

Survey and Topographical Map of Fish Pond  
at Grove Farm Homestead

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11-23-81

Kauai CC

## Background

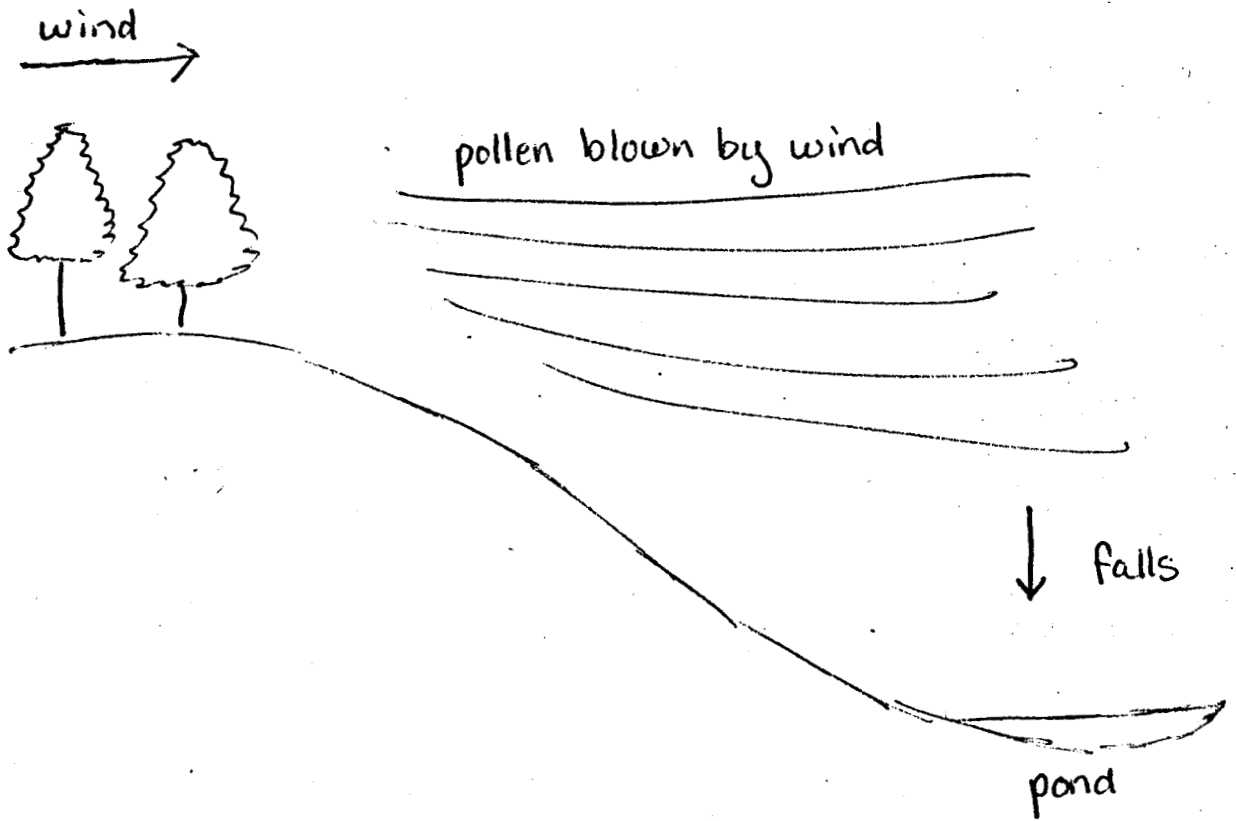
Archaeologists learn of the culture of earlier peoples through excavation from the tools found, the placement and relation of items and the estimation of use of "cerimonial" artifacts. To be scientific excavations need a statement of reasons, a hypothesis, and a detailed plan created from a thorough reconnaissance and an accurate survey.

The crescent-shaped depression thought to be the site of an ancient Hawaiian fish pond is on Grove Farm Homestead pasture land. The old Grove Farm Homestead or the Wilcox Estate is a national historic site and as such has been placed in the National Register of Historic Sites. The original main house serves as a museum.

