ORNITHOLOGICAL SURVEY

OF THE

PROPOSED

GEOTHERMAL WELL SITE # 2

DLNR DESIGNATED GEOTHERMAL RESOURCE SUBZONE
KILAUEA MIDDLE EAST RIFT ZONE
PUNA DISTRICT
ISLAND OF HAWAII

AUGUST 16, 1990

BY

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PREPARED FOR:

TRUE/MID PACIFIC GEOTHERMAL VENTURE

INTRODUCTION

The U.S. Fish and Wildlife Service (USFWS 1983) and the State of Hawaii (DLNR 1986) have listed as endangered six forest bird species for the Island of Hawaii. Two of these birds, the O'u (Psittirostra psittacea) and the Hawaiian hawk (Buteo solitarius) may be present within the Geothermal resource sub-zone (Scott et al. 1986). Thus, their presence could impact future development within the resource area. This report presents the results of a bird survey conducted August 11 and 12, 1990 in the sub-zone in and around the proposed well site and pad for True/Mid Pacific Geothermal Well #2.

METHODS

One eight-minute count was conducted at each of nine stations in the area of the proposed well drilling site and pad clearing on each of two consecutive days. The count period was begun at 6:15 a.m. in order to use the high calling/song rate period of birds occurring during the first three hours after dawn. Birds were detected aurally or visually using the Variable circle plot count method (Ramsey and Scott 1979) for detection and recording. Each bird was recorded by species, distance and direction from the trained observer. On Day One, birds were counted at consecutively numbered stations placed 400 feet apart in an ascending manner while moving into the forest from the access road around the well site. On Day Two, the stations were censused in reverse, that is, in a descending manner from the well site to the access road. This was done to remove any temporal bias in calling/song rates as the observer moved from station to station within the study site. Some bird species may call only just after sunrise with decreasing rates thereafter. These birds would not be calling later in the day, and therefore not detected, when the observer reached the last stations. (Scott and Ramsey 1981).

Any unidentified calls and species seen or heard while walking along the transect were considered as incidental observations and not included in the data summary except to be added to the species list.

This survey was conducted along the access road and in the forest covering an area equivalent to five times the proposed well pad area for Well Site #2 in the Kilauea middle east rift zone, Puna District, on the Island of Hawaii. (See maps #1, 2 & 3). The study site is approximately 1420 feet in elevation.

Counts were conducted at nine stations placed at least 400 feet apart in all directions. This spacing was used to maintain enough area between stations to eliminate repeat counts of loud species as recommended in Ramsey and Scott 1979.

FINDINGS

Two hundred sixty-two (262) birds comprising nine (9) species were counted during the two day survey (Table One and Two). Five (5) native species made up 65% of the detections. Of these only one, the Hawaiian hawk, is considered an endangered species. Four (4) non-native species comprised 35% of the total. Most endemic species were detected with equal frequency throughout the forested study site but two species, the Hawaiian hawk and the Elepaio were observed infrequently at the study site.

Apapane was the most commonly detected native species making up 33% of all birds observed and averaged 4.8 birds per station. Most likely this nectivorous species was attracted to the numerous ohia trees (Metrosideros polymorpha) that were in bloom through out the area.

Japanese white-eyes were the second most common species observed making up 26% of the total and averaged 3.7 birds per station. This alien species is ubiquitous throughout the forested areas on all major Islands in the Hawaiian chain. Being found from sea level to tree line, it is the most common bird found in Hawaii (Scott et al 1986).

The next most commom species found during the survey (21% of the total) was the Omao or Hawaiian thrush. This bird, commonly found at higher elevations was detected at a rate of 3.1 birds per station, an unusually high number for such a low elevation. This species is common in forests above 3000 feet on the Big Island except for the Kona side and the Kohala Mountains where it dissappeared earlier in this century for unknown reasons. Other species of this genus found on other Hawaiian Islands are only found in low nuwbers and are all but extinct (Scott et al 1986 and personal observations).

