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University of Hawaii at Manoa

Hawaii Institute of Geophysics
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August 21, 1978

Dr. Phillip M. Wright
Associate Director
University of Utah
Research Institute
Earth Science Laboratory
391 Chipeta Way, Suite A
Salt Lake City, Utah 84108

Dear Dr. Wright:

Enclosed are two sets of maps for the islands as well as a tabulation of data as requested in your letter. The first map set plots all identified anomalous water sources which have silica and/or temperature above a threshold value set for each island. The second set of maps plots all known rift zones or calderas on each island along with anomalous water sources identified according to a different (lower) set of threshold values for temperatures and silica concentrations. I will explain what I've done for each set, and why, so that you can then pick which ever of our potential thermal anomalies that fit in with your existing set for the continental U.S.

For the first data set we have used a strictly numerical method of screening the data: a threshold value for silica concentration and temperature was picked for each island. The threshold values were chosen based on local ground water hydrology and the mean values encountered on each island. Threshold values for Hawaii were chosen at 25°C for temperature while silica concentrations are identified as being greater than 30 ppm or greater than 50 ppm SiO_2. Both parameters have been used for this island and Maui because of the unique hydrologic conditions on both islands. The island of Hawaii has a relatively high rate of rainfall, in some places exceeding 200 inches/yr., as well as a highly permeable rock structure. As a result, the rate of recharge and through-put in most areas is quite high. Under these conditions thermal waters entering the shallow aquifers will be diluted rapidly and lose any thermal evidence of having been heated; the only exception to this case is when there are dike impounded water sources which can have appreciably slower circulation times. Silica concentrations are a relatively useful counterpart to temperature in that areas with rapid ground water through-put also have low silica concentrations and as a result injection of thermal waters carrying high silica leads should be easily detectable in normal low silica aquifers.

It is apparent that the distribution of identified sources on Hawaii is far from uniform; nearly every source identified is within a few miles of the coast. This arises primarily from the fact that there is very little

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perched water on Hawaii and in order to reach the Ghyben-Herzberg lens (i.e. fresh water table) it is necessary to drill a well nearly to sea level. For this reason there are very few wells drilled at the higher elevations on Hawaii. The plots of the wells on Hawaii indicate a considerable number of potential thermal anomalies. Only one anomaly can be said to be confirmed, the Puna area, on the south east cape of the island, has been drilled and resulted in the "discovery" of a high temperature (350°C) reservoir. The other areas identified on the map show varying degrees of promise and will be discussed in more detail after presentation of the second set of maps.

The threshold silica concentrations for the island of Maui is considerably higher than that for Hawaii. This is primarily a result of the greater age of Maui (the trend in age of the islands increases from south to north) and consequent greater soil formation. Thicker soil cover appear to have elevated the mean ground water silica concentrations; whether this is through an increase in residence time or simply greater ease in silica leaching is unknown at present.

The disbribution of identified potential thermal sources on Maui is as uneven as that found on Hawaii. Again this is probably the result of the distribution of water wells on the island: the greatest population densities are found on the western end of the island as is the greater well density. The absence of a significant number of natural water sources (i.e. streams and springs) on most islands (another result of the highly permeable rock structure) restricts our identification of potential sources largely to areas of high population density.

For the island of Oahu we have eliminated silica concentrations from consideration entirely. Age, structure, and types of land use have resulted in considerably increased and quite variable silica concentrations. The threshold values required by these factors were such that cold "false positive" anomalies had higher silica concentrations than sources in which high temperatures were observed. The temperature threshold has been increased for Oahu as well. The lower profile of Oahu ($\leq$ 2700 ft. vs. 10K - 13 K ft. for Maui and Hawaii) has the effect of lowering the average altitude (and temperature) of rainfall formation hence ground waters are, on the average, somewhat warmer than those found on the younger islands

Essentially the same considerations are encountered for Kauai as those that hold for Oahu so the same criteria were imposed on Kauai water sources. The very sparse population on Kauai considerably reduces the number of water sources available for study. Hence it is uncertain whether the paucity of identified sources arises from a much lower thermal potential for Kauai or if it is simply an artifact of the small number of wells.

The second set of maps included represents a slightly different method of screening the available water chemistry and temperature data. Somewhat "looser" criteria are used for water quality parameters (i.e. lower silica and temperature thresholds) but, in addition, one further requirement is imposed on the potential thermal anomaly: it must be located in an area of recent or past eruptive activity (i.e. on or near either a caldera or

volcanic rift). The justification for the latter requirement is obvious; all geothermal heat in Hawaii is derived from past or present volcanism hence the most likely places to look are those which have experienced the greatest activity. There are also drawbacks to the use of this criteria as well: not all rift zones and calderas are likely to still have residual heat and there is also the possibility that post erosional eruptions have taken place outside of former calderas and rift zones. Despite these shortcomings it is felt that this approach may also have some validity.

It is apparent from the map of Hawaii that the island is made up of five volcanoes. From north to south they are: Kohala, Mauna Kea, Hualalai, Mauna Loa, and Kilauea. The temperature and silica concentration values used for this map are identical to those for the first map of Hawaii presented. It is apparent that most of the "clustered" water sources fall on or near rift zones while several individual silica anomalies are plotted some distance away from volcanic centers. In addition, every thermal anomaly identified is on a rift zone. Our present interpretation is that most of the individual anomalies are probably due to nonthermal factors relating to either local geological conditions or possibly poor water analysis techniques (nearly all data used are from routine Dept. of Health or Board of Water Supply analyses). Our present ranking of confidence levels for the potential thermal resources on Hawaii are as follows (1-10): Puna (1) (already proven), Ka'u (2), Kawaihae (4), Keaau (5), Kohala (8), and Kona (8).

The map of Maui rift zones and water sources is somewhat different from the first map presented for Maui. The primary difference between the two maps is the deletion of those sources in the Wailuku area (central isthmus region). The fact that this area is composed largely of alluvium and that there is no evidence of rift zone or eruptive activity in this area argues strongly against a thermal origin for the observed silica anomalies.

It will also be noted that water sources in Lahaina have been included on the second map yet there is no evidence of a nearby rift zone. Despite the absence of a rift in this area, relatively recent eruptive activity has taken place near Lahaina and thermal waters (28°C) have been observed in water wells in this district. We presently feel that Lahaina may have a thermal potential equal to or greater than that for anywhere else on west Maui. Thermal waters have also been observed to the south of Lahaina in Olowalu Canyon and Ukumehame Canyon. These areas are closely associated with a southwestward trending dike complex and may well be associated with thermal reservoirs.

It should be noted again that the very uneven distribution of wells on Maui makes an assessment of the thermal potential of east Maui rather difficult: Haleakala is considerably younger than west Maui and one would expect a greater thermal potential there. With very few wells in east Maui it is difficult to make an assessment of the thermal potential for this area.

The present interpretation of the thermal potential for Maui (again based on a 1-10 scale) is as follows: Lahaina (2), Olowalu Canyon (2), Ukumehame Canyon (3), and East Maui (?).

Molokai was not included in the first set of maps primarily because the very small number of wells on the island did not permit an even marginally valid assessment of the thermal potential based simply on a statistical analysis of the water chemistry data. We have included it in this set since we feel that it may have some significant potential: thermal waters have been reported, although they are not yet confirmed, on west Molokai and in Halawa Canyon on east Molokai. The probability of there being thermal resources on Molokai is placed at about 5-6 on the same scale used for Maui.

The structure map of Oahu indicates several water resources having temperatures greater than 25°C and silica concentrations greater than 50 ppm in or near ancient calderas in rift zones. The age of the volcanic features on Oahu (∿3 m.y.) leads us to believe that the large number of identified "anomalies" may be more a function of the multitude of wells present than the actual resource available. Thermal sources have been reported by relatively reliable persons for both the Waianae and Koolau calderas so it is quite possible that a thermal resource exists in these districts although the actual reservoir temperature may be relatively low. The probability of finding thermal reservoirs away from the caldera boundaries is thought to be quite low. Although there are reported temperatures in excess of 25°C on a few of these rift zones, the probability of their being the result of geothermal heat seems remote. Our present assessment of the thermal potential for Oahu is as follows: Waianae Caldera (5), Koolau Caldera (6), rift zones (9).

The thermal anomalies on the island of Kauai (temperatures ≥25°C) are generally associated with the rift zone areas or with the Lihue Caldera. As in the case of Oahu, one would expect a relatively low thermal potential on Kauai because of its age. Nonetheless relatively recent post erosional volcanism has taken place on Kauai and it is possible that some remanent heat may still be present. We presently feel that the potential for finding a thermal resource on Kauai is greatest on the western end of the island near Nohili Point and on the eastern side near the Lihue depression although under present circumstances we would rate neither area higher than about 7 or 8.

I hope the above is of enough use that you can pick those areas in the state that fit in with your continental U.S. data. Obviously it's not a complete picture of each area but I've tried to give enough information without going into too much detail.

We have also included a set of well chemistry data for the wells identified on the maps as well as the tabular set of data that was requested for each area. If there is anything else that you need from us in order to complete your project please let me know.

Sincerely yours,

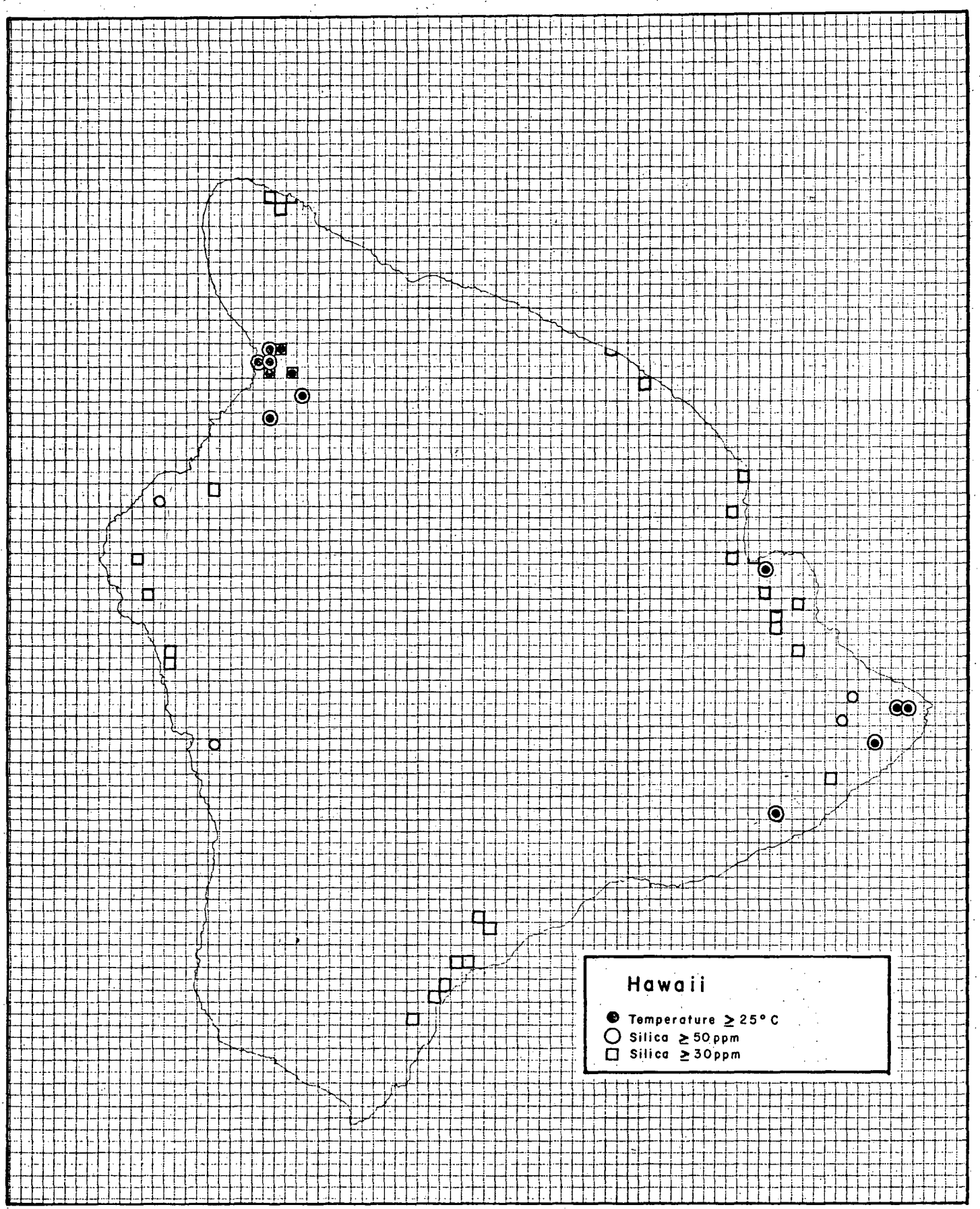
Donald Thomas

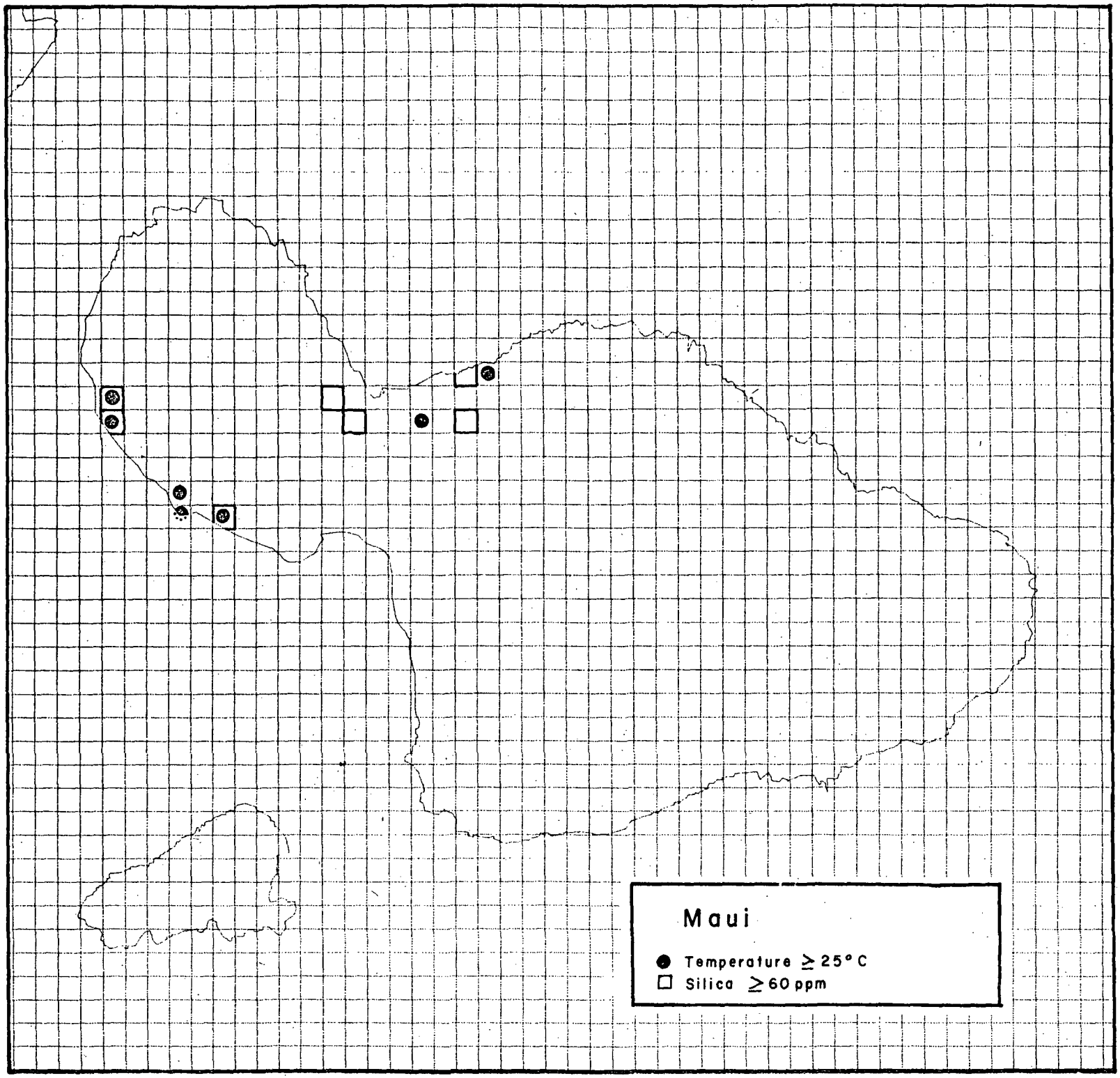
Donald Thomas

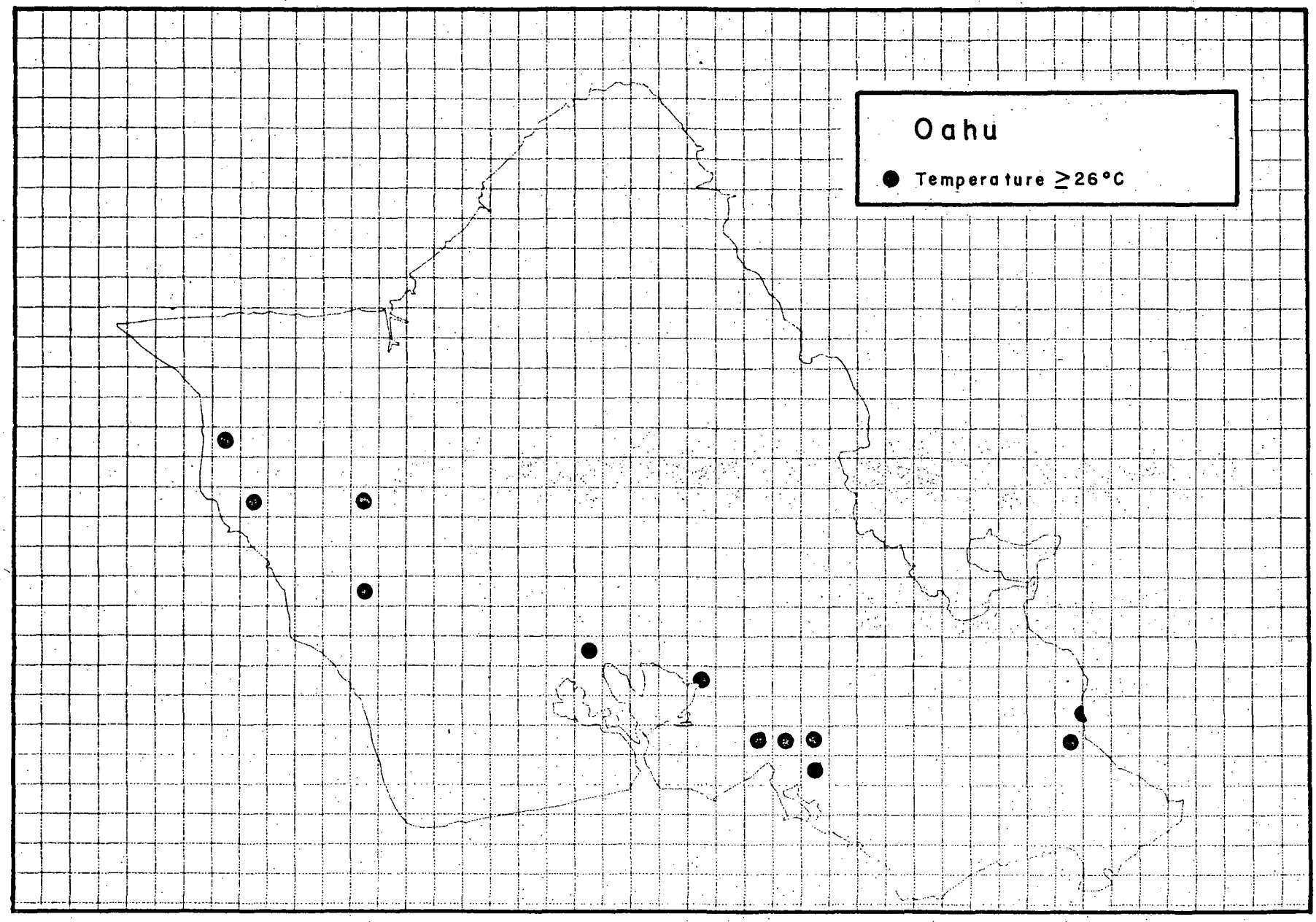
DT:cy

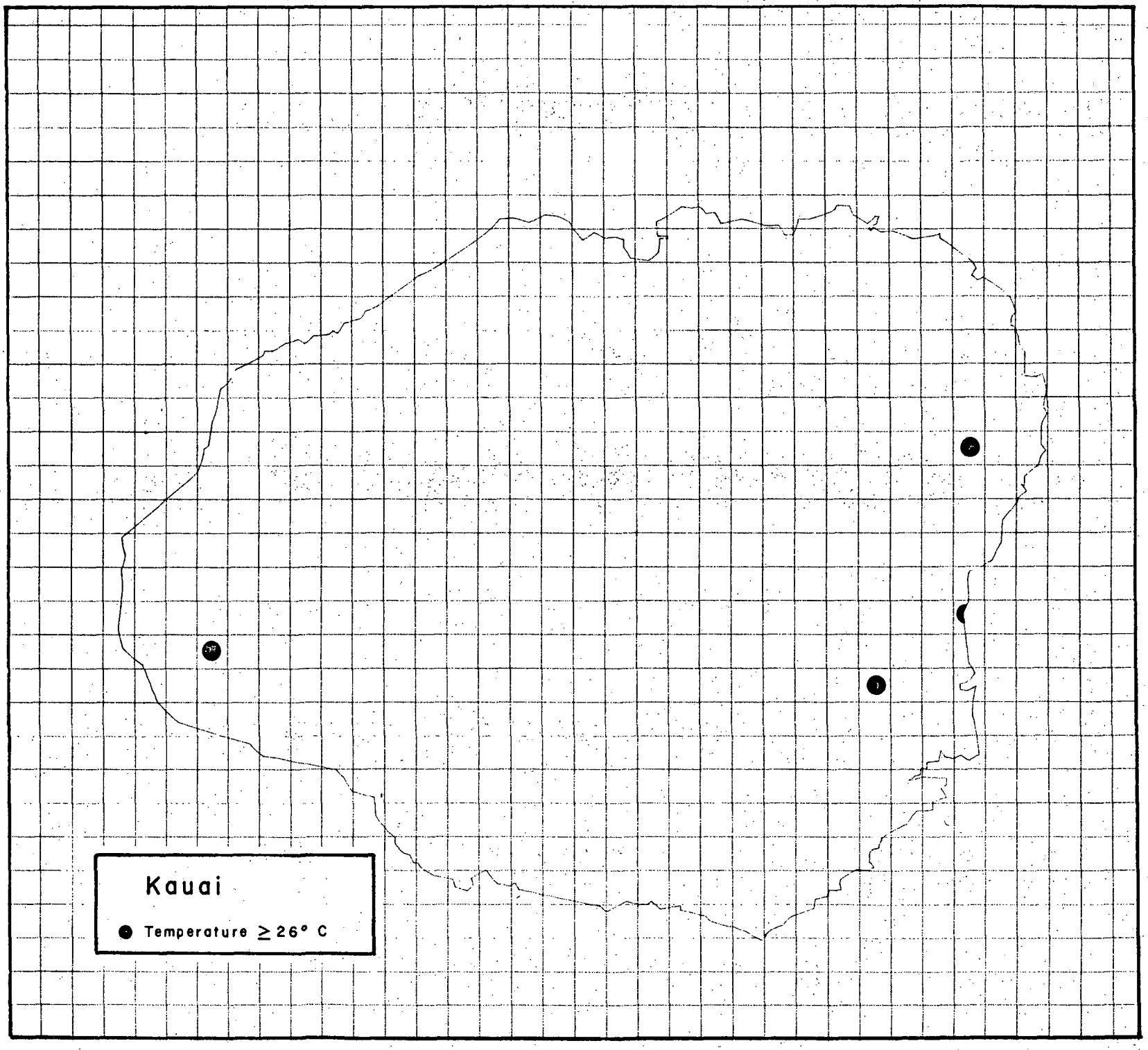
Enclosures

cc: E. Sammel


Hawaii
Temperature ≥ 25° C
Silica ≥ 50 ppm
Silica ≥ 30 ppm


Maui
Temperature ≥ 25° C
Silica ≥ 60 ppm


Oahu
Temperature ≥26°C


Kauai
Temperature ≥ 26° C

Legend for the Island

Structure Maps

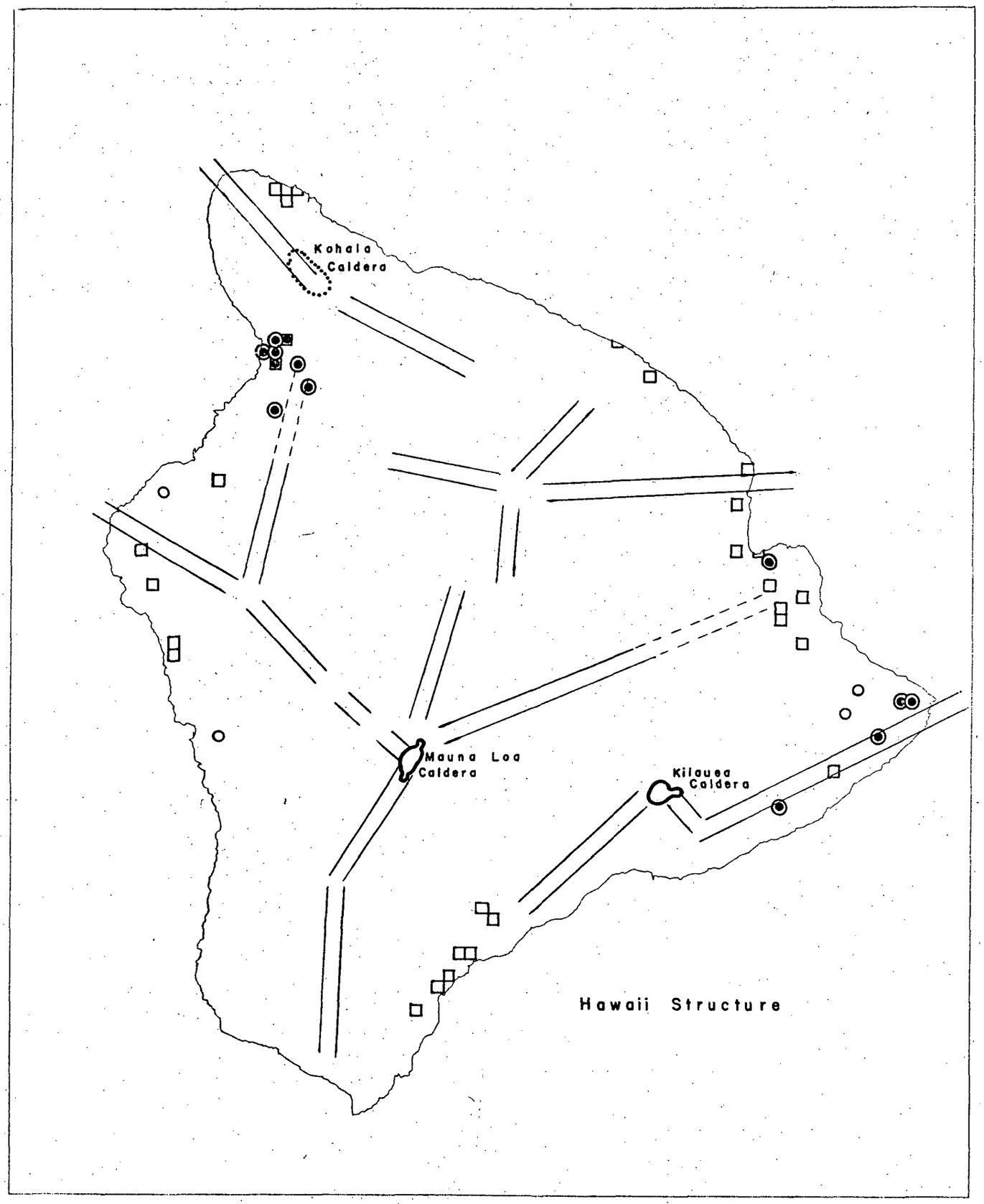
Rift Zones and Probable Extensions

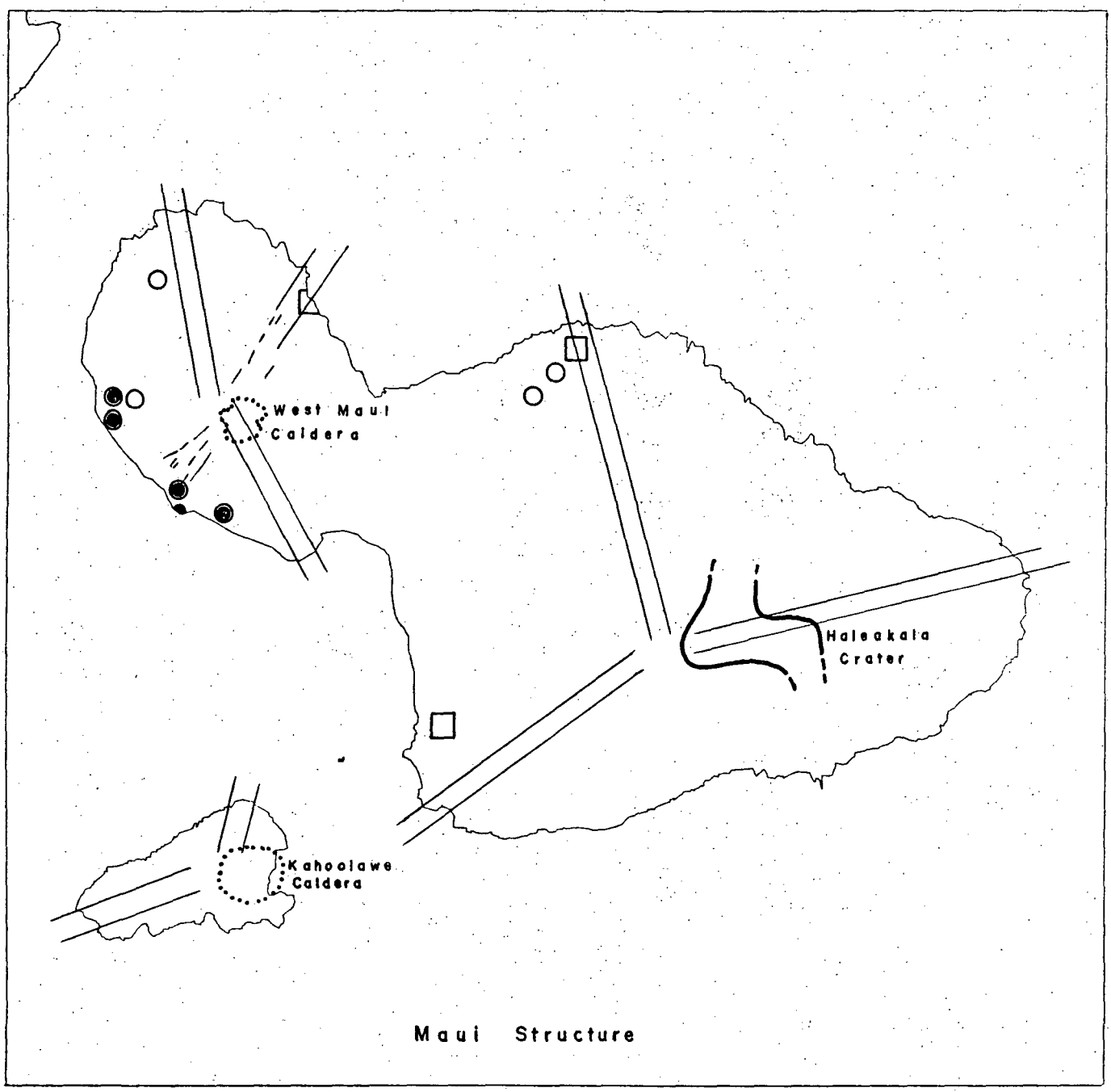
Caldera

Probable Caldera Boundaries

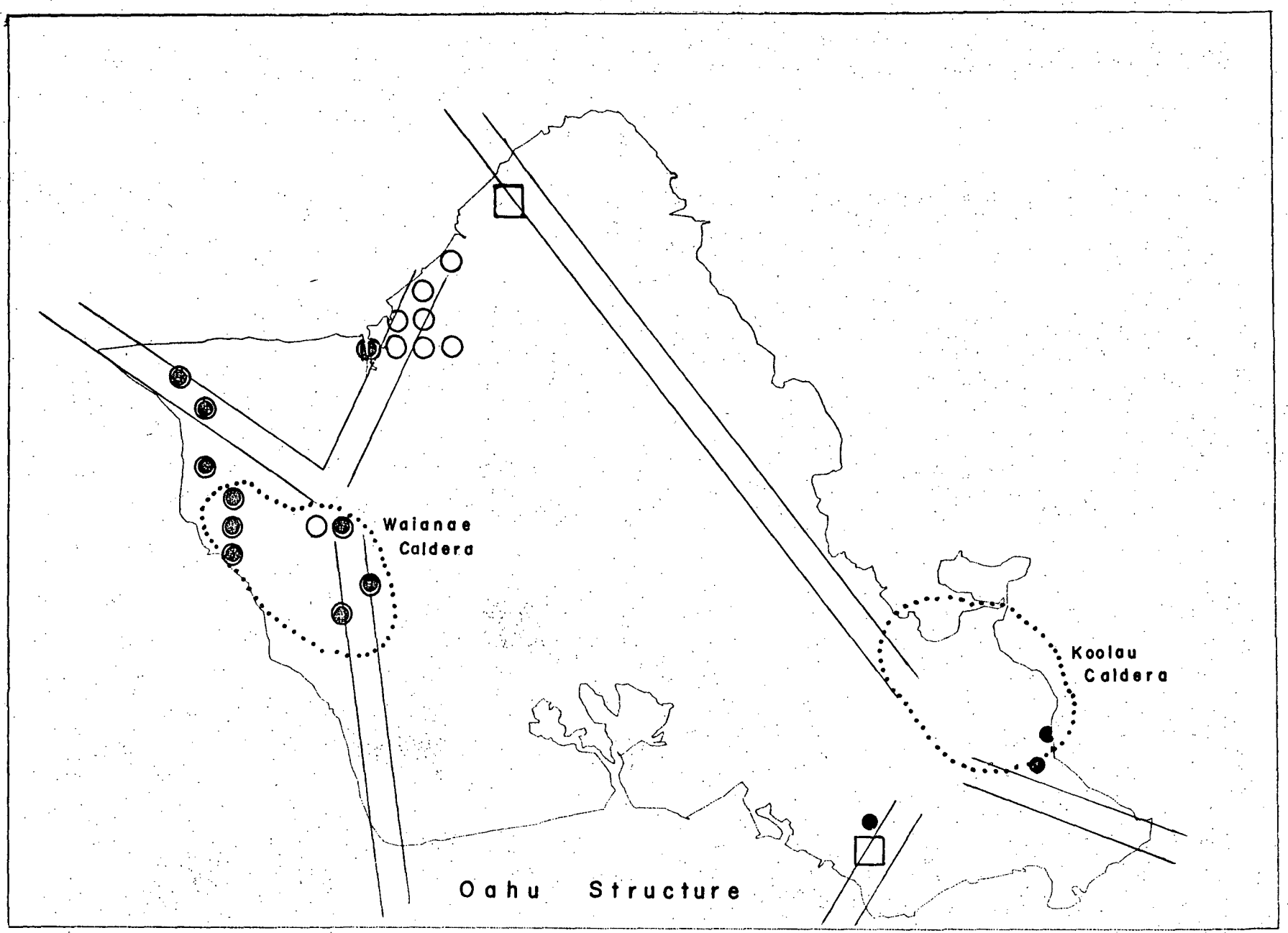
One Mile Quarangles; One or More Wells Present with:

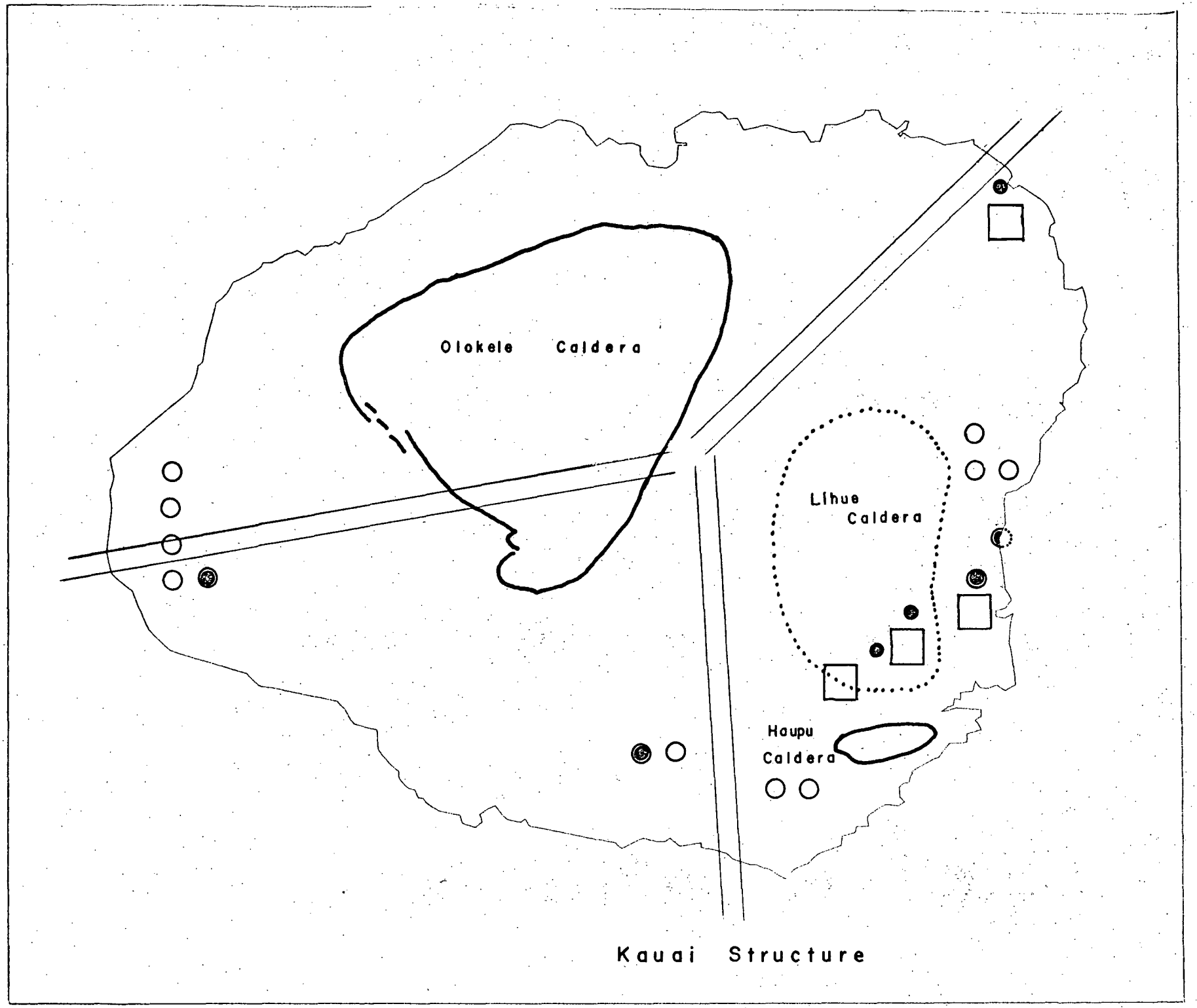
- ◉ Temperature ≥ 25°C
- ○ Silica ≥ 50 ppm
- □ Silica ≥ 30 ppm


Kohala
Caldera
Mauna Loa
Caldera
Kilauea
Caldera
Hawaii Structure



Maui Structure


Waianae
Caldera
Koolau
Caldera
Oahu Structure



Kauai Structure

EXPLANATION OF THE DATA SYMBOLS

ID#:	Local USGS Station Number
TYP:	Type of Station
COU:	County (Island)
LOC:	Location or Name of the Well
LAT,LON:	Latitude, Longitude
DAT:	Date

PH:		SPG:	Specific Gravity	WED:	Well Depth	WAD:	Static Head
ALK:	Total Alkalinity	DIS:	Dissolved Solids	SUS:	Suspended Solids	LI:	
CA:		SR:		BA:		MN:	
ZN:		HG:		B:		AL:	
CL:		BR:		I:		O_2:	
NO_3:		PO_4:		SIO:	SiO_2	SO_4:	
S:		PHE:	Phenols	CD:		CR:	

TEM:	Temperature	FLO:	Flow Rate	EH:		SPC:	Specific Conductance
NA:		K:		RB:		MG:	
FE:		FET:	Total Fe	F:		CU:	
PB:		AS:		SB:		U:	
CO_2:		H_2S:		NH_4:		NO_2:	
CO_3:		HCO_3:		CAR:	Carbonate Alkalinity	HAR:	Hardness
AG:		P:		N:		ELE:	Ground Elevation

TABLE 1 Kauai

ID#=	2-0021-01	TYP=	WELL	COU=	KAUAI			LOC=	KALEPA RIDGE	LAT,LON=	220054.		1592104.00	DAT=	1967.				
PH =	7.43	SPC=		WED=	276.00	WAD=	15.00	TEM=	25.30	FLO=		EH =		SPC=					
ALK=	134.40	DIS=		SUS=		LI =		NA =	80.00	K =	11.20	RB =		MG =	8.40				
CA =	6.90	SR =		BA =		MN =	0.05	FE =	0.12	FET=		F =	0.04	CU =	0.01				
ZN =	0.01	HG =		B =		AL =	0.01	PB =	0.01	AS =	0.00	SB =		U =					
CL =	29.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00				
NO3=	5.60	PO4=		SIO=	66.00	SO4=	20.50	CO3=		HCO=		CAR=		HAR=	52.20				
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	166.00				

ID#=	2-0044-03	TYP=	WELL	COU=	KAUAI			LOC=	KAUNALEWA-2	LAT,LON=	220008.		1594442.00	DAT=	1977.				
PH =	7.20	SPC=		WED=	195.00	WAD=	5.10	TEM=	23.50	FLO=		EH =		SPC=	10600.00				
ALK=	115.00	DIS=	5950.00	SUS=		LI =		NA =	910.00	K =	14.00	RB =		MG =	610.00				
CA =	400.00	SR =		BA =		MN =	20.00	FE =	60.00	FET=		F =		CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	3500.00	BR =		I =		O2 =		CO2=	14.00	H2S=		NH4=		NO2=					
NO3=		PO4=	0.40	SIO=	65.00	SO4=	380.00	CO3=		HCO=	140.00	CAR=		HAR=	3500.00				
SE =		PHE=		CD =		CR =		AG =		P =	0.13	N =	1.00	ELE=	8.00				

ID#=	2-0044-04	TYP=	WELL	COU=	KAUAI			LOC=	KAUNALEWA-3	LAT,LON=	220008.		1594442.00	DAT=	1977.				
PH =	8.40	SPC=		WED=		WAD=	5.00	TEM=	28.00	FLO=		EH =		SPC=	1700.00				
ALK=	160.00	DIS=	765.00	SUS=		LI =		NA =	110.00	K =	2.90	RB =		MG =	82.00				
CA =	57.00	SR =		BA =		MN =	60.00	FE =	10.00	FET=		F =	0.10	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	350.00	BR =		I =		O2 =		CO2=	1.20	H2S=		NH4=		NO2=					
NO3=		PO4=		SIO=	31.00	SO4=	38.00	CO3=	0.00	HCO=	190.00	CAR=		HAR=	480.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	9.00				

ID#=	2-0044-10	TYP=	WELL	COU=	KAUAI			LOC=	KAUNALEWA-12	LAT,LON=	220017.		1594447.00	DAT=	1977.				
PH =	7.10	SPC=		WED=	210.00	WAD=	11.30	TEM=	23.50	FLO=		EH =		SPC=	4100.00				
ALK=	110.00	DIS=	2170.00	SUS=		LI =		NA =	320.00	K =	4.50	RB =		MG =	220.00				
CA =	170.00	SR =		BA =		MN =	250.00	FE =	20.00	FET=		F =	0.10	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	1200.00	BR =		I =		O2 =		CO2=	17.00	H2S=		NH4=		NO2=					
NO3=		PO4=		SIO=	50.00	SO4=	140.00	CO3=		HCO=	130.00	CAR=		HAR=	1300.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	8.00				

ID#=	2-0044-12	TYP=	WELL	COU=	KAUAI			LOC=	KAUNALEWA-11	LAT,LON=	220005.		1594445.00	DAT=	1977.				
PH =	7.50	SPC=		WED=	213.00	WAD=		TEM=	22.50	FLO=		EH =		SPC=	6300.00				
ALK=	150.00	DIS=	3650.00	SUS=		LI =		NA =	600.00	K =	10.00	RB =		MG =	360.00				
CA =	240.00	SR =		BA =		MN =	100.00	FE =	40.00	FET=		F =	0.00	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	2000.00	BR =		I =		O2 =		CO2=	9.10	H2S=		NH4=		NO2=					
NO3=		PO4=		SIO=	72.00	SO4=	280.00	CO3=		HCO=	180.00	CAR=		HAR=	2100.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	4.00				

ID#=2-0044-13 TYP=WELL COU=KAUAI LOC=KAUNALEWA-7 LAT,LON= 220019. 1594448.00 DAT=1972.

PH =	7.70	SPG=		WED=	244.00	WAD=	10.60	TEM=	22.00	FLO=		EH =		SPC=	3990.00
ALK=		DIS=		SUS=		LI =		NA =	250.00	K =	4.70	RB =		MG =	228.00
CA =	172.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	1180.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.80	PO4=		SIO=	70.00	SO4=	143.00	CO3=		HCO=	138.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	8.00

ID#=2-0045-01 TYP=WELL COU=KAUAI LOC=CAMP 2 KS19 LAT,LON= 220053. 1594520.00 DAT=1972.

PH =	8.10	SPG=		WED=	192.00	WAD=	11.80	TEM=	22.50	FLO=		EH =		SPC=	1230.00
ALK=		DIS=		SUS=		LI =		NA =	49.00	K =	2.20	RB =		MG =	76.00
CA =	59.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	290.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.00	PO4=		SIO=	67.00	SO4=	43.00	CO3=		HCO=	150.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	8.00

ID#=2-0045-03 TYP=WELL COU=KAUAI LOC=CAMP 2 KS5 LAT,LON= 220055. 1594520.00 DAT=1972.

PH =	7.70	SPG=		WED=	262.00	WAD=	18.60	TEM=	21.40	FLO=		EH =		SPC=	760.00
ALK=		DIS=		SUS=		LI =		NA =	40.00	K =	1.70	RB =		MG =	47.00
CA =	32.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	145.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.90	PO4=		SIO=	71.00	SO4=	26.00	CO3=		HCO=	156.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	10.00

ID#=2-0120-01 TYP=WELL COU=KAUAI LOC=KALEPA RIDGE LAT,LON= 220136. 1592055.00 DAT=1975.

PH =	7.70	SPG=		WED=	240.00	WAD=	10.00	TEM=	24.50	FLO=		EH =		SPC=	650.00
ALK=	169.00	DIS=	530.00	SUS=		LI =		NA =	94.00	K =	2.40	RB =		MG =	33.00
CA =	32.00	SR =		BA =		MN =	20.00	FE =	40.00	FET=		F =	0.10	CU =	0.10
ZN =	0.03	HG =		B =		AL =	0.60	PB =	0.03	AS =	0.01	SB =		U =	
CL =	150.00	BR =		I =		O2 =		CO2=	6.60	H2S=		NH4=		NO2=	
NO3=	0.40	PO4=	0.28	SIO=	77.00	SO4=	32.00	CO3=		HCO=	206.00	CAR=		HAR=	220.00
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =	0.09	N =	1.80	ELE=	12.00

ID#=2-0120-02 TYP=WELL COU=KAUAI LOC=KALEPA RIDGE LAT,LON= 220134. 1592054.00 DAT=1972.

PH =	7.60	SPG=		WED=	312.00	WAD=	10.00	TEM=	27.50	FLO=		EH =		SPC=	722.00
ALK=	166.00	DIS=	457.00	SUS=		LI =		NA =	95.00	K =	2.60	RB =		MG =	23.00
CA =	8.00	SR =		BA =		MN =	0.05	FE =		FET=		F =	0.20	CU =	0.01
ZN =	0.01	HG =		B =		AL =	0.01	PB =	0.01	AS =	0.00	SB =		U =	
CL =	110.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	13.00	PO4=		SIO=	73.00	SO4=	23.00	CO3=		HCO=	202.00	CAR=		HAR=	140.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	12.00

ID#=	2-0145-08	TYP=	WELL	COU=	KAUAI			LOC=	MANA-4			LAT,LON=	220148.		1594535.00	DAT=	1972.		
PH =	7.80	SPC=		WED=	266.00	WAD=	11.00	TEM=	22.50	FLO=		EH =				SPC=	717.00		
ALK=		DIS=		SUS=		LI =		NA =	41.00	K =	1.50	RB =				MG =	44.00		
CA =	30.00	SR =		BA =		MN =		FE =		FET=		F =	0.20			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	122.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=			
NO3=	1.20	PO4=		SIO=	67.00	SO4=	22.00	CO3=		HCO=	183.00	CAR=				HAR=			
SE =		PHE=		CD =		CR =		AG =		P =		N =				ELE=	29.00		

ID#=	2-0145-09	TYP=	WELL	COU=	KAUAI			LOC=	MANA-5			LAT,LON=	220148.		1594535.00	DAT=	1972.		
PH =	7.90	SPC=		WED=	283.00	WAD=	10.80	TEM=	22.50	FLO=		EH =				SPC=	847.00		
ALK=		DIS=		SUS=		LI =		NA =	58.00	K =	1.80	RB =				MG =	46.00		
CA =	35.00	SR =		BA =		MN =		FE =		FET=		F =	0.20			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	152.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=			
NO3=	1.40	PO4=		SIO=	66.00	SO4=	29.00	CO3=		HCO=	192.00	CAR=				HAR=			
SE =		PHE=		CD =		CR =		AG =		P =		N =				ELE=	29.00		

ID#=	2-0145-10	TYP=	WELL	COU=	KAUAI			LOC=	MANA-6			LAT,LON=	220148.		1594535.00	DAT=	1972.		
PH =	7.90	SPC=		WED=	270.00	WAD=	10.60	TEM=	21.00	FLO=		EH =				SPC=	1450.00		
ALK=	141.00	DIS=	356.00	SUS=		LI =		NA =	31.00	K =	1.40	RB =				MG =	38.00		
CA =	25.00	SR =		BA =		MN =		FE =		FET=		F =	0.20			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	350.00	BR =		I =		O2 =		CO2=	3.50	H2S=		NH4=				NO2=			
NO3=	4.40	PO4=		SIO=	65.00	SO4=	16.00	CO3=		HCO=	172.00	CAR=				HAR=	220.00		
SE =		PHE=		CD =		CR =		AG =		P =		N =	1.00			ELE=	31.00		

ID#=	2-0145-11	TYP=	WELL	COU=	KAUAI			LOC=	MANA-7			LAT,LON=	220148.		1594535.00	DAT=	1972.		
PH =	7.70	SPC=		WED=	275.00	WAD=	10.80	TEM=	22.50	FLO=		EH =				SPC=	893.00		
ALK=	143.00	DIS=	491.00	SUS=		LI =		NA =	51.00	K =	1.70	RB =				MG =	52.00		
CA =	36.00	SR =		BA =		MN =		FE =		FET=		F =	0.10			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	175.00	BR =		I =		O2 =		CO2=	5.60	H2S=		NH4=				NO2=			
NO3=	4.00	PO4=		SIO=	59.00	SO4=	27.00	CO3=		HCO=	174.00	CAR=				HAR=	300.00		
SE =		PHE=		CD =		CR =		AG =		P =		N =	0.90			ELE=	30.00		

ID#=	2-0145-12	TYP=	WELL	COU=	KAUAI			LOC=	MANA-8			LAT,LON=	220148.		1594535.00	DAT=	1972.		
PH =	8.00	SPC=		WED=	272.00	WAD=	10.70	TEM=	22.00	FLO=		EH =				SPC=	856.00		
ALK=		DIS=		SUS=		LI =		NA =	50.00	K =	1.60	RB =				MG =	50.00		
CA =	33.00	SR =		BA =		MN =		FE =		FET=		F =	0.20			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	165.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=			
NO3=	1.00	PO4=		SIO=	64.00	SO4=	26.00	CO3=		HCO=	172.00	CAR=				HAR=			
SE =		PHE=		CD =		CR =		AG =		P =		N =				ELE=	31.00		

ID#=2-0145-13 TYP=WELL COU=KAUAI LOC=MANA-9 LAT,LON= 220148. 1594535.00 DAT=1972.

PH =	7.70	SPC=		WED=	251.00	WAD=	10.70	TEM=	22.00	FLO=		EH =		SPC=	523.00
ALK=		DIS=		SUS=		LI =		NA =	24.00	K =	1.40	RB =		MG =	35.00
CA =	23.00	SR =		BA =		MN =		FE =		FET=		F =	2000.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	72.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	9000.00	PO4=		SIO=	62.00	SO4=	13.00	CO3=		HCO=	165.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	31.00

ID#=2-0145-16 TYP=WELL COU=KAUAI LOC=MANA-12 LAT,LON= 220148. 1594535.00 DAT=1972.

PH =	7.70	SPC=		WED=	262.00	WAD=	10.70	TEM=	22.00	FLO=		EH =		SPC=	490.00
ALK=		DIS=		SUS=		LI =		NA =	24.00	K =	1.30	RB =		MG =	34.00
CA =	22.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	65.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.00	PO4=		SIO=	65.00	SO4=	12.00	CO3=		HCO=	170.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	31.00

ID#=2-0245-02 TYP=TUNNEL COU=KAUAI LOC=MANA SHAFT LAT,LON= 220210. 1594525.00 DAT=1972.

PH =	7.60	SPC=		WED=	105.00	WAD=		TEM=	23.00	FLO=		EH =		SPC=	537.00
ALK=		DIS=		SUS=		LI =		NA =	28.00	K =	1.90	RB =		MG =	36.00
CA =	22.00	SR =		BA =		MN =		FE =		FET=		F =	0.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	70.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.20	PO4=		SIO=	66.00	SO4=	12.00	CO3=		HCO=	181.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	102.00

ID#=2-0320-01 TYP=WELL COU=KAUAI LOC=NONOU-A LAT,LON= 220354. 1592056.00 DAT=1975.

PH =	7.80	SPC=		WED=	240.00	WAD=	20.00	TEM=	22.50	FLO=		EH =		SPC=	378.00
ALK=	79.00	DIS=	253.00	SUS=		LI =		NA =	34.00	K =	1.70	RB =		MG =	15.00
CA =	9.20	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.09	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	48.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.90	PO4=		SIO=	63.40	SO4=	15.00	CO3=		HCO=		CAR=		HAR=	91.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =	0.30	ELE=	155.00

ID#=2-0320-02 TYP=WELL COU=KAUAI LOC=WAILUA LAT,LON= 220346. 1592053.00 DAT=1960.

PH =	7.40	SPC=		WED=	230.00	WAD=	55.00	TEM=		FLO=		EH =		SPC=	
ALK=	96.00	DIS=	219.00	SUS=		LI =		NA =	30.00	K =		RB =		MG =	12.00
CA =	14.00	SR =		BA =		MN =		FE =		FET=		F =	0.06	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	25.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.40	PO4=		SIO=	59.00	SO4=	21.00	CO3=	0.00	HCO=	117.00	CAR=		HAR=	85.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	90.00

ID#=2-0320-03 TYP=WELL COU=KAUAI LOC=NONOU#9-1B LAT,LON= 220354. 1592056.00 DAT=1974.

PH =	6.90	SPC=		WED=	392.00	WAD=	21.20	TEM=	24.50	FLO=		EH =		SPC=	342.00
ALK=	115.00	DIS=	248.00	SUS=		LI =		NA =	38.00	K =	2.30	RB =		MG =	8.40
CA =	12.10	SR =		BA =	0.30	MN =	0.03	FE =	0.05	FET=		F =	0.13	CU =	0.02
ZN =	0.03	HC =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	48.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.30	PO4=		SIO=	51.10	SO4=	14.00	CO3=		HCO=	118.00	CAR=		HAR=	94.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	157.00

ID#=2-0321-01 TYP=WELL COU=KAUAI LOC=WAILUA-3 LAT,LON= 220333. 1592105.00 DAT=1971.

PH =	7.20	SPC=		WED=	275.00	WAD=	17.40	TEM=	24.20	FLO=		EH =		SPC=	432.00
ALK=	105.00	DIS=	287.00	SUS=		LI =		NA =	39.00	K =	1.70	RB =		MG =	20.00
CA =	16.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HC =		B =		AL =		PB =		AS =		SB =		U =	
CL =	64.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.30	PO4=		SIO=	68.00	SO4=	10.00	CO3=		HCO=	128.00	CAR=		HAR=	123.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	72.00

ID#=2-0421-01 TYP=WELL COU=KAUAI LOC=WAILUA HMSTD LAT,LON= 220416. 1592136.00 DAT=1972.

PH =	7.70	SPC=		WED=	568.00	WAD=	29.10	TEM=	24.50	FLO=		EH =		SPC=	360.00
ALK=	116.00	DIS=	270.00	SUS=		LI =		NA =	21.00	K =	1.00	RB =		MG =	21.00
CA =	18.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HC =		B =		AL =		PB =		AS =		SB =		U =	
CL =	41.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	4.60	PO4=		SIO=	83.00	SO4=	7.50	CO3=		HCO=	142.00	CAR=		HAR=	132.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	462.00

ID#=2-0620-01 TYP=WELL COU=KAUAI LOC=KAPAA CANNER LAT,LON= 220604. 1592014.00 DAT=1972.

PH =	7.30	SPC=		WED=	466.00	WAD=	11.60	TEM=	26.50	FLO=		EH =		SPC=	276.00
ALK=	80.00	DIS=	177.00	SUS=		LI =		NA =	26.00	K =	1.80	RB =		MG =	12.00
CA =	12.00	SR =		BA =		MN =	0.05	FE =		FET=		F =	0.20	CU =	0.01
ZN =	0.04	HC =		B =		AL =	0.01	PB =	0.01	AS =	0.00	SB =		U =	
CL =	28.00	BR =		I =		O2 =		CO2=	7.90	H2S=		NH4=		NO2=	0.07
NO3=	0.90	PO4=		SIO=	30.00	SO4=	18.00	CO3=		HCO=	98.00	CAR=		HAR=	79.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =	0.20	ELE=	249.00

ID#=2-1020-02 TYP=WELL COU=KAUAI LOC=MOLOAA-1 LAT,LON= 221030. 1591928.00 DAT=1972.

PH =	7.40	SPC=		WED=	581.00	WAD=	12.50	TEM=	21.50	FLO=		EH =		SPC=	213.00
ALK=		DIS=		SUS=		LI =		NA =	15.00	K =	0.60	RB =		MG =	11.00
CA =	10.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HC =		B =		AL =		PB =		AS =		SB =		U =	
CL =	19.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	35.00	SO4=	3.40	CO3=		HCO=	88.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	400.00

ID#=2-1020-03 TYP=WELL COU=KAUAI LOC=MOLOAA-2 LAT,LON= 221038. 1592038.00 DAT=1972.

PH =	7.60	SPC=		WED=	700.00	WAD=	136.60	TEM=	21.50	FLO=		EH =		SPC=	207.00
ALK=	72.00	DIS=	139.00	SUS=		LI =		NA =	14.00	K =	0.70	RB =		MG =	11.00
CA =	11.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	19.00	BR =		I =		O2 =		CO2=	3.50	H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	36.00	SO4=	3.40	CO3=		HCO=	88.00	CAR=		HAR=	73.00
SE =		PHE=		CD =		CR =		AG =		P =		N =	0.00	ELE=	358.00

ID#=2-1020-04 TYP=WELL COU=KAUAI LOC=ALIOMANU LAT,LON= 221006. 1592002.00 DAT=1974.

PH =		SPC=		WED=	600.00	WAD=	41.00	TEM=	20.80	FLO=		EH =		SPC=	217.00
ALK=	73.00	DIS=	147.00	SUS=		LI =		NA =	14.00	K =	0.70	RB =		MG =	11.00
CA =	11.00	SR =		BA =		MN =	0.00	FE =	0.00	FET=		F =	0.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	22.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=	0.15	SIO=	39.00	SO4=	4.30	CO3=		HCO=	89.00	CAR=		HAR=	73.00
SE =		PHE=		CD =		CR =		AG =		P =	0.05	N =	0.13	ELE=	307.00

ID#=2-1120-01 TYP=TUNNEL COU=KAUAI LOC=MOLOAA TUN-3 LAT,LON= 221111. 1592031.00 DAT=1973.

PH =	6.50	SPC=		WED=		WAD=	250.00	TEM=	25.50	FLO=		EH =		SPC=	251.00
ALK=	33.00	DIS=	168.00	SUS=		LI =		NA =	33.00	K =	1.10	RB =		MG =	7.00
CA =	2.80	SR =		BA =		MN =		FE =	0.10	FET=		F =	0.10	CU =	0.01
ZN =	0.10	HG =		B =		AL =	6.50	PB =	0.01	AS =	0.01	SB =		U =	
CL =	25.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	15.00	PO4=		SIO=	13.00	SO4=	14.00	CO3=	0.00	HCO=	6.00	CAR=		HAR=	36.00
SE =	0.01	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	250.00

ID#=2-5426-04 TYP=WELL COU=KAUAI LOC=KOLOA-C LAT,LON= 215418. 1592604.00 DAT=1977.

PH =	7.00	SPC=		WED=	393.00	WAD=	25.10	TEM=		FLO=		EH =		SPC=	366.00
ALK=	91.00	DIS=	252.00	SUS=		LI =		NA =	36.00	K =	1.40	RB =		MG =	17.00
CA =	13.00	SR =		BA =		MN =	10.00	FE =	20.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	55.00	BR =		I =		O2 =		CO2=	18.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.40	SIO=	58.00	SO4=	12.00	CO3=	0.00	HCO=	111.00	CAR=		HAR=	100.00
SE =		PHE=		CD =		CR =		AG =		P =	0.13	N =	1.00	ELE=	157.00

ID#=2-5427-01 TYP=WELL COU=KAUAI LOC=KOLOA-A LAT,LON= 215454. 1592742.00 DAT=1975.

PH =	7.60	SPC=		WED=	455.00	WAD=	45.20	TEM=	23.00	FLO=		EH =		SPC=	250.00
ALK=	71.00	DIS=	179.00	SUS=		LI =		NA =	21.00	K =	1.40	RB =		MG =	10.00
CA =	9.80	SR =		BA =	0.10	MN =	0.03	FE =	10.00	FET=		F =	0.10	CU =	0.02
ZN =	0.03	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	27.00	BR =		I =		O2 =		CO2=	3.50	H2S=		NH4=		NO2=	0.01
NO3=	0.49	PO4=	0.43	SIO=	59.00	SO4=	5.80	CO3=		HCO=	86.00	CAR=		HAR=	66.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.14	N =	0.43	ELE=	245.00

ID#=	2-5427-02	TYP=	WELL	COU=	KAUAI			LOC=	KOLOA-B			LAT,LON=	215455.		1592742.00	DAT=	1973.		
PH =	7.50	SPC=		WED=	503.00	WAD=	45.00	TEM=	23.00	FLO=		EH =		SPC=					
ALK=	58.00	DIS=	170.00	SUS=		LI =		NA =	16.00	K =	1.50	RB =		MG =	15.00				
CA =	7.20	SR =		BA =	0.10	MN =	0.03	FE =	0.05	FET=		F =	0.11	CU =	0.02				
ZN =	0.03	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =					
CL =	30.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01				
NO3=	0.54	PO4=		SIO=	36.80	SO4=	4.90	CO3=		HCO=	93.00	CAR=		HAR=	70.00				
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	245.00				

ID#=	2-5530-02	TYP=	WELL	COU=	KAUAI			LOC=	LAWAI CANNER			LAT,LON=	215524.		1593030.00	DAT=	1956.		
PH =	7.30	SPC=		WED=	750.00	WAD=	124.00	TEM=	22.00	FLO=		EH =		SPC=	250.00				
ALK=	60.00	DIS=	187.00	SUS=		LI =		NA =	20.00	K =	0.80	RB =		MG =	8.90				
CA =	5.80	SR =		BA =		MN =	0.10	FE =	0.10	FET=		F =	0.20	CU =	0.10				
ZN =	0.03	HG =		B =		AL =	0.30	PB =	0.03	AS =	0.01	SB =		U =					
CL =	26.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00				
NO3=	4.00	PO4=		SIO=	52.00	SO4=	16.40	CO3=		HCO=	88.00	CAR=		HAR=	51.70				
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	440.00				

ID#=	2-5530-03	TYP=	WELL	COU=	KAUAI			LOC=	LAWAI DEEP W			LAT,LON=	215535.		1593026.01	DAT=	1975.		
PH =	7.90	SPC=		WED=	695.00	WAD=	53.30	TEM=	22.00	FLO=		EH =		SPC=	220.00				
ALK=	60.00	DIS=	170.00	SUS=		LI =		NA =	19.00	K =	1.40	RB =		MG =	9.40				
CA =	5.80	SR =		BA =	0.10	MN =	0.03	FE =	10.00	FET=		F =	0.01	CU =	0.02				
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =					
CL =	23.00	BR =		I =		O2 =		CO2=	1.50	H2S=		NH4=		NO2=	0.01				
NO3=	0.54	PO4=	0.37	SIO=	59.00	SO4=	8.70	CO3=		HCO=	73.00	CAR=		HAR=	61.00				
SE =	0.00	PHE=		CD =	0.00	CR =	0.01	AG =	0.01	P =	0.12	N =	0.51	ELE=	600.00				

ID#=	2-5725-01	TYP=	TUNNEL	COU=	KAUAI			LOC=	KOKOLAU TUN			LAT,LON=	215747.		1592534.00	DAT=	1975.		
PH =		SPC=		WED=	300.00	WAD=	300.00	TEM=	23.00	FLO=		EH =		SPC=	5570.00				
ALK=	85.00	DIS=	158.00	SUS=		LI =		NA =	9.60	K =	1.20	RB =		MG =	11.00				
CA =	8.60	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.16	CU =	0.02				
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =					
CL =	19.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01				
NO3=	0.44	PO4=		SIO=	36.60	SO4=	4.70	CO3=		HCO=		CAR=		HAR=					
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	300.00				

ID#=	2-5823-01	TYP=	TUNNEL	COU=	KAUAI			LOC=	GARLINGHOUSE			LAT,LON=	215845.		1592321.00	DAT=	1977.		
PH =	6.80	SPC=		WED=		WAD=	187.00	TEM=	22.00	FLO=		EH =		SPC=	181.00				
ALK=	50.00	DIS=	132.00	SUS=		LI =		NA =	16.00	K =	1.30	RB =		MG =	8.60				
CA =	6.70	SR =		BA =	0.30	MN =	10.00	FE =	10.00	FET=		F =	0.10	CU =	0.02				
ZN =	0.15	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =					
CL =	22.00	BR =		I =		O2 =		CO2=	15.00	H2S=		NH4=		NO2=	0.01				
NO3=	0.90	PO4=	0.25	SIO=	32.00	SO4=	11.00	CO3=	0.00	HCO=	61.00	CAR=		HAR=	52.00				
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.08	N =	0.88	ELE=	187.00				

ID#=2-5824-01 TYP=WELL COU=KAUAI LOC=COMM COLL LAT,LON= 215825. 1592408.01 DAT=1975.

PH =		SPC=		WED=	772.00	WAD=		TEM=	25.00	FLO=		EH =		SPC=	
ALK=	135.00	DIS=	203.00	SUS=		LI =		NA =	42.00	K =	4.50	RB =		MG =	12.00
CA =	11.00	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	17.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=	0.34	SIO=	23.00	SO4=	4.00	CO3=		HCO=	165.00	CAR=		HAR=	77.00
SE =		PHE=		CD =		CR =		AG =		P =	0.11	N =	1.70	ELE=	328.00

ID#=2-5921-01 TYP=WELL COU=KAUAI LOC=KALAPA RIDGE LAT,LON= 215958. 1592143.00 DAT=1954.

PH =	7.20	SPC=		WED=	540.00	WAD=	16.00	TEM=	23.00	FLO=		EH =		SPC=	
ALK=	134.00	DIS=	266.00	SUS=		LI =		NA =		K =		RB =		MG =	12.80
CA =	39.10	SR =		BA =		MN =	0.00	FE =	0.40	FET=		F =	0.20	CU =	0.01
ZN =	0.01	HG =		B =		AL =	38.80	PB =	0.01	AS =	0.01	SB =		U =	
CL =	23.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.70
NO3=	0.10	PO4=		SIO=	32.00	SO4=	52.70	CO3=		HCO=	163.00	CAR=		HAR=	151.10
SE =	0.01	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	302.00

ID#=2-5923-01 TYP=WELL COU=KAUAI LOC=KILOHANA-A LAT,LON= 215901. 1592353.01 DAT=1974.

PH =	8.30	SPC=		WED=	920.00	WAD=	46.80	TEM=	26.50	FLO=		EH =		SPC=	289.00
ALK=	121.00	DIS=	174.00	SUS=		LI =		NA =	34.00	K =	3.80	RB =		MG =	11.00
CA =	9.00	SR =		BA =		MN =	40.00	FE =	20.00	FET=		F =	0.50	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	16.00	BR =		I =		O2 =		CO2=	1.20	H2S=		NH4=		NO2=	
NO3=		PO4=	0.28	SIO=	23.00	SO4=	2.80	CO3=	0.00	HCO=	148.00	CAR=		HAR=	68.00
SE =		PHE=		CD =		CR =		AG =		P =	0.09	N =	0.02	ELE=	371.00

ID#=2-5923-02 TYP=WELL COU=KAUAI LOC=KILOHANA LAT,LON= 215901. 1592353.02 DAT=1977.

