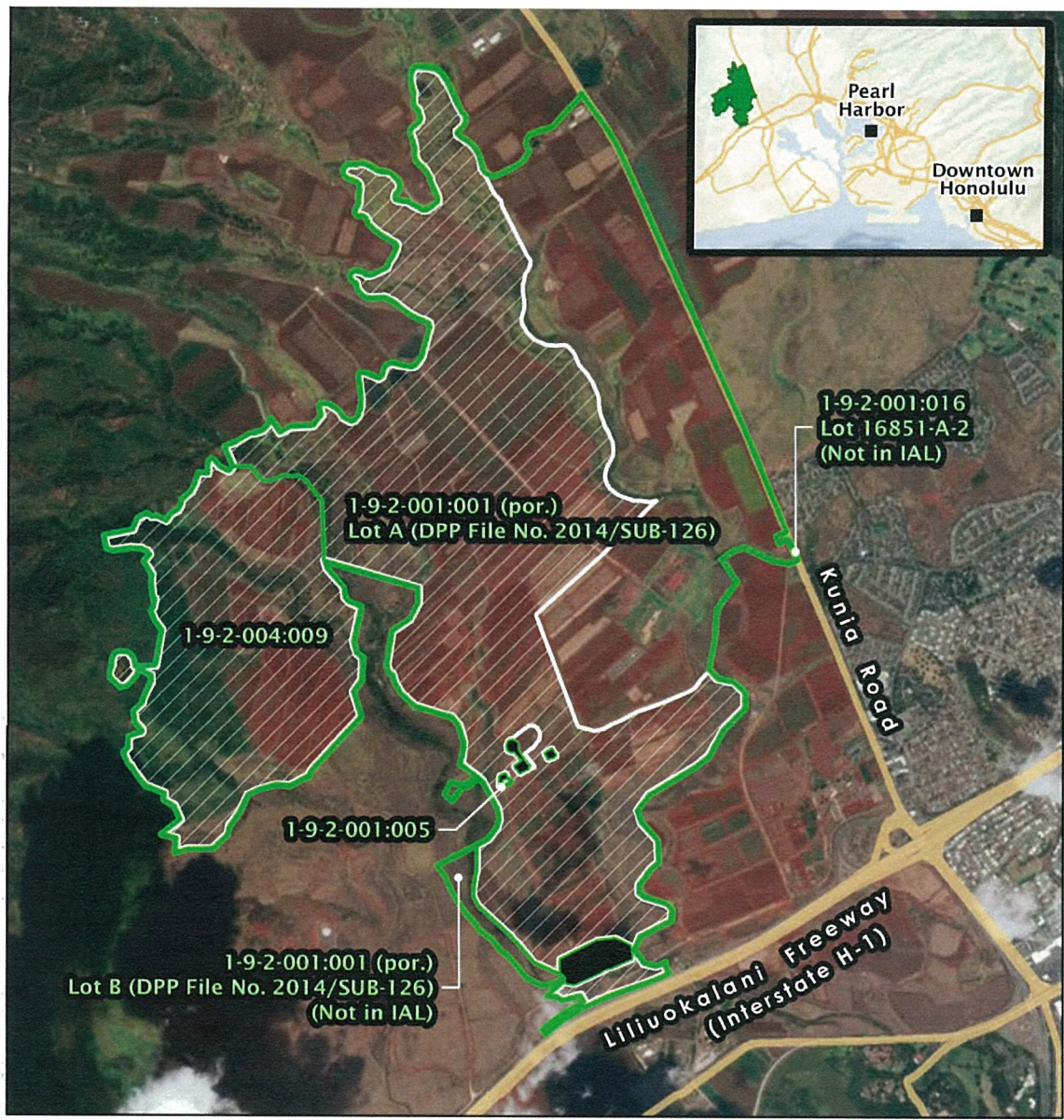


Source: Monsanto Company (2017), State of Hawaii, City & County of Honolulu
Disclaimer: This graphic has been prepared for general planning purposes only.



IAL

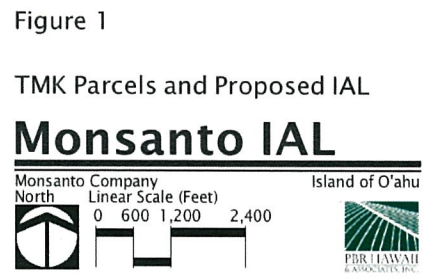
- Monsanto owns 2151 acres in Kunia.
- Proposing 1550 acres to be designated as IAL.
- 72% of total landholdings on Oahu.