Three observations of two individual endangered Hawaiian Hawks were made during the two day survey. One Hawaiian Hawk nest with a nestling was found out side of, but within approximately 400 feet of the proposed well site.

The nestling was first seen and heard approximately 50 feet from the nest on the first day of the survey. On the

second day the young bird was seen perched on the edge of the nest and was later fed by one of the parents.

During an earlier survey in July an unusual slightly upslured whistle was heard on several occassions. This unidentified call was again heard during this survey but this time more numerous than during the previous survey. It was determined that the source of this unusual sound was the Omao or Hawaiian Thrush. This observer had never heard this particular Omao call before. This type of vocalisation is probably a dialect of the Omao repertoire in this area. It could be confused with a similar up slurred whistle call of the O'U if an observer were not familiar with Omao calls.

DISCUSSION

Only one endangered species, the Hawaiian hawk, (three sightings) was detected during the survey. This bird ranges wide during foraging forays and is found throughout various native and non-native habitats on the Island of Hawaii. The presence of this bird and the active nest in the study site is not unique as Hawaiian hawks are known to live and nest throughout the Puna district (Griffin 1985, Jeffrey 1986, Scott et al. 1986).

The presence of an active hawk nest within 400 feet of the well pad should be treated with caution. Loud noises and constant human activity around nests are known to cause nest (egg and nestling) abandonment and mortality in many bird species including hawks. The nesting period of the Hawaiian hawk (March-August) is the most vulnerable to this type of disturbance (Griffin 1985).

Normally, Hawaiian hawks begin nesting in March/April when the eggs are laid and with most hatching occurring in mid-June. Most nestlings fledge during August (about 8-9 weeks after hatching) but remain in the natal territory for over a year begging food from the parents. There is a high frequency of nest reuse in subsequent years. (Griffin 1985)

The nestling at the study site nest is very close to fledging. It appeared close to adult size and was seen to fly at least 50 feet from the nest, perching in an adjacent tree. During a second observation, a parent was observed bringing a food item to the nestling at the nest on which the nestling immediately began to feed.

In order to prevent disturbance of the nest at the site it is reccommended the no clearing of the pad begin until the hawk nestling fledges (2-3 weeks). This can be determined by

weekly observations of the nest from a distance so as to not disrurb the nestling or adults, until the fledgling discontinues using the nest. Also, the nest should be monitored again in the spring to watch for reuse by the parents. Monitoring should continue if the nest is reactivated. Information on the effects of disturbance from nearby well activity is important. Very little is known about Hawaiian Hawk nesting and human disturbance and this would be a good opportunity to gather this type of information for future reference.

Other endangered species that are found in ohia forests (Hawaii Akepa, Hawaii Creeper) are limited to higher elevations (Scott et al. 1986) and have not been seen at elevations below 2000 feet since the early 1900's (Berger 1988). None of these species were found below 3600 feet during the Hawaii Forest Bird Survey of 1976-81 (Scott et al. 1986). Therefore, it is unlikely that either of these two species would occur within the study area.

A third endangered species, the O'u, also found in ohia forests was once a common species in the wet forests and were known to move from high elevations to low elevations during feeding forays. (Perkins in Berger 1988) Only one sighting was made during the Hawaii Forest Bird Survey in the Puna area (Scott et al. 1986). Although O'u calls are a loud, clear upslurred or downslurred whistle and fairly distinctive, the bird is rarely detected and has been confidently identified on the Island of Hawaii only once (Olaa Tract) in the last five years (USFWS pers com). This species still may occur in unexplored areas. Occasionally unconfirmed sightings are reported on the Island of Hawaii (1988-1990, 3 sightings, USFWS pers com). None were detected during this survey.

The Amakihi, Apapane and Omao are widely distributed over the study area in consistently moderate numbers whereas, the Elepaio was detected in very low numbers on only three of the nine stations. The presence of these four species of native birds in a low-elevation ohia forest is unique. Nowhere else in Hawaii can native bird species be found below 2000 feet elevation (Scott et al. 1986).