PH =	6.70	SPC=		WED=	180.00	WAD=	225.90	TEM=	23.50	FLO=		EH =		SPC=	190.00
ALK=	55.00	DIS=	132.00	SUS=		LI =		NA =	17.00	K =	1.10	RB =		MG =	9.00
CA =	7.20	SR =		BA =		MN =	0.00	FE =	70.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	22.00	BR =		I =		O2 =		CO2=	21.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.55	SIO=	33.00	SO4=	5.30	CO3=	0.00	HCO=	67.00	CAR=		HAR=	55.00
SE =		PHE=		CD =		CR =		AG =		P =	0.18	N =	0.84	ELE=	371.00

TABLE 2 Oahu

ID#=3-1749-08		TYP=WELL		COU=OAHU				LOC=KAPAHULU			LAT,LON=	211712.		1574912.00		DAT=1972.			
PH =	7.30	SPC=		WED=	411.00	WAD=	26.50	TEM=	22.00	FLO=		EH =		SPC=	834.00				
ALK=	49.00	DIS=	501.00	SUS=		LI =		NA =	160.00	K =	3.70	RB =		MG =	4.40				
CA =	3.60	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	208.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=					
NO3=		PO4=		SIO=	55.00	SO4=	36.00	CO3=		HCO=	60.00	CAR=		HAR=	27.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	11.00				

ID#=3-1849-10		TYP=WELL		COU=OAHU				LOC=MANOA VALLEY			LAT,LON=	211813.		1574952.00		DAT=1971.			
PH =	7.50	SPC=		WED=	315.00	WAD=	25.00	TEM=	25.00	FLO=		EH =		SPC=					
ALK=	121.00	DIS=	220.00	SUS=		LI =		NA =	50.00	K =	6.20	RB =		MG =	6.50				
CA =	5.60	SR =		BA =	0.10	MN =	0.03	FE =	0.02	FET=		F =	0.05	CU =	0.02				
ZN =	0.01	HG =		B =		AL =	0.15	PB =	0.01	AS =	0.00	SB =		U =					
CL =	18.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01				
NO3=	0.99	PO4=		SIO=	29.70	SO4=	8.00	CO3=		HCO=	148.00	CAR=		HAR=	40.00				
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.05	AG =	0.03	P =		N =		ELE=	36.00				

ID#=3-1952-04		TYP=WELL		COU=OAHU				LOC=KAPALAMA			LAT,LON=	211950.		1575202.00		DAT=1976.			
PH =		SPC=		WED=	150.00	WAD=	20.80	TEM=	26.00	FLO=		EH =		SPC=					
ALK=		DIS=		SUS=		LI =		NA =		K =		RB =		MG =					
CA =		SR =		BA =		MN =		FE =		FET=		F =		CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	118.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=					
NO3=		PO4=		SIO=		SO4=		CO3=		HCO=		CAR=		HAR=					
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	16.00				

ID#=3-2043-01		TYP=WELL		COU=OAHU				LOC=WAIMANALO			LAT,LON=	212059.		1574333.00		DAT=1970.			
PH =	7.30	SPC=		WED=	730.00	WAD=	31.50	TEM=	30.00	FLO=		EH =		SPC=	218.00				
ALK=	69.00	DIS=	138.00	SUS=		LI =		NA =	28.00	K =	1.10	RB =		MG =	2.80				
CA =	14.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	24.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=					
NO3=	0.10	PO4=		SIO=	22.00	SO4=	5.40	CO3=		HCO=	84.00	CAR=		HAR=	47.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	26.00				

ID#=3-2043-02		TYP=WELL		COU=OAHU				LOC=WAIMANALO			LAT,LON=	212012.		1574322.00		DAT=1971.			
PH =	6.90	SPC=		WED=	280.00	WAD=	29.00	TEM=	25.00	FLO=		EH =		SPC=					
ALK=	121.00	DIS=		SUS=		LI =		NA =	36.00	K =	1.00	RB =		MG =	6.80				
CA =	12.00	SR =		BA =	0.10	MN =	0.03	FE =	0.30	FET=		F =	0.05	CU =	0.02				
ZN =	0.01	HG =		B =		AL =	0.19	PB =	0.02	AS =	0.00	SB =		U =					
CL =	27.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01				
NO3=	1.90	PO4=		SIO=	35.60	SO4=	10.00	CO3=		HCO=	148.00	CAR=		HAR=	60.00				
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.05	AG =	0.01	P =		N =		ELE=	142.00				

ID#=3-2052-07 TYP=WELL COU=OAHU LOC=KAPALAMA AVE LAT,LON= 212016. 1575212.00 DAT=1971.

PH =	6.90	SPG=		WED=	321.00	WAD=	25.70	TEM=	26.00	FLO=		EH =		SPC=	
ALK=	157.00	DIS=	512.00	SUS=		LI =		NA =	70.00	K =	5.00	RB =		MG =	36.00
CA =	28.80	SR =		BA =	0.10	MN =	0.03	FE =	0.02	FET=		F =	0.05	CU =	0.07
ZN =	0.01	HG =		B =		AL =	0.17	PB =	0.03	AS =	0.00	SB =		U =	
CL =	130.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.20	PO4=		SIO=	20.20	SO4=	37.00	CO3=		HCO=	191.00	CAR=		HAR=	198.00
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.05	AG =	0.01	P =		N =		ELE=	80.00

ID#=3-2053-05 TYP=WELL COU=OAHU LOC=KALIHI LAT,LON= 212022. 1575317.00 DAT=1970.

PH =	6.60	SPG=		WED=	471.00	WAD=	23.80	TEM=	30.00	FLO=		EH =		SPC=	
ALK=	66.00	DIS=	660.00	SUS=		LI =		NA =	6.00	K =	3.40	RB =		MG =	11.00
CA =	14.40	SR =		BA =		MN =	0.05	FE =	0.02	FET=		F =	0.15	CU =	0.11
ZN =	0.13	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =		U =	
CL =	60.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.35	PO4=		SIO=	41.60	SO4=	9.00	CO3=		HCO=	54.00	CAR=		HAR=	82.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	26.00

ID#=3-2054-03. TYP=WELL COU=OAHU LOC=PUULOA RD LAT,LON= 212013. 1575413.00 DAT=1965.

PH =	7.70	SPG=		WED=	668.00	WAD=	21.00	TEM=	32.00	FLO=		EH =		SPC=	1900.00
ALK=	32.00	DIS=		SUS=		LI =		NA =	58.00	K =	16.00	RB =		MG =	1.50
CA =	3.44	SR =		BA =		MN =	0.05	FE =	0.20	FET=		F =	0.10	CU =	0.10
ZN =	0.10	HG =		B =		AL =	9.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	620.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	1.86	PO4=		SIO=	28.40	SO4=	25.50	CO3=		HCO=		CAR=		HAR=	14.80
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	6.00

ID#=3-2142-03 TYP=WELL COU=OAHU LOC=BELLOWS AFB LAT,LON= 212103. 1574238.00 DAT=1962.

PH =		SPG=		WED=	41.00	WAD=	7.30	TEM=	26.10	FLO=		EH =		SPC=	
ALK=		DIS=		SUS=		LI =		NA =		K =		RB =		MG =	
CA =		SR =		BA =		MN =		FE =		FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	238.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=		SO4=		CO3=		HCO=		CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	20.00

ID#=3-2153-02 TYP=WELL COU=OAHU LOC=MOANALUA LAT,LON= 212106. 1575337.00 DAT=1928.

PH =		SPG=		WED=	289.00	WAD=	19.10	TEM=	22.00	FLO=		EH =		SPC=	415.00
ALK=	69.00	DIS=	255.00	SUS=		LI =		NA =	38.00	K =	3.10	RB =		MG =	12.00
CA =	17.00	SR =		BA =		MN =		FE =		FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	74.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.40	PO4=		SIO=	63.00	SO4=	15.00	CO3=		HCO=	84.00	CAR=		HAR=	92.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	20.00

ID#=3-2153-07 TYP=WELL COU=OAHU LOC=MOANALUA LAT,LON= 212117. 1575346.00 DAT=1972.

PH =	7.60	SPG=		WED=	302.00	WAD=	20.00	TEM=	25.60	FLO=		EH =		SPC=	381.00
ALK=	51.00	DIS=	200.00	SUS=		LI =		NA =	38.00	K =	2.00	RB =		MG =	12.00
CA =	13.00	SR =		BA =		MN =	0.02	FE =	0.16	FET=		F =	0.10	CU =	
ZN =	0.03	HG =		B =		AL =	0.10	PB =		AS =		SB =		U =	
CL =	76.00	BR =		I =		O2 =		CO2=	2.50	H2S=		NH4=		NO2=	
NO3=	2.20	PO4=	0.07	SIO=	44.00	SO4=	12.00	CO3=		HCO=	62.00	CAR=		HAR=	82.00
SE =		PHE=		CD =		CR =		AG =		P =	0.00	N =	0.39	ELE=	28.00

ID#=3-2202-03 TYP=WELL COU=OAHU LOC=HONOULIULI LAT,LON= 212220. 1580218.00 DAT=1964.

PH =	7.01	SPG=		WED=	304.00	WAD=	19.00	TEM=	22.20	FLO=		EH =		SPC=	
ALK=	87.00	DIS=	496.00	SUS=		LI =		NA =	100.00	K =	5.00	RB =		MG =	27.40
CA =	19.10	SR =		BA =		MN =	0.05	FE =	0.04	FET=		F =	0.10	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	145.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	5.13	PO4=		SIO=	63.00	SO4=	42.00	CO3=		HCO=	73.00	CAR=		HAR=	132.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	50.00

ID#=3-2202-09 TYP=WELL COU=OAHU LOC=HONOULIULI LAT,LON= 212220. 1580218.00 DAT=1964.

PH =	7.00	SPG=		WED=	312.00	WAD=	11.70	TEM=		FLO=		EH =		SPC=	
ALK=	87.00	DIS=		SUS=		LI =		NA =	100.00	K =	5.00	RB =		MG =	27.40
CA =	19.10	SR =		BA =		MN =	0.05	FE =	0.04	FET=		F =	0.10	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	145.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.13	PO4=		SIO=	83.09	SO4=	42.00	CO3=		HCO=		CAR=		HAR=	132.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	50.00

ID#=3-2202-15 TYP=WELL COU=OAHU LOC=MILL PUMP-7A LAT,LON= 212204. 1580212.00 DAT=1968.

PH =	6.50	SPG=		WED=	468.00	WAD=	12.00	TEM=	25.50	FLO=		EH =		SPC=	2730.00
ALK=	10.00	DIS=	1530.00	SUS=		LI =		NA =	130.00	K =	4.00	RB =		MG =	59.00
CA =	108.00	SR =		BA =		MN =	0.05	FE =	0.04	FET=		F =	0.10	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	840.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	4.61	PO4=		SIO=	82.00	SO4=	52.00	CO3=		HCO=	12.00	CAR=	502.00	HAR=	519.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	46.00

ID#=3-2256-12 TYP=WELL COU=OAHU LOC=AIEA LAT,LON= 212238. 1575611.00 DAT=1976.

PH =		SPG=		WED=	182.00	WAD=	23.00	TEM=	27.00	FLO=		EH =		SPC=	580.00
ALK=		DIS=		SUS=		LI =		NA =		K =		RB =		MG =	
CA =		SR =		BA =		MN =		FE =		FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	150.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=		SO4=		CO3=		HCO=		CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	11.00

ID#=3-2300-02 TYP=WELL COU=OAHU LOC=WAIPAHU LAT,LON= 212327. 1580002.00 DAT=1969.

PH =	8.10	SPC=		WED=	214.00	WAD=		TEM=	23.00	FLO=		EH =		SPC=	666.00
ALK=		DIS=		SUS=		LI =		NA =	80.00	K =	3.60	RB =		MG =	20.00
CA =	19.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	135.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.10	PO4=		SIO=	66.00	SO4=		CO3=		HCO=	88.00	CAR=		HAR=	130.00
SE =		PHE=		CD =		CR =		AC =		P =		N =		ELE=	10.00

ID#=3-2300-07 TYP=WELL COU=OAHU LOC=WAIPAHU P6A LAT,LON= 212322. 1580038.00 DAT=1969.

PH =	7.00	SPC=		WED=		WAD=		TEM=	30.00	FLO=		EH =		SPC=	
ALK=	70.00	DIS=	504.00	SUS=		LI =		NA =	145.00	K =	0.20	RB =		MG =	6.40
CA =	44.00	SR =		BA =		MN =	0.01	FE =	0.06	FET=		F =	0.06	CU =	0.05
ZN =	0.08	HG =		B =		AL =	0.02	PB =	0.05	AS =	0.00	SB =		U =	
CL =	89.30	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.15	PO4=		SIO=	44.50	SO4=	5.60	CO3=		HCO=	51.00	CAR=		HAR=	116.00
SE =	0.01	PHE=	0.00	CD =		CR =		AC =		P =		N =		ELE=	60.00

ID#=3-2300-11 TYP=WELL COU=OAHU LOC=WAIPAHU LAT,LON= 212342. 1580012.00 DAT=1975.

PH =	6.80	SPC=		WED=	202.00	WAD=	21.50	TEM=	22.50	FLO=		EH =		SPC=	750.00
ALK=	73.00	DIS=	444.00	SUS=		LI =		NA =	96.00	K =	3.60	RB =		MG =	19.00
CA =	22.00	SR =		BA =		MN =		FE =	10.00	FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	170.00	BR =		I =		O2 =		CO2=	23.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.55	SIO=	60.00	SO4=	31.00	CO3=		HCO=	89.00	CAR=		HAR=	130.00
SE =		PHE=		CD =		CR =		AG =		P =	0.18	N =	1.90	ELE=	18.00

ID#=3-2300-18 TYP=WELL COU=OAHU LOC=WAIPAHU LAT,LON= 212340. 1580019.00 DAT=1968.

PH =	6.80	SPC=		WED=	205.00	WAD=	24.20	TEM=	22.00	FLO=		EH =		SPC=	453.00
ALK=	44.00	DIS=	318.00	SUS=		LI =		NA =	65.00	K =	10.90	RB =		MG =	13.00
CA =	16.00	SR =		BA =		MN =	0.05	FE =	0.02	FET=		F =	0.32	CU =	0.01
ZN =	0.04	HG =		B =		AL =	0.01	PB =	0.01	AS =	0.00	SB =		U =	
CL =	96.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	8.86	PO4=		SIO=	60.00	SO4=	20.00	CO3=		HCO=	54.00	CAR=		HAR=	94.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	26.00

ID#=3-2508-02 TYP=TUNNEL COU=OAHU LOC=LUALUALEI LAT,LON= 212501. 1580807.00 DAT=1971.

PH =	7.80	SPC=		WED=	175.00	WAD=	11.70	TEM=	29.00	FLO=		EH =		SPC=	1200.00
ALK=	258.00	DIS=	819.00	SUS=		LI =		NA =	92.00	K =	7.90	RB =		MG =	102.00
CA =	36.00	SR =		BA =		MN =		FE =	0.10	FET=		F =	0.20	CU =	0.01
ZN =		HG =		B =		AL =	1.90	PB =	0.01	AS =	0.01	SB =		U =	
CL =	280.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	8.50	PO4=	0.05	SIO=	92.00	SO4=	22.00	CO3=		HCO=	338.00	CAR=		HAR=	510.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	170.00

ID#=3-2607-01 TYP=WELL COU=OAHU LOC=LUALUALEI LAT,LON= 212656. 1580718.00 DAT=1972.

PH =	7.50	SPC=		WED=	451.00	WAD=	35.70	TEM=	25.00	FLO=		EH =		SPC=	340.00
ALK=	93.00	DIS=	246.00	SUS=		LI =		NA =	38.00	K =	2.80	RB =		MG =	12.00
CA =	13.00	SR =		BA =		MN =	0.05	FE =	0.01	FET=		F =	0.30	CU =	0.03
ZN =	0.10	HG =		B =		AL =		PB =	0.01	AS =	0.05	SB =		U =	
CL =	45.00	BR =		I =		O2 =	6.50	CO2=	38.00	H2S=		NH4=		NO2=	
NO3=	4.30	PO4=	0.25	SIO=	65.00	SO4=	8.50	CO3=		HCO=	113.00	CAR=		HAR=	82.00
SE =		PHE=		CD =		CR =	0.05	AG =		P =		N =	0.97	ELE=	395.00

ID#=3-2712-30 TYP=WELL COU=OAHU LOC=KAMAILE-1 LAT,LON= 212752. 1581202.00 DAT=1976.

PH =	7.10	SPC=		WED=	164.00	WAD=	9.00	TEM=	25.50	FLO=		EH =		SPC=	628.00
ALK=	150.00	DIS=	492.00	SUS=		LI =		NA =	55.00	K =	4.10	RB =		MG =	34.00
CA =	19.00	SR =		BA =		MN =	0.02	FE =	0.02	FET=		F =	0.20	CU =	0.02
ZN =		HG =		B =		AL =		PB =	0.02	AS =	0.01	SB =		U =	
CL =	97.00	BR =		I =		O2 =		CO2=	35.00	H2S=		NH4=		NO2=	
NO3=	8.40	PO4=	0.50	SIO=	75.00	SO4=	16.00	CO3=		HCO=	183.00	CAR=		HAR=	198.00
SE =	0.01	PHE=		CD =		CR =	0.01	AG =		P =	0.13	N =	2.20	ELE=	34.00

ID#=3-2808-01 TYP=WELL COU=OAHU LOC=NANAKULI LAT,LON= 212813. 1580802.00 DAT=1972.

PH =	7.80	SPC=		WED=	395.00	WAD=	441.30	TEM=	27.00	FLO=		EH =		SPC=	1190.00
ALK=	80.00	DIS=	711.00	SUS=		LI =		NA =	120.00	K =	3.40	RB =		MG =	28.00
CA =	66.00	SR =		BA =		MN =		FE =	0.24	FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	160.00	BR =		I =		O2 =		CO2=	2.50	H2S=		NH4=		NO2=	
NO3=	0.30	PO4=		SIO=	63.00	SO4=	222.00	CO3=		HCO=	97.00	CAR=		HAR=	280.00
SE =		PHE=		CD =		CR =		AG =		P =		N =	0.07	ELE=	437.00

ID#=3-2809-05 TYP=WELL COU=OAHU LOC=WAIANAE VAL LAT,LON= 212801. 1580938.00 DAT=1969.

PH =	7.35	SPC=		WED=	335.00	WAD=	77.60	TEM=		FLO=		EH =		SPC=	
ALK=	62.40	DIS=		SUS=		LI =		NA =	63.00	K =	0.20	RB =		MG =	3.74
CA =	36.00	SR =		BA =		MN =	0.01	FE =	0.02	FET=		F =	0.05	CU =	0.32
ZN =	0.04	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =		U =	
CL =	67.72	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.57	PO4=		SIO=	62.00	SO4=	0.10	CO3=		HCO=		CAR=		HAR=	100.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	303.00

ID#=3-2812-01 TYP=TUNNEL COU=OAHU LOC=MAKAHA SHAFT LAT,LON= 212857. 1581246.00 DAT=1969.

PH =	7.20	SPC=		WED=	168.00	WAD=	16.70	TEM=	26.50	FLO=		EH =		SPC=	490.00
ALK=	147.68	DIS=		SUS=		LI =		NA =	16.90	K =	0.40	RB =		MG =	4.91
CA =	34.00	SR =		BA =		MN =	0.01	FE =	0.05	FET=		F =	0.32	CU =	0.04
ZN =	0.05	HG =		B =		AL =	0.02	PB =	0.02	AS =	0.00	SB =		U =	
CL =	91.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	9.75	PO4=		SIO=	66.00	SO4=	3.50	CO3=		HCO=		CAR=		HAR=	180.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	140.00

ID#=3-2912-01 TYP=WELL COU=OAHU LOC=MAKAHA LAT,LON= 212852. 1581303.00 DAT=1976.

PH =	7.20	SPC=		WED=	640.00	WAD=	83.50	TEM=	25.00	FLO=		EH =		SPC=	530.00
ALK=	126.00	DIS=	344.00	SUS=		LI =		NA =	33.00	K =	4.10	RB =		MG =	30.00
CA =	27.00	SR =		BA =		MN =	10.00	FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	92.00	BR =		I =		O2 =		CO2=	16.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.25	SIO=	66.00	SO4=	6.60	CO3=		HCO=	154.00	CAR=		HAR=	190.00
SE =		PHE=		CD =		CR =		AG =		P =	0.08	N =	1.90	ELE=	491.00

ID#=3-3013-09 TYP=WELL COU=OAHU LOC=OHIKILOLO LAT,LON= 213024. 1581333.00 DAT=1973.

PH =	7.30	SPC=		WED=	235.00	WAD=	184.00	TEM=	27.00	FLO=		EH =		SPC=	6240.00
ALK=	142.00	DIS=	3590.00	SUS=		LI =		NA =	960.00	K =	20.00	RB =		MG =	170.00
CA =	130.00	SR =		BA =		MN =		FE =		FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	1900.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=	0.34	SIO=	77.00	SO4=	240.00	CO3=		HCO=	173.00	CAR=		HAR=	1000.00
SE =		PHE=		CD =		CR =		AG =		P =	0.11	N =	1.40	ELE=	186.00

ID#=3-3213-06 TYP=WELL COU=OAHU LOC=MAKUA LAT,LON= 213225. 1581359.00 DAT=1972.

PH =	7.40	SPC=		WED=	50.00	WAD=		TEM=	25.50	FLO=		EH =		SPC=	800.00
ALK=	87.00	DIS=	547.00	SUS=		LI =		NA =	132.00	K =	3.00	RB =		MG =	20.00
CA =	17.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	210.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	2.40	PO4=		SIO=	61.00	SO4=	36.00	CO3=		HCO=	106.00	CAR=		HAR=	125.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	26.00

ID#=3-3314-01 TYP=WELL COU=OAHU LOC=KEAWAULA LAT,LON= 213307. 1581427.00 DAT=1972.

PH =	7.50	SPC=		WED=	264.00	WAD=	5.00	TEM=		FLO=		EH =		SPC=	2010.00
ALK=	111.00	DIS=	1090.00	SUS=		LI =		NA =	224.00	K =	7.20	RB =		MG =	73.00
CA =	50.00	SR =		BA =		MN =	0.05	FE =	0.03	FET=		F =	0.30	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.00	AS =	0.01	SB =		U =	
CL =	510.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	8.00	PO4=		SIO=	69.00	SO4=	81.00	CO3=		HCO=	135.00	CAR=		HAR=	425.00
SE =	0.00	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	183.00

ID#=3-3314-02 TYP=WELL COU=OAHU LOC=KEAWAULA LAT,LON= 213307. 1581427.00 DAT=1972.

PH =	7.70	SPC=		WED=	278.00	WAD=	4.60	TEM=	25.70	FLO=		EH =		SPC=	1780.00
ALK=	111.00	DIS=	983.00	SUS=		LI =		NA =	188.00	K =	6.00	RB =		MG =	70.00
CA =	45.00	SR =		BA =		MN =		FE =		FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	470.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	4.60	PO4=		SIO=	78.00	SO4=	55.00	CO3=		HCO=	135.00	CAR=		HAR=	401.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	174.00

ID#=3-3314-03 TYP=WELL COU=OAHU LOC=KEAWAULA LAT,LON= 213357. 1581417.00 DAT=1971.

PH =	7.00	SPG=		WED=	1178.00	WAD=	13.50	TEM=		FLO=		EH =		SPC=	1180.00
ALK=	69.00	DIS=	665.00	SUS=		LI =		NA =	116.00	K =	7.80	RB =		MG =	44.00
CA =	37.00	SR =		BA =		MN =		FE =	96.00	FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =	0.30	PB =		AS =		SB =		U =	
CL =	290.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.10	PO4=		SIO=	68.00	SO4=	56.00	CO3=		HCO=	84.00	CAR=		HAR=	274.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	1146.00

ID#=3-3404-02 TYP=TUNNEL COU=OAHU LOC=WAIALUA LAT,LON= 213432. 1580421.00 DAT=1975.

PH =	7.20	SPG=		WED=	235.00	WAD=	11.10	TEM=	21.10	FLO=		EH =		SPC=	
ALK=	69.00	DIS=	172.00	SUS=		LI =		NA =	24.00	K =	1.40	RB =		MG =	5.30
CA =	5.20	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.15	CU =	0.02
ZN =	0.02	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	25.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.60	PO4=		SIO=	61.60	SO4=	12.00	CO3=		HCO=		CAR=		HAR=	40.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	249.00

ID#=3-3405-01 TYP=WELL COU=OAHU LOC=WAIALUA LAT,LON= 213428. 1580557.00 DAT=1957.

PH =	7.20	SPG=		WED=	337.00	WAD=	12.20	TEM=	21.80	FLO=		EH =		SPC=	
ALK=	91.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	15.10
CA =	9.60	SR =		BA =		MN =	0.10	FE =	0.10	FET=		F =	0.15	CU =	0.01
ZN =	0.03	HG =		B =		AL =	2.30	PB =	0.03	AS =	0.01	SB =		U =	
CL =	94.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	8.24	PO4=		SIO=	63.20	SO4=	30.20	CO3=		HCO=		CAR=		HAR=	87.00
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	196.00

ID#=3-3405-02 TYP=WELL COU=OAHU LOC=WAIALUA LAT,LON= 213427. 1580557.00 DAT=1971.

PH =	7.00	SPG=		WED=	343.00	WAD=	12.20	TEM=	22.00	FLO=		EH =		SPC=	595.00
ALK=	78.00	DIS=	349.00	SUS=		LI =		NA =	68.00	K =	3.10	RB =		MG =	8.00
CA =	8.20	SR =		BA =		MN =	0.02	FE =	0.02	FET=		F =	0.15	CU =	0.02
ZN =	0.03	HG =		B =		AL =		PB =	0.02	AS =	0.01	SB =		U =	
CL =	110.00	BR =		I =		O2 =	8.00	CO2=	11.50	H2S=		NH4=		NO2=	
NO3=	2.40	PO4=	0.80	SIO=	70.00	SO4=	21.00	CO3=		HCO=	95.00	CAR=		HAR=	53.00
SE =	0.01	PHE=	0.01	CD =		CR =	0.01	AG =		P =		N =		ELE=	197.00

ID#=3-3406-02 TYP=WELL COU=OAHU LOC=WAIALUA LAT,LON= 213455. 1580647.00 DAT=1972.

PH =	7.30	SPG=		WED=	221.00	WAD=	11.60	TEM=	21.60	FLO=		EH =		SPC=	527.00
ALK=	82.00	DIS=	347.00	SUS=		LI =		NA =	75.00	K =	3.40	RB =		MG =	12.00
CA =	11.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	95.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	2.10	PO4=		SIO=	70.00	SO4=	22.00	CO3=		HCO=	100.00	CAR=		HAR=	77.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	14.00

ID#=3-3406-03 TYP=WELL COU=OAHU LOC=WAIALUA LAT,LON= 213454. 1580627.00 DAT=1972.

PH =	7.70	SPC=		WED=	198.00	WAD=	10.80	TEM=	22.30	FLO=		EH =		SPC=	546.00
ALK=	85.00	DIS=	361.00	SUS=		LI =		NA =	80.00	K =	3.00	RB =		MG =	11.00
CA =	11.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	98.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	8.90	PO4=		SIO=	74.00	SO4=	24.00	CO3=		HCO=	104.00	CAR=		HAR=	73.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	9.00

ID#=3-3406-05 TYP=WELL COU=OAHU LOC=WAIALUA LAT,LON= 213433. 1580652.00 DAT=1972.

PH =	7.50	SPC=		WED=	100.00	WAD=	11.00	TEM=	23.40	FLO=		EH =		SPC=	863.00
ALK=	80.00	DIS=	570.00	SUS=		LI =		NA =	116.00	K =	4.20	RB =		MG =	21.00
CA =	22.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	145.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	84.00	PO4=		SIO=	79.00	SO4=	51.00	CO3=		HCO=	97.00	CAR=		HAR=	142.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	28.00

ID#=3-3406-06 TYP=WELL COU=OAHU LOC=WAIALUA LAT,LON= 213429. 1580658.00 DAT=1972.

PH =	8.00	SPC=		WED=	100.00	WAD=	11.00	TEM=	22.80	FLO=		EH =		SPC=	642.00
ALK=	85.00	DIS=	416.00	SUS=		LI =		NA =	92.00	K =	4.40	RB =		MG =	15.00
CA =	13.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	126.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	9.60	PO4=		SIO=	75.00	SO4=	30.00	CO3=		HCO=	104.00	CAR=		HAR=	94.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	12.00

ID#=3-3406-08 TYP=WELL COU=OAHU LOC=CAPROCK-17 LAT,LON= 213459. 1580635.00 DAT=1973.

PH =	7.30	SPC=		WED=	67.00	WAD=		TEM=		FLO=		EH =		SPC=	536.00
ALK=		DIS=		SUS=		LI =		NA =	74.00	K =	3.40	RB =		MG =	12.00
CA =	12.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	94.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	2.10	PO4=		SIO=	70.00	SO4=	23.00	CO3=		HCO=	102.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	

ID#=3-3407-02 TYP=WELL COU=OAHU LOC=WAIALUA LAT,LON= 213437. 1580702.00 DAT=1972.

PH =	7.70	SPC=		WED=		WAD=	11.20	TEM=	22.30	FLO=		EH =		SPC=	587.00
ALK=	89.00	DIS=	380.00	SUS=		LI =		NA =	80.00	K =	4.60	RB =		MG =	14.00
CA =	13.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	112.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	9.60	PO4=		SIO=	72.00	SO4=	27.00	CO3=		HCO=	98.00	CAR=		HAR=	90.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	8.00

ID#=3-3407-07 TYP=WELL COU=OAHU LOC=WAIALUA II LAT,LON= 213435. 1580741.00 DAT=1975.

PH =	7.40	SPG=		WED=	261.00	WAD=	12.00	TEM=	22.00	FLO=		EH =		SPC=	1800.00
ALK=	103.00	DIS=	440.00	SUS=		LI =		NA =	78.00	K =	3.90	RB =		MG =	17.00
CA =	12.00	SR =		BA =	0.10	MN =	3.00	FE =	0.02	FET=		F =	0.15	CU =	0.06
ZN =	0.02	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	41.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	3.30	PO4=		SIO=	62.80	SO4=	30.00	CO3=		HCO=	104.00	CAR=		HAR=	119.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	30.00

ID#=3-3407-30 TYP=WELL COU=OAHU LOC=WAIALUA LAT,LON= 213444. 1580755.00 DAT=1976.

PH =	7.80	SPG=		WED=	40.00	WAD=		TEM=	25.00	FLO=		EH =		SPC=	3450.00
ALK=		DIS=	1670.00	SUS=		LI =		NA =	420.00	K =	18.00	RB =		MG =	57.00
CA =	108.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	950.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	8.80	PO4=		SIO=	36.00	SO4=	121.00	CO3=		HCO=	328.00	CAR=		HAR=	505.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	15.00

ID#=3-3505-01 TYP=WELL COU=OAHU LOC=OPAEULA P3 LAT,LON= 213508. 1580545.00 DAT=1972.

PH =	7.50	SPG=		WED=	428.00	WAD=	10.50	TEM=	22.00	FLO=		EH =		SPC=	432.00
ALK=	75.00	DIS=	301.00	SUS=		LI =		NA =	64.00	K =	3.00	RB =		MG =	9.10
CA =	8.80	SR =		BA =		MN =		FE =	0.05	FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =	4.13	PB =		AS =		SB =		U =	
CL =	73.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	6.00	PO4=		SIO=	71.00	SO4=	21.00	CO3=		HCO=	92.00	CAR=		HAR=	60.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	60.00

ID#=3-3506-03 TYP=WELL COU=OAHU LOC=HALEIWA LAT,LON= 213512. 1580616.00 DAT=1972.

PH =	7.80	SPG=		WED=	101.00	WAD=	10.10	TEM=	22.00	FLO=		EH =		SPC=	460.00
ALK=	82.00	DIS=	306.00	SUS=		LI =		NA =	62.00	K =	3.10	RB =		MG =	10.00
CA =	11.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	86.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	7.40	PO4=		SIO=	72.00	SO4=	21.00	CO3=		HCO=	101.00	CAR=		HAR=	69.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	24.00

ID#=3-3506-06 TYP=WELL COU=OAHU LOC=HALEIWA LAT,LON= 213504. 1580635.00 DAT=1972.

PH =	7.70	SPG=		WED=	250.00	WAD=		TEM=	22.10	FLO=		EH =		SPC=	519.00
ALK=	85.00	DIS=	345.00	SUS=		LI =		NA =	70.00	K =	3.80	RB =		MG =	13.00
CA =	13.00	SR =		BA =		MN =		FE =	0.10	FET=		F =	0.20	CU =	0.10
ZN =	0.03	HG =		B =		AL =	0.70	PB =	0.03	AS =	0.01	SB =		U =	
CL =	92.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	8.10	PO4=		SIO=	71.00	SO4=	23.00	CO3=		HCO=	104.00	CAR=		HAR=	86.00
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	7.00

ID#=3-3605-03 TYP=WELL COU=OAHU LOC=KAWAILOA-4 LAT,LON= 213636. 1580537.00 DAT=1972.

PH =	7.80	SPC=		WED=	38.00	WAD=		TEM=	22.00	FLO=		EH =		SPC=	2000.00
ALK=	61.00	DIS=	1120.00	SUS=		LI =		NA =	328.00	K =	13.00	RB =		MG =	33.00
CA =	18.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	660.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	4.00	PO4=		SIO=	64.00	SO4=	82.00	CO3=		HCO=	74.00	CAR=		HAR=	181.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	8.00

ID#=3-3605-15 TYP=WELL COU=OAHU LOC=KAWAILOA-4 LAT,LON= 213636. 1580537.00 DAT=1972.

PH =	7.60	SPC=		WED=	45.00	WAD=		TEM=	21.60	FLO=		EH =		SPC=	1460.00
ALK=	64.00	DIS=	813.00	SUS=		LI =		NA =	228.00	K =	9.10	RB =		MG =	24.00
CA =	14.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	370.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	6.00	PO4=		SIO=	64.00	SO4=	60.00	CO3=		HCO=	78.00	CAR=		HAR=	134.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	7.00

ID#=3-3605-16 TYP=WELL COU=OAHU LOC=KAWAILOA-4 LAT,LON= 213636. 1580537.00 DAT=1972.

PH =	7.90	SPC=		WED=	45.00	WAD=		TEM=	21.50	FLO=		EH =		SPC=	1610.00
ALK=	65.00	DIS=	902.00	SUS=		LI =		NA =	252.00	K =	9.80	RB =		MG =	28.00
CA =	17.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	420.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.60	PO4=		SIO=	64.00	SO4=	66.00	CO3=		HCO=	79.00	CAR=		HAR=	158.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	7.00

ID#=3-3605-21 TYP=WELL COU=OAHU LOC=KAWAILOA-4 LAT,LON= 213636. 1580537.00 DAT=1972.

PH =	8.00	SPC=		WED=	48.00	WAD=	4.50	TEM=	22.00	FLO=		EH =		SPC=	1300.00
ALK=		DIS=	755.00	SUS=		LI =		NA =	212.00	K =	8.40	RB =		MG =	22.00
CA =	14.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	390.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.60	PO4=		SIO=	65.00	SO4=	54.00	CO3=		HCO=	80.00	CAR=		HAR=	125.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	6.00

ID#=3-3605-23 TYP=WELL COU=OAHU LOC=KAWAILOA P4 LAT,LON= 213636. 1580537.00 DAT=1972.

PH =	8.00	SPC=		WED=	46.00	WAD=	4.50	TEM=	21.60	FLO=		EH =		SPC=	1320.00
ALK=	66.00	DIS=	755.00	SUS=		LI =		NA =	212.00	K =	8.40	RB =		MG =	22.00
CA =	14.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	335.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.60	PO4=		SIO=	65.00	SO4=	54.00	CO3=		HCO=	80.00	CAR=		HAR=	126.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	6.00

ID#=3-3704-01 TYP=TUNNEL COU=OAHU LOC=MEADOW GOLD LAT,LON= 213734. 1580448.00 DAT=1972.

