

PH0055140

STATE: Hawaii
COUNTY: Hawaii
FOR NPS USE ONLY
ENTRY DATE AUG 7 1974

**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM
FOR FEDERAL PROPERTIES**

(Type all entries - complete applicable sections)

1. NAME

COMMON: 1790 Footprints
AND/OR HISTORIC: Footprints

2. LOCATION

STREET AND NUMBER: 9.1 miles southwest of park headquarters on Highway 11, then foot trail to southeast for 1 mile. H A I I			
CITY OR TOWN: Hawaii Volcanoes National Park		CONGRESSIONAL DISTRICT: 2	
STATE: Hawaii	CODE 15	COUNTY: Hawaii	CODE 01

3. CLASSIFICATION

CATEGORY (Check One)	OWNERSHIP	STATUS	ACCESSIBLE TO THE PUBLIC
<input type="checkbox"/> District <input type="checkbox"/> Building <input type="checkbox"/> Site <input type="checkbox"/> Structure <input checked="" type="checkbox"/> Object	<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Both	Public Acquisition: <input type="checkbox"/> In Process <input type="checkbox"/> Being Considered	<input type="checkbox"/> Occupied <input checked="" type="checkbox"/> Unoccupied <input type="checkbox"/> Preservation work in progress
PRESENT USE (Check One or More as Appropriate)			
<input type="checkbox"/> Agricultural <input type="checkbox"/> Commercial <input type="checkbox"/> Educational <input type="checkbox"/> Entertainment	<input checked="" type="checkbox"/> Government <input type="checkbox"/> Industrial <input type="checkbox"/> Military <input type="checkbox"/> Museum	<input checked="" type="checkbox"/> Park <input type="checkbox"/> Private Residence <input type="checkbox"/> Religious <input type="checkbox"/> Scientific	<input type="checkbox"/> Transportation <input type="checkbox"/> Other (Specify) _____ _____ _____
		<input type="checkbox"/> Comments	<input type="checkbox"/> Yes: <input type="checkbox"/> Restricted <input checked="" type="checkbox"/> Unrestricted <input type="checkbox"/> No

4. AGENCY

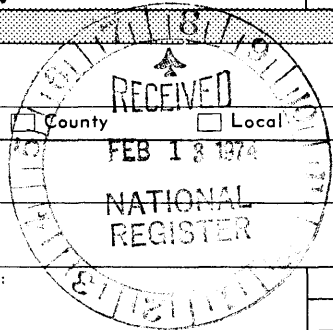
Hawaii Volcanoes National Park		STATE: Hawaii
REGIONAL HEADQUARTERS: (If applicable)	STREET AND NUMBER:	
CITY OR TOWN: Hawaii Volcanoes National Park	STATE: Hawaii	CODE

5. LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.: National Park Service, U.S.D.I.		
STREET AND NUMBER:		
CITY OR TOWN: Washington	STATE: D. C.	CODE 08

6. REPRESENTATION IN EXISTING SURVEYS

TITLE OF SURVEY:			
DATE OF SURVEY:	<input type="checkbox"/> Federal <input type="checkbox"/> State	<input type="checkbox"/> County <input type="checkbox"/> Local	
DEPOSITORY FOR SURVEY RECORDS:			
STREET AND NUMBER:			
CITY OR TOWN:	STATE:	CODE	



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7. DESCRIPTION

CONDITION	(Check One)				
	<input type="checkbox"/> Excellent	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input checked="" type="checkbox"/> Deteriorated	<input type="checkbox"/> Ruins
	(Check One)		(Check One)		
	<input type="checkbox"/> Altered	<input checked="" type="checkbox"/> Unaltered	<input type="checkbox"/> Moved	<input checked="" type="checkbox"/> Original Site	

DESCRIBE THE PRESENT AND ORIGINAL (if known) PHYSICAL APPEARANCE

CLASSIFIED STRUCTURE1790 Footprints: (No identification number)Order of Significance: SecondClass VI Land Associated: 4,284 acres

Present Condition: Unknown number of fossil footprints of men, women, and children and hoofprints of hogs. The area consists of scattered footprints in hardened, cement-like ash. Area overlain by loose volcanic material which is constantly, slowly, being shifted by rain and wind. A particular print may be covered one year and exposed another year. When exposed, the fossil footprints suffer from natural erosion of the relatively soft matrix, from wear by careless feet of observers, and occasionally from vandalism. Some have been deliberately defaced; some attempts have been made to remove them intact, an operation which usually is unsuccessful and results in destruction.