Disease, predation, competition from non-native bird species and habitat fragmentation are suspected agents in the demise of all Hawaii's native forest bird species. This is especially prevalent at low elevations. It has been assumed that disease has been the primary contributing factor in the decimation of native birds in low elevation habitats (Scott et al 1986, Scott et al. 1988). The presence of these four species at the study site elevation challenges these disease assumptions. This particular anomoly requires further study.

Forest fragmentation and distruction has led to the extinction of birds and plants worldwide and is of great concern to developers and biologists alike. With careful planning and cooperation in developement plans that include Hawaii's native forests we will help preserve this important component of Hawaii's native ecosystems.

Table 1.

Species Names

Native Species		
AMAK	Common Amakahi	*Hemignathus virens virens*
APAP	Apapane	*Himatione sanguinea sanguinea*
ELEP	Elepaio	*Chasiempsis sandwichensis ridgwayi*
OMAO	Omao	*Myadestes obscurus*
HAHA	Hawaiian Hawk	*Buteo solitarius*
Introduced Species		
HOFI	House Finch	*Carpodacus mexicanus*
JAWE	Japanese White-eye	*Zosterops japonicus*
NOCA	Northern Cardinal	*Cardinalis cardinalis*
MLTH	Melodious Laughing-thrush	*Garrulax canorus*
SPMU	Spotted Munia	*Lonchura punctulata*

Table 2.

Species and numbers of individuals detected at stations along the Proposed access road and at Well site #2.

DAY ONE

Station	1	2	3	4	5	6	7	8	9	
Species										TOTAL
AMAK	0	0	3	3	1	1	2	4	0	14
APAP	5	5	4	3	9	5	5	4	3	43
ELEP	0	0	0	0	0	0	0	0	0	0
HAHA	0	0	0	0	0	1	0	0	0	1
OMAO	4	4	4	3	3	3	2	3	3	29
JAWE	6	2	4	4	3	4	5	5	2	35
MLTH	3	2	2	2	0	0	0	2	1	12
NOCA	0	1	1	0	0	0	0	0	0	2
SPMU	0	0	0	0	0	0	0	0	2	2
										138

DAY TWO

Station	1	2	3	4	5	6	7	8	9	
Species										TOTAL
AMAK	1	1	2	1	0	0	3	0	0	8
APAP	6	4	6	4	4	3	7	4	5	43
ELEP	1	1	0	0	1	0	0	0	0	3
HAHA	0	0	0	0	1	1	0	0	0	2
OMAO	3	3	2	2	5	3	3	2	4	27
JAWE	6	2	4	3	2	1	5	4	5	32
MLTH	0	2	0	0	0	2	1	2	1	8
NOCA	0	0	0	0	1	0	0	0	0	1
SPMU	0	0	0	0	0	0	0	0	0	0
										124