DATE: 8/28/2017

LEGEND

- Monsanto Property ("Kunia Land")
- Proposed IAL ("Property")
- Owned by Others



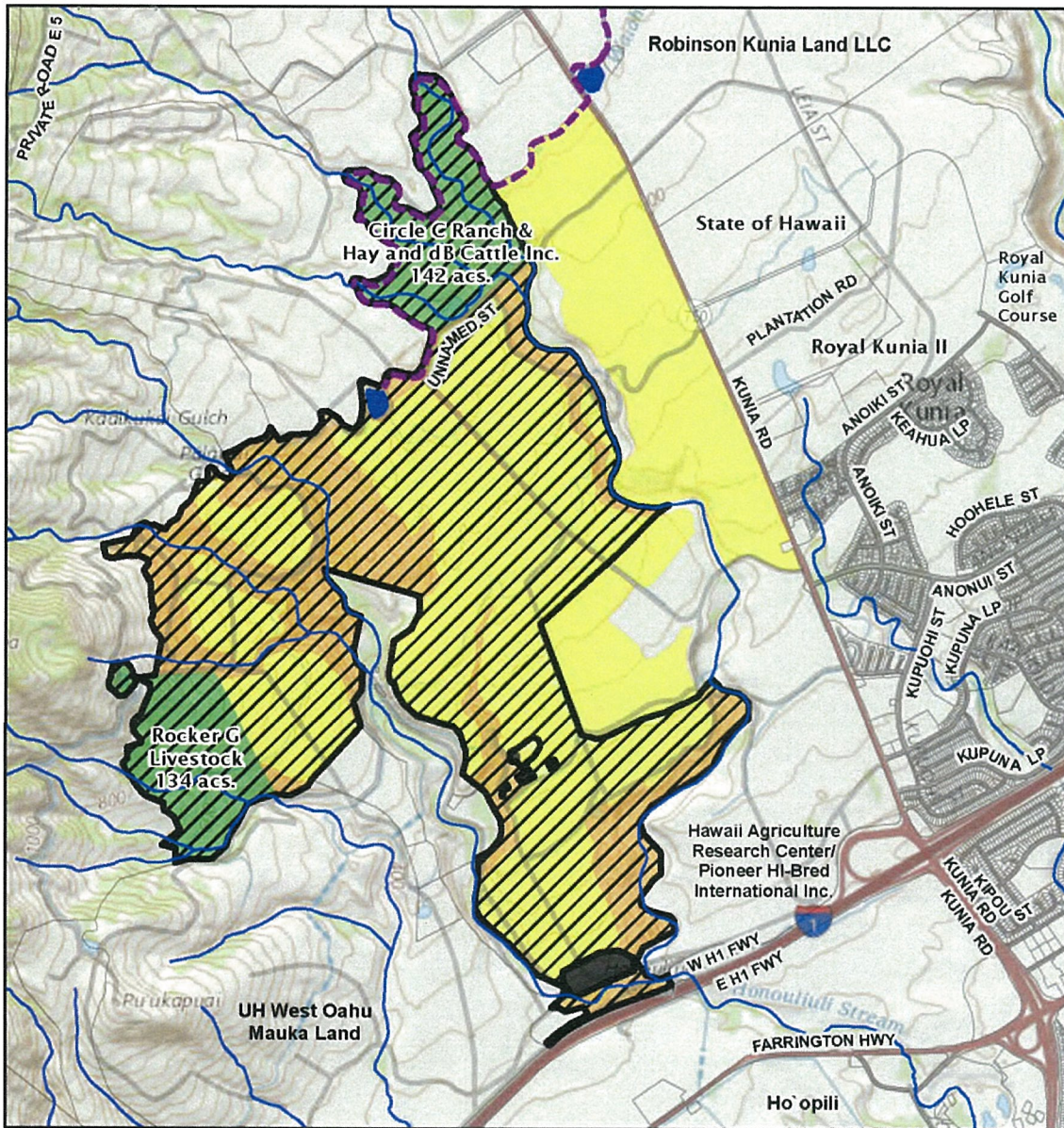
Source: State of Hawaii, City & County of Honolulu, ESRI Basemaps. Disclaimer: This graphic has been prepared for general planning purposes only.

Standards and criteria . . . *land that contributes to maintaining a critical land mass important to agricultural operating productivity. (HRS §205-44(c)(7))*

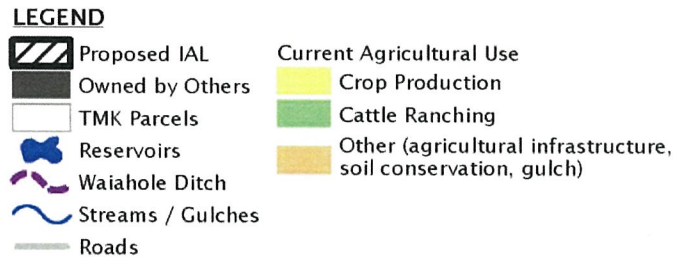
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Land Use



DATE: 8/28/2017

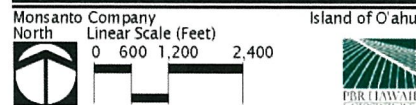


Source: Monsanto Hawaii (2017). State of Hawaii, City & County of Honolulu
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Figure 2

Agricultural Areas

Monsanto IAL



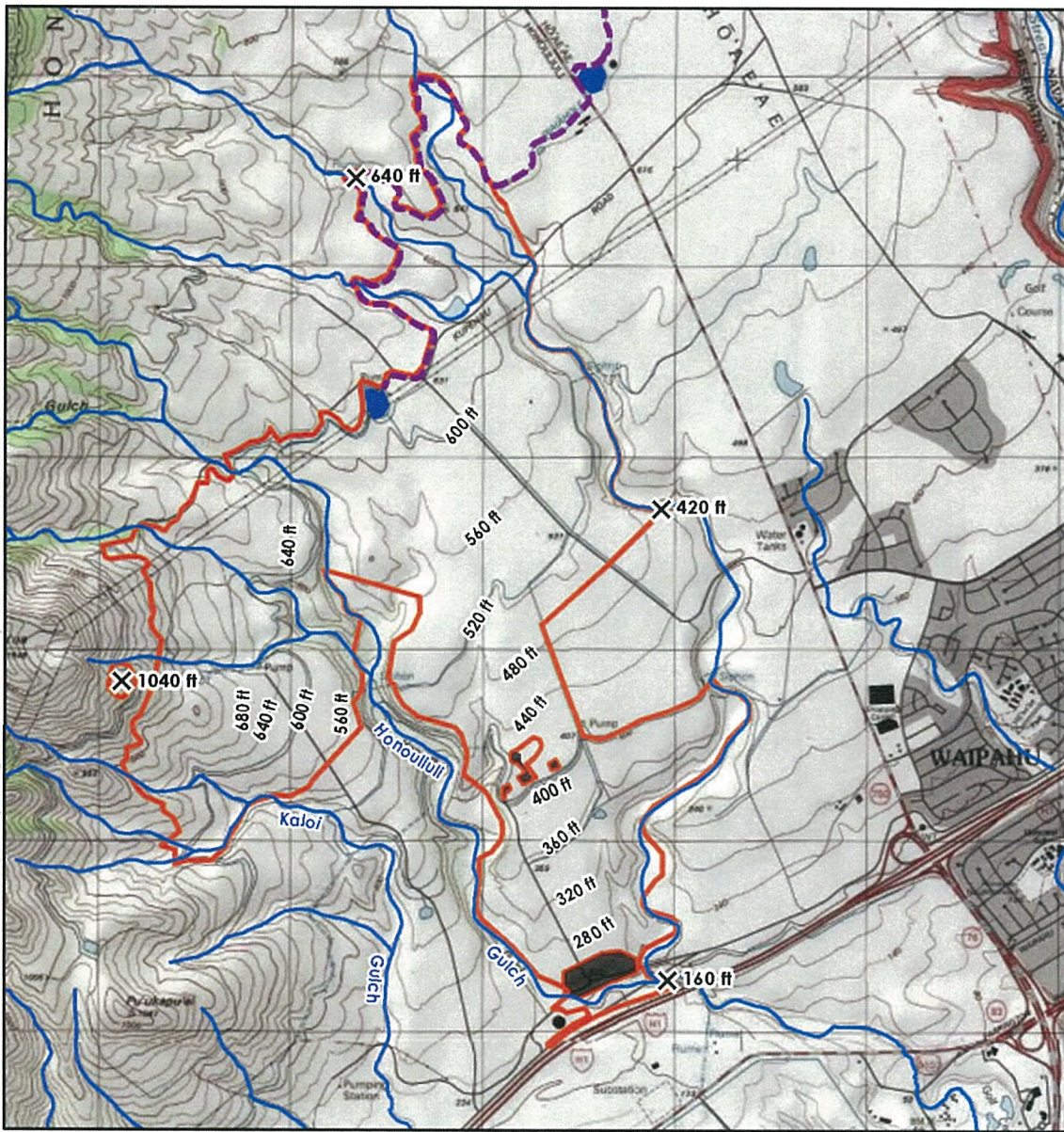
Agricultural Use	Acres	Percent
Crop Production	1,158	75%
Cattle Ranching	276	18%
Other (agricultural infrastructure, soil conservation, gulch)	116	7%
Total	1,550	100%