The proposed excavation is to dig several trenches for research. The soil at the site is hard and compact. If the area was at one time a fish pond, it should have grey, mucky, spongy soil. However, the area was bulldozed so the fish pond soil should be underneath the present surface. The water level used to be 25 feet higher and the land in the valley is basically flat, so it is possible that the water course may have changed over the years and that the fish pond was once a bend in the old course. If so, in excavating the old stream bed and bank may be found possibly 40 feet down. Also discovered should be layers of stratum indicating the fish pond floor. Layers of silt containing evidences of pond life and pollen from windward trees and plants may be visible. During the 1850's the fish pond was

used to raise mullet and the old bridge was utilized to drain the pond. There is a spring up a small canyon at one end of the valley, but it is not thought to have produced enough water to irrigate the pond area. There is also a ditch connecting to the Nawiliwili Stream a couple of miles below the mill, but it is well above the present water level.

Pollen In Mud May Determine Trees (Type and  
Number) In Windward Area



Grove Farm Homstead

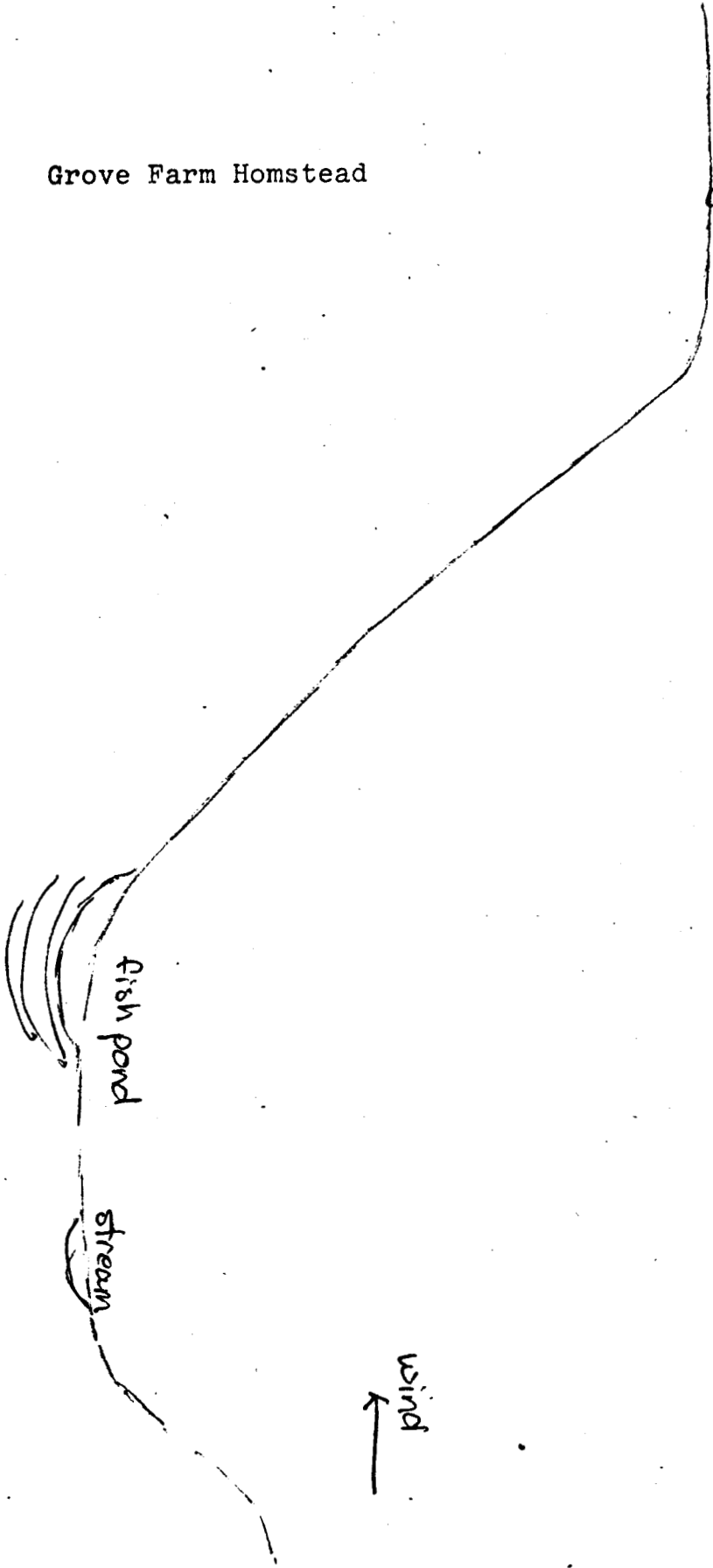
buildings

dust layers

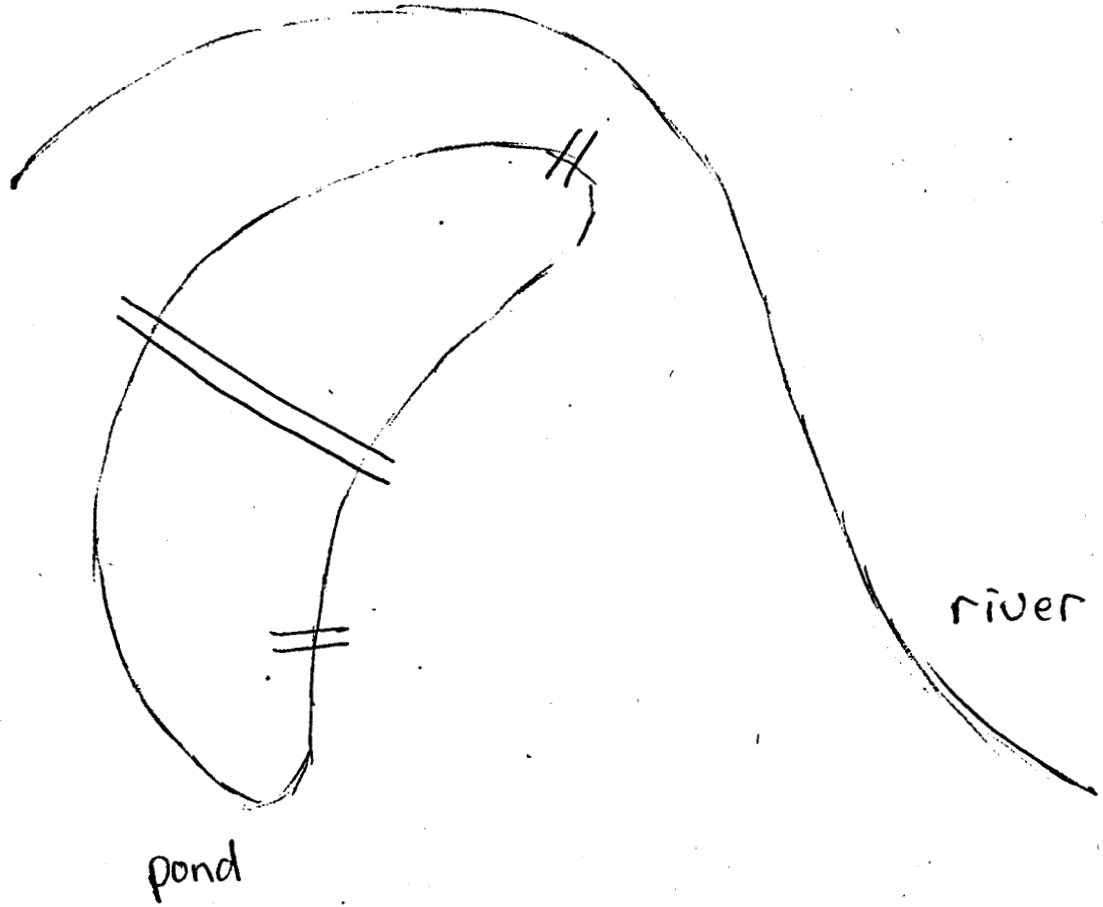
fish pond

stream

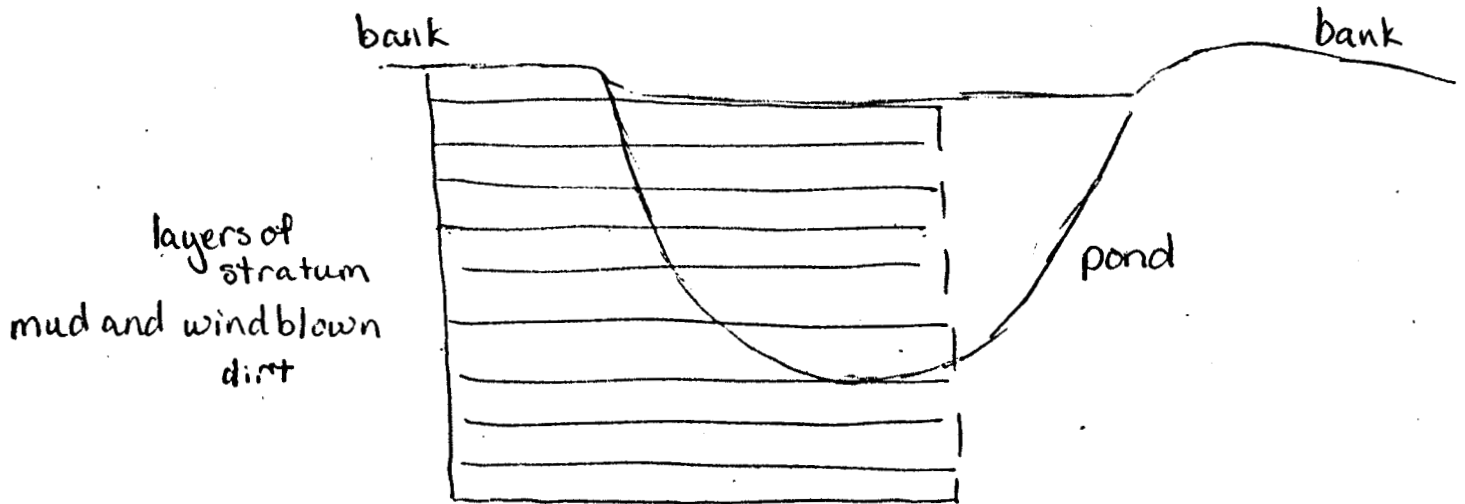
wind  
←



Possible Sites For Research Trenches



Cross Section



## Hypothesis

Is the crescent at Grove Farm an ancient Hawaiian fish pond? Or is it perhaps a modern system? Can this hypothesis be proved through excavation? Where did the water come from to fill the pond? Is it possible that the crescent is an old bend in the river's changing course? How much water does the spring nearby produce? Will traces of rocks, bacteria and plant life be found to indicate an old stream bed? Will silt or fine clay fill the stream area? How porous is the soil between the ditch and the pond? Does the ditch serve as drainage to keep the pond from becoming a swamp? What types of fish were raised in the pond? In the 1850's mullet were raised there, but were they raised there in ancient times? What else was cultivated there? What was growing around the pond and in neighboring areas? Lihue is on the windward side of the pond and Hawaiian weather is not thought to have changed since the creation of the islands, so will seeds and the pollen from plants in that area be found in the silt? Will excavation produce any indications of the answers to these questions?