TWO DAY TOTAL 262

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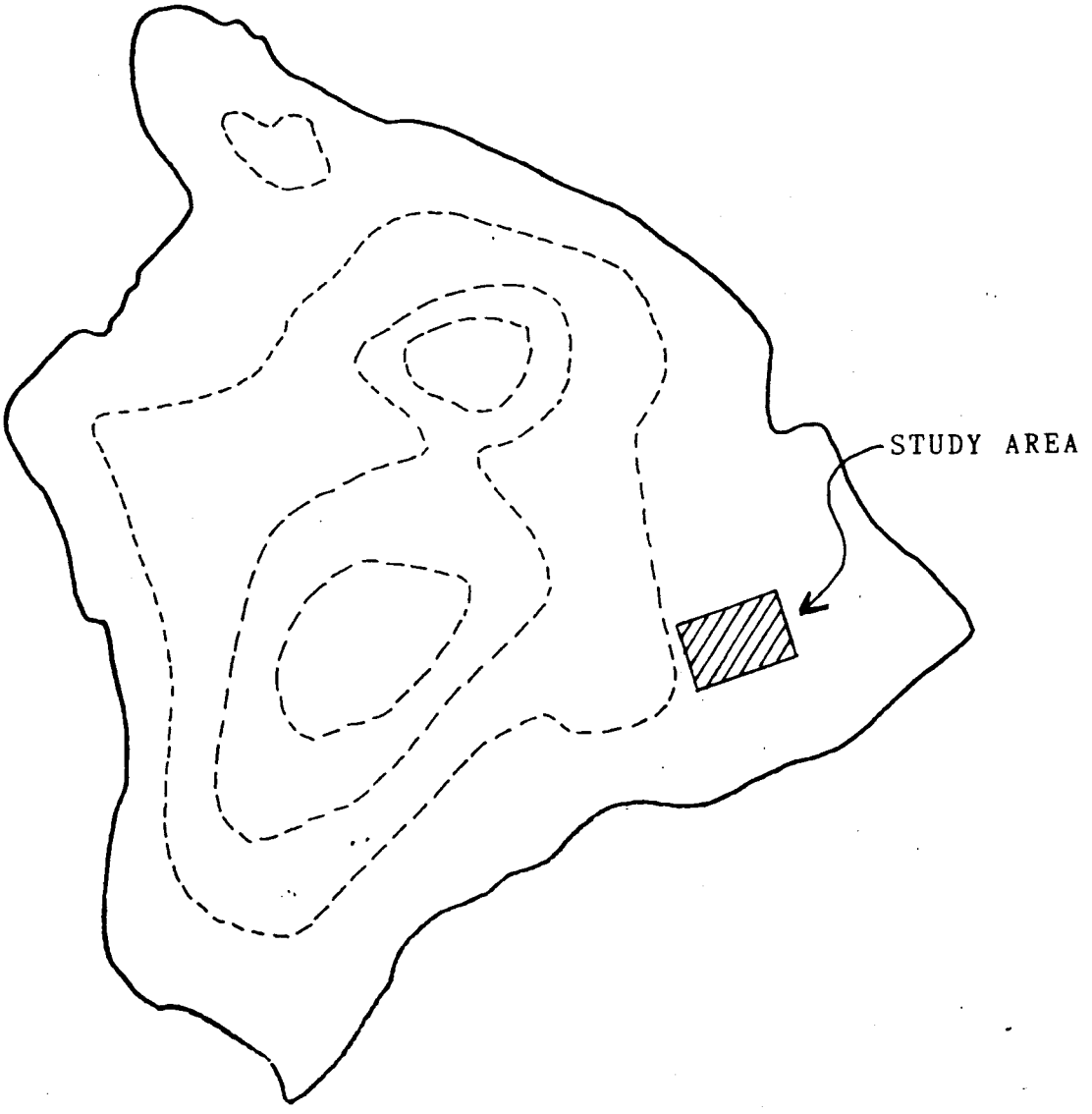
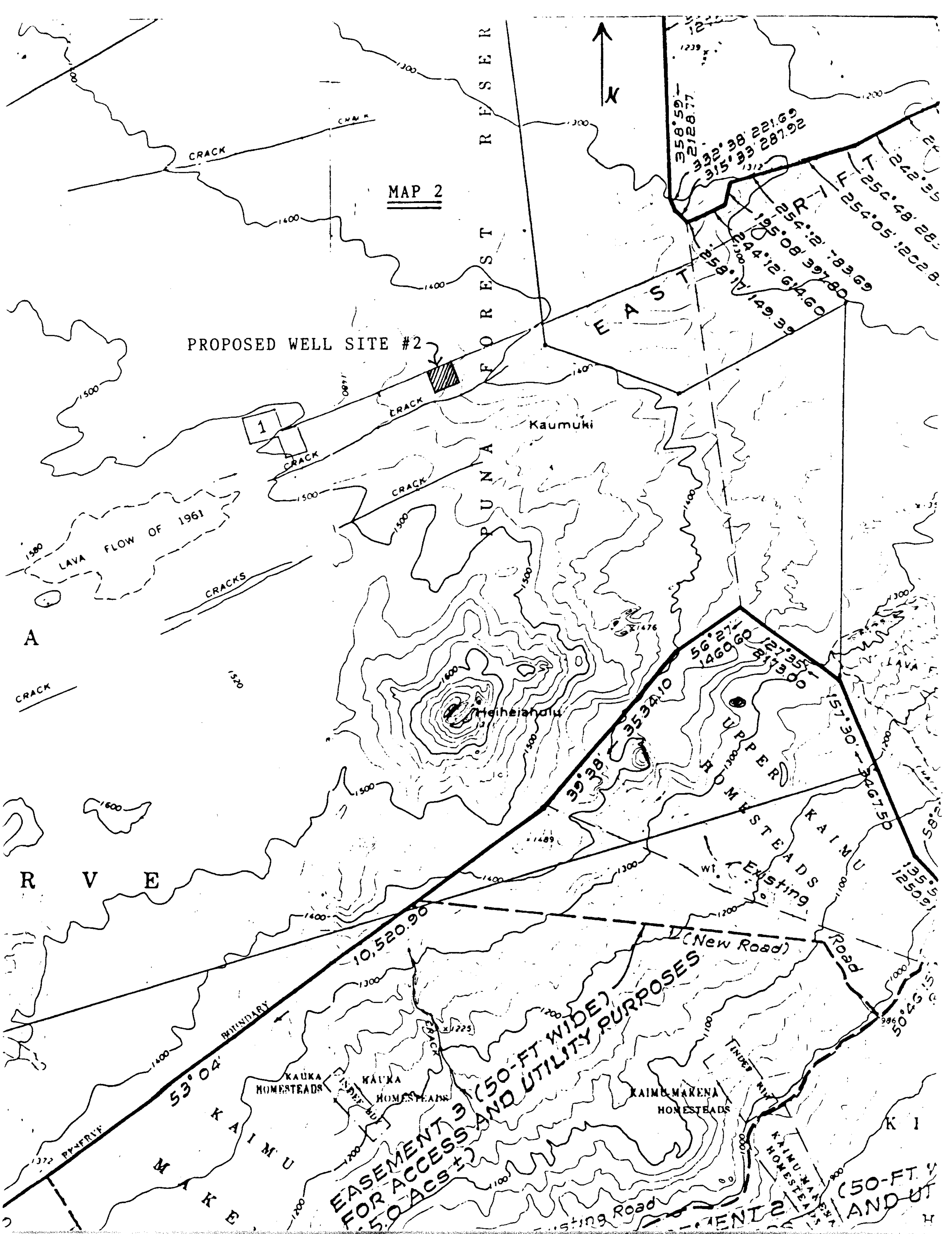
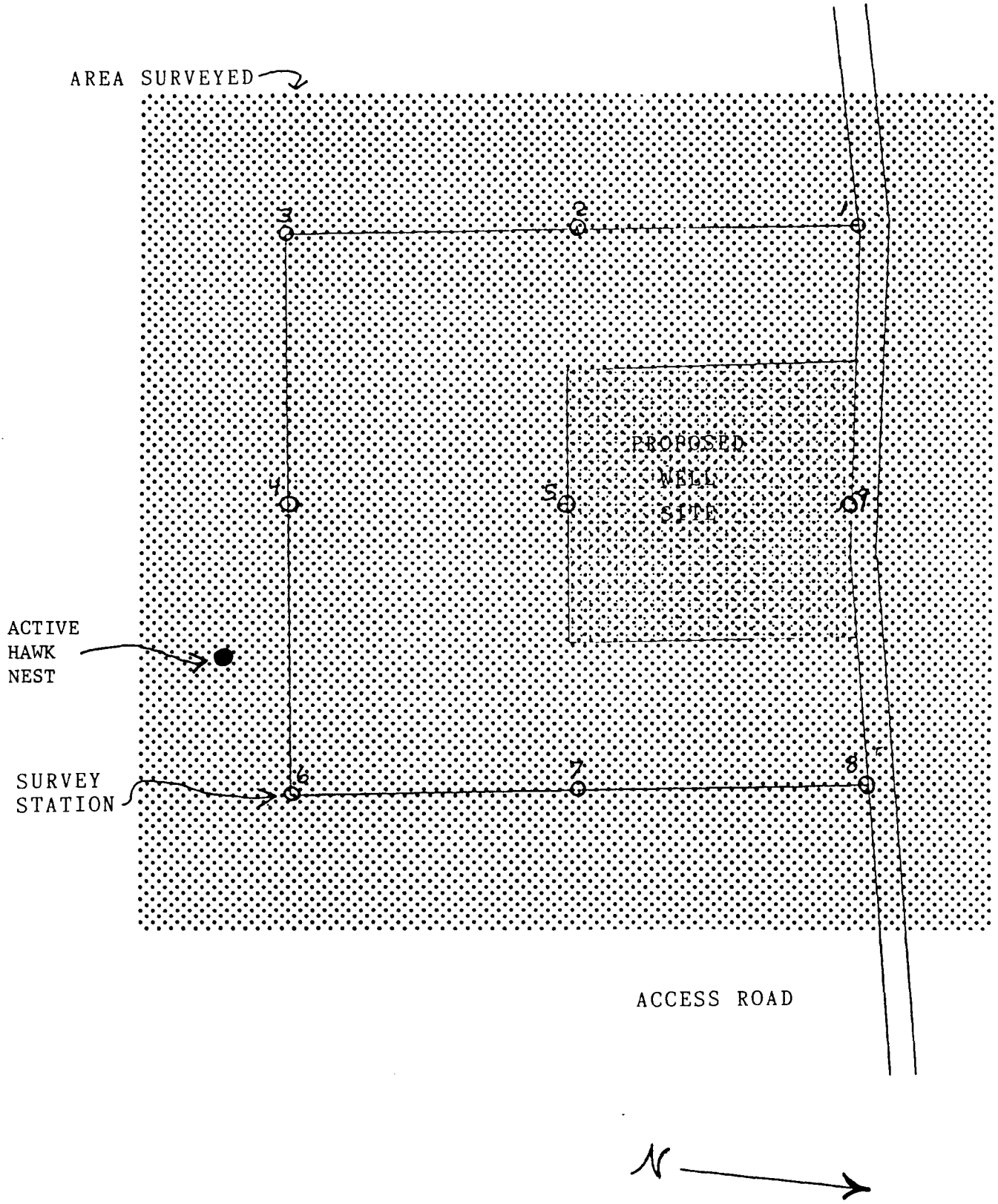
MAP 1





MAP 2
N
PROPOSED WELL SITE #2
1
CRACK
CRACKS
LAVA FLOW OF 1961
PUNA FOREST RESERVE
EAST RIFT
Kaumuki
Heiheiahulu
UPPER HOMESTEADS
KAIMU
Existing Road
(New Road)
10,520.90
53°04'
BOUNDARY
KAIMU MAKENA
KAUKA HOMESTEADS
KAIMU-MAKENA HOMESTEADS
EASEMENT 3 (50-FT WIDE) FOR ACCESS AND UTILITY PURPOSES
Existing Road
EASEMENT 2
358°59' 2128.77
332°38' 221.69
315°33' 287.92
254°12' 183.69
195°08' 397.80
244°12' 614.60
258°17' 149.39
254°48'
254°05' 1202.8
56°27' 1469.60
127°35' 817.00
157°30' 3467.50
39°38' 3534.10
135°5 1250.9
50°45'

MAP #3


AREA SURVEYED
1
2
3
4
5
6
7
8
PROPOSED
WELL
SITE
ACTIVE
HAWK
NEST
SURVEY
STATION
ACCESS ROAD
N