Standards and criteria . . . *land currently used for agricultural production. (HRS §205-44(c)(1))*

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Topography and Streams



DATE: 9/6/2017

LEGEND

-  Proposed IAL
-  Owned by Others
-  Reservoirs
-  Waiahole Ditch
-  Streams / Gulches

Source: U.S. Geological Survey, State of Hawaii, City & County of Honolulu
Disclaimer: This graphic has been prepared for general planning purposes only.

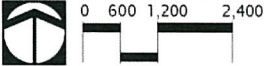


Figure 3

Topography and Streams

Monsanto IAL

Monsanto Company
North
Island of O'ahu

Linear Scale (Feet)
0 600 1,200 2,400

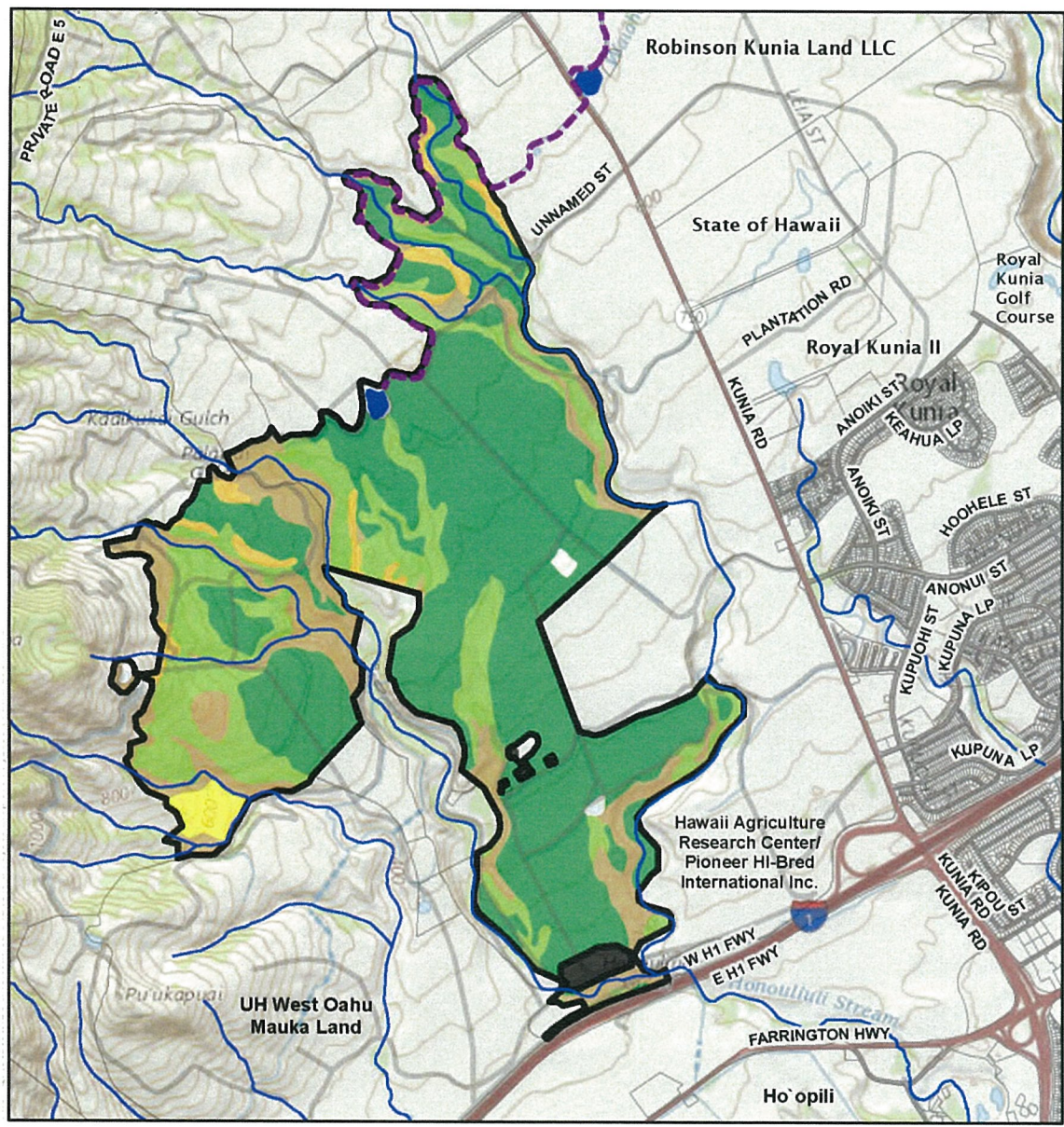




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LSB

(Land Study Bureau)
Detailed Land Classification System

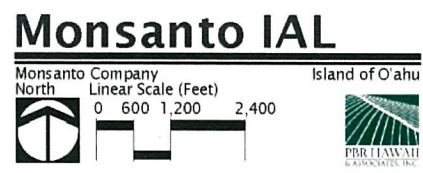


DATE: 8/28/2017

LEGEND

Proposed IAL	LSB Land Classification
Owned by Others	A: Excellent
TMK Parcels	B: Good
Reservoirs	C: Fair
Waiahole Ditch	D: Poor
Streams / Gulches	E: Very Poor
Roads	Unclassified