A few prints have been preserved under glass in a National Park Service shelter (Bldg. 55, built in 1940 and not a classified structure).

Description: An area of approximately 4,284 acres bounded on the north-west by the edge of the Keamoku lava flow of aa lava; on the southeast by the Ka'u Desert Trail; and on the northeast and southwest by irregular lines; of the Ka'u Desert, which contains an unknown number of fossil footprints and hoofprints in a surficial ash deposit laid down ca. 1790 during phreatic explosions of Kilauea volcano originating in Kilauea crater.

Existence of the fossil prints was unknown until the spring of 1920 when they were found about 8 miles from Uwekahuna bluff by Ruy H. Finch, assistant volcanologist of the Hawaiian Volcano Observatory. By October 1921, Jaggar (July, October 1921 reports), Finch and others had located two additional clusters of fossil footprints--one about a mile and three-quarters and the other cluster two miles from Uwekahuna (site of present buildings of Hawaiian Volcano Observatory). The boundary described above and marked on accompanying maps includes these three clusters, as well as areas between which are suspected of containing additional prints.

Jaggar described one track of a barefoot adult as indicating a stride of 24 inches with a 10 1/2-inch-long foot. The track was headed eastward. Long strides of another man were believed to be of a man running. Tracks within the three known clusters do not indicate any one prevailing direction of group travel. Jaggar included photographs with his report of October 1921. Volcanologist Jaggar (and later geologists) believed the

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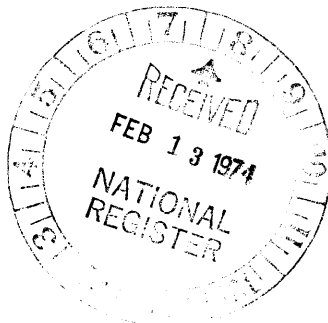
7. DESCRIPTION

May 1924 phreatic eruption series of Kilauea volcano resembled the 1790 series. In his report for August 1924, Jaggard noted that the fossil footprints of 1790 were being uncovered by wind "after their partial obliteration by a thin film of ash of the May 1924 eruption." Wind was blowing away the ash, "which fortunately did not cement itself in place in the manner of the 1790 ash at this distance from the volcanic center."

Men of the Civilian Conservation Corps placed a glass viewing device over several prints and placed a shelter over the windows in 1940. They also developed a trail to the shelter from the Hilo-Kona road through and over the rough aa lava of the Keamoku lava flow.

Recommended Treatment: Preservation (of Bldg. 55, the modern footprints shelter): replace rusted pipe rails surrounding glass covering Hawaiian fossil footprints in 1790 volcanic ash layer; modify existing shelter to permit viewing and photographs of footprints without reflections in the protecting glass. It should be noted that the footprints under glass within the shelter are the only prints always available for inspection. The shelter is reached via trail eight-tenths of a mile long from a parking area on Hawaii Route 11, nine miles from Kilauea Visitor Center-Park Headquarters.

Preliminary Estimate of Cost: \$6,000



8. SIGNIFICANCE

PERIOD (Check One or More as Appropriate)

- | | | | |
|--|---------------------------------------|--|---------------------------------------|
| <input type="checkbox"/> Pre-Columbian | <input type="checkbox"/> 16th Century | <input type="checkbox"/> 18th Century | <input type="checkbox"/> 20th Century |
| <input type="checkbox"/> 15th Century | <input type="checkbox"/> 17th Century | <input checked="" type="checkbox"/> 19th Century | |

SPECIFIC DATE(S) (If Applicable and Known)

AREAS OF SIGNIFICANCE (Check One or More as Appropriate)