PH =	7.50	SPG=		WED=	36.00	WAD=	2.60	TEM=	21.80	FLO=		EH =		SPC=	1880.00
ALK=	64.00	DIS=	1020.00	SUS=		LI =		NA =	292.00	K =	12.00	RB =		MG =	33.00
CA =	15.00	SR =		BA =	0.10	MN =	0.03	FE =	0.02	FET=		F =	0.10	CU =	0.08
ZN =	0.02	HC =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	490.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.60	PO4=		SIO=	64.00	SO4=	74.00	CO3=		HCO=	78.00	CAR=		HAR=	182.00
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	32.00

TABLE 3 Maui

ID#=6-3925-01		TYP=WELL		COU=MAUI				LOC=MAKENA-68		LAT,LON=	203912.		1562559.00		DAT=1964.				
PH =	7.35	SPC=		WED=	382.00	WAD=	0.40	TEM=	20.00	FLO=		EH =			SPC=				
ALK=	200.00	DIS=	1110.00	SUS=		LI =		NA =	255.00	K =	23.00	RB =			MG =	64.20			
CA =	49.60	SR =		BA =		MN =	0.05	FE =	0.13	FET=		F =	0.10		CU =	0.10			
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =			U =				
CL =	500.00	BR =		I =		O2 =		CO2=		H2S=		NH4=			NO2=	6.60			
NO3=	7.10	PO4=		SIO=	41.00	SO4=	50.00	CO3=		HCO=	244.00	CAR=	0.00		HAR=	388.00			
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =			ELE=	352.00			

ID#=6-4835-01		TYP=TUNNEL		COU=MAUI				LOC=UKUMEHAME		LAT,LON=	204847.		1563558.00		DAT=1970.				
PH =	7.50	SPC=		WED=	143.00	WAD=	6.00	TEM=	33.00	FLO=		EH =			SPC=				
ALK=	108.00	DIS=	921.00	SUS=		LI =		NA =	180.00	K =	15.00	RB =			MG =	29.00			
CA =	85.00	SR =		BA =		MN =		FE =		FET=		F =	1.20		CU =				
ZN =		HG =		B =		AL =		PB =		AS =		SB =			U =				
CL =	400.00	BR =		I =		O2 =		CO2=		H2S=		NH4=			NO2=				
NO3=	11.00	PO4=		SIO=	60.00	SO4=	50.00	CO3=		HCO=	130.00	CAR=			HAR=	330.00			
SE =		PHE=		CD =		CR =		AG =		P =		N =			ELE=	79.00			

ID#=6-4837-01		TYP=TUNNEL		COU=MAUI				LOC=OLOWALU		LAT,LON=	204859.		1563709.00		DAT=1970.				
PH =	7.60	SPC=		WED=	20.00	WAD=	2.00	TEM=	25.50	FLO=		EH =			SPC=				
ALK=	98.00	DIS=	956.00	SUS=		LI =		NA =	150.00	K =	5.00	RB =			MG =	67.00			
CA =	90.00	SR =		BA =		MN =		FE =		FET=		F =	0.20		CU =				
ZN =		HG =		B =		AL =		PB =		AS =		SB =			U =				
CL =	460.00	BR =		I =		O2 =		CO2=		H2S=		NH4=			NO2=				
NO3=	5.90	PO4=		SIO=	45.00	SO4=	70.00	CO3=		HCO=	120.00	CAR=			HAR=	500.00			
SE =		PHE=		CD =		CR =		AG =		P =		N =			ELE=	20.00			

ID#=6-4937-01		TYP=TUNNEL		COU=MAUI				LOC=OLOWALU S10		LAT,LON=	204931.		1563712.00		DAT=1974.				
PH =	7.10	SPC=		WED=	300.00	WAD=	3.50	TEM=	25.00	FLO=		EH =			SPC=	5680.00			
ALK=	116.00	DIS=	1900.00	SUS=		LI =		NA =	370.00	K =	14.00	RB =			MG =	120.00			
CA =	160.00	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.10		CU =				
ZN =		HG =		B =		AL =		PB =		AS =		SB =			U =				
CL =	1600.00	BR =		I =		O2 =		CO2=	18.00	H2S=		NH4=			NO2=				
NO3=	6.40	PO4=	0.21	SIO=	52.00	SO4=	110.00	CO3=		HCO=	141.00	CAR=			HAR=	890.00			
SE =		PHE=		CD =		CR =		AG =		P =	0.07	N =	1.90		ELE=	165.00			

ID#=6-5226-01		TYP=TUNNEL		COU=MAUI.				LOC=PUUNENE-5		LAT,LON=	205254.		1562658.00		DAT=1970.				
PH =	7.30	SPC=		WED=	48.00	WAD=	4.60	TEM=	26.00	FLO=		EH =			SPC=				
ALK=	320.00	DIS=	1210.00	SUS=		LI =		NA =	275.00	K =	19.00	RB =			MG =	62.00			
CA =	58.00	SR =		BA =		MN =		FE =		FET=		F =	2.70		CU =				
ZN =		HG =		B =		AL =		PB =		AS =		SB =			U =				
CL =	477.00	BR =		I =		O2 =		CO2=		H2S=		NH4=			NO2=				
NO3=	14.00	PO4=		SIO=	59.00	SO4=	44.00	CO3=		HCO=	390.00	CAR=			HAR=	398.00			
SE =		PHE=		CD =		CR =		AG =		P =		N =			ELE=	40.00			

ID#=6-5226-02 TYP=TUNNEL COU=MAUI LOC=PUUNENE-6 LAT,LON= 205201. 1562610.00 DAT=1970.

PH =	7.40	SPG=		WED=	176.00	WAD=	4.40	TEM=	23.50	FLO=		EH =		SPC=	
ALK=	148.00	DIS=	884.00	SUS=		LI =		NA =	230.00	K =	14.00	RB =		MG =	34.00
CA =	28.00	SR =		BA =		MN =		FE =		FET=		F =	2.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	376.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	13.00	PO4=		SIO=	56.00	SO4=	38.00	CO3=		HCO=	180.00	CAR=		HAR=	208.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	182.00

ID#=6-5240-01 TYP=TUNNEL COU=MAUI LOC=MILL PUMP-C LAT,LON= 205255. 1564044.00 DAT=1970.

PH =	7.20	SPG=		WED=	39.00	WAD=	3.00	TEM=	24.50	FLO=		EH =		SPC=	
ALK=	159.00	DIS=	2040.00	SUS=		LI =		NA =	430.00	K =	25.00	RB =		MG =	111.00
CA =	130.00	SR =		BA =		MN =		FE =		FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	980.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	22.00	PO4=		SIO=	55.00	SO4=	190.00	CO3=		HCO=	194.00	CAR=		HAR=	830.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	34.00

ID#=6-5240-03 TYP=TUNNEL COU=MAUI LOC=LAHAINA-B LAT,LON= 205227. 1564017.00 DAT=1970.

PH =	7.20	SPG=		WED=	31.00	WAD=	2.00	TEM=	28.00	FLO=		EH =		SPC=	
ALK=	202.00	DIS=	1370.00	SUS=		LI =		NA =	170.00	K =	15.00	RB =		MG =	109.00
CA =	140.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	600.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	15.00	PO4=		SIO=	60.00	SO4=	120.00	CO3=		HCO=	246.00	CAR=		HAR=	800.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	30.00

ID#=6-5321-01 TYP=TUNNEL COU=MAUI LOC=KAHEKA-18 LAT,LON= 205327. 1562132.00 DAT=1970.

PH =	7.70	SPG=		WED=		WAD=	6.20	TEM=	21.00	FLO=		EH =		SPC=	
ALK=	57.00	DIS=	279.00	SUS=		LI =		NA =	60.00	K =	4.30	RB =		MG =	11.00
CA =	9.00	SR =		BA =		MN =		FE =		FET=		F =	1.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	76.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	8.60	PO4=		SIO=	53.00	SO4=	20.00	CO3=		HCO=	70.00	CAR=		HAR=	66.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	552.00

ID#=6-5339-01 TYP=WELL COU=MAUI LOC=LAHAINA-1 LAT,LON= 205320. 1563945.00 DAT=1972.

PH =	7.60	SPG=		WED=	497.00	WAD=	2.60	TEM=	22.00	FLO=		EH =		SPC=	1330.00
ALK=	119.00	DIS=	600.00	SUS=		LI =		NA =	120.00	K =	6.50	RB =		MG =	27.00
CA =	26.00	SR =		BA =		MN =	0.05	FE =	0.30	FET=		F =	0.20	CU =	0.10
ZN =	0.10	HG =		B =		AL =	2.90	PB =	0.01	AS =	0.01	SB =		U =	
CL =	310.00	BR =		I =		O2 =		CO2=	5.80	H2S=		NH4=		NO2=	0.00
NO3=	10.60	PO4=		SIO=	57.00	SO4=	29.00	CO3=		HCO=	145.00	CAR=	119.00	HAR=	176.00
SE =	0.03	PHE=		CD =		CR =		AG =		P =		N =	7.20	ELE=	441.00

ID#=6-5339-02 TYP=WELL COU=MAUI LOC=LAHAINA-2 LAT,LON= 205321. 1563930.00 DAT=1974.

PH =	7.60	SPG=		WED=	498.00	WAD=	1.80	TEM=	21.00	FLO=		EH =		SPC=	1100.00
ALK=	110.00	DIS=	586.00	SUS=		LI =		NA =	120.00	K =	6.70	RB =		MG =	30.00
CA =	30.00	SR =		BA =		MN =	0.05	FE =	20.00	FET=		F =	0.20	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	250.00	BR =		I =		O2 =		CO2=	5.40	H2S=		NH4=		NO2=	0.01
NO3=	6.20	PO4=	0.55	SIO=	57.00	SO4=	39.00	CO3=		HCO=	134.00	CAR=		HAR=	200.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =	0.18	N =	1.40	ELE=	441.00

ID#=6-5339-03 TYP=WELL COU=MAUI LOC=KANAHA-1 LAT,LON= 205344. 1563930.00 DAT=1977.

PH =	6.20	SPG=		WED=	642.00	WAD=	2.50	TEM=	20.00	FLO=		EH =		SPC=	960.00
ALK=	49.00	DIS=	547.00	SUS=		LI =		NA =	130.00	K =	6.30	RB =		MG =	19.00
CA =	26.00	SR =		BA =		MN =	10.00	FE =	20.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	260.00	BR =		I =		O2 =		CO2=	61.00	H2S=		NH4=		NO2=	
NO3=	3.20	PO4=	0.21	SIO=	42.00	SO4=	34.00	CO3=		HCO=	60.00	CAR=		HAR=	140.00
SE =		PHE=		CD =		CR =		AG =		P =	0.07	N =	0.01	ELE=	590.00

ID#=6-5339-04 TYP=WELL COU=MAUI LOC=KANAHA-2 LAT,LON= 205341. 1563923.00 DAT=1973.

PH =	8.00	SPG=		WED=	749.00	WAD=	3.20	TEM=	20.50	FLO=		EH =		SPC=	150.00
ALK=	56.00	DIS=	123.00	SUS=		LI =		NA =	11.00	K =	1.50	RB =		MG =	5.70
CA =	11.00	SR =		BA =		MN =		FE =	80.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	11.00	BR =		I =		O2 =		CO2=	1.10	H2S=		NH4=		NO2=	
NO3=		PO4=	0.34	SIO=	44.00	SO4=	3.70	CO3=		HCO=	68.00	CAR=		HAR=	51.00
SE =		PHE=		CD =		CR =		AG =		P =	0.08	N =	0.33	ELE=	654.00

ID#=6-5340-01 TYP=TUNNEL COU=MAUI LOC=WAHIKULI-1 LAT,LON= 205324. 1564057.00 DAT=1970.

PH =	7.40	SPG=		WED=	27.00	WAD=	1.50	TEM=	24.50	FLO=		EH =		SPC=	
ALK=	123.00	DIS=	900.00	SUS=		LI =		NA =	150.00	K =	10.00	RB =		MG =	62.00
CA =	70.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	410.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	14.00	PO4=		SIO=	45.00	SO4=	60.00	CO3=		HCO=	150.00	CAR=		HAR=	430.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	26.00

ID#=6-5340-02 TYP=TUNNEL COU=MAUI LOC=KAHOMA SH5 LAT,LON= 205343. 1564011.00 DAT=1972.

PH =	7.40	SPG=		WED=	323.00	WAD=	2.20	TEM=	25.00	FLO=		EH =		SPC=	4000.00
ALK=	75.00	DIS=	630.00	SUS=		LI =		NA =	160.00	K =	7.00	RB =		MG =	23.00
CA =	21.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	1200.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	3.10	PO4=		SIO=	61.00	SO4=	38.00	CO3=		HCO=	91.00	CAR=		HAR=	147.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	322.00

ID#=6-5420-01 TYP=WELL COU=MAUI LOC=MAUI HIGH LAT,LON= 205458. 1562054.00 DAT=1975.

PH =	6.90	SPG=		WED=	371.00	WAD=	4.00	TEM=	22.20	FLO=		EH =		SPC=	
ALK=	77.00	DIS=	323.00	SUS=		LI =		NA =	82.00	K =	5.50	RB =		MG =	4.70
CA =	4.00	SR =		BA =	0.10	MN =	0.03	FE =	0.15	FET=		F =	0.35	CU =	0.02
ZN =	0.08	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	100.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	3.50	PO4=		SIO=	53.30	SO4=	33.00	CO3=		HCO=	79.00	CAR=		HAR=	32.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	349.00

ID#=6-5423-02 TYP=TUNNEL COU=MAUI LOC=LOW PAIA-16 LAT,LON= 205449. 1562310.00 DAT=1970.

PH =	7.20	SPG=		WED=		WAD=		TEM=	25.00	FLO=		EH =		SPC=	
ALK=	115.00	DIS=	780.00	SUS=		LI =		NA =	185.00	K =	14.00	RB =		MG =	40.00
CA =	27.00	SR =		BA =		MN =		FE =		FET=		F =	1.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	342.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	12.00	PO4=		SIO=	51.00	SO4=	37.00	CO3=		HCO=	140.00	CAR=		HAR=	230.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	25.00

ID#=6-5519-02 TYP=WELL COU=MAUI LOC=HAIKU LAT,LON= 205550. 1561958.00 DAT=1974.

PH =		SPG=		WED=	228.00	WAD=	210.00	TEM=	0.00	FLO=		EH =		SPC=	
ALK=	67.00	DIS=	140.00	SUS=		LI =		NA =	96.00	K =	2.70	RB =		MG =	1.00
CA =	1.00	SR =		BA =	0.10	MN =	0.07	FE =	1.58	FET=		F =	0.80	CU =	0.02
ZN =	0.56	HG =		B =		AL =	0.07	PB =	0.01	AS =	0.01	SB =		U =	
CL =	21.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.20	PO4=		SIO=	40.80	SO4=	20.00	CO3=		HCO=		CAR=		HAR=	40.00
SE =	0.00	PHE=	0.00	CD =		CR =	0.00	AG =	0.01	P =		N =		ELE=	360.00

ID#=6-5838-01 TYP=WELL COU=MAUI LOC=NAPILI-1 LAT,LON= 205837. 1563846.00 DAT=1971.

PH =	6.90	SPG=		WED=	893.00	WAD=	4.70	TEM=	21.00	FLO=		EH =		SPC=	670.00
ALK=	41.00	DIS=	350.00	SUS=		LI =		NA =	82.00	K =	5.30	RB =		MG =	13.00
CA =	10.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	148.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.80	PO4=		SIO=	51.00	SO4=	22.00	CO3=		HCO=	50.00	CAR=		HAR=	79.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	860.00

TABLE 4 Hawaii

ID#=	8-0335-01	TYP=	WELL	COU=	HAWAII			LOC=	NAALEHU-1	LAT,LON=	190347.	1553543.00		DAT=	1975.				
PH =	7.80	SPC=		WED=	896.00	WAD=	10.00	TEM=	18.50	FLO=		EH =		SPC=	129.00				
ALK=	34.00	DIS=	110.00	SUS=		LI =		NA =	11.00	K =	1.50	RB =		MG =	4.60				
CA =	6.40	SR =		BA =		MN =	5.00	FE =	10.00	FET=		F =	0.10	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	9.00	BR =		I =		O2 =		CO2=	1.10	H2S=		NH4=		NO2=					
NO3=	1.90	PO4=	0.37	SIO=	43.00	SO4=	13.00	CO3=	0.00	HCO=	42.00	CAR=		HAR=	35.00				
SE =		PHE=		CD =		CR =		AG =		P =	0.12	N =	0.28	ELE=	746.00				

ID#=	8-0533-01	TYP=	WELL	COU=	HAWAII			LOC=	HONUAPO MILL	LAT,LON=	190540.	1553305.00		DAT=	1972.				
PH =	7.00	SPC=		WED=	34.00	WAD=		TEM=	19.00	FLO=		EH =		SPC=	4180.00				
ALK=	38.00	DIS=	2300.00	SUS=		LI =		NA =	680.00	K =	24.00	RB =		MG =	86.00				
CA =	33.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	1240.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=					
NO3=		PO4=		SIO=	43.00	SO4=	169.00	CO3=		HCO=	46.00	CAR=		HAR=	436.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	22.00				

ID#=	8-0533-02	TYP=	WELL	COU=	HAWAII			LOC=	HONUAPO-1	LAT,LON=	190559.	1553301.00		DAT=	1972.				
PH =	7.10	SPC=		WED=	130.00	WAD=	2.00	TEM=	19.00	FLO=		EH =		SPC=	2120.00				
ALK=	34.00	DIS=	1130.00	SUS=		LI =		NA =	320.00	K =	14.00	RB =		MG =	44.00				
CA =	20.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	580.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=					
NO3=	0.70	PO4=		SIO=	43.00	SO4=	86.00	CO3=		HCO=	42.00	CAR=		HAR=	231.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	94.00				

ID#=	8-0533-03	TYP=	WELL	COU=	HAWAII			LOC=	HONUAPO-3	LAT,LON=	190557.	1553302.00		DAT=	1972.				
PH =	7.00	SPC=		WED=	125.00	WAD=	3.20	TEM=	19.00	FLO=		EH =		SPC=	1850.00				
ALK=	34.00	DIS=	980.00	SUS=		LI =		NA =	272.00	K =	12.00	RB =		MG =	38.00				
CA =	18.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	500.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=					
NO3=	1.70	PO4=		SIO=	43.00	SO4=	75.00	CO3=		HCO=	41.00	CAR=		HAR=	202.00				
SE =		PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	89.00				

ID#=	8-0632-01	TYP=	WELL	COU=	HAWAII			LOC=	HONUAPO-2	LAT,LON=	190602.	1553259.00		DAT=	1972.				
PH =	7.30	SPC=		WED=	140.00	WAD=	2.90	TEM=	19.00	FLO=		EH =		SPC=	1620.00				
ALK=	36.00	DIS=	876.00	SUS=		LI =		NA =	245.00	K =	11.00	RB =		MG =	33.00				
CA =	17.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	440.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=					
NO3=	1.30	PO4=		SIO=	41.00	SO4=	66.00	CO3=		HCO=	44.00	CAR=		HAR=	178.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	103.00				

ID#=8-0830-01 TYP=WELL COU=HAWAII LOC=PUNALUU LAT,LON= 190828. 1553028.00 DAT=1972.

PH =	7.10	SPG=		WED=	20.00	WAD=	14.20	TEM=	19.00	FLO=		EH =		SPC=	830.00
ALK=	28.00	DIS=	441.00	SUS=		LI =		NA =	118.00	K =	5.50	RB =		MG =	16.00
CA =	9.60	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	205.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.70	PO4=		SIO=	32.00	SO4=	37.00	CO3=		HCO=	34.00	CAR=		HAR=	90.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	22.00

ID#=8-0831-01 TYP=WELL COU=HAWAII LOC=NINOLE GU TH LAT,LON= 190829. 1553111.00 DAT=1972.

PH =	7.30	SPG=		WED=	174.00	WAD=	4.00	TEM=	18.00	FLO=		EH =		SPC=	530.00
ALK=	35.00	DIS=	329.00	SUS=		LI =		NA =	80.00	K =	4.40	RB =		MG =	12.00
CA =	9.20	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	130.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.20	PO4=		SIO=	41.00	SO4=	24.00	CO3=		HCO=	43.00	CAR=		HAR=	73.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	123.00

ID#=8-0831-02 TYP=WELL COU=HAWAII LOC=NINOLE-A LAT,LON= 190832. 1553108.00 DAT=1974.

PH =	7.30	SPG=		WED=	172.00	WAD=	5.40	TEM=	18.00	FLO=		EH =		SPC=	645.00
ALK=	34.00	DIS=	411.00	SUS=		LI =		NA =	100.00	K =	5.90	RB =		MG =	18.00
CA =	13.00	SR =		BA =	0.30	MN =	0.00	FE =	20.00	FET=		F =	0.10	CU =	0.02
ZN =	0.02	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	170.00	BR =		I =		O2 =		CO2=	3.30	H2S=		NH4=		NO2=	0.01
NO3=	0.17	PO4=	0.28	SIO=	43.00	SO4=	29.00	CO3=		HCO=	41.00	CAR=		HAR=	110.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.09	N =	0.26	ELE=	128.00

ID#=8-0831-03 TYP=WELL COU=HAWAII LOC=NINOLE-B LAT,LON= 190832. 1553109.00 DAT=1974.

PH =		SPG=		WED=	172.00	WAD=	4.90	TEM=	17.80	FLO=		EH =		SPC=	
ALK=	42.00	DIS=		SUS=		LI =		NA =	89.00	K =	5.20	RB =		MG =	18.00
CA =	13.20	SR =		BA =	0.10	MN =	0.01	FE =	0.01	FET=		F =	0.15	CU =	0.01
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	165.94	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.29	PO4=		SIO=	39.90	SO4=	28.00	CO3=		HCO=		CAR=		HAR=	96.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	128.00

ID#=8-1128-01 TYP=TUNNEL COU=HAWAII LOC=PAHALA SHAFT LAT,LON= 191157. 1552849.00 DAT=1973.

PH =	7.20	SPG=		WED=	547.00	WAD=	238.00	TEM=	19.00	FLO=		EH =		SPC=	99.00
ALK=	33.00	DIS=	110.00	SUS=		LI =		NA =	7.00	K =	1.20	RB =		MG =	3.20
CA =	8.00	SR =		BA =	0.30	MN =	0.03	FE =	0.02	FET=		F =	0.25	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	2.40	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.36	PO4=		SIO=	46.40	SO4=	9.90	CO3=		HCO=	43.00	CAR=		HAR=	38.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	774.00

ID#=8-1128-02 TYP=WELL COU=HAWAII LOC=PALIMA LAT,LON= 191108. 1552816.00 DAT=1974.

PH =	7.00	SPG=		WED=	375.00	WAD=	8.70	TEM=	19.00	FLO=		EH =		SPC=	117.00
ALK=	34.00	DIS=	110.00	SUS=		LI =		NA =	12.00	K =	1.20	RB =		MG =	4.30
CA =	6.10	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.40	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	12.00	BR =		I =		O2 =		CO2=	6.60	H2S=		NH4=		NO2=	
NO3=		PO4=	0.52	SIO=	47.00	SO4=	7.50	CO3=		HCO=	41.00	CAR=		HAR=	33.00
SE =		PHE=		CD =		CR =		AG =		P =	0.17	N =	0.28	ELE=	304.00

ID#=8-1229-01 TYP=WELL COU=HAWAII LOC=PAHALA LAT,LON= 191225. 1552922.00 DAT=1974.

PH =		SPG=		WED=	937.00	WAD=	383.60	TEM=	17.20	FLO=		EH =		SPC=	93.00
ALK=	33.00	DIS=	94.00	SUS=		LI =		NA =	5.70	K =	1.30	RB =		MG =	3.30
CA =	7.50	SR =		BA =		MN =		FE =	20.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	3.20	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=	0.28	SIO=	42.00	SO4=	6.60	CO3=		HCO=	40.00	CAR=		HAR=	32.00
SE =		PHE=		CD =		CR =		AG =		P =	0.09	N =	0.86	ELE=	112.00

ID#=8-2102-01 TYP=WELL COU=HAWAII LOC=PULAMA LAT,LON= 192107. 1550212.00 DAT=1963.

PH =	7.50	SPG=		WED=	250.00	WAD=	3.30	TEM=	26.00	FLO=		EH =		SPC=	900.00
ALK=	44.00	DIS=	734.00	SUS=		LI =		NA =	170.00	K =	8.50	RB =		MG =	31.20
CA =	15.90	SR =		BA =		MN =	0.05	FE =	0.10	FET=		F =	0.10	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.00	AS =	0.01	SB =		U =	
CL =	230.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	0.32	PO4=		SIO=	72.40	SO4=	65.10	CO3=		HCO=	54.00	CAR=		HAR=	145.00
SE =	0.00	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	230.00

ID#=8-2487-01 TYP=WELL COU=HAWAII LOC=KEAUOHANA-1 LAT,LON= 192456. 1545719.00 DAT=1972.

PH =	7.30	SPG=		WED=	802.00	WAD=	2.90	TEM=	23.00	FLO=		EH =		SPC=	344.00
ALK=	34.00	DIS=	222.00	SUS=		LI =		NA =	54.00	K =	3.80	RB =		MG =	3.30
CA =	6.60	SR =		BA =		MN =	0.10	FE =	0.10	FET=		F =	0.20	CU =	0.10
ZN =	0.03	HG =		B =		AL =	0.20	PB =	0.03	AS =	0.01	SB =		U =	
CL =	70.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	41.00	SO4=	22.00	CO3=		HCO=	42.00	CAR=		HAR=	30.00
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	752.00

ID#=8-2487-02 TYP=WELL COU=HAWAII LOC=KEAUOHANA-2 LAT,LON= 192457. 1545718.00 DAT=1974.

PH =	7.00	SPG=		WED=	803.00	WAD=	3.10	TEM=	23.50	FLO=		EH =		SPC=	515.00
ALK=	37.00	DIS=	304.00	SUS=		LI =		NA =	57.00	K =	5.40	RB =		MG =	5.90
CA =	11.80	SR =		BA =	0.10	MN =	0.03	FE =	0.66	FET=		F =	0.33	CU =	0.02
ZN =	0.02	HG =		B =		AL =	0.15	PB =	0.01	AS =	0.01	SB =		U =	
CL =	124.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.15	PO4=		SIO=	45.30	SO4=	25.00	CO3=		HCO=	42.00	CAR=		HAR=	50.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	752.00

ID#=8-2753-01 TYP=WELL COU=HAWAII LOC=KEEI-A LAT,LON= 192731. 1555341.00 DAT=1974.

PH =	7.30	SPG=		WED=	780.00	WAD=	2.80	TEM=	19.00	FLO=		EH =		SPC=	470.00
ALK=	46.00	DIS=	320.00	SUS=		LI =		NA =	61.00	K =	3.40	RB =		MG =	12.10
CA =	9.80	SR =		BA =	0.10	MN =	0.01	FE =	0.04	FET=		F =	0.28	CU =	0.04
ZN =	0.40	HC =		B =		AL =	0.16	PB =	0.00	AS =	0.01	SB =		U =	
CL =	110.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.30	PO4=		SIO=	41.10	SO4=	2.50	CO3=		HCO=	47.00	CAR=		HAR=	20.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.06	AG =	0.01	P =		N =		ELE=	744.00

ID#=8-2753-02 TYP=WELL COU=HAWAII LOC=KEEI-B LAT,LON= 192722. 1555338.00 DAT=1974.

PH =	6.80	SPG=		WED=	774.00	WAD=	2.30	TEM=	19.00	FLO=		EH =		SPC=	695.00
ALK=	35.00	DIS=	348.00	SUS=		LI =		NA =	80.00	K =	4.70	RB =		MG =	12.00
CA =	10.00	SR =		BA =	0.10	MN =	10.00	FE =	80.00	FET=		F =	0.20	CU =	0.02
ZN =	0.22	HC =		B =		AL =	0.10	PB =	0.00	AS =	0.01	SB =		U =	
CL =	168.00	BR =		I =		O2 =		CO2=	11.00	H2S=		NH4=		NO2=	0.01
NO3=	1.00	PO4=	0.46	SIO=	50.00	SO4=	26.00	CO3=		HCO=	43.00	CAR=		HAR=	74.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.15	N =	0.66	ELE=	737.00

ID#=8-2783-01 TYP=WELL COU=HAWAII LOC=MALAMAKI 9-9 LAT,LON= 192728. 1545301.00 DAT=1962.

PH =	6.92	SPG=		WED=	319.00	WAD=	0.90	TEM=	54.00	FLO=		EH =		SPC=	16500.00
ALK=	215.00	DIS=	10300.00	SUS=		LI =		NA =		K =		RB =		MG =	324.00
CA =	182.00	SR =		BA =		MN =	0.05	FE =	3.16	FET=		F =	1.50	CU =	0.20
ZN =	0.20	HC =		B =		AL =	101.00	PB =	0.01	AS =	0.01	SB =		U =	
CL =	6100.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.50	PO4=		SIO=	59.00	SO4=	681.00	CO3=		HCO=	215.00	CAR=		HAR=	1790.00
SE =	0.08	PHE=		CD =		CR =		AG =		P =		N =		ELE=	274.00

ID#=8-2986-01 TYP=WELL COU=HAWAII LOC=PAHOA-2A LAT,LON= 192924. 1545647.00 DAT=1973.

PH =	7.40	SPG=		WED=	755.00	WAD=	17.80	TEM=	22.50	FLO=		EH =		SPC=	127.00
ALK=	38.00	DIS=	110.00	SUS=		LI =		NA =	17.00	K =	3.50	RB =		MG =	0.86
CA =	4.80	SR =		BA =	0.30	MN =	0.03	FE =	0.02	FET=		F =	0.46	CU =	0.03
ZN =	0.03	HC =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	12.00	BR =		I =		O2 =		CO2=	3.20	H2S=		NH4=		NO2=	0.01
NO3=	0.22	PO4=		SIO=	39.60	SO4=	13.00	CO3=		HCO=	51.00	CAR=		HAR=	22.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =	0.20	ELE=	711.00

ID#=8-2986-02 TYP=WELL COU=HAWAII LOC=PAHOA-2B LAT,LON= 192925. 1545646.00 DAT=1974.

PH =	6.40	SPG=		WED=		WAD=		TEM=	22.50	FLO=		EH =		SPC=	125.00
ALK=	39.00	DIS=	126.00	SUS=		LI =		NA =	16.00	K =	3.20	RB =		MG =	2.40
CA =	3.90	SR =		BA =	0.10	MN =	0.03	FE =	60.00	FET=		F =	0.30	CU =	0.02
ZN =	0.01	HC =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	5.80	BR =		I =		O2 =		CO2=	31.00	H2S=		NH4=		NO2=	0.01
NO3=	0.41	PO4=	0.43	SIO=	55.00	SO4=	13.00	CO3=		HCO=	48.00	CAR=		HAR=	20.60
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.14	N =	0.53	ELE=	705.00

ID#=8-3080-01 TYP=WELL COU=HAWAII LOC=KAPAHO CRATE LAT,LON= 193016. 1545021.00 DAT=1974.

PH =	6.50	SPG=		WED=	46.00	WAD=	2.60	TEM=	25.00	FLO=		EH =		SPC=	810.00
ALK=	272.00	DIS=	548.00	SUS=		LI =		NA =	80.00	K =	7.00	RB =		MG =	31.00
CA =	60.00	SR =		BA =		MN =	0.00	FE =	20.00	FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	100.00	BR =		I =		O2 =		CO2=	167.00	H2S=		NH4=		NO2=	
NO3=	27.00	PO4=	0.86	SIO=	58.00	SO4=	19.00	CO3=	6.00	HCO=	331.00	CAR=		HAR=	280.00
SE =		PHE=		CD =		CR =		AG =		P =	0.28	N =	4.20	ELE=	38.00

ID#=8-3081-01 TYP=WELL COU=HAWAII LOC=KAPOHO TEST LAT,LON= 193024. 1545159.00 DAT=1961.

PH =	7.20	SPG=		WED=	337.00	WAD=	3.20	TEM=	28.00	FLO=		EH =		SPC=	
ALK=	50.00	DIS=	131.00	SUS=		LI =		NA =		K =		RB =		MG =	17.10
CA =	14.10	SR =		BA =		MN =	0.10	FE =	0.20	FET=		F =	0.10	CU =	0.10
ZN =	0.03	HG =		B =		AL =	0.10	PB =	0.03	AS =	0.01	SB =		U =	
CL =	220.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	0.10	PO4=		SIO=	70.50	SO4=	65.40	CO3=		HCO=		CAR=		HAR=	106.40
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	287.00

ID#=8-3185-01 TYP=WELL COU=HAWAII LOC=HAWN SHORES1 LAT,LON= 193113. 1545558.00 DAT=1974.

PH =	7.70	SPG=		WED=	446.00	WAD=	10.60	TEM=	21.70	FLO=		EH =		SPC=	118.00
ALK=	42.00	DIS=	126.00	SUS=		LI =		NA =	13.00	K =	3.20	RB =		MG =	3.80
CA =	3.90	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.28	CU =	0.02
ZN =	0.06	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	11.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.17	PO4=		SIO=	51.90	SO4=	5.10	CO3=		HCO=		CAR=		HAR=	22.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	402.00

ID#=8-3185-02 TYP=WELL COU=HAWAII LOC=HAWN SHORES2 LAT,LON= 193126. 1545544.00 DAT=1974.

PH =	7.60	SPG=		WED=	430.00	WAD=	0.00	TEM=		FLO=		EH =		SPC=	165.00
ALK=	46.00	DIS=	140.00	SUS=		LI =		NA =	19.00	K =	3.50	RB =		MG =	4.50
CA =	3.90	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.57	CU =	0.07
ZN =	0.74	HG =		B =		AL =	0.10	PB =	0.02	AS =	0.01	SB =		U =	
CL =	28.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.11	PO4=		SIO=	49.00	SO4=	7.00	CO3=		HCO=	56.00	CAR=		HAR=	26.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	380.00

ID#=8-3457-02 TYP=WELL COU=HAWAII LOC=KEAUHOU-2 LAT,LON= 193428. 1555734.00 DAT=1966.

PH =	7.90	SPG=		WED=	430.00	WAD=		TEM=		FLO=		EH =		SPC=	
ALK=	48.00	DIS=		SUS=		LI =		NA =	1300.00	K =	0.00	RB =		MG =	110.00
CA =	30.00	SR =		BA =		MN =	0.05	FE =	0.02	FET=		F =	0.76	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	1700.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	3.30	PO4=		SIO=	33.00	SO4=	195.00	CO3=		HCO=		CAR=		HAR=	530.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	385.00

ID#=	8-3500-01	TYP=	WELL	COU=	HAWAII			LOC=	WAI PAHOEHOE	LAT,LON=		193517.		1550049.00		DAT=	1961.		
PH =	7.10	SPG=		WED=	361.00	WAD=	16.20	TEM=	22.00	FLO=		EH =		SPC=					
ALK=	58.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	6.70				
CA =	5.30	SR =		BA =		MN =	0.10	FE =	0.10	FET=		F =	0.10	CU =	0.10				
ZN =	0.03	HG =		B =		AL =	0.20	PB =	0.03	AS =	0.01	SB =		U =					
CL =	5.50	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=					
NO3=		PO4=		SIO=	46.50	SO4=	10.90	CO3=		HCO=		CAR=		HAR=	41.00				
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	311.00				

ID#=	8-3557-01	TYP=	WELL	COU=	HAWAII			LOC=	KAHALUU-A	LAT,LON=		193510.		1555708.00		DAT=	1974.		
PH =	7.10	SPG=		WED=	878.00	WAD=	4.00	TEM=	20.00	FLO=		EH =		SPC=	180.00				
ALK=	46.00	DIS=	172.00	SUS=		LI =		NA =	18.00	K =	1.80	RB =		MG =	6.50				
CA =	8.80	SR =		BA =	0.10	MN =	0.01	FE =	0.01	FET=		F =	0.28	CU =	0.01				
ZN =	0.15	HG =		B =		AL =	0.10	PB =	0.00	AS =	0.01	SB =		U =					
CL =	23.00	BR =		I =		O2 =		CO2=	6.20	H2S=		NH4=		NO2=	0.01				
NO3=	1.40	PO4=	0.46	SIO=	46.00	SO4=	11.00	CO3=		HCO=	49.00	CAR=		HAR=	42.00				
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.15	N =	0.96	ELE=	833.00				

ID#=	8-3557-02	TYP=	WELL	COU=	HAWAII			LOC=	KAHALUU-B	LAT,LON=		193505.		1555708.00		DAT=	1974.		
PH =	7.20	SPG=		WED=	881.00	WAD=	4.00	TEM=	20.60	FLO=		EH =		SPC=					
ALK=	48.00	DIS=	162.00	SUS=		LI =		NA =	22.00	K =	1.80	RB =		MG =	7.10				
CA =	8.50	SR =		BA =	0.10	MN =	0.02	FE =	0.34	FET=		F =	0.33	CU =	0.04				
ZN =	0.05	HG =		B =		AL =	0.10	PB =	0.00	AS =	0.01	SB =		U =					
CL =	32.10	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01				
NO3=	1.20	PO4=		SIO=	41.70	SO4=	12.00	CO3=		HCO=	74.00	CAR=		HAR=	48.00				
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.00	AG =	0.01	P =		N =		ELE=	839.00				

ID#=	8-3557-03	TYP=	WELL	COU=	HAWAII			LOC=	KAHALUU-C	LAT,LON=		193508.		1555707.00		DAT=	1974.		
PH =	7.30	SPG=		WED=	868.00	WAD=	4.60	TEM=	21.00	FLO=		EH =		SPC=	150.00				
ALK=	50.00	DIS=	143.00	SUS=		LI =		NA =	14.00	K =	1.30	RB =		MG =	5.20				
CA =	7.50	SR =		BA =	0.10	MN =	0.01	FE =	0.04	FET=		F =	0.30	CU =	0.01				
ZN =	0.06	HG =		B =		AL =	10.00	PB =	0.01	AS =	0.01	SB =		U =					
CL =	11.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01				
NO3=	1.30	PO4=		SIO=	43.60	SO4=	10.00	CO3=		HCO=	48.00	CAR=		HAR=	36.00				
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	834.00				

ID#=	8-3557-04	TYP=	WELL	COU=	HAWAII			LOC=	KAHALUU-D	LAT,LON=		193505.		1555707.00		DAT=	1974.		
PH =	7.50	SPG=		WED=	905.00	WAD=	4.00	TEM=	20.60	FLO=		EH =		SPC=	210.00				
ALK=	50.00	DIS=	122.00	SUS=		LI =		NA =	12.00	K =	1.30	RB =		MG =	4.80				
CA =	6.70	SR =		BA =	0.10	MN =	0.01	FE =	0.01	FET=		F =	0.36	CU =	0.01				
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.00	AS =	0.01	SB =		U =					
CL =	17.13	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01				
NO3=	1.30	PO4=		SIO=	45.00	SO4=	9.10	CO3=		HCO=	52.00	CAR=		HAR=	32.00				
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	855.00				

ID#=8-3702-01 TYP=TUNNEL COU=HAWAII LOC=OLAA SHAFT LAT,LON= 193757. 1550200.00 DAT=1972.