Figure 4
Detailed Land Classification System
Land Study Bureau (LSB)



Productivity Rating	Total IAL	
	Acres	% of IAL
A	849	54.7%
B	328	21.2%
C	22	1.4%
D	42	2.7%
E	297	19.2%
Unclassified	12	0.8%
Total	1,550	100%

Standards and criteria . . . *land with soil qualities and growing conditions that support agricultural production of food, fiber, or fuel- and energy-producing crops. (HRS §205-44(c)(2))*

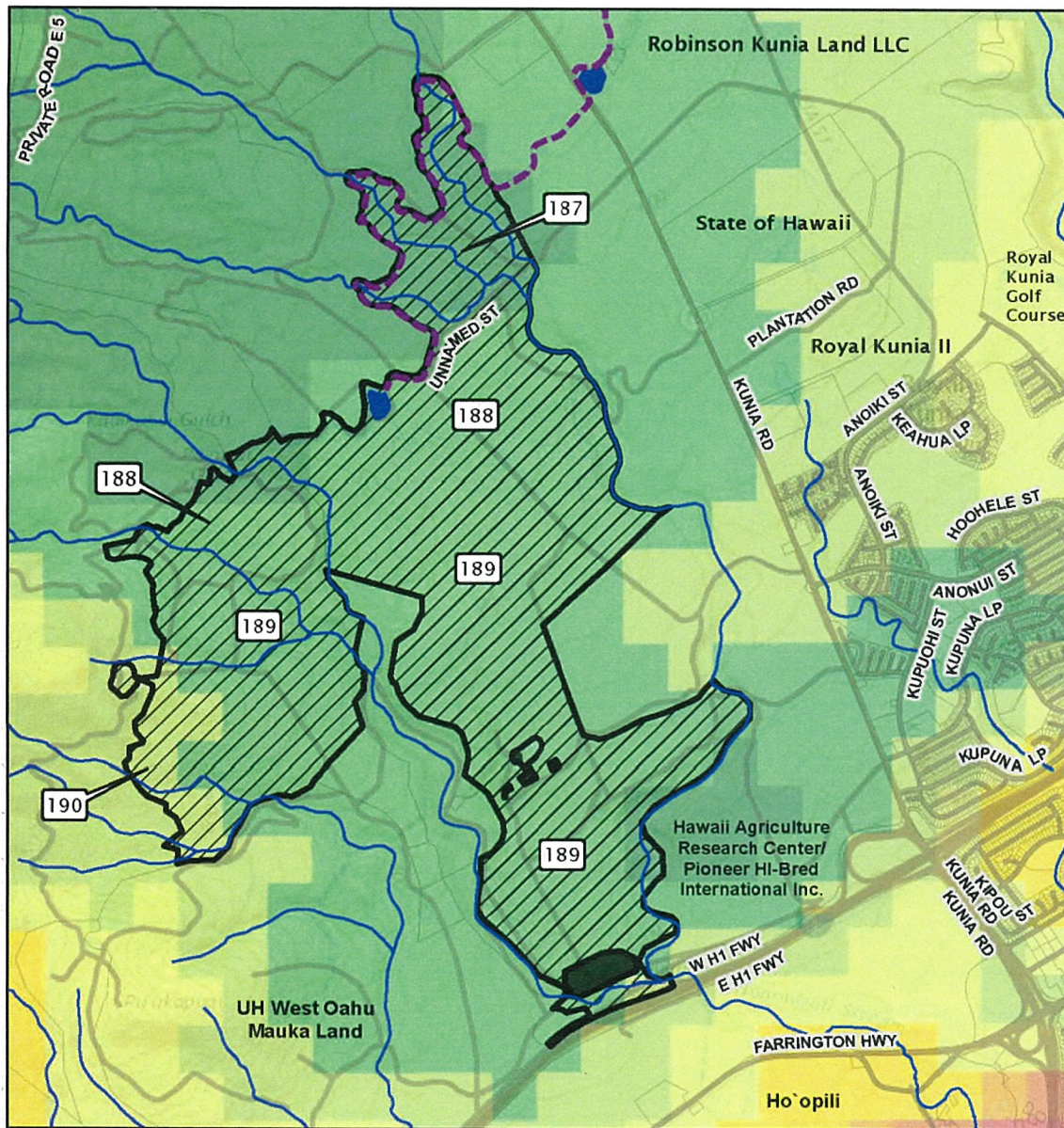
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Source: University of Hawaii Land Study Bureau (1972); State of Hawaii; City & County of Honolulu
Disclaimer: This graphic has been prepared for general planning purposes only.

Solar Radiation

Mean annual solar radiation: 187 to 190 watts per square meter per hour.

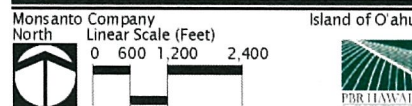


DATE: 8/30/2017

Figure 6

Solar Radiation

Monsanto IAL



Standards and criteria . . . *land with . . . growing conditions that support agricultural production of food, fiber, or fuel- and energy-producing crops. (HRS §205-44(c)(2))*