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> Aboriginal | <input type="checkbox"/> Education | <input type="checkbox"/> Political | <input type="checkbox"/> Urban Planning |
| <input type="checkbox"/> Prehistoric | <input type="checkbox"/> Engineering | <input type="checkbox"/> Religion/Philosophy | <input type="checkbox"/> Other (Specify) _____ |
| <input checked="" type="checkbox"/> Historic | <input type="checkbox"/> Industry | <input checked="" type="checkbox"/> Science | _____ |
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Invention | <input type="checkbox"/> Sculpture | _____ |
| <input type="checkbox"/> Architecture | <input type="checkbox"/> Landscape Architecture | <input type="checkbox"/> Social/Humanitarian | _____ |
| <input type="checkbox"/> Art | <input type="checkbox"/> Literature | <input type="checkbox"/> Theater | _____ |
| <input type="checkbox"/> Commerce | <input checked="" type="checkbox"/> Military | <input type="checkbox"/> Transportation | _____ |
| <input type="checkbox"/> Communications | <input type="checkbox"/> Music | | |
| <input type="checkbox"/> Conservation | | | |

STATEMENT OF SIGNIFICANCE

Fossil footprints of Hawaiian men, women, and children, some walking and some running, with hoofprints of Polynesian hogs, are in a cement-like layer of volcanic ash laid down during the 1790 explosive eruption of Kilauea volcano. The prints are believed to be those left by the warriors, with their families and animals, who served ruling chief Keoua Kuahu'ula. The chief and his company crossed the summit area of the volcano during the eruption enroute to battle with warriors of Kamehameha the Great.

DISCOVERY 1920

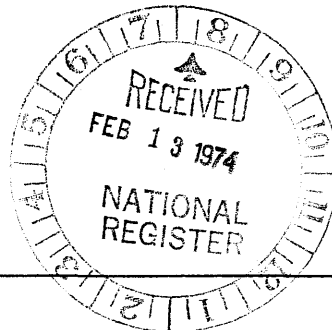
To reach the flowing lavas and fountains of liquid rock spewing forth on the Big Island's Ka'u Desert in 1919 and 1920, scientists of the Hawaiian Volcano Observatory had a rough 8-mile hike.

Part of the way they could follow an ancient Hawaiian trail through the desert of crisscrossed lava fields, but the going was tough on legs and feet, trail or no trail. Underfoot were billows of hard rock, loose boulders, cinders and grey ash and pumice. In some places thin crusts broke from body weight to propel shins and knees into sharp edges of thin rock layers. Falls were hard to avoid.

Dr. Thomas A. Jaggar and his staff of volcanologists hiked the 8 miles downhill, observed the eruption, and hiked the 8 miles back to the observatory uphill.

It was hard to make the round trip during daylight hours.

But the 1919-1920 Ka'u Desert eruption was only three miles from the Hilo-Kona road. Between the road and the eruption was one of the roughest lava fields known to man--the prehistoric Keamoku Flow of rough and jagged clinkery aa lava.



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Hiking across 3 miles of the Keamoku lava field was thought to be worse than 8 miles of billowy rock, boulders, cinders, ash and pumice.

Ruy H. Finch was the man who crossed the Keamoku clinker field. Finch was the assistant to Dr. Jaggar, who drove down the Hilo-Kona road and parked opposite the eruption.

Finch picked his way through the Keamoku to break out on the normal Ka'u Desert surface about a half-mile from the eruption. Finch had assistants with him.

Finch found the footprints. Footprints made by bare Hawaiian feet in a cement-like layer of volcanic ash.

Footprints made by men, women, and children, some running, some walking. Hoofprints made by the cloven hoofs of Hawaiian pigs.

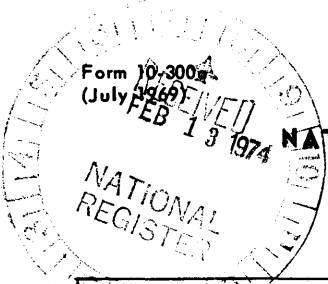
The ash in which the prints were preserved was laid down during the 1790 explosive eruption of Kilauea volcano. Its principal vent, Halemaumau, let loose a series of blasts in 1790 which put tons of rocks and ash into the air. Some of the ash mixed with rain to fall as cool mud on the Ka'u Desert.

Men, women, children, and pigs walked and ran through the mud. It hardened into a cement-like layer, footprints, hoofprints and all. Ruy Finch found them early in 1920.