## Reconnaissance

On January 31, 1981 the spring semester archaeological class lead by Dr. Kikuchi and accompanied by Mr. Higa went to Grove Farm Homestead to view the grassy crescent thought to be the possible site of an ancient Hawaiian fish pond. From the top of the hill near the main buildings one could see the whole valley. Near the foot of the hill was a dirt road extending to the left in the valley. Further out was the lower area thought to be the fish pond. Then the ground rises again slightly to drop away at the river. The group climbed down the hill, and through the barbed wire fence next to the road to reach the area where taro was grown, passed a small stream and topped the slight rise on the other side of the pond. The class turned left walking over level ground until they reached the river bank. Cutting back along the rise they came to the river again as it curved around the pond. Wandering along the valley the students and their professors investigated a small canyon containing the spring. At the mouth of the canyon was an old bridge. Following the road along the fence the group found an old stone building without a roof. This structure dates back to the 1800's and was a caretaker's house. Much information having been gathered, they returned up the hill with their plants, rocks and soil samples..

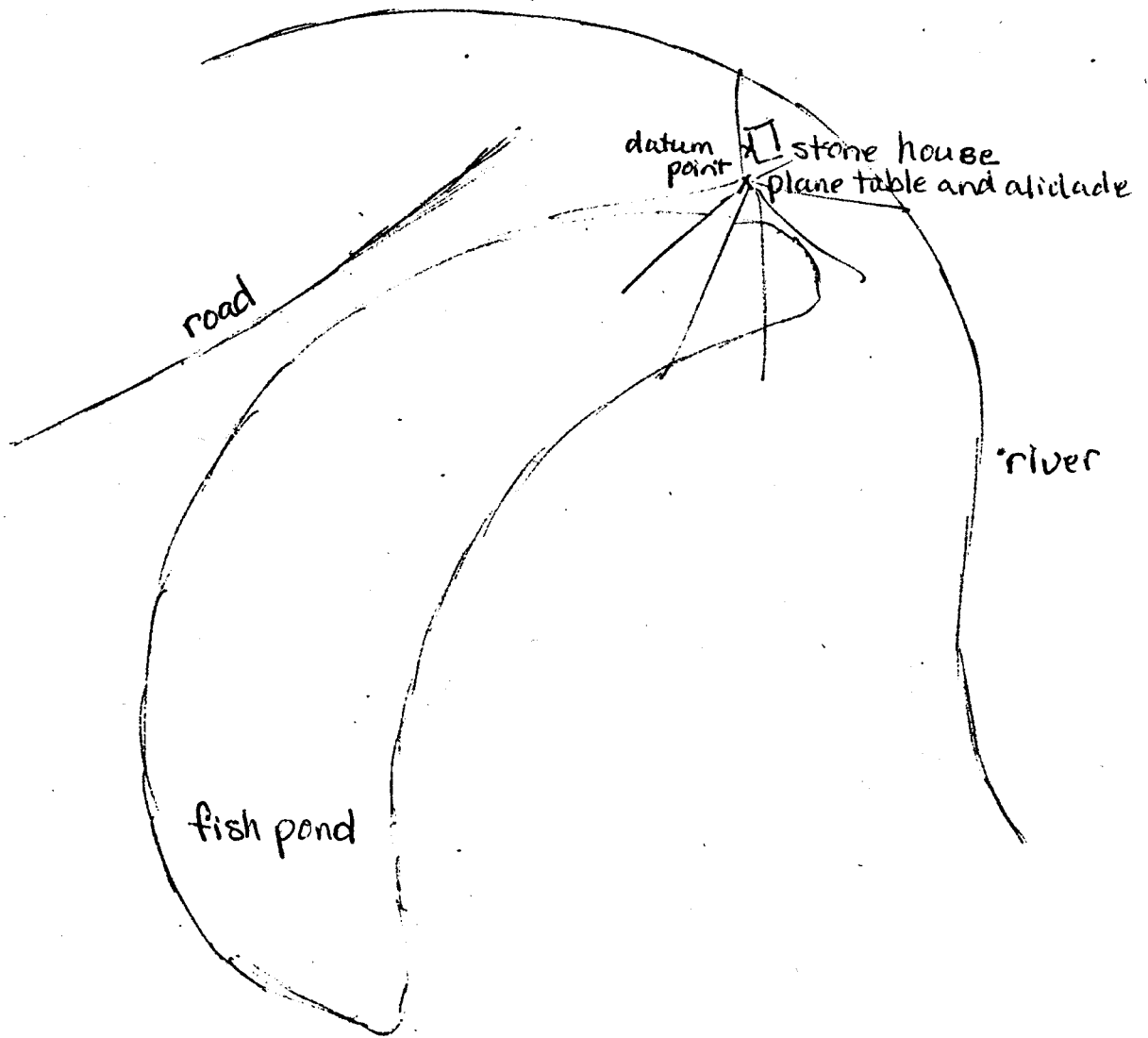
## Survey

On March 14, 1981 Dr. Kikuchi, his wife and several class members began the surveying. They set up a plane table and alidade near the stone house. Dr. Kikuchi chose a rock near the base of the stone house as a datum point. Using a plumb bob and the datum point, they measured the location of the equipment so that it could be returned to exactly the same position if necessary to recheck work or to obtain additional data. Using a long measuring tape and a stadia rod they measured and recorded the distance and elevation of many points at that end of the fish pond and the surrounding area, noting any geographical information deemed necessary by Dr. Kikuchi who would later use the information to draw a topographical map. During lunch break, the group investigated the ditch to Nawiliwili Stream. Dr. Kikuchi concluded that while it might have been used to fill the pond at some time, it was not likely to have been used by the ancient Hawaiians as the construction was not similar to their usual design.