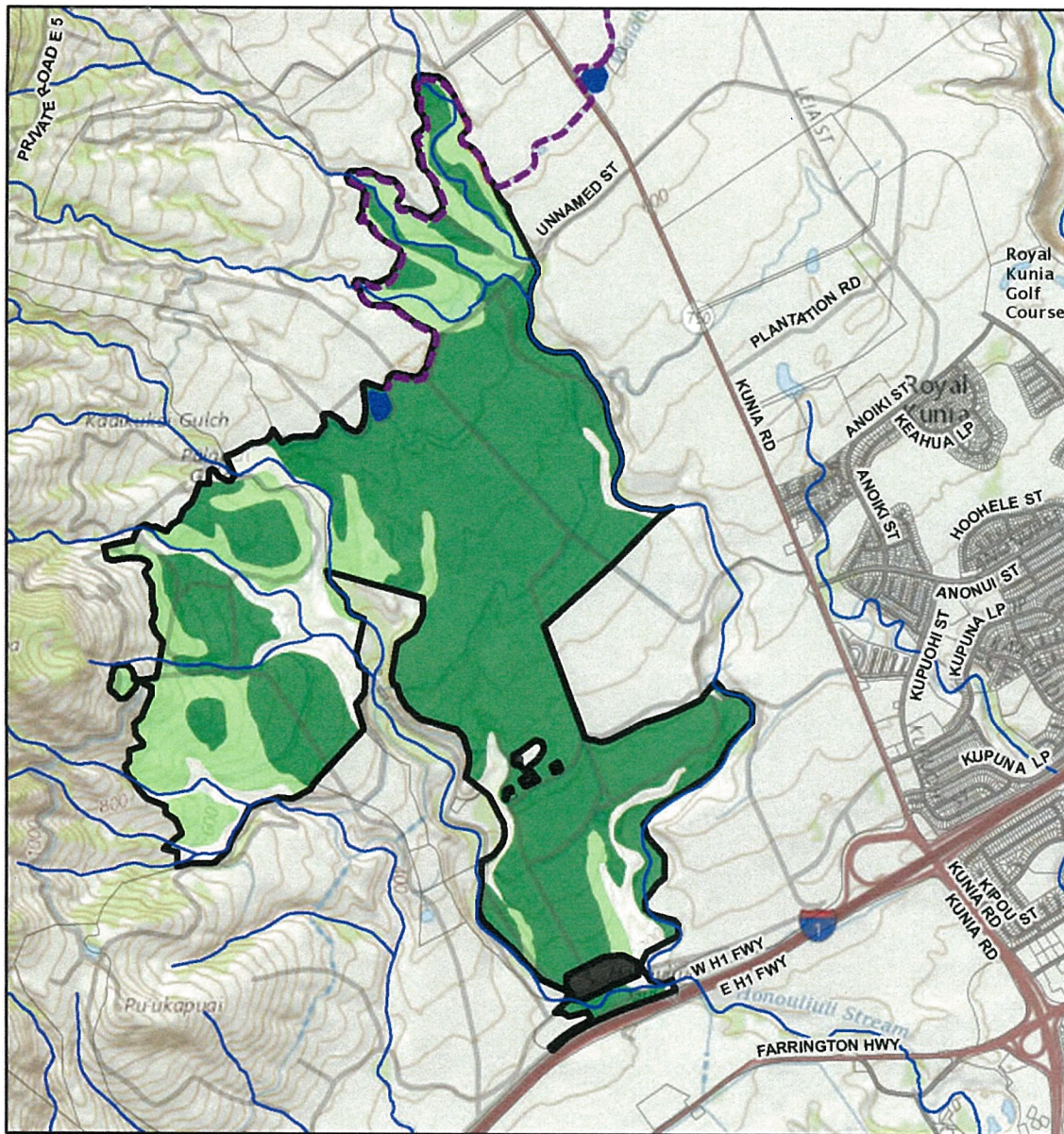
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Source: University of Hawaii Evapotranspiration of Hawaii (2014); State of Hawaii; City & County of Honolulu
Disclaimer: This graphic has been prepared for general planning purposes only.

ALISH

(Agricultural Lands of Importance to the State of Hawai'i)



DATE: 8/28/2017

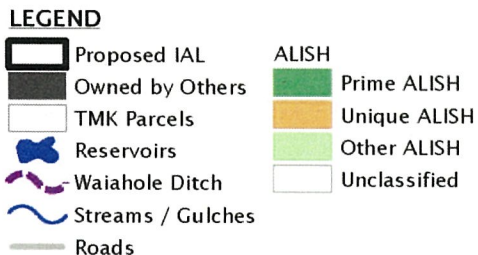
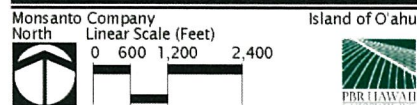


Figure 5
Agricultural Lands of Importance to the State of Hawaii (ALISH)

Monsanto IAL



Source: State Department of Agriculture (1977). State of Hawaii. City & County of Honolulu
Disclaimer: This graphic has been prepared for general planning purposes only.

ALISH Classifications	Total IAL	
	Acres	% of IAL
Prime	1,064	68.7%
Unique	2	0.1%
Other	318	20.5%
Not ALISH	166	10.7%
Total	1,550	100%