ORIGIN 1790

The complex historical background behind the footprints involves the volcano goddess Pele, Kamehameha the Great, and the battles and wars of the Big Island. Many historians and Hawaiians believe the footprints were made by the warriors of Keoua Kuahu'ula (a high Hawaiian chief) who were traveling with their families; or else by a detached group of relatives of Keoua's army. Keoua and his army passed through the Ka'u Desert during the 1790 steam-blast eruption of Kilauea. Volcanic gasses killed about one-third of his army.

In 1790, Keoua Kuahu'ula was the only remaining rival of Kamehameha the Great for control of the Island of Hawaii. Camped in Hilo, Keoua learned



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of an invasion of his home district of Ka'u by warriors of Kamehameha. To reach Ka'u from Hilo, Keoua had a choice of two routes--one was the usually traveled coastal route, at sea level, but it was longer, hot, shadeless, and without potable water for long distances. The other route was shorter, but passed over the summit and through the lee of Kilauea volcano, an area sacred to, and the home of, the Hawaiian volcano goddess Pele. Keoua chose the volcano route, perhaps because it was shorter and quicker, with water available frequently. He also wished to consult, perhaps, with the prophet Kamaka-aka-akua, a priest of Pele at the temple Oalalauo.

One of the rare series of phreatic explosions of Kilauea began the first night Keoua and his army were camped near the temple. The explosions were accompanied by flowing lava within the crater and by thunder and lightning in clouds over the crater. Explosions tossed rocks into Keoua's camp to kill some of the men; others were burned by falling cinders. Keoua spent the next two days and nights in attempts to propitiate the volcano goddess, but the unusual violence continued.

On the third day the army left the camp in three groups at different times for safety. The route onward from the temple for all groups was along the northern edge of the crater to Uwekahuna, the high point on the western side, and then into the lee of the crater across the Ka'u Desert by the regular trail. The ultimate destination was the populated parts of Ka'u, the thatched villages in the more westerly part where horticulture predominated. The warriors and raiding parties of Kamehameha were in that area.

The first group was well across the Ka'u Desert when earthquakes began--some so strong that people could not stand. The volcanic vent in Kilauea crater ejected a cloud of rocks, fume, debris, smoke and dust so dense that survivors later compared the darkness it created to night. The underside of the cloud was illuminated by light from flowing lavas. Lightning was frequent. Hot cinders, sand, and ash fell from the cloud, particularly downwind on the Ka'u Desert. A few members of the first group were burned to death by falling cinders, and all experienced trouble breathing. The first group hurried on away from the crater to establish a camp at a safer distance.

The third group was near the crater but not downwind during the earthquakes and darkness. The ash and sand shower did them little injury, and they continued on after the atmosphere cleared and light returned. The third group discovered the bodies, in life-like postures, of the men, women,

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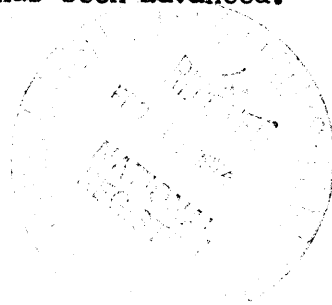
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and children of the middle group. Only a hog survived. The bodies were scorched but not burned. The third group left the bodies as found and continued on to join the first group at their encampment. Ten days later, on their return journey to Hilo, Keoua's companions found the bodies little changed in the desert conditions. Estimates of the size of each of the approximately equal groups vary from 80 to 400. Keoua's total army, including women and children, from survivors' not-in-agreement estimates, may have ranged from 240 to more than a thousand. The above summary is based on the eyewitness and survivor accounts recorded by Dibble and published in 1843.

British naturalist David Douglas (of the fir) talked to a priest of Pele at Kilauea crater in 1834. The priest, who said he was an eyewitness to the 1790 affair, told Douglas that more than 5,000 people were killed downwind of the crater in 1790. The aging priest said that he assisted in offering [selected male] bodies to the volcano goddess by throwing the bodies into active lava in the crater, Pele's home. The remaining bodies were left where they lay. Scientist William Brigham, later the first director of the Bishop Museum in Honolulu, hiking with Horace Mann, saw scattered human thigh bones on the Ka'u Desert in 1864. Other human bones were seen on the desert in 1920 by Ruy Finch. He found a battered calabash near one skeleton.