PH =	7.00	SPG=		WED=	203.00	WAD=	15.00	TEM=	23.00	FLO=		EH =		SPC=	87.00
ALK=	31.00	DIS=	88.00	SUS=		LI =		NA =	5.80	K =	2.40	RB =		MG =	2.70
CA =	6.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	4.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	2.80	PO4=		SIO=	40.00	SO4=	5.50	CO3=		HCO=	38.00	CAR=		HAR=	26.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	220.00

ID#=8-3802-01 TYP=WELL COU=HAWAII LOC=KEAAU 1(9-3) LAT,LON= 193802. 1550202.00 DAT=1973.

PH =	7.40	SPG=		WED=	450.00	WAD=	0.00	TEM=	24.50	FLO=		EH =		SPC=	78.00
ALK=	30.00	DIS=	80.00	SUS=		LI =		NA =	6.00	K =	2.00	RB =		MG =	1.80
CA =	5.60	SR =		BA =	0.30	MN =	0.03	FE =	0.02	FET=		F =	0.12	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =		U =	
CL =	3.40	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.50	PO4=		SIO=	37.70	SO4=	6.20	CO3=		HCO=	36.00	CAR=		HAR=	40.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	215.00

ID#=8-3802-02 TYP=WELL COU=HAWAII LOC=KEAAU-2 LAT,LON= 193803. 1550202.00 DAT=1974.

PH =	7.40	SPG=		WED=	450.00	WAD=	0.00	TEM=	24.50	FLO=		EH =		SPC=	78.00
ALK=	37.00	DIS=	80.00	SUS=		LI =		NA =	5.00	K =	2.00	RB =		MG =	2.80
CA =	4.90	SR =		BA =	0.10	MN =	0.01	FE =	0.08	FET=		F =	0.10	CU =	0.02
ZN =	0.02	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	5.40	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.36	PO4=		SIO=	34.60	SO4=	5.60	CO3=		HCO=	86.00	CAR=		HAR=	22.00
SE =	0.00	PHE=	0.00	CD =	0.01	CR =	0.01	AG =	0.01	P =		N =		ELE=	215.00

ID#=8-3802-03 TYP=WELL COU=HAWAII LOC=KEAAU MILL-1 LAT,LON= 193804. 1550202.00 DAT=1974.

PH =	7.80	SPG=		WED=	379.00	WAD=	13.40	TEM=	18.50	FLO=		EH =		SPC=	83.00
ALK=	30.00	DIS=	85.00	SUS=		LI =		NA =	6.50	K =	2.00	RB =		MG =	3.10
CA =	6.90	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	3.50	BR =		I =		O2 =		CO2=	0.90	H2S=		NH4=		NO2=	
NO3=		PO4=	0.21	SIO=	36.00	SO4=	6.20	CO3=		HCO=	36.00	CAR=		HAR=	30.00
SE =		PHE=		CD =		CR =		AG =		P =	0.07	N =	0.49	ELE=	214.00

ID#=8-3802-04 TYP=WELL COU=HAWAII LOC=KEAAU MILL-2 LAT,LON= 193806. 1550202.00 DAT=1972.

PH =	7.40	SPG=		WED=	371.00	WAD=	12.40	TEM=	22.00	FLO=		EH =		SPC=	88.00
ALK=	32.00	DIS=	82.00	SUS=		LI =		NA =	5.20	K =	2.10	RB =		MG =	3.30
CA =	5.50	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	4.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.50	PO4=		SIO=	36.00	SO4=	5.50	CO3=		HCO=	38.00	CAR=		HAR=	27.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	214.00

ID#=	8-3802-05	TYP=	WELL	COU=	HAWAII			LOC=	KEAAU MILL-3	LAT,LON=		193807.		1550202.00		DAT=	1972.		
PH =	7.40	SPG=		WED=	375.00	WAD=	12.40	TEM=	22.00	FLO=		EH =		SPC=	88.00				
ALK=	31.00	DIS=	81.00	SUS=		LI =		NA =	5.20	K =	2.10	RB =		MG =	3.30				
CA =	5.50	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	4.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=					
NO3=	1.50	PO4=		SIO=	36.00	SO4=	5.50	CO3=	0.00	HCO=	38.00	CAR=		HAR=	27.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =	0.00	ELE=	214.00				

ID#=	8-3900-01	TYP=	WELL	COU=	HAWAII			LOC=	KEAAU ORCH-1	LAT,LON=		193937.		1550043.00		DAT=	1974.		
PH =	7.10	SPG=		WED=	137.00	WAD=	8.50	TEM=	18.50	FLO=		EH =		SPC=	300.00				
ALK=	29.00	DIS=	197.00	SUS=		LI =		NA =	38.00	K =	3.80	RB =		MG =	7.70				
CA =	7.80	SR =		BA =		MN =		FE =	10.00	FET=		F =	0.10	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	64.00	BR =		I =		O2 =		CO2=	4.40	H2S=		NH4=		NO2=					
NO3=	3.60	PO4=	0.21	SIO=	39.00	SO4=	14.00	CO3=	0.00	HCO=	35.00	CAR=		HAR=	51.00				
SE =		PHE=		CD =		CR =		AG =		P =	0.07	N =	1.10	ELE=	92.00				

ID#=	8-3900-02	TYP=	WELL	COU=	HAWAII			LOC=	KEAAU ORCH-2	LAT,LON=		193934.		1550045.00		DAT=	1972.		
PH =	7.30	SPG=		WED=	147.00	WAD=	8.10	TEM=	19.50	FLO=		EH =		SPC=	380.00				
ALK=	36.00	DIS=	228.00	SUS=		LI =		NA =	54.00	K =	4.10	RB =		MG =	7.10				
CA =	6.80	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	81.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=					
NO3=	3.60	PO4=		SIO=	33.00	SO4=	16.00	CO3=		HCO=	44.00	CAR=		HAR=	45.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	95.00				

ID#=	8-4003-01	TYP=	WELL	COU=	HAWAII			LOC=	PANAEWA-1	LAT,LON=		194035.		1550355.00		DAT=	1973.		
PH =	7.50	SPG=		WED=	306.00	WAD=	13.10	TEM=	19.50	FLO=		EH =		SPC=	90.00				
ALK=	37.00	DIS=	76.00	SUS=		LI =		NA =	5.10	K =	1.80	RB =		MG =	2.70				
CA =	6.80	SR =		BA =		MN =		FE =		FET=		F =	0.00	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	2.50	BR =		I =		O2 =		CO2=	2.30	H2S=		NH4=		NO2=					
NO3=		PO4=		SIO=	34.00	SO4=	0.00	CO3=		HCO=	45.00	CAR=		HAR=	28.00				
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	206.00				

ID#=	8-4003-02	TYP=	WELL	COU=	HAWAII			LOC=	PANAEWA-2	LAT,LON=		194040.		1550352.00		DAT=	1974.		
PH =		SPG=		WED=	302.00	WAD=	13.10	TEM=	19.50	FLO=		EH =		SPC=	86.00				
ALK=	44.00	DIS=	80.00	SUS=		LI =		NA =	5.00	K =	1.80	RB =		MG =	2.30				
CA =	7.20	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.22	CU =	0.02				
ZN =	0.01	HC =		B =		AL =	0.10	PB =	0.02	AS =	0.01	SB =		U =					
CL =	4.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01				
NO3=	0.24	PO4=		SIO=	36.60	SO4=	5.00	CO3=		HCO=		CAR=		HAR=	30.00				
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	201.00				

ID#=8-4059-01 TYP=WELL COU=HAWAII LOC=PALANI LAT,LON= 194018. 1555903.00 DAT=1958.

PH =	7.90	SPC=		WED=	853.00	WAD=	1.60	TEM=	19.70	FLO=		EH =		SPC=	
ALK=	88.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	250.00
CA =	95.00	SR =		BA =		MN =	0.10	FE =	0.10	FET=		F =	0.10	CU =	0.10
ZN =	0.03	HG =		B =		AL =	0.30	PB =	0.03	AS =	0.01	SB =		U =	
CL =	3600.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.10	PO4=		SIO=	43.20	SO4=	547.00	CO3=		HCO=		CAR=		HAR=	1278.00
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	800.00

ID#=8-4203-02Z TYP=WELL COU=HAWAII LOC=WAIAKEA TH-2 LAT,LON= 194223. 1550352.00 DAT=1964.

PH =	7.00	SPC=		WED=	55.00	WAD=	9.10	TEM=	21.10	FLO=		EH =		SPC=	0.00
ALK=	41.00	DIS=	94.00	SUS=		LI =		NA =	10.00	K =	1.00	RB =		MG =	4.40
CA =	8.00	SR =		BA =		MN =		FE =		FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	11.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.20	PO4=		SIO=	33.00	SO4=	2.50	CO3=	0.00	HCO=	50.00	CAR=		HAR=	38.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	41.00

ID#=8-4203-03 TYP=WELL COU=HAWAII LOC=WAIAKEA TH-3 LAT,LON= 194230. 1550348.00 DAT=1972.

PH =	7.10	SPC=		WED=	56.00	WAD=	5.80	TEM=	23.50	FLO=		EH =		SPC=	95.00
ALK=	36.00	DIS=	86.00	SUS=		LI =		NA =	7.40	K =	1.80	RB =		MG =	3.60
CA =	6.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	7.50	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.80	PO4=		SIO=	36.00	SO4=	2.00	CO3=		HCO=	44.00	CAR=		HAR=	30.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	41.00

ID#=8-4203-04 TYP=WELL COU=HAWAII LOC=WAIAKEA-4 LAT,LON= 194222. 1550351.00 DAT=1972.

PH =	7.20	SPC=		WED=	201.00	WAD=	7.10	TEM=	26.00	FLO=		EH =		SPC=	94.00
ALK=	38.00	DIS=	107.00	SUS=		LI =		NA =	6.90	K =	1.80	RB =		MG =	2.90
CA =	8.40	SR =		BA =		MN =	0.05	FE =	0.20	FET=		F =	0.10	CU =	0.10
ZN =	0.01	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	6.50	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.22	PO4=		SIO=	55.00	SO4=	2.60	CO3=		HCO=	47.00	CAR=		HAR=	33.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	47.00

ID#=8-4203-06 TYP=WELL COU=HAWAII LOC=KANOELEHUA-2 LAT,LON= 194223. 1550349.00 DAT=1974.

PH =	6.20	SPC=		WED=	200.00	WAD=	6.50	TEM=	24.00	FLO=		EH =		SPC=	105.00
ALK=	32.00	DIS=	109.00	SUS=		LI =		NA =	12.00	K =	2.10	RB =		MG =	3.50
CA =	11.00	SR =		BA =		MN =	0.09	FE =	20.00	FET=		F =	0.00	CU =	0.10
ZN =	0.01	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	14.00	BR =		I =		O2 =		CO2=	39.00	H2S=		NH4=		NO2=	
NO3=	0.80	PO4=	0.16	SIO=	37.00	SO4=	5.00	CO3=		HCO=	39.00	CAR=		HAR=	42.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =	0.06	N =	0.01	ELE=	50.00

ID#=8-4203-07 TYP=WELL COU=HAWAII LOC=KANOELEHUA-3 LAT,LON= 194224. 1550350.00 DAT=1972.

PH =	7.20	SPG=		WED=	200.00	WAD=		TEM=	26.00	FLO=		EH =		SPC=	94.00
ALK=	39.00	DIS=	107.00	SUS=		LI =		NA =	6.50	K =	1.80	RB =		MG =	2.90
CA =	8.40	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	6.50	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	55.00	SO4=	2.60	CO3=		HCO=	47.00	CAR=		HAR=	33.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	50.00

ID#=8-4304-01 TYP=WELL COU=HAWAII LOC=WAIAKEA LAT,LON= 194337. 1550418.00 DAT=1972.

PH =	7.20	SPG=		WED=	20.00	WAD=		TEM=	20.00	FLO=		EH =		SPC=	12300.00
ALK=	80.00	DIS=	10900.00	SUS=		LI =		NA =	3400.00	K =	110.00	RB =		MG =	390.00
CA =	132.00	SR =		BA =		MN =		FE =	0.20	FET=		F =	0.60	CU =	0.10
ZN =	0.10	HG =		B =		AL =	1449.80	PB =	0.10	AS =	0.01	SB =		U =	
CL =	4200.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.60	PO4=		SIO=	44.00	SO4=	832.00	CO3=		HCO=	97.00	CAR=		HAR=	1940.00
SE =	0.01	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	12 00

ID#=8-4304-02 TYP=WELL COU=HAWAII LOC=WAIAKEA LAT,LON= 194337. 1550418.00 DAT=1972.

PH =	7.20	SPG=		WED=	27.00	WAD=		TEM=	19.50	FLO=		EH =		SPC=	35900.00
ALK=	86.00	DIS=	22700.00	SUS=		LI =		NA =	7200.00	K =	240.00	RB =		MG =	800.00
CA =	340.00	SR =		BA =		MN =		FE =		FET=		F =	1.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	12500.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	33.00	SO4=	1630.00	CO3=		HCO=	105.00	CAR=		HAR=	3910.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	10.00

ID#=8-4304-03 TYP=WELL COU=HAWAII LOC=WAIAKEA LAT,LON= 194337. 1550418.00 DAT=1972.

PH =	7.10	SPG=		WED=	26.00	WAD=		TEM=	20.00	FLO=		EH =		SPC=	19000.00
ALK=	72.00	DIS=	11400.00	SUS=		LI =		NA =	3540.00	K =	110.00	RB =		MG =	460.00
CA =	132.00	SR =		BA =		MN =		FE =		FET=		F =	0.60	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	6250.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	2.10	PO4=		SIO=	46.00	SO4=	868.00	CO3=		HCO=	88.00	CAR=		HAR=	2180.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	10.00

ID#=8-4306-01 TYP=WELL COU=HAWAII LOC=PIIHONUA LAT,LON= 194318. 1550618.00 DAT=1973.

PH =	8.00	SPG=		WED=	425.00	WAD=	42.00	TEM=	17.80	FLO=		EH =		SPC=	93.00
ALK=	38.00	DIS=	88.00	SUS=		LI =		NA =	7.80	K =	2.20	RB =		MG =	3.30
CA =	5.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	2.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.30	PO4=		SIO=	37.00	SO4=	5.90	CO3=		HCO=	46.00	CAR=		HAR=	26.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	278.00

ID#=8-4360-01 TYP=WELL COU=HAWAII LOC=KALAOA 12-11 LAT,LON= 194327. 1566023.00 DAT=1968.

PH =	7.40	SPC=		WED=	702.00	WAD=	3.20	TEM=	20.80	FLO=		EH =		SPC=	2760.00
ALK=	98.00	DIS=	1560.00	SUS=		LI =		NA =		K =		RB =		MG =	46.00
CA =	23.00	SR =		BA =		MN =		FE =	0.02	FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	740.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	39.00	SO4=		CO3=		HCO=		CAR=		HAR=	243.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	680.00

ID#=8-4706-01 TYP=WELL COU=HAWAII LOC=PAPAIKOU LAT,LON= 194715. 1550613.00 DAT=1974.

PH =	7.30	SPC=		WED=	425.00	WAD=	21.00	TEM=		FLO=		EH =		SPC=	119.00
ALK=	62.00	DIS=	76.00	SUS=		LI =		NA =	6.00	K =	1.30	RB =		MG =	3.60
CA =	7.20	SR =		BA =	0.10	MN =	0.01	FE =	0.01	FET=		F =	0.26	CU =	0.01
ZN =	0.12	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	14.99	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.22	PO4=		SIO=	29.80	SO4=	5.00	CO3=		HCO=	66.00	CAR=		HAR=	42.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	369.00

ID#=8-4858-01 TYP=WELL COU=HAWAII LOC=KONA VIL-1 LAT,LON= 194820. 1555824.00 DAT=1972.

PH =	7.70	SPC=		WED=	528.00	WAD=	0.80	TEM=	20.90	FLO=		EH =		SPC=	1920.00
ALK=	348.00	DIS=	1120.00	SUS=		LI =		NA =	370.00	K =	0.30	RB =		MG =	69.00
CA =	28.00	SR =		BA =	0.10	MN =	0.03	FE =	0.06	FET=		F =	2.20	CU =	0.02
ZN =	0.03	HG =		B =		AL =	0.06	PB =	0.01	AS =	0.03	SB =		U =	
CL =	370.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	6.20	PO4=		SIO=	76.00	SO4=	75.00	CO3=		HCO=	424.00	CAR=		HAR=	354.00
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	501.00

ID#=8-4858-02 TYP=WELL COU=HAWAII LOC=KONA VIL-2 LAT,LON= 194818. 1555824.00 DAT=1973.

PH =	7.10	SPC=		WED=	523.00	WAD=	1.80	TEM=	22.20	FLO=		EH =		SPC=	1900.00
ALK=	270.00	DIS=	1160.00	SUS=		LI =		NA =	313.00	K =	16.00	RB =		MG =	77.00
CA =	29.00	SR =		BA =	0.30	MN =	0.03	FE =	0.23	FET=		F =	2.40	CU =	0.02
ZN =	0.04	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =		U =	
CL =	380.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.10	PO4=		SIO=	84.40	SO4=	80.00	CO3=		HCO=	73.00	CAR=		HAR=	350.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	503.00

ID#=8-4858-03 TYP=WELL COU=HAWAII LOC=KONA VIL-3 LAT,LON= 194820. 1555825.00 DAT=1974.

PH =		SPC=		WED=	534.00	WAD=	2.80	TEM=	20.50	FLO=		EH =		SPC=	2500.00
ALK=	160.00	DIS=	1130.00	SUS=		LI =		NA =	362.00	K =	11.10	RB =		MG =	92.70
CA =	25.00	SR =		BA =	0.10	MN =	0.01	FE =	0.12	FET=		F =	1.00	CU =	0.02
ZN =	0.22	HG =		B =		AL =	0.10	PB =	0.05	AS =	0.01	SB =		U =	
CL =	520.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	2.00	PO4=		SIO=	47.90	SO4=	77.00	CO3=		HCO=		CAR=		HAR=	344.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	500.00

ID#=	8-4953-01	TYP=	WELL	COU=	HAWAII			LOC=	KIHOLO			LAT,LON=	194945.	1555344.00		DAT=	1972.		
PH =	7.90	SPG=		WED=	971.00	WAD=	2.60	TEM=	21.00	FLO=		EH =				SPC=	1250.00		
ALK=	75.00	DIS=	769.00	SUS=		LI =		NA =	218.00	K =	12.00	RB =				MG =	26.00		
CA =	16.00	SR =		BA =		MN =		FE =		FET=		F =	0.90			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	330.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=			
NO3=	0.90	PO4=		SIO=	36.00	SO4=	71.00	CO3=		HCO=	91.00	CAR=				HAR=	147.00		
SE =		PHE=		CD =		CR =		AG =		P =	0.08	N =				ELE=	932.00		

ID#=	8-5005-01	TYP=	WELL	COU=	HAWAII			LOC=	PEPEEKEO SUG			LAT,LON=	195034.	1550545.00		DAT=	1972.		
PH =	7.20	SPG=		WED=	333.00	WAD=	11.40	TEM=	23.00	FLO=		EH =				SPC=	174.00		
ALK=	61.00	DIS=	141.00	SUS=		LI =		NA =	7.80	K =	0.60	RB =				MG =	10.00		
CA =	12.00	SR =		BA =	0.10	MN =	0.05	FE =	0.23	FET=		F =	0.10			CU =	0.02		
ZN =	0.67	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =				U =			
CL =	12.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=	0.01		
NO3=	0.50	PO4=		SIO=	45.00	SO4=	17.00	CO3=		HCO=	74.00	CAR=				HAR=	72.00		
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.05	AG =	0.01	P =		N =				ELE=	304.00		

ID#=	8-5005-02	TYP=	WELL	COU=	HAWAII			LOC=	PEPEEKEO MKI			LAT,LON=	195042.	1550538.00		DAT=	1974.		
PH =	5.70	SPG=		WED=	309.00	WAD=	11.00	TEM=	22.00	FLO=		EH =				SPC=	200.00		
ALK=	60.00	DIS=	108.00	SUS=		LI =		NA =	8.40	K =	0.60	RB =				MG =	8.50		
CA =	11.00	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.00			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	20.00	BR =		I =		O2 =		CO2=	233.00	H2S=		NH4=				NO2=			
NO3=	1.20	PO4=	0.18	SIO=	29.00	SO4=	13.00	CO3=		HCO=	73.00	CAR=				HAR=	62.00		
SE =		PHE=		CD =		CR =		AG =		P =	0.06	N =	0.03			ELE=	247.00		

ID#=	8-5548-01	TYP=	WELL	COU=	HAWAII			LOC=	PARKER-1			LAT,LON=	195546.	1554802.00		DAT=	1977.		
PH =	7.50	SPG=		WED=	849.00	WAD=	6.10	TEM=	28.50	FLO=		EH =				SPC=	2050.00		
ALK=	110.00	DIS=	1180.00	SUS=		LI =		NA =	320.00	K =	22.00	RB =				MG =	47.00		
CA =	29.00	SR =		BA =		MN =	10.00	FE =	20.00	FET=		F =	0.50			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	540.00	BR =		I =		O2 =		CO2=	7.10	H2S=		NH4=				NO2=			
NO3=	3.10	PO4=		SIO=	56.00	SO4=	99.00	CO3=		HCO=	140.00	CAR=				HAR=	270.00		
SE =		PHE=		CD =		CR =		AG =		P =		N =				ELE=	814.00		

ID#=	8-5745-01	TYP=	WELL	COU=	HAWAII			LOC=	PARKER-5			LAT,LON=	195725.	1554553.00		DAT=	1974.		
PH =	6.70	SPG=		WED=	1236.00	WAD=	16.00	TEM=	26.70	FLO=		EH =				SPC=	280.00		
ALK=	88.00	DIS=	210.00	SUS=		LI =		NA =	27.00	K =	3.10	RB =				MG =	8.60		
CA =	5.40	SR =		BA =	0.10	MN =	0.01	FE =	0.27	FET=		F =	0.36			CU =	0.05		
ZN =	0.12	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =				U =			
CL =	23.00	BR =		I =		O2 =		CO2=	5.20	H2S=		NH4=				NO2=	0.01		
NO3=	0.94	PO4=		SIO=	46.80	SO4=	14.00	CO3=		HCO=	102.00	CAR=				HAR=	76.00		
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =	3.80			ELE=	1213.00		

ID#=8-5745-02 TYP=WELL COU=HAWAII LOC=PARKER-4 LAT,LON= 195722. 1554551.00 DAT=1977.

PH =	7.40	SPG=		WED=	1231.00	WAD=	16.00	TEM=	26.70	FLO=		EH =		SPC=	278.00
ALK=	82.00	DIS=	207.00	SUS=		LI =		NA =	34.00	K =	4.80	RB =		MG =	9.90
CA =	9.00	SR =		BA =		MN =	0.00	FE =	20.00	FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	27.00	BR =		I =		O2 =		CO2=	6.40	H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	57.00	SO4=	16.00	CO3=		HCO=	100.00	CAR=		HAR=	63.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	1203.00

ID#=8-5814-01 TYP=WELL COU=HAWAII LOC=LAUPAHOEHOE LAT,LON= 195857. 1551423.00 DAT=1974.

PH =	7.00	SPG=		WED=	700.00	WAD=	5.90	TEM=	19.00	FLO=		EH =		SPC=	470.00
ALK=	45.00	DIS=	262.00	SUS=		LI =		NA =	46.00	K =	4.10	RB =		MG =	13.00
CA =	15.00	SR =		BA =		MN =	0.00	FE =	60.00	FET=		F =	0.10	CU =	0.02
ZN =	0.13	HG =		B =		AL =	0.02	PB =	0.02	AS =		SB =		U =	
CL =	100.00	BR =		I =		O2 =		CO2=	8.80	H2S=		NH4=		NO2=	0.01
NO3=	0.15	PO4=	0.21	SIO=	40.00	SO4=	14.00	CO3=		HCO=	55.00	CAR=		HAR=	91.00
SE =	0.00	PHE=		CD =		CR =		AG =		P =	0.07	N =	0.44	ELE=	659.00

ID#=8-5946-01 TYP=WELL COU=HAWAII LOC=LALAMILO LAT,LON= 195930. 1554630.00 DAT=1977.

PH =		SPG=		WED=	1277.00	WAD=	24.90	TEM=	26.50	FLO=		EH =		SPC=	449.00
ALK=	73.00	DIS=	291.00	SUS=		LI =		NA =	61.00	K =	5.90	RB =		MG =	15.00
CA =	11.00	SR =		BA =		MN =	20.00	FE =	40.00	FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	78.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	55.00	SO4=	21.00	CO3=		HCO=	89.00	CAR=		HAR=	89.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	1172.00

ID#=8-5948-01 TYP=WELL COU=HAWAII LOC=HAPUNA BCH P LAT,LON= 195947. 1554858.00 DAT=1970.

PH =	7.30	SPG=		WED=	278.00	WAD=		TEM=	25.50	FLO=		EH =		SPC=	1600.00
ALK=	78.00	DIS=	922.00	SUS=		LI =		NA =	250.00	K =	15.00	RB =		MG =	37.00
CA =	20.00	SR =		BA =		MN =		FE =		FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	430.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.30	PO4=		SIO=	49.00	SO4=	68.00	CO3=		HCO=	93.00	CAR=		HAR=	202.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	244.00

ID#=8-6048-01 TYP=WELL COU=HAWAII LOC=KAWAIHAE-2 LAT,LON= 200029. 1554848.00 DAT=1961.

PH =	7.70	SPG=		WED=	430.00	WAD=	3.30	TEM=	26.10	FLO=		EH =		SPC=	
ALK=	78.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	27.80
CA =	53.60	SR =		BA =		MN =	0.10	FE =		FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	504.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	30.00	SO4=	90.80	CO3=		HCO=		CAR=		HAR=	250.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	392.00

ID#=8-6048-02 TYP=WELL COU=HAWAII LOC=M KEA BCH HT LAT,LON= 200010. 1554855.00 DAT=1972.

PH =	7.60	SPG=		WED=	376.00	WAD=	4.50	TEM=	26.00	FLO=		EH =		SPC=	1500.00
ALK=	77.00	DIS=	838.00	SUS=		LI =		NA =	216.00	K =	15.00	RB =		MG =	34.00
CA =	21.00	SR =		BA =		MN =		FE =		FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	390.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	3.20	PO4=		SIO=	51.00	SO4=	62.00	CO3=		HCO=	94.00	CAR=		HAR=	193.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	340.00

ID#=8-6049-01 TYP=WELL COU=HAWAII LOC=M KEA BCH HT LAT,LON= 200015. 1554920.00 DAT=1972.

PH =	8.10	SPG=		WED=	218.00	WAD=	2.00	TEM=	25.00	FLO=		EH =		SPC=	1520.00
ALK=	78.00	DIS=	838.00	SUS=		LI =		NA =	216.00	K =	15.00	RB =		MG =	34.00
CA =	21.00	SR =		BA =		MN =		FE =		FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	390.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.90	PO4=		SIO=	51.00	SO4=	62.00	CO3=		HCO=	95.00	CAR=		HAR=	193.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	188.00

ID#=8-6049-02 TYP=WELL COU=HAWAII LOC=M KEA RESRT3 LAT,LON= 200934. 1554940.00 DAT=1972.

PH =	7.80	SPG=		WED=	76.00	WAD=		TEM=	26.00	FLO=		EH =		SPC=	5840.00
ALK=	87.00	DIS=	3300.00	SUS=		LI =		NA =	974.00	K =	50.00	RB =		MG =	119.00
CA =	58.00	SR =		BA =		MN =	0.05	FE =	0.04	FET=		F =	0.30	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	1740.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.02
NO3=	3.80	PO4=		SIO=	50.00	SO4=	249.00	CO3=		HCO=	106.00	CAR=		HAR=	635.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	40.00

ID#=8-6049-03 TYP=WELL COU=HAWAII LOC=M KEA RESRT4 LAT,LON= 200939. 1554940.00 DAT=1974.

PH =	7.30	SPG=		WED=		WAD=		TEM=	25.00	FLO=		EH =		SPC=	13800.00
ALK=	85.00	DIS=	7990.00	SUS=		LI =		NA =	2400.00	K =	110.00	RB =		MG =	270.00
CA =	120.00	SR =		BA =		MN =	110.00	FE =	60.00	FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	4700.00	BR =		I =		O2 =		CO2=	8.30	H2S=		NH4=		NO2=	
NO3=	3.20	PO4=	0.37	SIO=	53.00	SO4=	580.00	CO3=		HCO=	104.00	CAR=		HAR=	1400.00
SE =		PHE=		CD =		CR =		AG =		P =	0.12	N =	1.10	ELE=	

ID#=8-6117-01 TYP=TUNNEL COU=HAWAII LOC=OOKALA SHAFT LAT,LON= 200108. 1551716.00 DAT=1972.

PH =	7.60	SPG=		WED=	600.00	WAD=	6.00	TEM=	17.80	FLO=		EH =		SPC=	599.00
ALK=	51.00	DIS=	338.00	SUS=		LI =		NA =	78.00	K =	4.90	RB =		MG =	14.00
CA =	11.00	SR =		BA =	0.10	MN =	0.03	FE =	0.93	FET=		F =	0.20	CU =	0.02
ZN =	0.02	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	135.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.00	PO4=		SIO=	43.00	SO4=	21.00	CO3=		HCO=	62.00	CAR=		HAR=	85.00
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	300.00

ID#=	8-6147-01	TYP=	WELL	COU=	HAWAII			LOC=	KAWAIHAE-3			LAT,LON=	200132.	1554711.00		DAT=	1964.		
PH =	8.05	SPC=		WED=	1046.00	WAD=	4.60	TEM=	35.60	FLO=		EH =				SPC=	1070.00		
ALK=	81.00	DIS=	660.00	SUS=		LI =		NA =	460.00	K =	34.20	RB =				MG =	64.20		
CA =	43.80	SR =		BA =		MN =	0.05	FE =	1.41	FET=		F =	0.20			CU =	0.10		
ZN =	0.10	HG =		B =		AL =	0.20	PB =	0.01	AS =	0.01	SB =				U =			
CL =	850.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=	0.00		
NO3=	2.32	PO4=		SIO=	38.00	SO4=	100.00	CO3=		HCO=	101.00	CAR=	14.00			HAR=	331.00		
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =				ELE=	982.00		

ID#=	8-6148-01	TYP=	WELL	COU=	HAWAII			LOC=	KAWAIHAE-1			LAT,LON=	200122.	1554809.00		DAT=	1973.		
PH =	7.80	SPC=		WED=	620.00	WAD=	3.30	TEM=	28.00	FLO=		EH =				SPC=	1250.00		
ALK=	66.00	DIS=	741.00	SUS=		LI =		NA =	180.00	K =	13.00	RB =				MG =	32.00		
CA =	24.00	SR =		BA =	0.30	MN =	0.05	FE =	5.60	FET=		F =	0.30			CU =	0.03		
ZN =	2.20	HG =		B =		AL =	0.10	PB =	0.16	AS =	0.05	SB =				U =			
CL =	360.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=	0.01		
NO3=	3.80	PO4=		SIO=	66.00	SO4=	42.00	CO3=		HCO=	82.00	CAR=				HAR=	192.00		
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =				ELE=	579.00		

ID#=	8-6148-02	TYP=	WELL	COU=	HAWAII			LOC=	KAWAIHAE-4			LAT,LON=	200121.	1554808.00		DAT=	1970.		
PH =	7.40	SPG=		WED=	626.00	WAD=	7.60	TEM=	26.40	FLO=		EH =				SPC=	1400.00		
ALK=	69.30	DIS=		SUS=		LI =		NA =	168.00	K =	0.70	RB =				MG =	29.88		
CA =	172.00	SR =		BA =		MN =	0.01	FE =	0.03	FET=		F =	0.07			CU =	0.02		
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =				U =			
CL =	460.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=	0.01		
NO3=	0.18	PO4=		SIO=	52.00	SO4=	0.09	CO3=		HCO=		CAR=				HAR=	172.00		
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =				ELE=	582.00		

ID#=	8-6321-01	TYP=	WELL	COU=	HAWAII			LOC=	PAAUILO MILL			LAT,LON=	200314.	1552143.00		DAT=	1972.		
PH =	7.60	SPC=		WED=	217.00	WAD=	1.70	TEM=	18.00	FLO=		EH =				SPC=	806.00		
ALK=	43.00	DIS=	429.00	SUS=		LI =		NA =	102.00	K =	5.60	RB =				MG =	19.00		
CA =	16.00	SR =		BA =		MN =		FE =		FET=		F =	0.10			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	195.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=			
NO3=		PO4=		SIO=	37.00	SO4=	29.00	CO3=		HCO=	53.00	CAR=				HAR=	118.00		
SE =		PHE=		CD =		CR =		AG =		P =		N =				ELE=	215.00		

ID#=	8-6321-02	TYP=	TUNNEL	COU=	HAWAII			LOC=	PAAUILO SHFT			LAT,LON=	200308.	1552157.00		DAT=	1972.		
PH =	7.60	SPG=		WED=	626.00	WAD=	3.30	TEM=	20.00	FLO=		EH =				SPC=	806.00		
ALK=	43.00	DIS=	430.00	SUS=		LI =		NA =	80.00	K =	5.50	RB =				MG =	14.00		
CA =	29.00	SR =		BA =	0.10	MN =	0.03	FE =	0.05	FET=		F =	0.20			CU =	0.02		
ZN =	0.02	HG =		B =		AL =	0.11	PB =	0.01	AS =	0.01	SB =				U =			
CL =	320.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=	0.01		
NO3=	0.52	PO4=		SIO=	29.60	SO4=	28.00	CO3=		HCO=	53.00	CAR=				HAR=	118.00		
SE =	0.01	PHE=	0.01	CD =		CR =		AG =	0.01	P =		N =				ELE=	273.00		

ID#=8-7347-02 TYP=WELL COU=HAWAII LOC=HALAULA 2-1 LAT,LON= 201352. 1554705.00 DAT=1956.