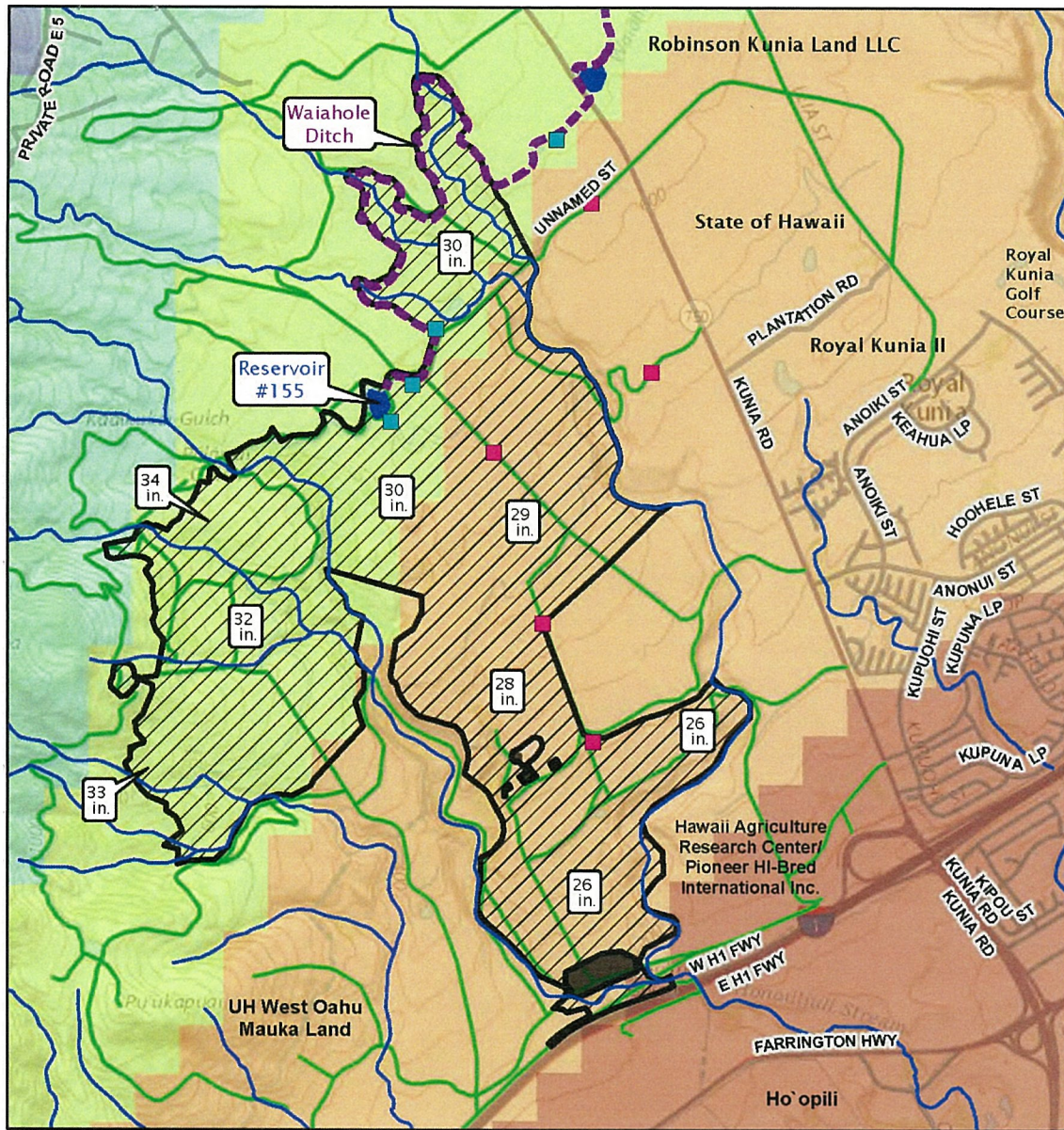
Standards and criteria . . . land identified under agricultural productivity rating systems, such as the agricultural lands of importance to the State of Hawaii (ALISH) system . . . (HRS §205-44(c)(3))

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Water Resources and Agricultural Infrastructure

- Source of Water: Waiāhole Ditch.
- Water Use Permit (WUP No. 828).
- Mean annual rainfall: 26" to 34".



DATE: 8/29/2017

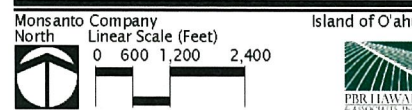
LEGEND

Proposed IAL	Mean Annual Rainfall (Inch)
Owned by Others	
Water Pumps	
Filter Stations	
Reservoirs	
Waiāhole Ditch	
Streams / Gulches	40 - 45
Cane Haul Roads / Trails	35 - 40
	30 - 35
	25 - 30
	20 - 25

Source: Environmental Resources Management; University of Hawaii Rainfall Atlas of Hawaii (2011).
 State of Hawaii, City & County of Honolulu
 Disclaimer: This graphic has been prepared for general planning purposes only.

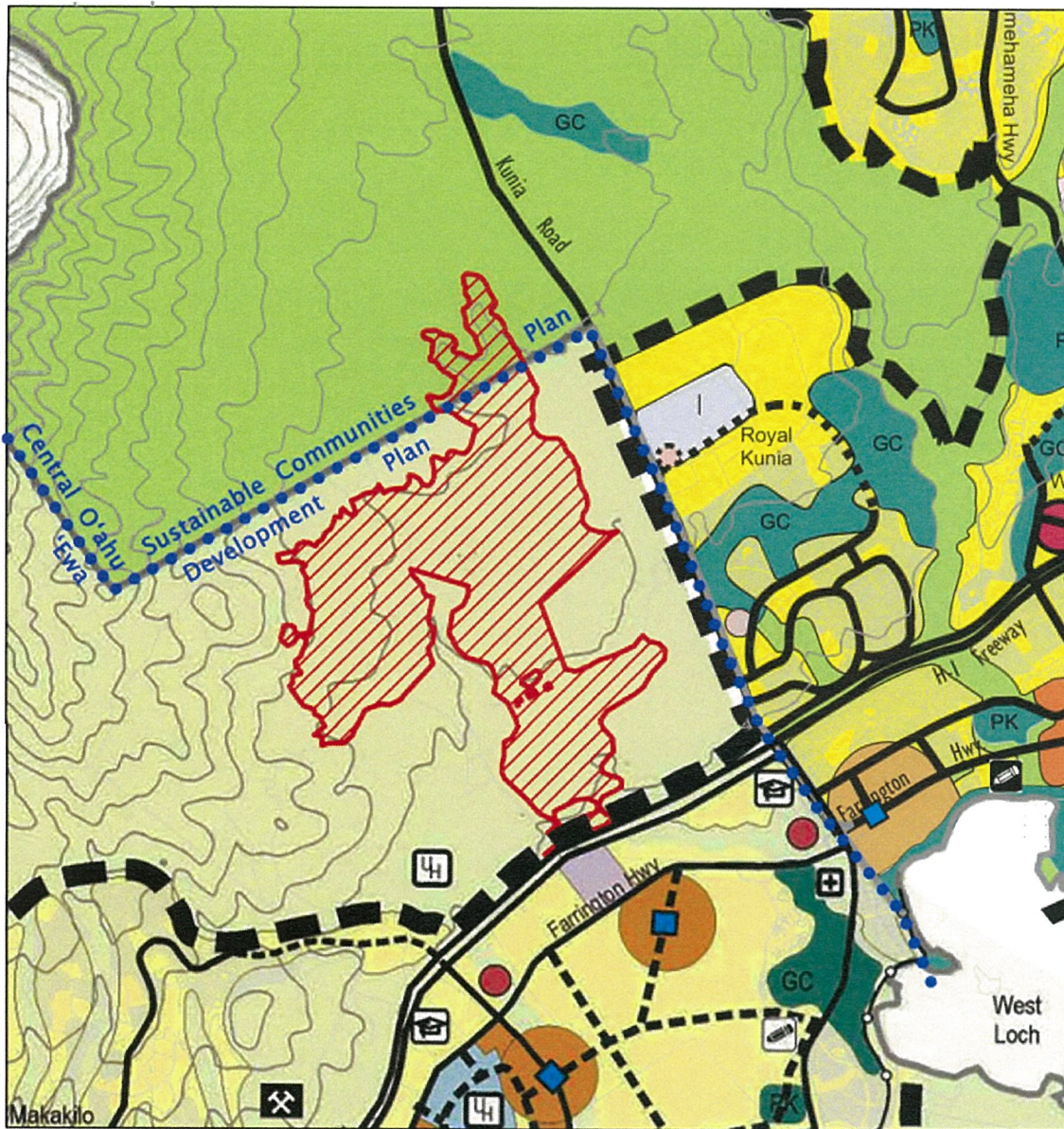
Figure 7
 Water Resources and Agricultural Infrastructure