Vagueness as to actual numbers is frequent in Hawaiian oral history, especially when told by Hawaiians to Christian missionaries (Dibble, Ellis) or to Westerners (Douglas) generally. This vagueness as to numbers does not of itself negate the reality of the event. In this instance, the larger the number alleged killed, the greater the power attributed to the volcano goddess. The priest of Pele gave the largest estimate. Circumstantial evidence only links the fossil footprints to the army et al. of Keoua Kuahu'ula, but no other explanation for them has been advanced.



9. MAJOR BIBLIOGRAPHICAL REFERENCES

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SW 5/252190
NW 5/250500
2140 360
2141000

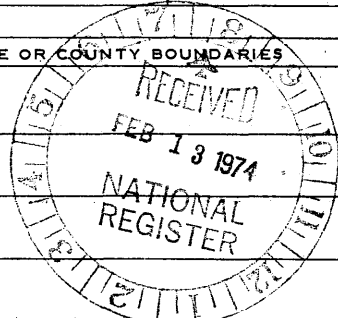
10. GEOGRAPHICAL DATA

LATITUDE AND LONGITUDE COORDINATES DEFINING A RECTANGLE LOCATING THE PROPERTY				O R	LATITUDE AND LONGITUDE COORDINATES DEFINING THE CENTER POINT OF A PROPERTY OF LESS THAN TEN ACRES				
CORNER	LATITUDE		LONGITUDE		LATITUDE		LONGITUDE		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
NW	19°	21'	40"	155°	22'	30"			
NE	19°	25'	42"	155°	18'	44"			
SE	19°	24'	39"	155°	17'	53"			
SW	19°	20'	32"	155°	21'	35"			

APPROXIMATE ACREAGE OF NOMINATED PROPERTY: 4.284

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE:	CODE	COUNTY:	CODE



HR 15/257100
2149300
SE 5/258690
2148000

SEE INSTRUCTIONS

11. FORM PREPARED BY

NAME AND TITLE: **Russell A. Apple, Pacific Historian** DATE: **9/5/73**

BUSINESS ADDRESS: **Hawaii Group, National Park Service, U.S.D.I.**

STREET AND NUMBER: **Suite 512, 677 Ala Moana Blvd.** PHONE: **808/521-3027**

CITY OR TOWN: **Honolulu** STATE: **Hawaii 96813** CODE: **15**

12. CERTIFICATION OF NOMINATION

NATIONAL REGISTER VERIFICATION

State Liaison Officer recommendation:

- Yes
- No
- None

[Signature]
State Liaison Officer Signature

In compliance with Executive Order 11593, I hereby nominate this property to the National Register, certifying that the State Liaison Officer has been allowed 90 days in which to present the nomination to the State Review Board and to evaluate its significance. The recommended level of significance is National State

Local State
[Signature] 20 NOV 1973
Federal Representative Signature Date
Regional Director, Western Region
Title

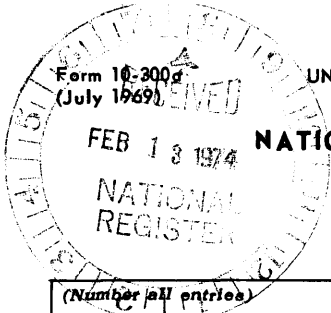
I hereby certify that this property is included in the National Register.

[Signature]
Director, Office of Archeology and Historic Preservation

Date 9/7/74

ATTEST:
[Signature]
Keeper of The National Register

Date 8/1/74



Form 10-200a
(July 1969)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

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9. MAJOR BIBLIOGRAPHICAL REFERENCES

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1966 Geology of the State of Hawaii. Palo Alto. Pp. 134-135.

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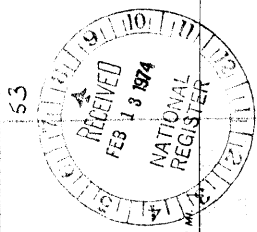
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Pp. 367-389.

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1969 Geologic Map of the Kau Desert Quadrangle, Hawaii. U. S. Geological
Survey. Washington.



this map

BOTTOM



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY 52
HILLO 38 MI.
NAT. PARK HEADQUARTERS 8.8 MI.