PH =	8.00	SPG=		WED=	505.00	WAD=	8.20	TEM=	21.00	FLO=		EH =		SPC=	170.00
ALK=	40.00	DIS=	125.00	SUS=		LI =		NA =	15.00	K =		RB =		MG =	8.90
CA =	4.90	SR =		BA =		MN =	0.10	FE =	0.10	FET=		F =	0.10	CU =	0.10
ZN =	0.03	HC =		B =		AL =	0.30	PB =	0.03	AS =	0.01	SB =		U =	
CL =	28.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.20	PO4=		SIO=	28.40	SO4=	12.50	CO3=		HCO=	45.00	CAR=		HAR=	49.50
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	342.00

ID#=8-7446-01 TYP=TUNNEL COU=HAWAII LOC=KOHALA SHAFT LAT,LON= 201428. 1554649.00 DAT=1974.

PH =	6.90	SPG=		WED=	135.00	WAD=	7.00	TEM=	22.50	FLO=		EH =		SPC=	2280.00
ALK=	80.00	DIS=	1740.00	SUS=		LI =		NA =	460.00	K =	19.00	RB =		MG =	73.00
CA =	65.00	SR =		BA =		MN =	10.00	FE =	100.00	FET=		F =	0.10	CU =	
ZN =		HC =		B =		AL =		PB =		AS =		SB =		U =	
CL =	920.00	BR =		I =		O2 =		CO2=	20.00	H2S=		NH4=		NO2=	
NO3=	3.70	PO4=	0.18	SIO=	43.00	SO4=	110.00	CO3=		HCO=	98.00	CAR=		HAR=	460.00
SE =		PHE=		CD =		CR =		AG =		P =	0.06	N =	1.00	ELE=	123.00

ID#=8-7448-04 TYP=WELL COU=HAWAII LOC=UNION MILL-1 LAT,LON= 201427. 1554822.00 DAT=1973.

PH =	7.30	SPG=		WED=	412.00	WAD=	7.10	TEM=	21.50	FLO=		EH =		SPC=	259.00
ALK=		DIS=		SUS=		LI =		NA =	27.00	K =	2.70	RB =		MG =	7.00
CA =	9.40	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HC =		B =		AL =		PB =		AS =		SB =		U =	
CL =	42.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.20	PO4=		SIO=	38.00	SO4=	8.90	CO3=		HCO=	62.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	311.00

ID#=8-7448-05 TYP=WELL COU=HAWAII LOC=UNION MILL-2 LAT,LON= 201430. 1554841.00 DAT=1971.

PH =		SPG=		WED=	522.00	WAD=	7.10	TEM=	22.00	FLO=		EH =		SPC=	510.00
ALK=	96.80	DIS=		SUS=		LI =		NA =	43.00	K =	4.90	RB =		MG =	1.30
CA =	16.00	SR =		BA =	0.50	MN =	0.03	FE =	0.09	FET=		F =		CU =	0.02
ZN =	0.01	HC =		B =		AL =	0.14	PB =	0.01	AS =	0.00	SB =		U =	
CL =	129.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.58	PO4=		SIO=	31.20	SO4=	13.00	CO3=		HCO=	118.00	CAR=		HAR=	88.00
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.05	AG =	0.01	P =		N =		ELE=	420.00

ID#=8-7650-01 TYP=TUNNEL COU=HAWAII LOC=HOEA SHAFT LAT,LON= 201603. 1555022.00 DAT=1974.

PH =	6.90	SPG=		WED=	61.00	WAD=	2.00	TEM=	21.00	FLO=		EH =		SPC=	415.00
ALK=	75.00	DIS=	320.00	SUS=		LI =		NA =	92.00	K =	4.40	RB =		MG =	6.20
CA =	4.50	SR =		BA =		MN =	0.00	FE =	40.00	FET=		F =	0.30	CU =	
ZN =		HC =		B =		AL =		PB =		AS =		SB =		U =	
CL =	71.00	BR =		I =		O2 =		CO2=	18.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.89	SIO=	38.00	SO4=	26.00	CO3=		HCO=	91.00	CAR=		HAR=	37.00
SE =		PHE=		CD =		CR =		AG =		P =	0.29	N =	0.88	ELE=	52.00

ID#=8-7652-01		TYP=TUNNEL		COU=HAWAII				LOC=WAIKANE SHFT		LAT,LON=	201603.	1555217.00		DAT=1974.					
PH =	6.90	SPG=		WED=	42.00	WAD=	0.50	TEM=	22.00	FLO=		EH =		SPC=	1850.00				
ALK=	118.00	DIS=	962.00	SUS=		LI =		NA =	290.00	K =	13.00	RB =		MG =	27.00				
CA =	15.00	SR =		BA =		MN =	10.00	FE =	40.00	FET=		F =	0.40	CU =					
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =					
CL =	480.00	BR =		I =		O2 =		CO2=	29.00	H2S=		NH4=		NO2=					
NO3=		PO4=	1.10	SIO=	54.00	SO4=	63.00	CO3=		HCO=	144.00	CAR=		HAR=	150.00				
SE =		PHE=		CD =		CR =		AG =		P =	0.36	N =	1.60	ELE=	33.00				

TABLE 5
DATA REQUIRED FOR AREAS ON WESTERN MAP

Area #	Name	Wells Considered: # of wells	depth range / temp. range	# of wells	depth range / temp. range	Water Source	Dissolved solids: Range (PPM)	Mean (PPM)	Heat Source	Mean Air Temp. (°C)	References	Other Explanatory Remarks: (Mean Ann. Rainfall)	(Quality)
1	Puna	6	0 - 150m / 19 - 28°C	5	150-300m / 22.5-23.5°C	Meteoric	110-548	213	volcanic	22.2°	HIG Report in progress	125"	fresh
2	Ka'u	9	0 - 100m / 17.8 - 19°C	3	>100m / 17.2 - 19°C	Meteoric	94-2300	626	volcanic	23.8°	"	60"	fresh
3	Kawaihae	7	0 - 200m / 25.0 - 28.0	5	>200m / 26.5 - 35.6	Meteoric	207-7990	1561	volcanic	25°	"	20"	2 moderate saline, rest fresh
4	South Hilo Keaau	11	0 - 70m / 18.5 - 26.0	8	>70 m / 17.8-24.5	Meteoric	*1 76-228	105	volcanic	22.7°	"	150"	*2 fresh
5	Lahaina	3	0 - 15m / 24.5-28.0	5	15 - 250m / 20 - 25.0	Meteoric	123-2040	849	volcanic	24.4°	"	5"	fresh
6	Olowalu-Ukumehame	2	0 - 50m / 25.5-33.0	1	50 - 100m / 25°	Meteoric	921 -1900	1259	volcanic	25°	"	5"	fresh-slightly saline
7	Lualualei	3	0 -150m / 25 - 29°	0	- - - -	Meteoric	246-810	592	volcanic	23.8°	"	20"	fresh
8	Waimanalo	2	0- 100m / 25-26.1	1	222m / 30°	Meteoric	*3 138	138	volcanic	21.6°	"	40"	fresh
9	Wailua	8	0 - 100m / 22.5-27.5	3	100-280m / 23.0-26.5	Meteoric	174-530	315	volcanic	21.6°	"	70"	fresh
10	Nohili Pt.	3	0 - 50m / 22.5 - 24.0	—		Meteoric	492-742	617	volcanic	23.3°	"	20"	fresh

*1 Excluding the 3 Waiakea wells: 10,900; 11,400; and 22700 ppm.
*2 Excluding the 3 Waiakea wells: 4,200; 6,250; and 12,500 ppm cl.
*3 Only one well, 222m, had dissolved solids data available.

APR 4 1978

University of Hawaii at Manoa

Hawaii Institute of Geophysics
2525 Correa Road • Honolulu, Hawaii 96822
Cable Address: UNIHAW

→ Foley return

Office of the Director

March 31, 1978

Dr. John Griffith
Department of Energy
Idaho Operations Office
550 Second S.E.
Idaho Falls, Idaho 83401

Dear John,

Enclosed are three copies of our first bi-monthly report, due April 1, under the Western State Cooperative Direct Heat Geothermal Program. We believe we have made significant progress in our first two months and are confident that we will be able to complete our initial compilation as scheduled. Should you need more copies, please let us know.

We are still operating on a somewhat informal basis and hope that our formal contract arrives soon. We would also appreciate any suggestions that would make the data more useful to you.

Sincerely,

Charles E. Helsley
Director

CEH:ctk

Enclosures

cc: Dr. C. Nichols
Dr. M. Wright

AN EQUAL OPPORTUNITY EMPLOYER

PROGRESS REPORT #1

UNIVERSITY OF HAWAII EFFORTS

ASSOCIATED WITH

WESTERN STATE'S COOPERATIVE DIRECT HEAT GEOTHERMAL PROGRAM

The data which has been compiled to the present has been chiefly concerned with the ground waters of the Island of Hawaii. The enclosed table presents the majority of the information acquired to date. The sources for the data presented in the table are as follows: State of Hawaii Board of Health, water quality; Hawaii County Board of Water Supply, well site locations; State of Hawaii Division of Water and Land Development, well locations, depths, temperatures; U.S. Geological Survey, Honolulu Office, well numbers and locations; U.S.G.S. water supply papers, circulars, and reports, water quality data, well names and locations. The most recent information available for each well is included in the present report although some of the water quality and temperature data is rather old extending back to analyses made prior to 1960.

The criterion for inclusion of well data in this report has been expanded somewhat over that originally proposed. All wells with temperatures above 25°C have been included in our data base; in addition, all easily accessible water chemistry data has been scanned for anomalously high silica concentrations. Silica was chosen as a geothermal indicator for several reasons: the very high permeability of Hawaiian basalts as well as the very high rainfall on many parts of the island may effectively mask thermal anomalies in the shallow ground water. Sodium, potassium, and calcium ion concentrations are unsuitable due to sea water contamination of many near shore wells. Finally, silica concentrations in every known warm water well in Hawaii are well above normal ground water levels. The present lower limit of well water silica concentration necessary to be included in this report is 30 ppm. This lower limit will undoubtedly be revised upward for the other islands which generally have a higher average silica concentration in their ground waters.

We are presently in the process of searching older records and reports for further information on other older wells. Many of these wells were abandoned prior to the more recent compilations.

NUMBER	NAME-LOCATION	TEMP.	DEPTH WELL / H_2O	DATE	Na	K	Ca	Mg	SiO_2	Cl	F	SO_4	H_2CO_3	Carb	Source
0335-01	Naalehu, Ka'u District	19.5	896/736	'71	12		6.0	4.6	45	8.0	.3	14	44	36	4
0533-01	Honaupo	19.0	34/–	'72	680		33	86	43	1240	.2	169	46	37	4
0533-02	Honaupo 1	18	130/92	'72	320		20	44	43	580	.1	86	42	34	4
0533-03	Honaupo	19.0	125/85.8	'72	272		18	38	43	500	.2	75	41	34	4
0632-01	Honaupo	19.0	140/100.1	'72	245		17	33	41	440	.2	66	44	36	4
0830-01	Punaluu	19.0	120/–	'72	118		9.6	16	32	205	.2	37	34	28	4
0831-01	Ninole A	19.0	128/119	'72	80		9.2	12	41	136	.2	24	43	35	4
0831-02	Ninole B	17.8	172/123	'74	89		13.2	18.0	39.9	165.9	.15	28	42.0	0	2
1128-01	Pahala Shaft	19.0	547/1	'55	+K 5.0		13.5	3.8	36.8	2.0	.2	22.4	30		2
1128-01	Pahala Shaft	19.0	547/1	'72	7.2		6.6	3.6	42	3.5	.2	10	43	35	4
1128-01	Pahala Shaft		547/1	'73	7.0		8.0	3.2	46.4	2.4	.25	9.9	33	0	2
1128-02	Pahala (Palima)	19.0	375/301	'72	12		5	3	46	8	.3	7.3	42		4
1129-01	Pahala	17.2	937/729	'74	5.7		7.5	3.3	42	3.2	.1	6.6	40		4
2102-01	Pulama	25.8	250/227	'63	170		15.9	31.2	72.4	345	.1	65.1	44	0	2
2102-01	Pulama		250/227	'72	170		16	31	72	345	.1	65	54		2
2317-01	Kilauea Geothermal	37.0	4128/2008												1
2487-01	Keauohana Puna	23	801/784	'72	54		6.6	3.3	41	70	.2	22	42	34	4
2487-02	Keauohana 2	23.5	803/748	'74	57		11.8	5.9	45.3	129	.33	25	37	0	4
2686-01	Geothermal 1 (Puna)	54.5													3
2686-02	Geothermal 2 (Puna)	96.8	556/–												3
2753-01	Keei Well A	19.4	780/741	'74	61		7.8	13.1	41.1	128.47	.28	25	46	0	2

NUMBER	NAME-LOCATION	TEMP.	DEPTH WELL / H_2O	DATE	Na	K	Ca	Mg	SiO_2	Cl	F	SO_4	H_2CO_3	Alk Carb	Source
2753-02	Keei Well B	18.9	774/734	'74	69		10	13.9	45.0	14132	.28	26	46	0	2
2753-02	Keei Well B	19.5	774/734	'77											1
2782-01	Malama Ki	53.9	319/273	'62	+K 3090		.182	324	59.0	5850	1.5	681	215		2
2782-01	Malama Ki	53.9	319/273	'74											3
2881-01	(Allison) Pohoiki, Puna	39.0	140/127												1
2881-01	(Allison) Pohoiki, Puna	38.9	140/127	'74											3
2986-01	Pahoa 2A	22.2	755/693	'67	22		2.6	4.1	55.0	8	.4	1	44	0	2
2986-01	Pahoa 2A	23.5	755/693	'73	17		4.8	.86	39.6	12	.46	13	38	0	2
3080-01	Kapoho Crater	25.3	46/35	'72	57		72	31	39 44.0	54	.3	11	393	332	4
3080-02	Kapoho	23.4		'72	57		72	31	39	54	.3	11	393	332	4
3081-01	Kapoho Test Well (Airstrip)	33.9	337/284	'61	+K 163		14.1	17.1	70.5	331	.1	65.4	50.0		1
3081-02	Geothermal 4 Puna	43.0	290/-												1
3185-01	Haw'n. Beaches (Shores)	21.7	446/391	'74	13		3.9	3.8	51.9	13	.28	5.1	49	0	2
3185-01	Haw'n. Shores	21.5	446/391	'76											4
3185-02	Haw'n. Shores	24.5	430/-	'72											4
3185-02	Haw'n. Shores	24.5	430/-	'74	19		3.9	4.5	49.0	28	.57	7.0	46	0	2
3457-02	Keauhou 2 (not in USGS file)		430/-	'66	1300		30	110	33	1700	.76	195	48	0	2
3500-01	Waipahoehoe Puna Test Well #5	22.5	361/295	'61	+K 7.6		5.3	6.7	46.5	6.0	.1	10.9	58.0		4
3500-01	Waipahoehoe Puna Test Well #5	22.5	361/295	'74											3
3557-01	Kahaluu A	20.3	878/829	'74	18		8.8	6.5	46	34	.28	11	46	0	2
3557-02	Kahaluu B	20.6	881/836	'74	22		8.5	7.1	41.7	32.1	.33	12	48	0	2

NUMBER	NAME-LOCATION	TEMP.	DEPTH WELL / H_2O	DATE	Na	K	Ca	Mg	SiO_2	Cl	F	SO_4	H_2CO_3	Alk Carb	Source
3557-03	Kahaluu C	21.0	868 / 829	'74	14		7.5	5.2	43.6	21.4	.3	10	50	0	2
3557-04	Kahaluu D	20.6	905 / 851	'74	12		6.7	4.8	45.0	17.13	.36	9.1	50	0	2
3758-01	Kailua-Kona	21.1	615 / 592	'56	+K 119.6		78	34	32.8	485.0	.2	78.5	42	42	2
3758-01	Kailua-Kona		615 / 592	'59	+K 23.6		15	37	26	440	.2	76	44	36	2
3802-01	Keaau 1 Olaa-Mt. View	24.5	450 / -	'72	5.7		4.6	2.9	31	4.0	.1	5.0	36	30	4
3802-01	Keaau 1 Olaa-Mt. View		450 / -	'73	6		5.6	1.8	37.7	3.4	.12	6.2	30	0	2
3802-02	Keaau 2 Olaa-Mt. View	23.4	450 / -	'74	5.6		4.9	2.8	34.6	5.4	.1	5.6	37	0	2
3802-03	Keaau Well 1	19.5	379 / 196	'72	5.2		4.8	2.8	33	4.0	.2	5.3	35		4
3802-04	Owner's Deep Well Keaau Well 2	24.2	371 / 294	'72	5.2		5.5	3.3	36	4.0	.1	5.5	38	32	4
3802-05	Keaau Mill 3	22.0	375 / -	'72	5.2		5.5	3.3	36	4.0	.1	5.5	38	31	4
3900-01	Well #1 Keaau Orchard	93.3	137 / 83	'72	33		6.5	5.9	33	58	.1	12	44	36	4
3900-01	Well #1 Keaau Orchard	18.5	137 / 83	'74	39		7.8	7.7	39	64	.1	14	35	29	4
3900-02	Well #2 Keaau Orchard	18.5	147 / 87	'72	54		6.8	7.1	33	.81	.1	16	44	36	4
4059-01	Kailua	20.5	858 / 798	'58	+K 163		95	250	43.2	3600	.1	547	88		2
4203-03	Waiakea	23.5	56 / 35	'72	7.4		6.0	3.6	36	7.5	.1	2.0	44	36	4
4203-04	Waiakea 4	26.0	201 / 40	'72	6.9		8.4	2.9	55	6.5	.1	2.6	47	38	4
4203-06	Kanoelehua 2	23.5	200 / 43	'72	7.4		6.0	3.6	36	7.5	.1	2.0	44	36	4
4203-06	Kanoelehua 2	23.5	200 / 43	'75											4
4203-07	Kanoelehua 3	23.9	200 / 50	'72	6.5		8.4	2.9	55	6.5	.1	2.6	47		4
4304-01	Waiakea Stream Plant	19.5	20 / 12	'72	3400		132	390	44	6000	.6	832	97	80	4
4304-02	Waiakea Stream Plant			'72	7200		240	800	33	12500	1.1	1630	105	86	4

NUMBER	NAME-LOCATION	TEMP.	DEPTH WELL / H_2O	DATE	Na	K	Ca	Mg	SiO_2	Cl	F	SO_4	H_2CO_3	Alk Carb	Source
4304-03	Waiakea Stream Plant	20	26/10	'72	3540		132	450	46	6250	.6	863	88	72	4
4306-01	Piihonua	17.8	425/236	'73	7.8		5.0	3.3	37.0	2.0	.2	5.9	46	0	2
4360-01	Kalaoa, N. Kona	20.8	702/677	'68			23	46	39.4	740			98	0	2
4706-01	Papaikou		425/348	'73	6		11	4.6	32	2.4	.08	1.4	34	0	2
4858-01	Kaupulehu	21.9	528/500	'31	270		28	69	76	370	2.2	75	424	348	4
4858-02	Kona Village 2	22.2	523/501	'73	313		29	77	84.4	362	2.4	80	270	0	2
4858-03	Kona Village 3	20	534/497	'74	362		25	92.7	47.9	428	1.0	77	160	0	4
4953-01	Kiholo	22.2	971/929	'73	218		16	26	36	340	.9	71	91	75	2
5005-01	Pepeekeo	23	333/293	'72	7.8		12	10	45	12	.1	17	74	61	4
5548-01	Parker 1	27.8	848/808	'72	330		28	47	82	550	.5	95	142	116	4
5648-02	(Tunnel) Parker 2	27.5													1
5648-02	(Tunnel) Parker 2	80.5	651/615												1
5745-01	Parker 5	26.7	123/1197	'74	27		5.4	8.6	46.8	40.68	.36	14	88	0	2
5745-02	Parker 4	26.7	1231/1187	'69	34		8.4	11.0	58	27	.4	-	99		1
5750-02	Puako 6	26.7	55/48												1
5946-01	Laulamilo	26.5	1277/1147	'77											1
5948-01	Hapuna Beach Park	25.5	268/-	'70	250		20	37	49	430	.3	68	95	78	2
6048-01	Kawaihae 2	26.1	430/389	'61			53.6	27.8	30.0	550.0		90.8	78		2
6048-01	Kawaihae 2	26.1	430/389	'74											3
6048-02	Mauna Kea Beach Well	26.0	376/335	'72	216		21	34	51	390	.3	62	94	77	4
6049-01	Mauna Kea Beach Res 2	25.0	218/186	'72	216		21	34	51	390	.3	62	95	78	1

NUMBER	NAME-LOCATION	TEMP.	DEPTH WELL / H_2O	DATE	Na	K	Ca	Mg	SiO_2	Cl	F	SO_4	H_2CO_3	Alk Carb	Source
6049-02	Mauna Kea Beach Res 3	26.0	76 / -	'64	458		37.8	68.8	65.0	912	.2	107	78	0	2
6049-02	Mauna Kea Beach Res 3	26.0	76 / -	'72	974		58	119	50	1740	.3	249	106	87	4
6049-03	Mauna Kea Beach Res 4	26.0	- / -	'72	896		58	111	50	1610	.2	236	103	84	1
6117-01	Laupahoehoe Sug. Co. (Ookala)	-	600 / 294	'72	78		11	14	51	135	.2	21	62	77	4
6147-01	Kawaihae 3	35.6	1046 / 977	'63	135		31.5	32.8	89.2	250	.2	54	89	0	2
6148-01	Kawaihae 1	28.0	620 / 576	'72	175		32	30	32	340	.3	70	0	0	2
6148-01	Kawaihae 1		620 / 576	'73	178		27	30	37.7	375	.43	56	66	0	2
6148-02	Kawaihae 4	26.4	626 / 574	'70	168		172	29.88	52.0	304	.07	.09	67	0	2
6321-01	Paauilo Mill	18	217 / -	'72	102		16	19	37	195	.1	29	53	43	4
6321-02	Pauuilo Shaft	20	626 / 270	'72	+K 102		16	19	37	195	.1	29	53	43	2
7347-02	Halaula	-	505 / 334	'56	15		8	5.5	42	.22	.1	9.6	45	37	2
7446-01	Kohala Shaft		135 / 123	'72	450		60	72	63	890	.2	120	98	80	4
7448-04	Kohala Sugar Union Mill #1	21.5	412 / 305	'73	27		9.4	7.0	38	42	.2	8.9	62		4
7448-05	Kohala Sugar Union Mill #1	22.0	522 / -	'71	43		16.0	1.3	31.2	88		13	96.8	0	2
7650-01	Hoea (Kohala Sugar Co.)	21	61 / 50	'73	130		6.6	8.0	42	170	.3	35	72		1

*All ion concentrations are in milligrams per liter

Source 1 Division of Water and Land Development - State of Hawaii

Source 2 Department of Health - State of Hawaii

Source 3 David Epp - unpublished data

Source 4 U. S. Geological Survey files, reports and circulars

6 Nov 78

1. Hawaii Institute of Geophysics –
2. what kd info want –

→ Donald Thomas 808- 948-7654 | $3\frac{1}{2} = 10^{30}$

3. Going thru Basalt pets –
   Silica content correlated w/ temps.
   but are high Si

4. How much data ultimately?
   Big Island highest potential for geoth
   3 major areas in B I
   N Kona, Waimea, NW end.

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needs to include more phase I data compilation efforts - talks only about water tap geochem

DOE-STATE PROGRAM FOR ASSESSMENT OF DIRECT HEAT RESOURCES

Introduction

During the Hawaii Geothermal Project (HGP), a general survey of the geothermal potential of the Hawaiian Island was made. Various data sets were accumulated for this purpose, and thus some of the data required for the State compilation is already in hand. This initial data base can readily be extended to include data from areas not included in the original HGP study, but in many areas, these data will have to be supplemented by additional field work in order for an optimally useful data set to emerge.

The general types of data that are readily available and reasonably complete are: (1) geologic data including location of rift zones, dike swarms, recent cones, Quaternary cones, faults, etc.; (2) hydrologic data including temperature, chemistry and productivity of most wells drilled for water supply (many of which are >20°C); and (3) infrared imagery data for coastal areas indicating the presence of warm water springs. All of these data sets should be useful to low temperature resource identification.

Based upon our preliminary evaluation of the geothermal resources of Hawaii conducted as part of the HGP, we feel that there are more than a dozen areas that are potentially useful either as high T or low T resources. Unfortunately, the available data on these areas is very limited for the reasons discussed below. Thus, we feel that the objectives of the DOE-USGS-State program can best be achieved by implementing field programs in selected areas in order to develop additional data for resource evaluation.

Unusual Aspects of Hawaii as Related to the Program

The mean annual temperature for much of Hawaii is in excess of 20°C and, as a result, most well waters have temperatures near or slightly in excess of 20°C. Water temperatures probably do not become indicative of a geothermal resource until they are in excess of 25°C in this area. Thus, it may be appropriate to modify the requirements of the survey for this tropical area.

agree M.

The water table throughout most of Hawaii is very near sea level, and since much of the area has moderate to high rainfall, most of the islands above sea level have been cooled to near ambient, i.e. mean annual, temperatures by rain water percolating through very porous material. Most wells have been drilled to about sea level to tap the upper part of the Ghyben-Herzburg fresh water lens, and very few wells penetrate to depths significantly below sea level, ~~Yet this is~~ where most of the geothermal potential is. Despite these facts, a few wells in Hawaii show

temperatures of 30° or 40°C even when large volumes of water are removed for domestic or irrigation use. Thus, there is abundant evidence for warm or hot water resources on most of the islands. The real question is how to interpret the existing data in terms of useful geothermal resources.

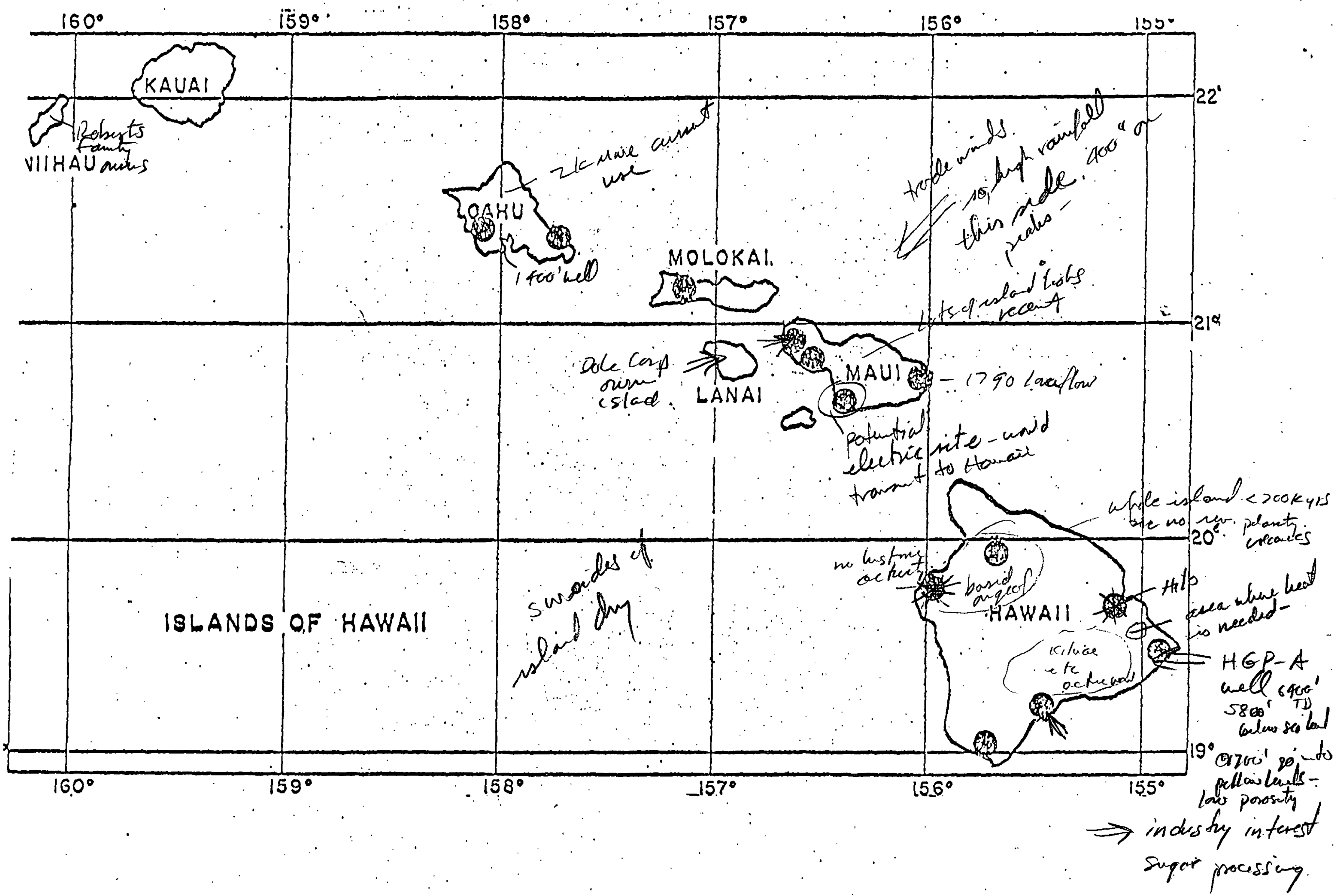
Since the current well data yields little data about "source" regions, we believe that chemical and geophysical techniques need to be applied if we are to successfully define areas where the geothermal resource potential is high. We therefore propose that limited field programs be started concurrently with the data compilation efforts.

Proposed Efforts

In order to achieve the goals set forth in the DOE Western State Cooperative Direct Heat Geothermal Program, we propose to initiate the following efforts:

1. Assemble all data for wells, preferably using 25°C as the level of geothermal significance;
2. Identify and tabulate geothermal gradients when possible;
3. Tabulate water chemistry and identify those of apparent geothermal interest;
4. Calculate subsurface temperatures based on chemical geothermometers (this is difficult in Hawaii due to sodium contamination);
5. Compile geologic and geophysical data pertinent to geothermal resources;
6. Initiate field programs (as described below) to acquire additional data for geothermal resource identification in selected areas. These areas will be selected on the basis of favorable geology, existing warm water wells, and proximity to potential geothermal customers.

As an initial focus for the field effort, we have identified 12 regions (see figure) where additional data sets would be acquired (these do not include the East Rift of Kilauea where the HGP well has been drilled). On the Big Island these regions include the SW Rift of Kilauea, the SW Rift of Mauna Loa, the SE Rift of Mauna Loa, the NE Rift of Mauna Loa, the NW Rift of Hualalai and an area around Waimea. Each of these areas has some evidence for elevated temperature groundwater or in a geologic environment in which elevated temperature could be expected to exist.



160°
159°
158°
157°
156°
155°
22°
21°
20°
19°
KAUAI
NIIHAU
Roberts Family owns
OAHU
1400' well
MOLOKAI
LANAI
Dole Corp owns island
MAUI
1790 lava flow
trade winds
HAWAII
Hilo
HGP-A well
ISLANDS OF HAWAII
industry interest
sugar processing

On Maui, we need additional data from the SW Rift of Haleakala and from two regions in West Maui where warm groundwaters have been reported but adequate documentation is lacking. A warm well has also been drilled on Molokai but again inadequate data is available for the region.

On the Island of Oahu, two areas appear promising on the basis of elevated groundwater temperatures. These areas are near Waimanalo and Lualualei. Neither data set is very complete and additional data would be helpful.

Techniques to be Employed

Compilation of data from existing records is a routine (even if laborious) process and needs no further explanation. Much of the necessary data exists in tabulations in various State depositories. However, our past experience has taught us that some of this data is unreliable, and thus, field checks will be necessary especially where particularly important anomalies may be indicated.

In order to make the existing data set more useful, we plan to gather additional temperature and water chemistry (including dissolved silica determinations) in each of the 12 areas mentioned above and at any other anomalously warm area that is identified during our data compilation.

actually measure temperatures?

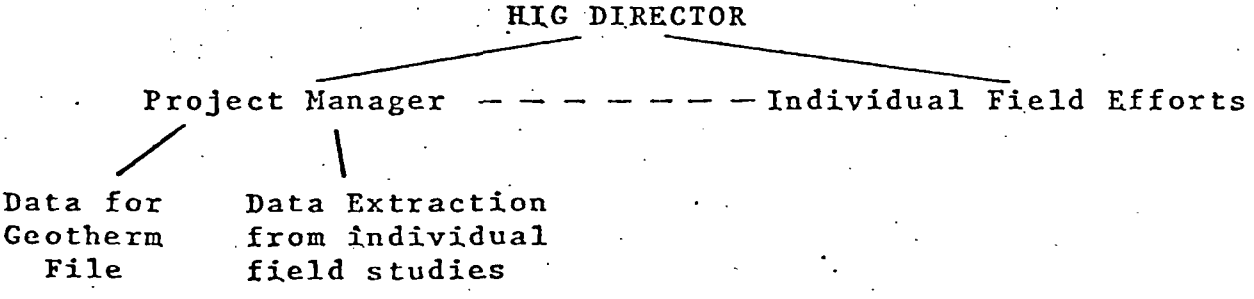
Many of the target areas, however, have no wells or perhaps only one, and thus, we will need to apply geophysical techniques such as passive seismic studies (microearthquake and ground noise coherence), magnetotelluric studies, and electrical self-potential

studies to these areas. These four techniques are believed to be the most definitive of geothermal resources in Hawaii based upon our experience on the East Rift of Kilauea during the Hawaii geothermal project.

Management Structure

In order to provide a focal point for the project, and to increase the effectiveness of the effort a full-time scientific manager will be appointed to supervise the project on a day-to-day basis. This manager's primary responsibility will be to oversee the gathering and extraction of data for the GEOTHERM file. A secondary responsibility will be to coordinate the collection of data from each of the 12 critical areas that we at present believe to be of highest interest and usefulness.

Individual field programs will be under the direction of various members of faculty with each member of faculty being responsible for an area in which he is an expert. The Director of the Hawaii Institute of Geophysics will be responsible for the overall project, and he will direct both the individual field efforts and the efforts of the project manager. The envisaged structure is shown below:



The personnel tentatively assigned to this project include:

Donald Thomas - a recent Ph.D. at U.H. (Dec. 1977) who will be responsible for the assembly of past geochemical data as well as being responsible for the acquisition of new geochemical data.

Dale Erlandson - (M.S. from U.H.) who will assist in the compilation of existing data for the geothermal file. His past work has dealt with the management synthesis of marine Geophysical data at H.I.G.

Dave Epp - A Ph.D. candidate at UH who was responsible for most of the well temperature data collection done under the Hawaii Geothermal Project. He will assist in collecting the existing temperature data set as well as being responsible for additional data collection in the selected areas.

These individuals and the associated faculty will be supported by a project secretary, chemical technician and field assistants as necessary.