Monsanto IAL



Standards and criteria . . . *land with sufficient quantities of water to support viable agricultural production.*
 (HRS §205-44(c)(5))





LEGEND

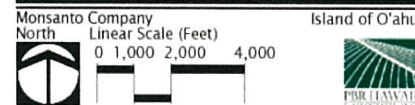
- Proposed IAL
- 'Ewa Development Plan (2013)
- Agricultural and Preservation Area
- Community Growth Boundary
- U.H. West Oahu
- Central O'ahu SCP (2002) Agricultural and Preservation Area
- Urban Community Boundary

Source: City & County of Honolulu. Disclaimer: This graphic has been prepared for general planning purposes only.

Figure 9a

'Ewa Development Plan (2013) and Central O'ahu Sustainable Communities Plan (2002)

Monsanto IAL



'Ewa Development Plan (2013) & Central O'ahu Sustainable Communities Plan (2002)

- Agriculture and Preservation Area.
- Draft 2016 Central Oahu SCP map—same designations.
- Outside of Urban Community Boundary.

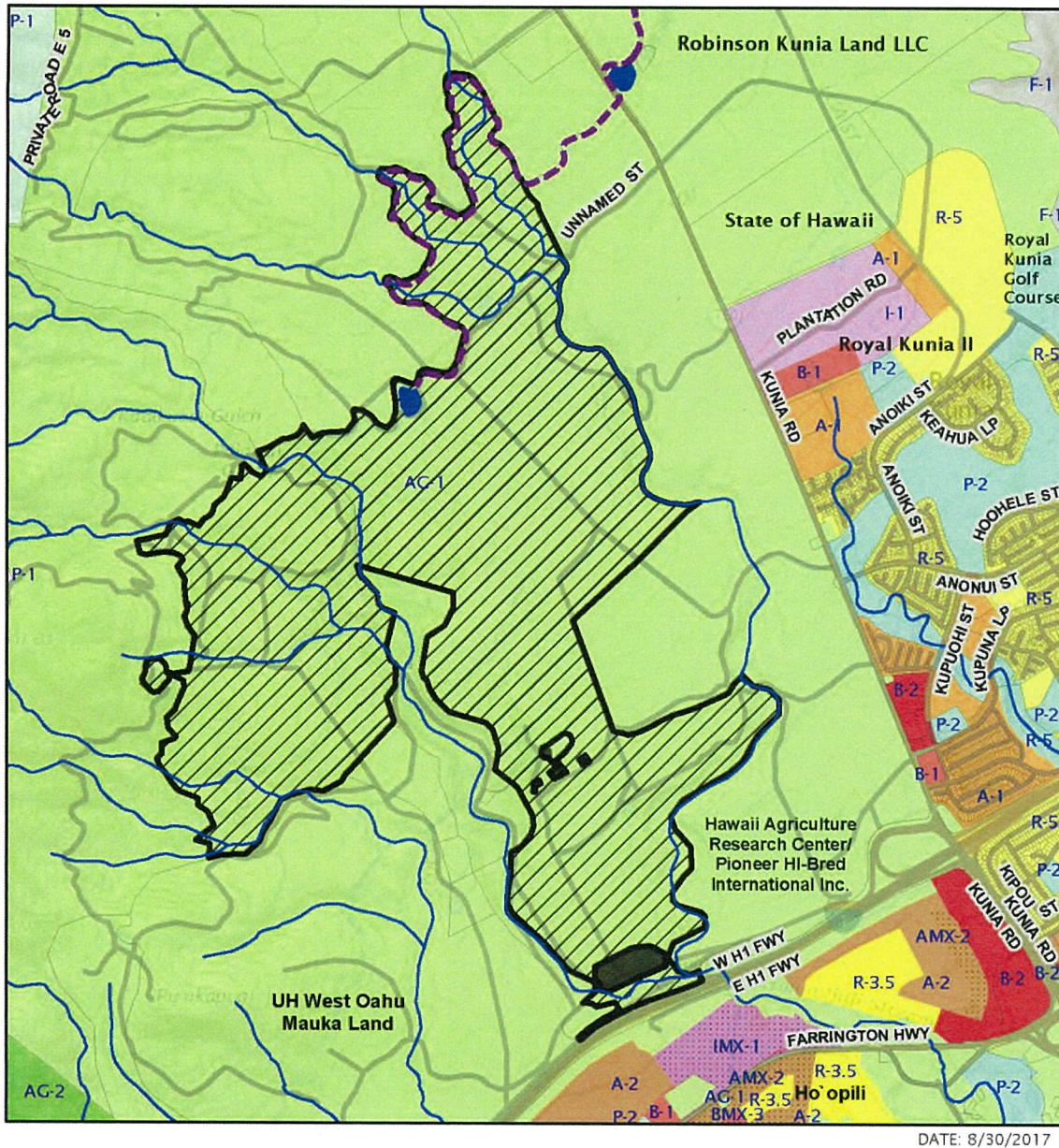
Standards and criteria . . . *land whose designation as IAL is consistent with general, development, and community plans of the county. (HRS §205-44(c)(6))*

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City and County Zoning

Agricultural – Restricted (AG-1)



LEGEND

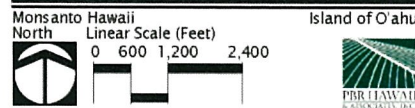
	Proposed IAL		P-1		R-5		B-1
	Owned by Others		P-2		R-3.5		B-2
	TMK Parcels		F-1		A-1		BMX-3
	Reservoirs		AG-1		A-2		I-1
	Waiahole Ditch		AG-2		AMX-2		IMX-1
	Streams / Gulches						
	Roads						

Source: City & County of Honolulu (2017) State of Hawaii. Disclaimer: This graphic has been prepared for general planning purposes only.