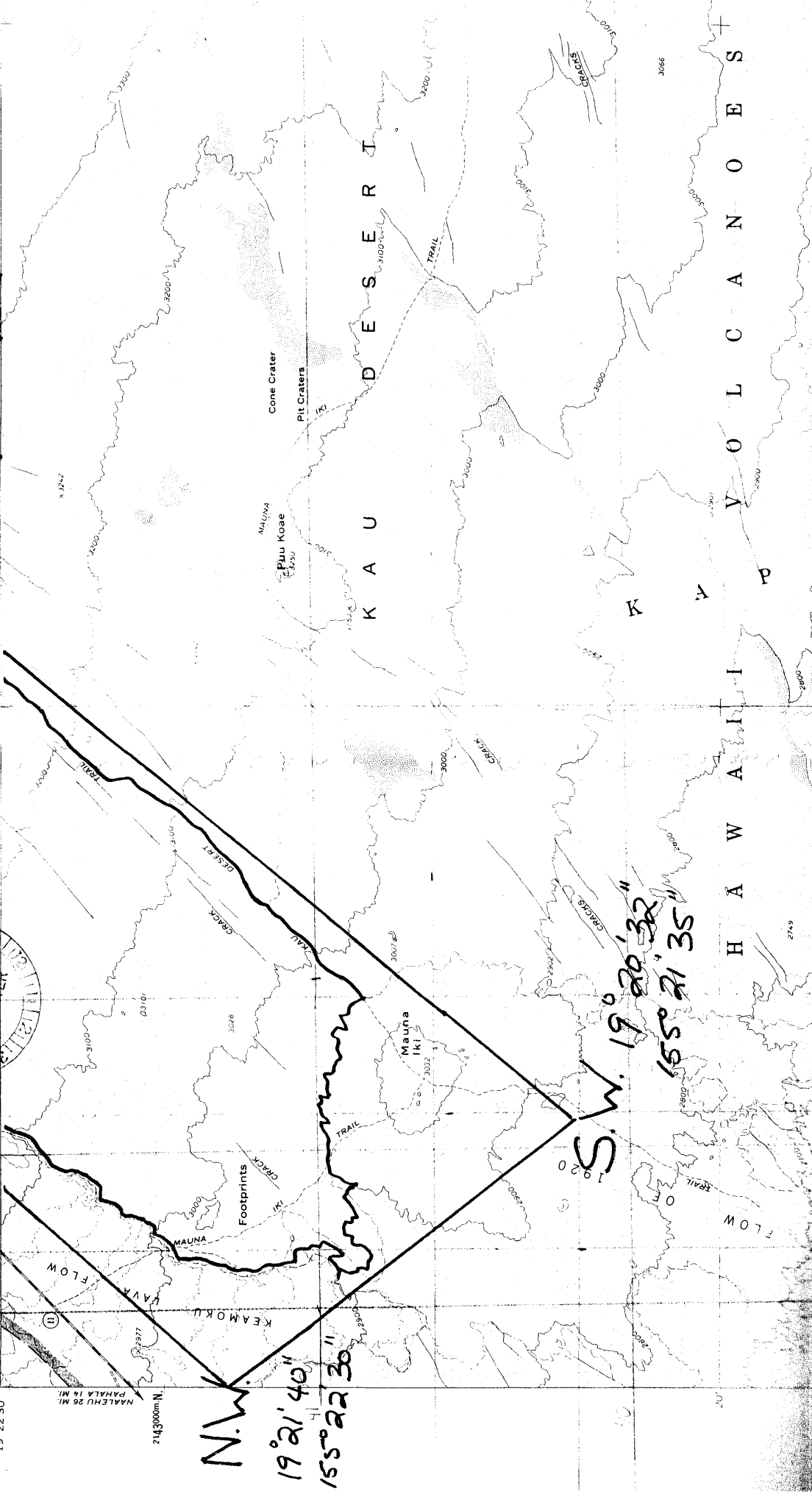
155° 22' 30"
19° 22' 30"

24,300m N.
2,937

NALEHU 26 MI.
PAHALA 14 MI.