BUDGET

A. Project Management and Data Synthesis

1. Salaries	
C. E. Helsley, Project Director, 1 mo.	$ 3,663
Dale Erlandson, 8 mos.	9,000
Donald Thomas, 6 mos.	7,700
Dave Epp, Research Assistant, 4 mos. @ 50%, 2 mos. @ 100%	4,208
Secretary, 8 mos.	7,560
Total Salaries and Wages	$32,131
2. Fringe Benefits	7,390
Total Salaries, Wages & Fringe Benefits	39,521
3. Permanent Equipment	
Typewriter	895
File Cabinets, 2 @ $125	250
Total Permanent Equipment	1,145
4. Expendable Supplies	500
5. Computer Time	1,500
6. Communications	800
7. Travel - mainland meetings	
Air fare	2,000
Per diem, 20 days @ $40/day	800
8. Publications	800
Total Direct Costs	47,066
9. Indirect Costs (48.2% of Salaries & Wages)	15,487
Total (A)	62,553

B. Water Chemistry and Temperature Field Program

1. Salaries	
Donald Thomas, 2 mos.	$ 2,567
Dave Epp, Research Assistant, 2 mos. @ 100%	2,104
Field Assistant, 3 mos.	3,000
Total Salaries and Wages	7,671
2. Fringe Benefits	1,764
Total Salaries, Wages & Fringe Benefits	9,435
3. Expendable Supplies and Equipment	2,000
4. Computer	500
5. Publications	500
6. Communications	200
7. Travel	
25 round trips to other islands	1,500
Per diem @ $30/day for 60 mandays	1,800
Field transportation @ $20/day	1,200
Total Travel	4,500
8. Chemical Analyses	3,000
Total Direct Costs	20,135
9. Indirect Costs (48.2% of Salaries & Wages)	3,697
Total (B)	23,832

C. Passive Seismology Field Program

1. Salaries	
C. E. Helsley, 1 mo.	3,663
Joe Gettrust, 1 mo.	1,524
Student Assistant for analysis, 5 mos. @ 50%, 3 mos. @ 100%	5,786
Total Salaries and Wages	10,973
2. Fringe Benefits	1,540
Total Salaries, Wages & Fringe Benefits	12,513

3.	Expendable Supplies (batteries, tape, etc.)	$ 600
4.	Field Travel	
	6 round trips to other islands	360
	Per diem, 2 men x 15 days @ $30/man day	900
	Field transportation @ $20/day for 15 days	300
	Total Field Travel	1,560
5.	Publications	400
6.	Computer	1,500
	Total Direct Costs	15,573
7.	Indirect Costs (48.2% of Salaries & Wages)	5,289
	Total (C)	20,862

SUMMARY

A.	Project Management and Data Synthesis	$ 62,553	- active constantly
B.	Water Chemistry and Temperature Field Program	23,832	- get more data
C.	Passive Seismology Field Program	20,862	- closer look @ specific areas where users are.
	GRAND TOTAL	107,247	

ready to go — may start

THE UNIVERSITY OF UTAH

SALT LAKE CITY 84112

COLLEGE OF MINES AND
MINERAL INDUSTRIES

DEPARTMENT OF GEOLOGY
AND GEOPHYSICS
717 MINERAL SCIENCE BUILDING

January 10, 1978

TO: Mike Wright

FROM: Stanley H. Ward

need now

1) Probably wise to look at 50°C+ in first phase and then, later, extend to lower temperatures.

2) "Tabulate" water chemistry is a totally inadequate statement. Evaluation of chemical analyses must be performed first. If not good, then must re-perform analyses.

3) Use mixing models and isotope thermometer.

4) Define geologic and geophysical data to be collected.

5) Define field program.

6) µQ, g noise, MT. , and SP applications must be described in much greater detail, later. Right now one should concentrate on a phased program of preliminary studies.

7) Potential users and users must be defined in proposal (eg Molokai has no potential user at the location of the prospect).

8) ESL/UURI personnel available to hlep define project (write proposal).

PROGRESS REPORT #1

UNIVERSITY OF HAWAII EFFORTS

ASSOCIATED WITH

WESTERN STATE'S COOPERATIVE DIRECT HEAT GEOTHERMAL PROGRAM

The data which has been compiled to the present has been chiefly concerned with the ground waters of the Island of Hawaii. The enclosed table presents the majority of the information acquired to date. The sources for the data presented in the table are as follows: State of Hawaii Board of Health, water quality; Hawaii County Board of Water Supply, well site locations; State of Hawaii Division of Water and Land Development, well locations, depths, temperatures; U.S. Geological Survey, Honolulu Office, well numbers and locations; U.S.G.S. water supply papers, circulars, and reports, water quality data, well names and locations. The most recent information available for each well is included in the present report although some of the water quality and temperature data is rather old extending back to analyses made prior to 1960.

The criterion for inclusion of well data in this report has been expanded somewhat over that originally proposed. All wells with temperatures above 25°C have been included in our data base; in addition, all easily accessible water chemistry data has been scanned for anomalously high silica concentrations. Silica was chosen as a geothermal indicator for several reasons: the very high permeability of Hawaiian basalts as well as the very high rainfall on many parts of the island may effectively mask thermal anomalies in the shallow ground water. Sodium, potassium, and calcium ion concentrations are unsuitable due to sea water contamination of many near shore wells. Finally, silica concentrations in every known warm water well in Hawaii are well above normal ground water levels. The present lower limit of well water silica concentration necessary to be included in this report is 30 ppm. This lower limit will undoubtedly be revised upward for the other islands which generally have a higher average silica concentration in their ground waters.

We are presently in the process of searching older records and reports for further information on other older wells. Many of these wells were abandoned prior to the more recent compilations.

NUMBER	NAME-LOCATION	TEMP.	DEPTH WELL / H_2O	DATE	Na	K	Ca	Mg	SiO_2	Cl	F	SO_4	H_2CO_3	Alk Carb	Source
0335-01	Naalehu, Ka'u District	19.5	896 / 736	'71	12		6.0	4.6	45	8.0	.3	14	44	36	4
0533-01	Honaupo	19.0	34 / -	'72	680		33	86	43	1240	.2	169	46	37	4
0533-02	Honaupo 1	18	130 / 92	'72	320		20	44	43	580	.1	86	42	34	4
0533-03	Honaupo	19.0	125 / 85.8	'72	272		18	38	43	500	.2	75	41	34	4
0632-01	Honaupo	19.0	140 / 100.1	'72	245		17	33	41	440	.2	66	44	36	4
0830-01	Punaluu	19.0	120 / -	'72	118		9.6	16	32	205	.2	37	34	28	4
0831-01	Ninole A	19.0	128 / 119	'72	80		9.2	12	41	136	.2	24	43	35	4
0831-02	Ninole B	17.8	172 / 123	'74	89		13.2	18.0	39.9	165.9	.15	28	42.0	0	2
1128-01	Pahala Shaft	19.0	547 / 1	'55	+K 5.0		13.5	3.8	36.8	2.0	.2	22.4	30		2
1128-01	Pahala Shaft	19.0	547 / 1	'72	7.2		6.6	3.6	42	3.5	.2	10	43	35	4
1128-01	Pahala Shaft		547 / 1	'73	7.0		8.0	3.2	46.4	2.4	.25	9.9	33	0	2
1128-02	Pahala (Palima)	19.0	375 / 301	'72	12		5	3	46	8	.3	7.3	42		4
1129-01	Pahala	17.2	937 / 729	'74	5.7		7.5	3.3	42	3.2	.1	6.6	40		4
2102-01	Pulama	25.8	250 / 227	'63	170		15.9	31.2	72.4	345	.1	65.1	44	0	2
2102-01	Pulama		250 / 227	'72	170		16	31	72	345	.1	65	54		2
2317-01	Kilauea Geothermal	37.0	4128 / 2008												1
2487-01	Keauohana Puna	23	801 / 784	'72	54		6.6	3.3	41	70	.2	22	42	34	4
2487-02	Keauohana 2	23.5	803 / 748	'74	57		11.8	5.9	45.3	129	.33	25	37	0	4
2686-01	Geothermal 1 (Puna)	54.5													3
2686-02	Geothermal 2 (Puna)	96.8	556 / -												3
2753-01	Keei Well A	19.4	780 / 741	'74	61		7.8	13.1	41.1	128.47	.28	25	46	0	2

NUMBER	NAME-LOCATION	TEMP.	DEPTH WELL / H_2O	DATE	Na	K	Ca	Mg	SiO_2	Cl	F	SO_4	H_2CO_3	Alk Carb	Source
2753-02	Keei Well B	18.9	774/734	'74	69		10	13.9	45.0	14132	.28	26	46	0	2
2753-02	Keei Well B	19.5	774/734	'77											1
2782-01	Malama Ki	53.9	319/273	'62	+K 3090		.182	324	59.0	5850	1.5	681	215		2
2782-01	Malama Ki	53.9	319/273	'74											3
2881-01	(Allison) Pohoiki, Puna	39.0	140/127												1
2881-01	(Allison) Pohoiki, Puna	38.9	140/127	'74											3
2986-01	Pahoa 2A	22.2	755/693	'67	22		2.6	4.1	55.0	8	.4	1	44	0	2
2986-01	Pahoa 2A	23.5	755/693	'73	17		4.8	.86	39.6	12	.46	13	38	0	2
3080-01	Kapoho Crater	25.3	46/35	'72	57		72	31	39 44.0	54	.3	11	393	332	4
3080-02	Kapoho	23.4		'72	57		72	31	39	54	.3	11	393	332	4
3081-01	Kapoho Test Well (Airstrip)	33.9	337/284	'61	+K 163		14.1	17.1	70.5	331	.1	65.4	50.0		1
3081-02	Geothermal 4 Puna	43.0	290/-												1
3185-01	Haw'n. Beaches (Shores)	21.7	446/391	'74	13		3.9	3.8	51.9	13	.28	5.1	49	0	2
3185-01	Haw'n. Shores	21.5	446/391	'76											4
3185-02	Haw'n. Shores	24.5	430/-	'72											4
3185-02	Haw'n. Shores	24.5	430/-	'74	19		3.9	4.5	49.0	28	.57	7.0	46	0	2
3457-02	Keauhou 2 (not in USGS file)		430/-	'66	1300		30	110	33	1700	.76	195	48	0	2
3500-01	Waipahoehoe Puna Test Well #5	22.5	361/295	'61	+K 7.6		5.3	6.7	46.5	6.0	.1	10.9	58.0		4
3500-01	Waipahoehoe Puna Test Well #5	22.5	361/295	'74											3
3557-01	Kahaluu A	20.3	878/829	'74	18		8.8	6.5	46	34	.28	11	46	0	2
3557-02	Kahaluu B	20.6	881/836	'74	22		8.5	7.1	41.7	32.1	.33	12	48	0	2

NUMBER	NAME-LOCATION	TEMP.	DEPTH WELL / H_2O	DATE	Na	K	Ca	Mg	SiO_2	Cl	F	SO_4	H_2CO_3	Alk Carb	Source
3557-03	Kahaluu C	21.0	868 / 829	'74	14		7.5	5.2	43.6	21.4	.3	10	50	0	2
3557-04	Kahaluu D	20.6	905 / 851	'74	12		6.7	4.8	45.0	17.13	.36	9.1	50	0	2
3758-01	Kailua-Kona	21.1	615 / 592	'56	+K 119.6		78	34	32.8	485.0	.2	78.5	42	42	2
3758-01	Kailua-Kona		615 / 592	'59	+K 23.6		15	37	26	440	.2	76	44	36	2
3802-01	Keaau 1 Olaa-Mt. View	24.5	450 / -	'72	5.7		4.6	2.9	31	4.0	.1	5.0	36	30	4
3802-01	Keaau 1 Olaa-Mt. View		450 / -	'73	6		5.6	1.8	37.7	3.4	.12	6.2	30	0	2
3802-02	Keaau 2 Olaa-Mt. View	23.4	450 / -	'74	5.6		4.9	2.8	34.6	5.4	.1	5.6	37	0	2
3802-03	Keaau Well 1	19.5	379 / 196	'72	5.2		4.8	2.8	33	4.0	.2	5.3	35		4
3802-04	Owner's Deep Well Keaau Well 2	24.2	371 / 294	'72	5.2		5.5	3.3	36	4.0	.1	5.5	38	32	4
3802-05	Keaau Mill 3	22.0	375 / -	'72	5.2		5.5	3.3	36	4.0	.1	5.5	38	31	4
3900-01	Well #1 Keaau Orchard	93.3	137 / 83	'72	33		6.5	5.9	33	58	.1	12	44	36	4
3900-01	Well #1 Keaau Orchard	18.5	137 / 83	'74	39		7.8	7.7	39	64	.1	14	35	29	4
3900-02	Well #2 Keaau Orchard	18.5	147 / 87	'72	54		6.8	7.1	33	.81	.1	16	44	36	4
4059-01	Kailua	20.5	858 / 798	'58	+K 163		95	250	43.2	3600	.1	547	88		2
4203-03	Waiakea	23.5	56 / 35	'72	7.4		6.0	3.6	36	7.5	.1	2.0	44	36	4
4203-04	Waiakea 4	26.0	201 / 40	'72	6.9		8.4	2.9	55	6.5	.1	2.6	47	38	4
4203-06	Kanoelehua 2	23.5	200 / 43	'72	7.4		6.0	3.6	36	7.5	.1	2.0	44	36	4
4203-06	Kanoelehua 2	23.5	200 / 43	'75											4
4203-07	Kanoelehua 3	23.9	200 / 50	'72	6.5		8.4	2.9	55	6.5	.1	2.6	47		4
4304-01	Waiakea Stream Plant	19.5	20 / 12	'72	3400		132	390	44	6000	.6	832	97	80	4
4304-02	Waiakea Stream Plant			'72	7200		240	800	33	12500	1.1	1630	105	86	4

NUMBER	NAME-LOCATION	TEMP.	DEPTH WELL / H_2O	DATE	Na	K	Ca	Mg	SiO_2	Cl	F	SO_4	H_2CO_3	Alk Carb	Source
4304-03	Waiakea Stream Plant	20	26/10	'72	3540		132	450	46	6250	.6	863	88	72	4
4306-01	Piihonua	17.8	425/236	'73	7.8		5.0	3.3	37.0	2.0	.2	5.9	46	0	2
4360-01	Kalaoa, N. Kona	20.8	702/677	'68			23	46	39.4	740			98	0	2
4706-01	Papaikou		425/348	'73	6		11	4.6	32	2.4	.08	1.4	34	0	2
4858-01	Kaupulehu	21.9	528/500	'31	270		28	69	76	370	2.2	75	424	348	4
4858-02	Kona Village 2	22.2	523/501	'73	313		29	77	84.4	362	2.4	80	270	0	2
4858-03	Kona Village 3	20	534/497	'74	362		25	92.7	47.9	428	1.0	77	160	0	4
4953-01	Kiholo	22.2	971/929	'73	218		16	26	36	340	.9	71	91	75	2
5005-01	Pepeekeo	23	333/293	'72	7.8		12	10	45	12	.1	17	74	61	4
5548-01	Parker 1	27.8	848/808	'72	330		28	47	82	550	.5	95	142	116	4
5648-02	(Tunnel) Parker 2	27.5													1
5648-02	(Tunnel) Parker 2	80.5	651/615												1
5745-01	Parker 5	26.7	123/1197	'74	27		5.4	8.6	46.8	40.68	.36	14	88	0	2
5745-02	Parker 4	26.7	1231/1187	'69	34		8.4	11.0	58	27	.4	-	99		1
5750-02	Puako 6	26.7	55/48												1
5946-01	Laulamilo	26.5	1277/1147	'77											1
5948-01	Hapuna Beach Park	25.5	268/-	'70	250		20	37	49	430	.3	68	95	78	2
6048-01	Kawaihae 2	26.1	430/389	'61			53.6	27.8	30.0	550.0		90.8	78		2
6048-01	Kawaihae 2	26.1	430/389	'74											3
6048-02	Mauna Kea Beach Well	26.0	376/335	'72	216		21	34	51	390	.3	62	94	77	4
6049-01	Mauna Kea Beach Res 2	25.0	218/186	'72	216		21	34	51	390	.3	62	95	78	1

NUMBER	NAME-LOCATION	TEMP.	DEPTH WELL / H_2O	DATE	Na	K	Ca	Mg	SiO_2	Cl	F	SO_4	H_2CO_3	Alk Carb	Source
6049-02	Mauna Kea Beach Res 3	26.0	76 / -	'64	458		37.8	68.8	65.0	912	.2	107	78	0	2
6049-02	Mauna Kea Beach Res 3	26.0	76 / -	'72	974		58	119	50	1740	.3	249	106	87	4
6049-03	Mauna Kea Beach Res 4	26.0	- / -	'72	896		58	111	50	1610	.2	236	103	84	1
6117-01	Laupahoehoe Sug. Co. (Ookala)	-	600 / 294	'72	78		11	14	51	135	.2	21	62	77	4
6147-01	Kawaihae 3	35.6	1046 / 977	'63	135		31.5	32.8	89.2	250	.2	54	89	0	2
6148-01	Kawaihae 1	28.0	620 / 576	'72	175		32	30	32	340	.3	70	0	0	2
6148-01	Kawaihae 1		620 / 576	'73	178		27	30	37.7	375	.43	56	66	0	2
6148-02	Kawaihae 4	26.4	626 / 574	'70	168		172	29.88	52.0	304	.07	.09	67	0	2
6321-01	Paauilo Mill	18	217 / -	'72	102		16	19	37	195	.1	29	53	43	4
6321-02	Pauuilo Shaft	20	626 / 270	'72	+K 102		16	19	37	195	.1	29	53	43	2
7347-02	Halaula	-	505 / 334	'56	15		8	5.5	42	.22	.1	9.6	45	37	2
7446-01	Kohala Shaft		135 / 123	'72	450		60	72	63	890	.2	120	98	80	4
7448-04	Kohala Sugar Union Mill #1	21.5	412 / 305	'73	27		9.4	7.0	38	42	.2	8.9	62		4
7448-05	Kohala Sugar Union Mill #1	22.0	522 / -	'71	43		16.0	1.3	31.2	88		13	96.8	0	2
7650-01	Hoea (Kohala Sugar Co.)	21	61 / 50	'73	130		6.6	8.0	42	170	.3	35	72		1

*All ion concentrations are in milligrams per liter

Source 1 Division of Water and Land Development - State of Hawaii

Source 2 Department of Health - State of Hawaii

Source 3 David Epp - unpublished data

Source 4 U. S. Geological Survey files, reports and circulars

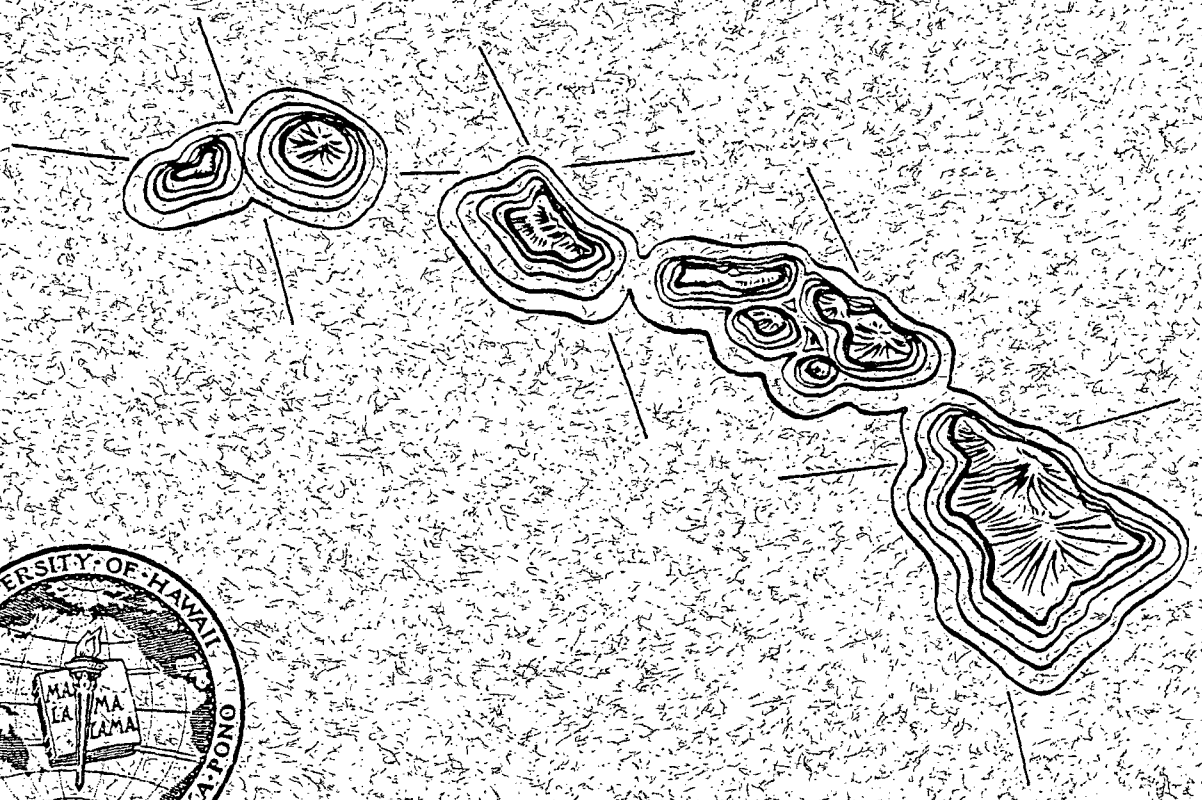
HAWAII GEOTHERMAL RESOURCE ASSESSMENT PROGRAM

PROGRESS REPORT #2

UNIVERSITY OF HAWAII EFFORTS

ASSOCIATED WITH

WESTERN STATE'S COOPERATIVE DIRECT HEAT GEOTHERMAL PROGRAM



Hawaii Institute of Geophysics

PROGRESS REPORT #2

UNIVERSITY OF HAWAII EFFORTS

ASSOCIATED WITH

WESTERN STATE'S COOPERATIVE DIRECT HEAT GEOTHERMAL PROGRAM

Our compilation of Hawaiian groundwater data has been expanded to all of the major high islands in the Hawaiian Chain, i. e., Hawaii, Maui, Molokai, Oahu and Kauai. The data sources are as follows: U. S. Geological Survey, Honolulu office; State of Hawaii Board of Health; State of Hawaii Division of Water and Land Development; and the County Boards of Water Supply. The data in Appendix A represents the most recent information for each item at each station, regardless of source.

A silica concentration in excess of 30 ppm was the criterion for inclusion in our first Progress Report, and this was kept for the islands of Maui, Molokai, and Kauai as well. It became obvious that the 30 ppm silica concentration was too low for station data on Oahu because of the great numbers of wells which were in excess of that value. Therefore, on Oahu, a silica concentration in excess of 55 ppm was taken as the criterion for inclusion in our data base. Once these water chemistry data are in our computer data base we will be able to filter them to determine what concentrations of silica, sodium, potassium, calcium, and magnesium are the most significant geothermal indicators. Of course, all wells, regardless of silica concentration, which had a temperature $\geq$ 25°C were kept.

We are presently in the process of putting the data we have thus far collected in the computer data base. Appendix A is the printout of the data which is already compiled. This includes all the data we have for Maui, Molokai, and Kauai, and most of the Hawaii data. The other data will be in the computer shortly.

Our search for additional data is now being directed toward the more obscure public and private records, reports and publications. These will be included in our data base as they are uncovered.

Included with this report are computer drawn island outlines with one square-mile grids. Those quads which have high temperature or high silica wells are shaded to give some idea as to the location of areas with possible warm water potential. Doing this also shows that on Kauai the 30 ppm silica concentration is not a reliable geothermal indicator. Here too, the use of the computer data base will help in filtering the data to choose a better criterion.

APPENDIX A

Well and Water Chemistry Data

The data herein represents that which is currently in our data bank. Tables for Kauai, Maui and Molokai contain all our existing data, and the Hawaii Table approximately 80%. These tables will be updated as additional data are located, and included in our next progress report.

These tables are in our compiling format and not the final GEOTHERM format.

The criteria for wells being included in these tables are: 1. a temperature $\geq$ 25°C, and 2. a silica concentration $\geq$ 30ppm.

EXPLANATION OF THE DATA SYMBOLS

ID#:	Local USGS Station Number
TYP:	Type of Station
COU:	County (Island)
LOC:	Location or Name of the Well
LAT,LON:	Latitude, Longitude
DAT:	Date

PH:		SPG:	Specific Gravity	WED:	Well Depth	WAD:	Static Head
ALK:	Total Alkalinity	DIS:	Dissolved Solids	SUS:	Suspended Solids	LI:	
CA:		SR:		BA:		MN:	
ZN:		HG:		B:		AL:	
CL:		BR:		I:		O_2:	
NO_3:		PO_4:		SIO:	SiO_2	SO_4:	
S:		PHE:	Phenols	CD:		CR:	

TEM:	Temperature	FLO:	Flow Rate	EH:		SPC:	Specific Conductance
NA:		K:		RB:		MG:	
FE:		FET:	Total Fe	F:		CU:	
PB:		AS:		SR:		U:	
CO_2:		H_2S:		NH_4:		NO_2:	
CO_3:		HCO_3:		CAR:	Carbonate Alkalinity	HAR:	Hardness
AG:		F:		N:		ELE:	Ground Elevation

TABLE 1 Hawaii

1	ID#=8-0335-01		TYP=WELL		COU=HAWAII				LOC=NAALEHU 1			LAT,LON=	190347.	1553543.00		DAT=1975.					
PH =	7.80	SPC=		WED=	896.00	WAD=	10.00	TEM=	18.50	FLO=		EH =			SPC=	122.00					
ALK=	34.00	DIS=	110.00	SUS=		LI =		NA =	11.00	K =	1.50	RB =			MG =	4.60					
CA =	6.40	SR =		BA =		MN =	5.00	FE =	10.00	FET=		F =	0.10		CU =						
ZN =		HG =		B =		AL =		PB =		AS =		SB =			U =						
CL =	8.40	BR =		I =		O2 =		CO2=	1.10	H2S=		NH4=			NO2=						
NO3=		PO4=	0.37	SIO=	43.00	SO4=	13.00	CO3=	0.00	HCO=	42.00	CAR=			HAR=	35.00					
SE =		PHE=		CD =		CR =		AG =		P =	0.12	N =	0.28		ELE=	746.00					

2	ID#=8-0831-02		TYP=WELL		COU=HAWAII				LOC=NINOLE A			LAT,LON=	190832.	1553108.00		DAT=1974.					
PH =	7.30	SPC=		WED=	172.00	WAD=	5.70	TEM=	18.00	FLO=		EH =			SPC=	650.00					
ALK=	34.00	DIS=	411.00	SUS=		LI =		NA =	100.00	K =	5.90	RB =			MG =	18.00					
CA =	13.00	SR =		BA =		MN =	0.00	FE =	20.00	FET=		F =	0.10		CU =						
ZN =		HG =		B =		AL =		PB =		AS =		SB =			U =						
CL =	189.00	BR =		I =		O2 =		CO2=	34.00	H2S=		NH4=			NO2=						
NO3=		PO4=	0.28	SIO=	43.00	SO4=	29.00	CO3=		HCO=	41.00	CAR=			HAR=	110.00					
SE =		PHE=		CD =		CR =		AG =		P =	0.09	N =	0.26		ELE=	128.00					

3	ID#=8-0831-03		TYP=WELL		COU=HAWAII				LOC=NINOLE B			LAT,LON=	190832.	1553109.00		DAT=1974.					
PH =		SPC=		WED=	172.00	WAD=	4.90	TEM=	17.80	FLO=		EH =			SPC=						
ALK=	42.00	DIS=		SUS=		LI =		NA =	89.00	K =	5.20	RB =			MG =	18.00					
CA =	13.20	SR =		BA =	0.10	MN =	0.01	FE =	0.01	FET=		F =	0.15		CU =	0.01					
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =			U =						
CL =	165.94	BR =		I =		O2 =		CO2=		H2S=		NH4=			NO2=	0.01					
NO3=	0.29	PO4=		SIO=	39.90	SO4=	28.00	CO3=		HCO=		CAR=			HAR=	96.00					
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =			ELE=	128.00					

4	ID#=8-1128-01		TYP=TUNNEL		COU=HAWAII				LOC=PAHALA SHAFT			LAT,LON=	191157.	1552849.00		DAT=1973.					
PH =		SPC=		WED=	547.00	WAD=	238.00	TEM=		FLO=		EH =			SPC=						
ALK=	33.00	DIS=		SUS=		LI =		NA =	7.00	K =	1.20	RB =			MG =	3.20					
CA =	8.00	SR =		BA =	0.30	MN =	0.03	FE =	0.02	FET=		F =	0.25		CU =	0.02					
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =			U =						
CL =	2.40	BR =		I =		O2 =		CO2=		H2S=		NH4=			NO2=	0.01					
NO3=	0.36	PO4=		SIO=	46.40	SO4=	9.90	CO3=		HCO=		CAR=			HAR=	38.00					
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =			ELE=	774.00					

5	ID#=8-1128-02		TYP=WELL		COU=HAWAII				LOC=PALIMA			LAT,LON=	191108.	1552817.00		DAT=1974.					
PH =	7.00	SPC=		WED=	375.00	WAD=	8.70	TEM=	19.00	FLO=		EH =			SPC=	120.00					
ALK=	34.00	DIS=	110.00	SUS=		LI =		NA =	12.00	K =	1.20	RB =			MG =	4.30					
CA =	6.10	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.40		CU =						
ZN =		HG =		B =		AL =		PB =		AS =		SB =			U =						
CL =	9.90	BR =		I =		O2 =		CO2=	6.60	H2S=		NH4=			NO2=						
NO3=		PO4=	0.52	SIO=	47.00	SO4=	7.50	CO3=		HCO=	41.00	CAR=			HAR=	33.00					
SE =		PHE=		CD =		CR =		AG =		P =	0.17	N =	0.28		ELE=	304.00					

6 ID#=8-1229-01 TYP=WELL COU=HAWAII LOC=PAHALA LAT,LON= 191219. 1552916.00 DAT=1974.

PH =		SPC=		WED=		WAD=		TEM=	17.20	FLO=		EH =		SPC=	93.00
ALK=	33.00	DIS=	94.00	SUS=		LI =		NA =	5.70	K =	1.30	RB =		MG =	3.30
CA =	7.50	SR =		BA =		MN =		FE =	20.00	FET=		F =	0.10	CU =	
ZN =		HC =		B =		AL =		PB =		AS =		SB =		U =	
CL =	3.20	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=	0.28	SIO=	42.00	SO4=	6.60	CO3=		HCO=	40.00	CAR=		HAR=	32.00
SE =		PHE=		CD =		CR =		AG =		P =	0.09	N =	0.86	ELE=	

7 ID#=8-2102-01 TYP=WELL COU=HAWAII LOC=PULAMA LAT,LON= 192107. 1550212.00 DAT=1963.

PH =	7.50	SPC=		WED=	250.00	WAD=	3.30	TEM=	25.80	FLO=		EH =		SPC=	
ALK=	44.00	DIS=		SUS=		LI =		NA =	170.00	K =	8.50	RB =		MG =	31.20
CA =	15.90	SR =		BA =		MN =	0.05	FE =	0.10	FET=		F =	0.10	CU =	0.10
ZN =	0.10	HC =		B =		AL =	0.05	PB =	0.00	AS =	0.01	SB =		U =	
CL =	345.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.32	PO4=		SIO=	72.40	SO4=	65.10	CO3=		HCO=		CAR=		HAR=	145.00
SE =	0.00	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	230.00

8 ID#=8-2437-02 TYP=WELL COU=HAWAII LOC=KEAUOHANA 2 LAT,LON= 192457. 1545718.00 DAT=1974.

PH =		SPC=		WED=	803.00	WAD=	3.10	TEM=	23.50	FLO=		EH =		SPC=	
ALK=	37.00	DIS=		SUS=		LI =		NA =	57.00	K =	5.40	RB =		MG =	5.90
CA =	11.80	SR =		BA =	0.10	MN =	0.03	FE =	0.66	FET=		F =	0.33	CU =	0.02
ZN =	0.02	HC =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	129.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.15	PO4=		SIO=	45.30	SO4=	25.00	CO3=		HCO=		CAR=		HAR=	50.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	752.00

9 ID#=8-2753-01 TYP=WELL COU=HAWAII LOC=KEEI A LAT,LON= 192731. 1555341.00 DAT=1974.

PH =		SPC=		WED=	780.00	WAD=	2.80	TEM=	19.40	FLO=		EH =		SPC=	
ALK=	46.00	DIS=		SUS=		LI =		NA =	61.00	K =	3.40	RB =		MG =	12.10
CA =	9.80	SR =		BA =	0.10	MN =	0.01	FE =	0.04	FET=		F =	0.28	CU =	0.04
ZN =	0.40	HC =		B =		AL =	0.16	PB =	0.00	AS =	0.01	SB =		U =	
CL =	128.47	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.51
NO3=	1.30	PO4=		SIO=	41.10	SO4=	2.50	CO3=		HCO=		CAR=		HAR=	20.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.06	AG =	0.01	P =		N =		ELE=	744.00

10 ID#=8-2753-02 TYP=WELL COU=HAWAII LOC=KEEI B LAT,LON= 192722. 1555338.00 DAT=1974.

PH =	6.80	SPC=		WED=	774.00	WAD=	2.30	TEM=	18.50	FLO=		EH =		SPC=	535.00
ALK=	35.00	DIS=	348.00	SUS=		LI =		NA =	80.00	K =	4.70	RB =		MG =	12.00
CA =	10.00	SR =		BA =		MN =	10.00	FE =	80.00	FET=		F =	0.20	CU =	
ZN =		HC =		B =		AL =		PB =		AS =		SB =		U =	
CL =	140.00	BR =		I =		O2 =		CO2=	11.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.46	SIO=	50.00	SO4=	26.00	CO3=		HCO=	43.00	CAR=		HAR=	74.00
SE =		PHE=		CD =		CR =		AG =		P =	0.15	N =	0.66	ELE=	737.00

11 ID#=8-2782-01 TYP=WELL COU=HAWAII LOC=MALAMAKI 9-9 LAT,LON= 192728. 1545300.00 DAT=1962.

PH =		SPG=		WED=	319.00	WAD=	0.90	TEM=		FLO=		EH =		SPC=	
ALK=	215.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	324.00
CA =	182.00	SR =		BA =		MN =	0.05	FE =	3.16	FET=		F =	1.50	CU =	0.20
ZN =	0.20	HG =		B =		AL =	101.00	PB =	0.01	AS =	0.01	SB =		U =	
CL =	5850.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.50	PO4=		SIO=	59.00	SO4=	681.00	CO3=		HCO=		CAR=		HAR=	1790.00
SE =	0.08	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	274.00

12 ID#=8-2986-01 TYP=WELL COU=HAWAII LOC=PAHOA 2A LAT,LON= 192924. 1545647.00 DAT=1973.

PH =	7.40	SPG=		WED=	755.00	WAD=	17.80	TEM=	22.20	FLO=		EH =		SPC=	127.00
ALK=	38.00	DIS=	121.00	SUS=		LI =		NA =	17.00	K =	3.50	RB =		MG =	0.86
CA =	4.80	SR =		BA =	0.30	MN =	0.03	FE =	0.02	FET=		F =	0.46	CU =	0.03
ZN =	0.03	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	12.00	BR =		I =		O2 =		CO2=	3.20	H2S=		NH4=		NO2=	0.01
NO3=	0.22	PO4=		SIO=	39.60	SO4=	13.00	CO3=		HCO=		CAR=		HAR=	22.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =	0.20	ELE=	711.00

13 ID#=8-2986-02 TYP=WELL COU=HAWAII LOC=PAHOA 2B LAT,LON= 192925. 1545646.00 DAT=1974.

PH =	6.40	SPG=		WED=		WAD=		TEM=	22.50	FLO=		EH =		SPC=	125.00
ALK=	39.00	DIS=	126.00	SUS=		LI =		NA =	16.00	K =		RB =		MG =	2.40
CA =	3.90	SR =		BA =	0.10	MN =	0.03	FE =		FET=		F =	0.30	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	5.80	BR =		I =		O2 =		CO2=	31.00	H2S=		NH4=		NO2=	0.01
NO3=	0.41	PO4=	0.43	SIO=	55.00	SO4=	13.00	CO3=		HCO=	48.00	CAR=		HAR=	60.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.14	N =	0.53	ELE=	705.00