Figure 10

City and County of Honolulu Zoning

Monsanto IAL



Standards and criteria . . . *land with or near support infrastructure conducive to agricultural productivity, such as transportation to markets, water, or power. (HRS §205-44(c)(8))*

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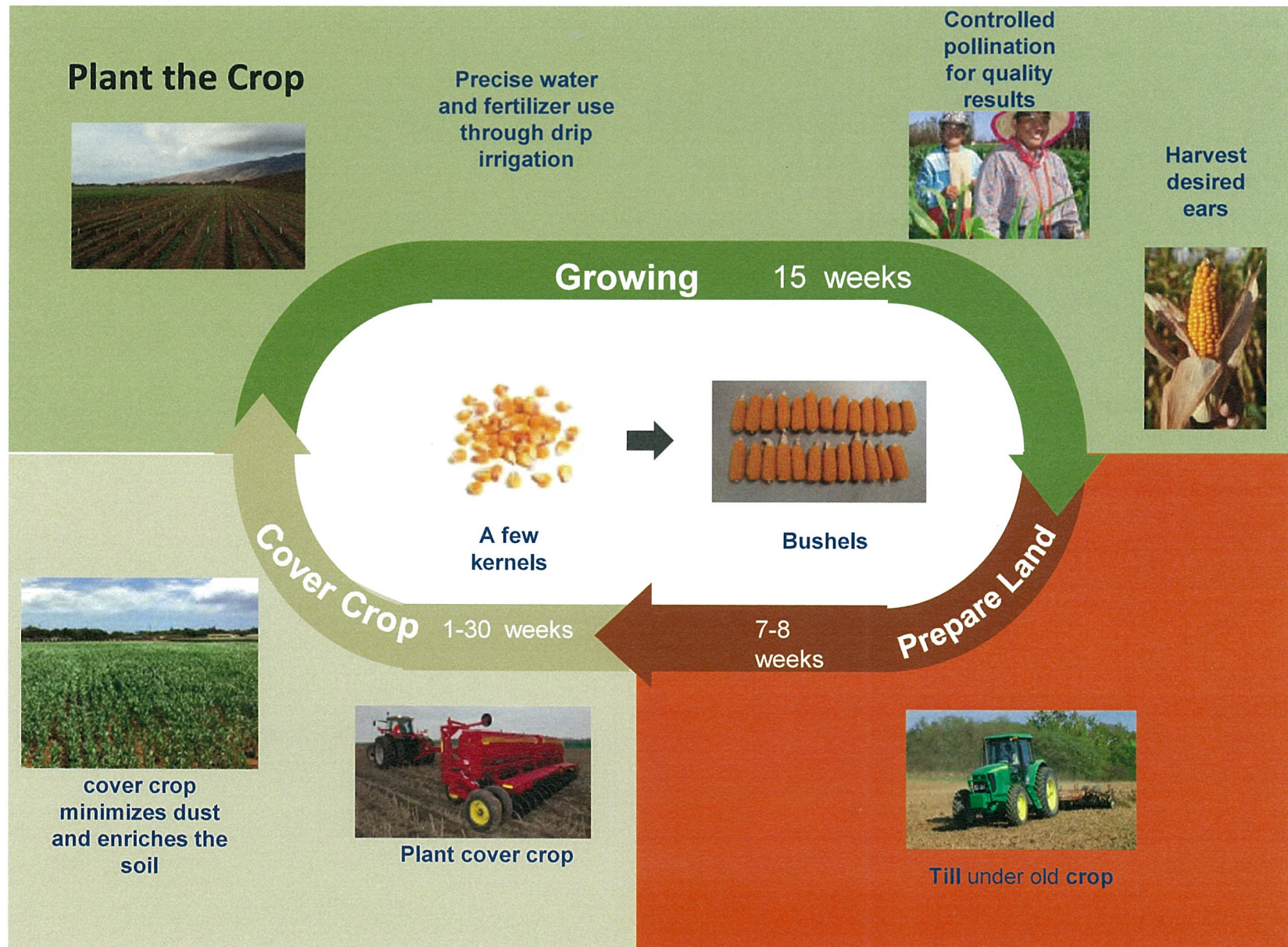
Standards and Criteria for IAL

HRS §205-44(c)

1. *Land currently used for **agricultural production**;*
2. *Land with **soil qualities and growing conditions** that support agricultural production of food, fiber, or fuel-and energy-producing crops;*
3. *Land identified under **agricultural productivity rating systems**, such as the agricultural lands of importance to the State of Hawaii (ALISH) system adopted by the board of agriculture on January 28, 1977;*
4. *Land types associated with **traditional native Hawaiian agricultural uses**, such as taro cultivation, or **unique agricultural crops and uses**, such as coffee, vineyards, aquaculture, and energy production;*
5. *Land with **sufficient quantities of water** to support viable agricultural production;*
6. *Land whose designation as important agricultural lands is **consistent with general, development and community plans of the county**;*
7. *Land that contributes to maintaining a **critical land mass** important to agricultural operation productivity;*
8. *Land with or near **support infrastructure** conducive to agricultural productivity, such as transportation to markets, water or power.*



Kunia Farm Crop Production Cycle



Land Stewardship

- Berms and grassed waterways.
- Reduced tillage methods such as Strip Till.
- Crop rotations and fallow periods.
- Cover crops.
- Micro-irrigation/water management.



Mahalo



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