N.W.
192° 40'
155° 22' 30"

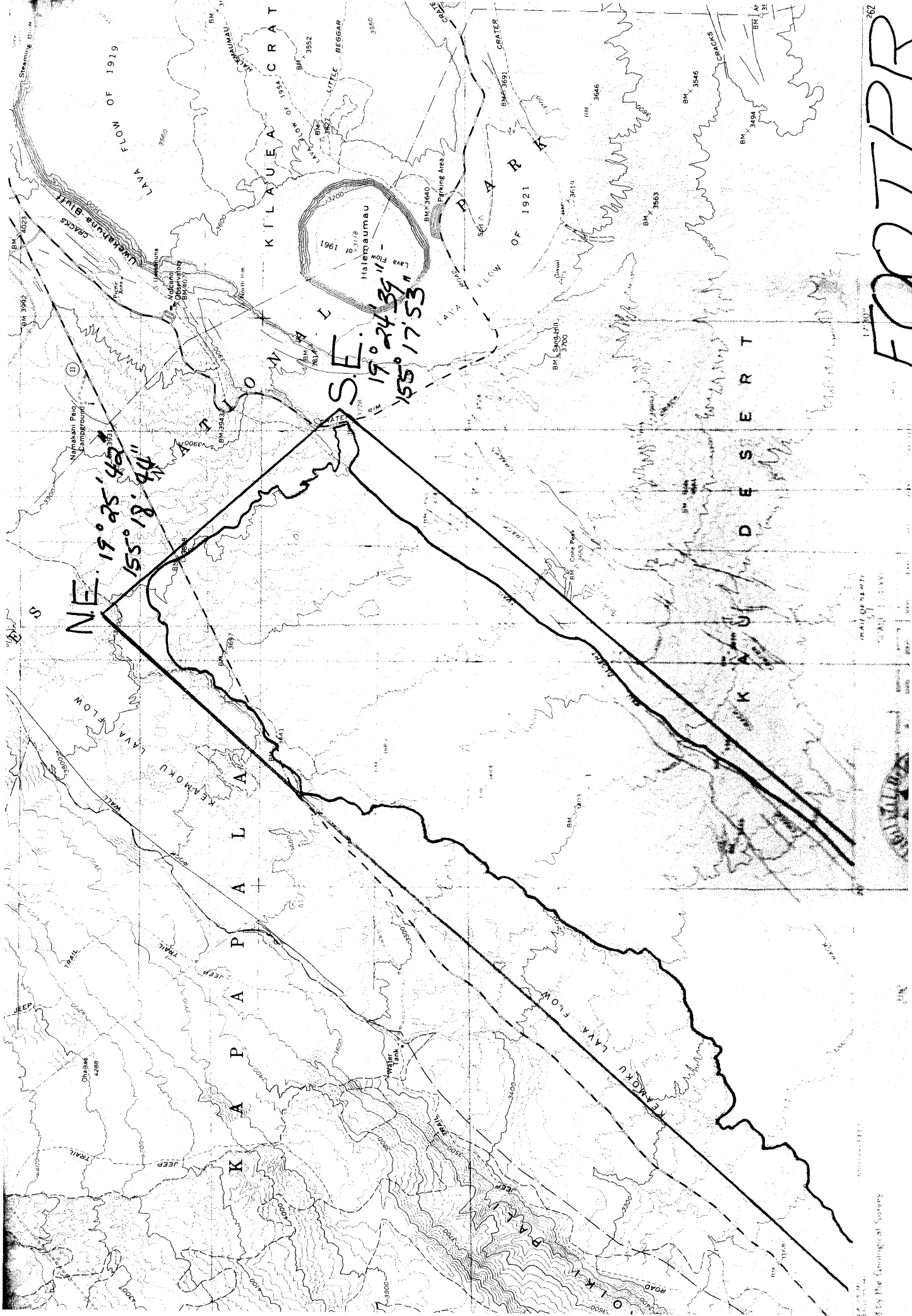
S.W. 192° 32"
155° 21' 35"



K A U D E S E R T

H A W A I I I Y O L C A N O E S S

53



NE. 19° 25' 45"
 155° 18' 44"

SE. 19° 24' 39"
 155° 17' 53"

FOOTPRINT
 U.S. GEOLOGICAL SURVEY
 DEPARTMENT OF THE INTERIOR
 BUREAU OF LAND MANAGEMENT
 WASHINGTON, D.C. 20508
 17 100'



PROPERTY OF THE NATIONAL REGISTER

NPS Number 8/7/74

Title: 1790 Footprints

Hawaii County, Hawaii

Loc. Single footprint in 1790 ash layer -

loose sand and cinders from 1924

phreatic eruptions.