On June 24, 1981 the summer semester archaeological field methods class again under Dr. Kikuchi's supervision continued the survey at Grove Farm. This time using the simpler method of surveying with a compass, meter rod and tape measure, they marked several stations with wooden stakes along the length of the valley and over the course of the summer recorded degrees of azimuth, taped distances and measured heights of a multitude of points across the valley.

Many notes were taken to mark ditches, big rocks, roads and other geographical configurations. These notes and measured elevations were then plotted on the topographical map started in the previous class by Dr. Kikuchi. Also during this period the water and the outflow of the spring was tested by Mr. Timbol.

Area Surveyed By First Class





Pt = Stake

Page 1  
H.I. =

Sta	Pt.	Description	Compass Bearing	∠	Distance		Stake	Height Vertical	Corr	Sample Measurements Taken In Sec	Class
					Stadia	Taped					
1	00		140°	∠							
	01				1.25m			-15 cm	cm deep		
	02				4.25m			-158 cm	173		
	03				3.05m			-61 cm	234		
	04				4.95m			-131 cm	365		
	05				6m			-9 cm	455		
	06							-3 cm	485		
	07		bottom road					-3 cm	455		
	08							-11 cm	444		
	09		ditch at bottom of hill					61 cm	365		
	10							90 cm	293		
2	01			∠	2.25m			45 cm	248		
	02				1.55m				272		
	03				5.01m			148 cm	1135		
	04				3.64m			155 cm	465		
	05				3.52m			142 cm	560		
	06				4.53m			45 cm	523		
	07		road		4.8m			-23 cm	488		
	08				5.8m			-35 cm	346		
	09				4.75m			-30 cm	191		
	10				4.8m			-163 cm	43		

Pt = Stake

written to indicate ground level for instrument

bottom of ground if measured to ground

Sta	Pt.	Description of ground	Compass Bearing	Stadia	Distance		leave	Height		Corr.
					Taped	by		Stake	Vertical	
					1m			19cm		207
					3m			96cm		
					3m			113cm		
					4m			45cm		
					4m			116cm		
					3m			-7cm		
					7m			-6cm		385
					4m	edge		-8cm		397
					5m	top		0		397
					4m	middle		-3cm		380
					2.5m	of ditch		-172cm		278
					2.5m			-23cm		205
					2.5m			-52cm		153
					2m			54cm		186
					3.5m	ditch		137cm		
					4m	big rock		14cm		337
					4m	rock		13cm		
					4m			-2cm		348
					5m			-6cm		
					4m			-1cm		341
					3m			-6cm		
					4m			-10cm		
					4.5m			17cm		