14 ID#=8-3080-02 TYP=WELL COU=HAWAII LOC=KAPAHO CRATE LAT,LON= 193017. 1545021.00 DAT=1974.

PH =	6.50	SPG=		WED=	46.00	WAD=	2.60	TEM=	25.00	FLO=		EH =		SPC=	775.00
ALK=	272.00	DIS=	548.00	SUS=		LI =		NA =	80.00	K =	7.00	RB =		MG =	31.00
CA =	60.00	SR =		BA =		MN =	0.00	FE =	20.00	FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	110.00	BR =		I =		O2 =		CO2=	167.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.86	SIO=	58.00	SO4=	19.00	CO3=		HCO=	331.00	CAR=		HAR=	280.00
SE =		PHE=		CD =		CR =		AG =		P =	0.28	N =	4.20	ELE=	38.00

15 ID#=8-3081-01 TYP=WELL COU=HAWAII LOC=KAPOHO TEST LAT,LON= 193024. 1551754.00 DAT=1961.

PH =	7.20	SPG=		WED=	287.00	WAD=	3.20	TEM=	33.90	FLO=		EH =		SPC=	
ALK=	50.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	17.10
CA =	14.10	SR =		BA =		MN =	0.10	FE =	0.20	FET=		F =	0.10	CU =	0.10
ZN =	0.03	HG =		B =		AL =	0.10	PB =	0.03	AS =	0.01	SB =		U =	
CL =	331.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	0.10	PO4=		SIO=	70.50	SO4=	65.40	CO3=		HCO=		CAR=		HAR=	106.40
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	18.00

16 ID#=8-3185-01 TYP=WELL COU=HAWAII LOC=HAWN BEACHES LAT,LON= 193113. 1545558.00 DAT=1974.

PH =		SPC=		WED=	446.00	WAD=	10.60	TEM=	21.70	FLO=		EH =		SPC=	
ALK=	42.00	DIS=		SUS=		LI =		NA =	13.00	K =	3.20	RB =		MG =	3.80
CA =	3.90	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.28	CU =	0.02
ZN =	0.06	HC =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	13.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.17	PO4=		SIO=	51.90	SO4=	5.10	CO3=		HCO=		CAR=		HAR=	22.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	402.00

17 ID#=8-3185-02 TYP=WELL COU=HAWAII LOC=HAWN SHORES LAT,LON= 193126. 1545544.00 DAT=1974.

PH =		SPC=		WED=	430.00	WAD=	0.00	TEM=		FLO=		EH =		SPC=	
ALK=	46.00	DIS=		SUS=		LI =		NA =	19.00	K =	3.50	RB =		MG =	4.50
CA =	3.90	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.57	CU =	0.07
ZN =	0.74	HC =		B =		AL =	0.10	PB =	0.02	AS =	0.01	SB =		U =	
CL =	23.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.11	PO4=		SIO=	49.00	SO4=	7.00	CO3=		HCO=		CAR=		HAR=	26.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	402.00

18 ID#=8-3457-02 TYP=WELL COU=HAWAII LOC=KEAUHOU 2 LAT,LON= 193428. 1555734.00 DAT=1966.

PH =		SPC=		WED=	430.00	WAD=		TEM=		FLO=		EH =		SPC=	
ALK=	48.00	DIS=		SUS=		LI =		NA =	1300.00	K =	0.00	RB =		MG =	110.00
CA =	30.00	SR =		BA =		MN =	0.05	FE =	0.02	FET=		F =	0.76	CU =	0.10
ZN =	0.10	HC =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	1700.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	3.30	PO4=		SIO=	33.00	SO4=	195.00	CO3=		HCO=		CAR=		HAR=	530.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	385.00

19 ID#=8-3557-01 TYP=WELL COU=HAWAII LOC=KAHALUU A LAT,LON= 193510. 1555708.00 DAT=1974.

PH =	7.10	SPC=		WED=	878.00	WAD=	4.00	TEM=	19.50	FLO=		EH =		SPC=	200.00
ALK=	40.00	DIS=	172.00	SUS=		LI =		NA =	26.00	K =	3.00	RB =		MG =	7.60
CA =	8.90	SR =		BA =	0.10	MN =	0.01	FE =	40.00	FET=		F =	0.30	CU =	0.01
ZN =	0.15	HC =		B =		AL =	0.00	PB =	0.00	AS =	0.01	SB =		U =	
CL =	35.00	BR =		I =		O2 =		CO2=	6.20	H2S=		NH4=		NO2=	0.01
NO3=	1.40	PO4=	0.46	SIO=	50.00	SO4=	12.00	CO3=		HCO=	49.00	CAR=		HAR=	54.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.00	AG =	0.01	P =	0.15	N =	0.96	ELE=	833.00

20 ID#=8-3557-02 TYP=WELL COU=HAWAII LOC=KAHALUU B LAT,LON= 193505. 1555708.00 DAT=1974.

PH =		SPC=		WED=	881.00	WAD=	4.00	TEM=	20.60	FLO=		EH =		SPC=	
ALK=	48.00	DIS=		SUS=		LI =		NA =	22.00	K =	1.80	RB =		MG =	7.10
CA =	8.50	SR =		BA =	0.10	MN =	0.02	FE =	0.34	FET=		F =	0.33	CU =	0.04
ZN =	0.05	HC =		B =		AL =	0.10	PB =	0.00	AS =	0.01	SB =		U =	
CL =	32.10	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.20	PO4=		SIO=	41.70	SO4=	12.00	CO3=		HCO=		CAR=		HAR=	48.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.00	AG =	0.01	P =		N =		ELE=	338.00

21 ID#=8-3557-03 TYP=WELL COU=HAWAII LOC=KAHALUU C LAT,LON= 193508. 1555707.00 DAT=1970.

PH =	7.30	SPC=		WED=	868.00	WAD=	4.60	TEM=	21.00	FLO=		EH =		SPC=	
ALK=	44.00	DIS=		SUS=		LI =		NA =	12.00	K =	0.00	RB =		MG =	4.80
CA =	4.80	SR =		BA =		MN =	0.01	FE =	0.02	FET=		F =	0.16	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	11.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	5.10	PO4=		SIO=	42.20	SO4=	9.50	CO3=		HCO=		CAR=		HAR=	32.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	834.00

22 ID#=8-3557-04 TYP=WELL COU=HAWAII LOC=KAHALUU D LAT,LON= 193505. 1555707.00 DAT=1974.

PH =		SPC=		WED=	905.00	WAD=	4.00	TEM=	20.60	FLO=		EH =		SPC=	
ALK=	50.00	DIS=		SUS=		LI =		NA =	12.00	K =	1.30	RB =		MG =	4.80
CA =	6.70	SR =		BA =	0.10	MN =	0.01	FE =	0.01	FET=		F =	0.36	CU =	0.01
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.00	AS =	0.01	SB =		U =	
CL =	17.13	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.30	PO4=		SIO=	45.00	SO4=	9.10	CO3=		HCO=		CAR=		HAR=	32.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	855.00

23 ID#=8-3758-01 TYP=WELL COU=HAWAII LOC=KAILUA KONA LAT,LON= 193750. 1555805.00 DAT=1955.

PH =		SPC=		WED=	615.00	WAD=	2.00	TEM=	21.50	FLO=		EH =		SPC=	
ALK=	42.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	34.80
CA =	0.01	SR =		BA =		MN =	0.00	FE =	0.10	FET=		F =	0.20	CU =	
ZN =	0.40	HG =		B =		AL =	22.30	PB =	0.01	AS =	0.01	SB =		U =	
CL =	485.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	0.80	PO4=		SIO=	32.80	SO4=	78.50	CO3=		HCO=		CAR=		HAR=	340.00
SE =	0.01	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	595.00

24 ID#=8-3802-01 TYP=WELL COU=HAWAII LOC=KEAAU 1(9-3) LAT,LON= 193802. 1550202.00 DAT=1973.

PH =		SPC=		WED=	450.00	WAD=	0.00	TEM=		FLO=		EH =		SPC=	
ALK=	30.00	DIS=		SUS=		LI =		NA =	6.00	K =	2.00	RB =		MG =	1.80
CA =	5.60	SR =		BA =	0.30	MN =	0.03	FE =	0.02	FET=		F =	0.12	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =		U =	
CL =	3.40	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.50	PO4=		SIO=	37.70	SO4=	6.20	CO3=		HCO=		CAR=		HAR=	40.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	215.00

25 ID#=8-3802-02 TYP=WELL COU=HAWAII LOC=KEAAU 2 LAT,LON= 193803. 1550202.00 DAT=1974.

PH =		SPC=		WED=	450.00	WAD=	0.00	TEM=		FLO=		EH =		SPC=	
ALK=	37.00	DIS=		SUS=		LI =		NA =	5.00	K =	2.00	RB =		MG =	3.80
CA =	4.90	SR =		BA =	0.10	MN =	0.01	FE =	0.08	FET=		F =	0.10	CU =	0.02
ZN =	0.02	HG =		B =/		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	5.40	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.36	PO4=		SIO=	34.60	SO4=	5.60	CO3=		HCO=		CAR=		HAR=	22.00
SE =	0.00	PHE=	0.00	CD =	0.01	CR =		AG =	0.01	P =		N =		ELE=	215.00

26 ID#=8-3802-03 TYP=WELL COU=HAWAII LOC=KEAAU MILL 1 LAT,LON= 193804. 1550202.00 DAT=1974.

PH =	7.80	SPC=		WED=	379.00	WAD=	23.00	TEM=	19.00	FLO=		EH =		SPC=	87.00
ALK=	30.00	DIS=	85.00	SUS=		LI =		NA =	6.50	K =	2.00	RB =		MG =	3.10
CA =	6.90	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	3.60	BR =		I =		O2 =		CO2=	0.90	H2S=		NH4=		NO2=	
NO3=		PO4=	0.21	SIO=	36.00	SO4=	6.20	CO3=		HCO=	36.00	CAR=		HAR=	30.00
SE =		PHE=		CD =		CR =		AG =		P =	0.07	N =	0.40	ELE=	214.00

27 ID#=8-3900-01 TYP=WELL COU=HAWAII LOC=KEAAU ORCH 1 LAT,LON= 193937. 1550043.00 DAT=1974.

PH =	7.10	SPC=		WED=	137.00	WAD=	8.50	TEM=	18.50	FLO=		EH =		SPC=	300.00
ALK=	29.00	DIS=	197.00	SUS=		LI =		NA =	38.00	K =	3.80	RB =		MG =	7.70
CA =	7.80	SR =		BA =		MN =		FE =	10.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	64.00	BR =		I =		O2 =		CO2=	4.40	H2S=		NH4=		NO2=	
NO3=		PO4=	0.21	SIO=	39.00	SO4=	14.00	CO3=	0.00	HCO=	35.00	CAR=		HAR=	81.00
SE =		PHE=		CD =		CR =		AG =		P =	0.07	N =	1.10	ELE=	92.00

28 ID#=8-4003-01 TYP=WELL COU=HAWAII LOC=PANAEWA 1 LAT,LON= 194035. 1550355.00 DAT=1973.

PH =	7.50	SPC=		WED=	306.00	WAD=	13.10	TEM=	20.00	FLO=		EH =		SPC=	86.00
ALK=	37.00	DIS=	76.00	SUS=		LI =		NA =	5.10	K =	1.80	RB =		MG =	2.70
CA =	6.80	SR =		BA =		MN =		FE =		FET=		F =	0.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	3.50	BR =		I =		O2 =		CO2=	2.30	H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	34.00	SO4=	0.00	CO3=		HCO=	45.00	CAR=		HAR=	28.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	206.00

29 ID#=8-4003-02 TYP=WELL COU=HAWAII LOC=PANAEWA 2 LAT,LON= 194040. 1550352.00 DAT=1974.

PH =		SPC=		WED=	302.00	WAD=	13.10	TEM=	19.50	FLO=		EH =		SPC=	
ALK=	44.00	DIS=		SUS=		LI =		NA =	5.00	K =	1.80	RB =		MG =	2.30
CA =	7.20	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.22	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.02	AS =	0.01	SB =		U =	
CL =	3.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.24	PO4=		SIO=	36.60	SO4=	5.00	CO3=		HCO=		CAR=		HAR=	30.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	201.00

30 ID#=8-4203-06 TYP=WELL COU=HAWAII LOC=KANOELEHUA 2 LAT,LON= 194223. 1550349.00 DAT=1974.

PH =	6.20	SPC=		WED=	200.00	WAD=	6.50	TEM=	19.50	FLO=		EH =		SPC=	140.00
ALK=	32.00	DIS=	109.00	SUS=		LI =		NA =	12.00	K =	2.10	RB =		MG =	3.50
CA =	11.00	SR =		BA =		MN =	0.00	FE =	20.00	FET=		F =	0.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	19.00	BR =		I =		O2 =		CO2=	39.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.18	SIO=	37.00	SO4=	5.00	CO3=		HCO=	39.00	CAR=		HAR=	42.00
SE =		PHE=		CD =		CR =		AG =		P =	0.06	N =	0.01	ELE=	50.00

31 ID#=8-4306-01 TYP=WELL COU=HAWAII LOC=PIIHONUA LAT,LON= 194318. 1550618.00 DAT=1973.

PH =	8.00	SPC=		WED=	425.00	WAD=	42.00	TEM=	17.80	FLO=		EH =		SPC=	93.00
ALK=	38.00	DIS=	88.00	SUS=		LI =		NA =	7.80	K =	2.20	RB =		MG =	3.30
CA =	5.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	2.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.20	PO4=		SIO=	37.00	SO4=	5.90	CO3=		HCO=	46.00	CAR=		HAR=	26.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	278.00

32 ID#=8-4360-01 TYP=WELL COU=HAWAII LOC=KALAOA 12-11 LAT,LON= 194327. 1566023.00 DAT=1968.

PH =	7.80	SPC=		WED=	702.00	WAD=	3.20	TEM=	20.80	FLO=		EH =		SPC=	2760.00
ALK=	93.00	DIS=	1560.00	SUS=		LI =		NA =		K =		RB =		MG =	46.00
CA =	23.00	SR =		BA =		MN =		FE =	0.02	FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	740.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	39.00	SO4=		CO3=		HCO=		CAR=		HAR=	248.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	689.00

33 ID#=8-4706-01 TYP=WELL COU=HAWAII LOC=PAPAIKOU LAT,LON= 194715. 1550613.00 DAT=1973.

PH =		SPC=		WED=	425.00	WAD=	21.00	TEM=		FLO=		EH =		SPC=	
ALK=	34.00	DIS=		SUS=		LI =		NA =	6.00	K =	1.40	RB =		MG =	4.60
CA =	11.00	SR =		BA =	0.30	MN =	0.03	FE =	0.02	FET=		F =	0.08	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	2.40	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.22	PO4=		SIO=	32.00	SO4=	1.40	CO3=		HCO=		CAR=		HAR=	46.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	369.00

34 ID#=8-4858-02 TYP=WELL COU=HAWAII LOC=KONA VILL-2 LAT,LON= 194818. 1555824.00 DAT=1973.

PH =		SPC=		WED=	523.00	WAD=	1.80	TEM=	22.20	FLO=		EH =		SPC=	
ALK=	270.00	DIS=		SUS=		LI =		NA =	313.00	K =	16.00	RB =		MG =	77.00
CA =	29.00	SR =		BA =	0.30	MN =	0.03	FE =	0.23	FET=		F =	2.40	CU =	0.02
ZN =	0.04	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =		U =	
CL =	362.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	1.10
NO3=	1.10	PO4=		SIO=	84.40	SO4=	80.00	CO3=		HCO=		CAR=		HAR=	350.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	503.00

35 ID#=8-4953-01 TYP=WELL COU=HAWAII LOC=KIHOLO LAT,LON= 194945. 1555344.00 DAT=1972.

PH =		SPC=		WED=	971.00	WAD=	2.60	TEM=	22.00	FLO=		EH =		SPC=	1390.00
ALK=	75.00	DIS=	769.00	SUS=		LI =		NA =	218.00	K =	12.00	RB =		MG =	26.00
CA =	16.00	SR =		BA =		MN =		FE =		FET=		F =	0.90	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	340.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.90	PO4=		SIO=	36.00	SO4=	71.00	CO3=		HCO=	91.00	CAR=		HAR=	147.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	932.00

36 ID#=8-5005-02 TYP=WELL COU=HAWAII LOC=PEPEEKEO MKI LAT,LON= 195042. 1550538.00 DAT=1974.

PH =	5.70	SPC=		WED=	309.00	WAD=	11.00	TEM=	23.00	FLO=		EH =		SPC=	170.00
ALK=	60.00	DIS=	108.00	SUS=		LI =		NA =	8.40	K =	0.60	RB =		MG =	8.50
CA =	11.00	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	1.10	BR =		I =		O2 =		CO2=	233.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.18	SIO=	29.00	SO4=	13.00	CO3=		HCO=	73.00	CAR=		HAR=	62.00
SE =		PHE=		CD =		CR =		AG =		P =	0.06	N =	0.03	ELE=	247.00

37 ID#=8-5543-01 TYP=WELL COU=HAWAII LOC=PARKER 1 LAT,LON= 195546. 1554302.00 DAT=1977.

PH =	7.50	SPC=		WED=	849.00	WAD=	6.10	TEM=		FLO=		EH =		SPC=	2050.00
ALK=	110.00	DIS=	1180.00	SUS=		LI =		NA =	320.00	K =	22.00	RB =		MG =	47.00
CA =	29.00	SR =		BA =		MN =	10.00	FE =	20.00	FET=		F =	0.50	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	540.00	BR =		I =		O2 =		CO2=	7.10	H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	56.00	SO4=	99.00	CO3=		HCO=	140.00	CAR=		HAR=	270.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	814.00

38 ID#=8-5745-01 TYP=WELL COU=HAWAII LOC=PARKER 5 LAT,LON= 195725. 1554553.00 DAT=1974.

PH =		SPC=		WED=	1236.00	WAD=	16.00	TEM=	26.70	FLO=		EH =		SPC=	280.00
ALK=	88.00	DIS=	234.00	SUS=		LI =		NA =	27.00	K =	3.10	RB =		MG =	8.60
CA =	5.40	SR =		BA =	0.10	MN =	0.01	FE =	0.27	FET=		F =	0.36	CU =	0.05
ZN =	0.12	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	40.68	BR =		I =		O2 =		CO2=	5.20	H2S=		NH4=		NO2=	0.01
NO3=	0.94	PO4=		SIO=	46.80	SO4=	14.00	CO3=		HCO=	102.00	CAR=		HAR=	76.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =	3.80	ELE=	1213.00

39 ID#=8-5745-02 TYP=WELL COU=HAWAII LOC=PARKER 4 LAT,LON= 195722. 1554551.00 DAT=1977.

PH =	7.40	SPC=		WED=	1231.00	WAD=	16.00	TEM=	26.70	FLO=		EH =		SPC=	278.00
ALK=	82.00	DIS=	207.00	SUS=		LI =		NA =	34.00	K =	4.80	RB =		MG =	9.99
CA =	9.00	SR =		BA =		MN =	0.00	FE =	20.00	FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	27.00	BR =		I =		O2 =		CO2=	6.40	H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	57.00	SO4=	16.00	CO3=		HCO=	100.00	CAR=		HAR=	63.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	1203.00

40 ID#=8-5814-01 TYP=WELL COU=HAWAII LOC=LAUPAHOEHOE LAT,LON= 195857. 1551423.00 DAT=1974.

PH =	7.00	SPC=		WED=	700.00	WAD=	5.90	TEM=	19.00	FLO=		EH =		SPC=	425.00
ALK=	45.00	DIS=	262.00	SUS=		LI =		NA =	46.00	K =	4.10	RB =		MG =	13.00
CA =	15.00	SR =		BA =		MN =	0.00	FE =	60.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	100.00	BR =		I =		O2 =		CO2=	8.80	H2S=		NH4=		NO2=	
NO3=		PO4=	0.21	SIO=	40.00	SO4=	14.00	CO3=		HCO=	55.00	CAR=		HAR=	91.00
SE =		PHE=		CD =		CR =		AG =		P =	0.07	N =	0.44	ELE=	659.00

41 ID#=8-5946-01 TYP=WELL COU=HAWAII LOC=LALAMILO LAT,LON= 195930. 1554630.00 DAT=1977.

PH =		SPC=		WED=	1277.00	WAD=	24.90	TEM=	26.50	FLO=		EH =		SPC=	449.00
ALK=	73.00	DIS=	291.00	SUS=		LI =		NA =	61.00	K =	5.90	RB =		MG =	15.00
CA =	11.00	SR =		BA =		MN =	20.00	FE =	40.00	FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	78.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	55.00	SO4=	21.00	CO3=		HCO=	89.00	CAR=		HAR=	89.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	1172.00

42 ID#=8-6048-01 TYP=WELL COU=HAWAII LOC=KAWAIHAE #2 LAT,LON= 200029. 1551723.00 DAT=1961.

PH =	7.70	SPC=		WED=	430.00	WAD=	3.30	TEM=	26.10	FLO=		EH =		SPC=	
ALK=	78.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	27.80
CA =	53.60	SR =		BA =		MN =	0.10	FE =		FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	550.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	30.00	SO4=	90.80	CO3=		HCO=		CAR=		HAR=	250.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	392.00

43 ID#=8-6049-02 TYP=WELL COU=HAWAII LOC=M KEA RESRT3 LAT,LON= 200034. 1554940.00 DAT=1964.

PH =	7.40	SPC=		WED=	40.00	WAD=		TEM=	26.00	FLO=		EH =		SPC=	
ALK=	78.00	DIS=		SUS=		LI =		NA =	458.00	K =	30.00	RB =		MG =	68.80
CA =	37.80	SR =		BA =		MN =	0.05	FE =	0.04	FET=		F =	0.20	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	912.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.02
NO3=	1.32	PO4=		SIO=	65.00	SO4=	107.00	CO3=		HCO=		CAR=		HAR=	378.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	14.00

44 ID#=8-6049-03 TYP=WELL COU=HAWAII LOC=M KEA RESRT4 LAT,LON= 200039. 1554940.00 DAT=1974.

PH =	7.30	SPC=		WED=		WAD=		TEM=	25.00	FLO=		EH =		SPC=	9999.99
ALK=	85.00	DIS=	7990.00	SUS=		LI =		NA =	2400.00	K =	110.00	RB =		MG =	270.00
CA =	120.00	SR =		BA =		MN =	110.00	FE =	60.00	FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =		BR =		I =		O2 =		CO2=	8.30	H2S=		NH4=		NO2=	
NO3=		PO4=	0.37	SIO=	53.00	SO4=	580.00	CO3=		HCO=	104.00	CAR=		HAR=	1400.00
SE =		PHE=		CD =		CR =		AG =		P =	0.12	N =	1.10	ELE=	

45 ID#=8-6147-01 TYP=WELL COU=HAWAII LOC=KAWAIHAE 3 LAT,LON= 200132. 1554711.00 DAT=1963.

PH =	7.30	SPC=		WED=	1046.00	WAD=	4.60	TEM=	35.60	FLO=		EH =		SPC=	
ALK=	89.00	DIS=		SUS=		LI =		NA =	135.00	K =	14.50	RB =		MG =	32.80
CA =	31.50	SR =		BA =		MN =	0.05	FE =	0.04	FET=		F =	0.20	CU =	0.13
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	250.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	2.89	PO4=		SIO=	89.20	SO4=	54.00	CO3=		HCO=		CAR=		HAR=	214.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	982.00

46 ID#=8-6148-01 TYP=WELL COU=HAWAII LOC=KAWAIHAE 1 LAT,LON= 200122. 1554809.00 DAT=1961.

PH =		SPC=		WED=	620.00	WAD=	3.30	TEM=	27.20	FLO=		EH =		SPC=	
ALK=	85.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	34.00
CA =	20.00	SR =		BA =		MN =	0.10	FE =	0.20	FET=		F =	0.10	CU =	0.10
ZN =	0.03	HG =		B =		AL =	0.10	PB =	0.03	AS =	0.01	SB =		U =	
CL =	325.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.10	PO4=		SIO=	58.60	SO4=	57.30	CO3=		HCO=		CAR=		HAR=	192.00
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	579.00

47 ID#=8-6148-02 TYP=WELL COU=HAWAII LOC=KAWAIHAE 4 LAT,LON= 200121. 1554808.00 DAT=1970.

PH =	7.40	SPC=		WED=	626.00	WAD=	7.60	TEM=	26.40	FLO=		EH =		SPC=	
ALK=	69.30	DIS=		SUS=		LI =		NA =	168.00	K =	0.70	RB =		MG =	29.88
CA =	172.00	SR =		BA =		MN =	0.01	FE =	0.03	FET=		F =	0.07	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =		U =	
CL =	304.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.18	PO4=		SIO=	52.00	SO4=	0.09	CO3=		HCO=		CAR=		HAR=	172.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	582.00

48 ID#=8-6321-02 TYP=TUNNEL COU=HAWAII LOC=PAAUILO SHFT LAT,LON= 200308. 1552157.00 DAT=1955.

PH =	7.30	SPC=		WED=	626.00	WAD=	1.70	TEM=		FLO=		EH =		SPC=	
ALK=	45.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	8.30
CA =	22.00	SR =		BA =		MN =	0.20	FE =	0.10	FET=		F =	0.20	CU =	0.01
ZN =	0.01	HG =		B =		AL =	0.30	PB =	0.01	AS =	0.01	SB =		U =	
CL =	48.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.20	PO4=		SIO=	32.80	SO4=	18.10	CO3=		HCO=		CAR=		HAR=	89.50
SE =	0.01	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	273.00

49 ID#=8-7347-02 TYP=WELL COU=HAWAII LOC=HALAULA 2-1 LAT,LON= 201352. 1554705.00 DAT=1956.

PH =	8.00	SPC=		WED=	505.00	WAD=	7.80	TEM=	21.00	FLO=		EH =		SPC=	
ALK=	40.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	8.90
CA =	4.90	SR =		BA =		MN =	0.10	FE =	0.10	FET=		F =	0.10	CU =	0.10
ZN =	0.03	HG =		B =		AL =	0.30	PB =	0.03	AS =	0.01	SB =		U =	
CL =	26.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.20	PO4=		SIO=	28.40	SO4=	12.50	CO3=		HCO=		CAR=		HAR=	49.50
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	342.00

50 ID#=8-7446-01 TYP=TUNNEL COU=HAWAII LOC=KOHALA SHAFT LAT,LON= 201428. 1554640.00 DAT=1974.

PH =	6.90	SPC=		WED=	135.00	WAD=	7.00	TEM=	22.50	FLO=		EH =		SPC=	2230.00
ALK=	80.00	DIS=	1740.00	SUS=		LI =		NA =	460.00	K =	19.00	RB =		MG =	73.00
CA =	65.00	SR =		BA =		MN =	10.00	FE =	100.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	920.00	BR =		I =		O2 =		CO2=	20.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.18	SIO=	43.00	SO4=	110.00	CO3=		HCO=	98.00	CAR=		HAR=	460.00
SE =		PHE=		CD =		CR =		AG =		P =	0.06	N =	1.00	ELE=	123.00

51 ID#=8-7650-01 TYP=TUNNEL COU=HAWAII LOC=HOEA SHAFT LAT,LON= 201603. 1555022.00 DAT=1974.

PH =	6.90	SPC=		WED=	61.00	WAD=	2.00	TEM=	24.00	FLO=		EH =		SPC=	490.00
ALK=	75.00	DIS=	320.00	SUS=		LI =		NA =	92.00	K =	4.40	RB =		MG =	6.20
CA =	4.50	SR =		BA =		MN =	0.00	FE =	40.00	FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	99.00	BR =		I =		O2 =		CO2=	18.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.89	SIO=	38.00	SO4=	26.00	CO3=		HCO=	91.00	CAR=		HAR=	37.00
SE =		PHE=		CD =		CR =		AG =		P =	0.29	N =	0.88	ELE=	52.00

52 ID#=8-7652-01 TYP=TUNNEL COU=HAWAII LOC=WAIKANE SHAF LAT,LON= 201603. 1555218.00 DAT=1974.

PH =	6.90	SPC=		WED=	42.00	WAD=	0.50	TEM=	22.00	FLO=		EH =		SPC=	1450.00
ALK=	118.00	DIS=	962.00	SUS=		LI =		NA =	290.00	K =	13.00	RB =		MG =	27.00
CA =	15.00	SR =		BA =		MN =	10.00	FE =	40.00	FET=		F =	0.40	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	420.00	BR =		I =		O2 =		CO2=	29.00	H2S=		NH4=		NO2=	
NO3=		PO4=	1.10	SIO=	54.00	SO4=	63.00	CO3=		HCO=	144.00	CAR=		HAR=	350.00
SE =		PHE=		CD =		CR =		AG =		P =	0.36	N =	1.60	ELE=	83.00

TABLE 2 Maui

1 ID#=6-3806-01 TYP=SPRING COU=MAUI LOC=PUNAHOA SPR LAT,LON= 203836. 1560650.00 DAT=1975.

PH = 6.80	SPC=	WED=	WAD=	TEM=	FLO=	EH =	SPC= 831.00
ALK= 30.00	DIS= 454.00	SUS=	LI =	NA = 130.00	K = 5.70	RB =	MG = 13.00
CA = 12.00	SR =	BA =	MN = 10.00	FE = 10.00	FET=	F = 0.10	CU =
ZN =	HG =	B =	AL =	PB =	AS =	SB =	U =
CL = 0.00	BR =	I =	O2 =	CO2= 9.10	H2S=	NH4=	NO2=
NO3=	PO4= 0.03	SIO= 18.00	SO4= 27.00	CO3= 0.00	HCO= 36.00	CAR=	HAR=
SE =	PHE=	CD =	CR =	AG =	P = 0.01	N = 2.30	ELE=

2 ID#=6-3925-01 TYP=WELL COU=MAUI LOC=MAKENA 68 LAT,LON= 203912. 1562559.00 DAT=1964.

PH = 7.35	SPC=	WED= 382.00	WAD= 0.80	TEM= 20.00	FLO=	EH =	SPC=
ALK= 200.00	DIS=	SUS=	LI =	NA = 255.00	K = 23.00	RB =	MG = 64.20
CA = 49.60	SR =	BA =	MN = 0.05	FE = 0.13	FET=	F = 0.10	CU = 0.10
ZN = 0.10	HG =	B =	AL = 0.05	PB = 0.01	AS = 0.01	SB =	U =
CL = 500.00	BR =	I =	O2 =	CO2=	H2S=	NH4=	NO2= 6.00
NO3= 7.10	PO4=	SIO= 41.00	SO4= 50.00	CO3=	HCO=	CAR= 0.00	HAR= 383.00
SE = 0.01	PHE= 0.00	CD =	CR =	AG =	P =	N =	ELE= 352.00

3 ID#=6-4627-14 TYP=WELL COU=MAUI LOC=HASHIMOTO T LAT,LON= 204635. 1562701.00 DAT=1974.

PH = 7.60	SPC=	WED= 200.00	WAD=	TEM= 23.50	FLO=	EH =	SPC= 1350.00
ALK= 196.00	DIS= 799.00	SUS=	LI =	NA = 240.00	K = 20.00	RB =	MG = 18.00
CA = 13.00	SR =	BA =	MN = 0.00	FE = 40.00	FET=	F = 0.30	CU =
ZN =	HG =	B =	AL =	PB =	AS =	SB =	U =
CL = 270.00	BR =	I =	O2 =	CO2= 9.60	H2S=	NH4=	NO2=
NO3=	PO4= 0.89	SIO= 59.00	SO4= 44.00	CO3=	HCO= 239.00	CAR=	HAR= 110.00
SE =	PHE=	CD =	CR =	AG =	P = 0.29	N = 3.50	ELE= 130.00

4 ID#=6-4727-01 TYP=TUNNEL COU=MAUI LOC=KIHEI SHAFT LAT,LON= 204721. 1562745.00 DAT=1973.

PH =	SPC=	WED= 23.00	WAD= 3.50	TEM=	FLO=	EH =	SPC= 4850.00
ALK=	DIS= 1600.00	SUS=	LI =	NA = 434.00	K = 23.00	RB =	MG = 64.00
CA = 54.00	SR =	BA =	MN =	FE =	FET=	F = 0.40	CU =
ZN =	HG =	B =	AL =	PB =	AS =	SB =	U =
CL = 575.00	BR =	I =	O2 =	CO2=	H2S=	NH4=	NO2=
NO3= 6.80	PO4= 0.00	SIO= 48.00	SO4= 93.00	CO3= 0.00	HCO= 559.00	CAR=	HAR= 0.00
SE =	PHE=	CD =	CR =	AG =	P =	N =	ELE= 26.00

5 ID#=6-4824-01 TYP=WELL COU=MAUI LOC=KIHEI EXPLOR LAT,LON= 204827. 1562422.00 DAT=1971.

PH = 7.70	SPC=	WED= 640.00	WAD= 2.80	TEM= 24.00	FLO=	EH =	SPC= 612.00
ALK= 190.00	DIS= 408.00	SUS=	LI =	NA = 95.00	K = 11.00	RB =	MG = 18.00
CA = 11.00	SR =	BA =	MN =	FE =	FET=	F = 0.80	CU =
ZN =	HG =	B =	AL =	PB =	AS =	SB =	U =
CL = 73.00	BR =	I =	O2 =	CO2=	H2S=	NH4=	NO2=
NO3= 12.00	PO4= 0.00	SIO= 57.00	SO4= 16.00	CO3= 0.00	HCO= 232.00	CAR=	HAR= 102.00
SE =	PHE=	CD =	CR =	AG =	P =	N =	ELE= 593.00

6 ID#=6-4825-01 TYP=WELL COU=MAUI LOC=KIHEI SHFT15 LAT,LON= 204845. 1562549.00 DAT=1972.

PH =	8.00	SPC=		WED=		WAD=	3.60	TEM=		FLO=		EH =		SPC=	1670.00
ALK=	273.00	DIS=	979.00	SUS=		LI =		NA =	275.00	K =	19.00	RB =		MG =	35.00
CA =	21.00	SR =		BA =		MN =		FE =		FET=		F =	0.80	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	335.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	18.00	PO4=	0.00	SIO=	58.00	SO4=	53.00	CO3=		HCO=	333.00	CAR=		HAR=	197.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	325.00

7 ID#=6-4928-02 TYP=SHAFT COU=MAUI LOC=PUUNENE AIRP LAT,LON= 204909. 1562814.00 DAT=1973.

PH =	7.80	SPC=		WED=	53.00	WAD=	4.30	TEM=		FLO=		EH =		SPC=	1890.00
ALK=		DIS=	1040.00	SUS=		LI =		NA =	277.00	K =	13.00	RB =		MG =	45.00
CA =	30.00	SR =		BA =		MN =		FE =		FET=		F =	0.40	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	390.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	4.30	PO4=	0.00	SIO=	44.00	SO4=	53.00	CO3=	0.00	HCO=	334.00	CAR=		HAR=	260.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	50.00

8 ID#=6-4937-01 TYP=WELL COU=MAUI LOC=OLOWALU S10 LAT,LON= 204931. 1563712.00 DAT=1974.

PH =	7.10	SPC=		WED=	300.00	WAD=	3.50	TEM=	25.00	FLO=		EH =		SPC=	3500.00
ALK=	116.00	DIS=	1900.00	SUS=		LI =		NA =	370.00	K =	14.00	RB =		MG =	120.00
CA =	160.00	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	1000.00	BR =		I =		O2 =		CO2=	18.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.21	SIO=	52.00	SO4=	110.00	CO3=		HCO=	141.00	CAR=		HAR=	890.00
SE =		PHE=		CD =		CR =		AG =		P =	0.07	N =	1.90	ELE=	165.00

9 ID#=6-5021-01 TYP=WELL COU=MAUI LOC=PUKALANI LAT,LON= 205014. 1562127.00 DAT=1972.

PH =	7.40	SPC=		WED=	1140.00	WAD=	8.00	TEM=	19.50	FLO=		EH =		SPC=	2020.00
ALK=	69.00	DIS=	1030.00	SUS=		LI =		NA =	116.00	K =	19.00	RB =		MG =	103.00
CA =	84.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	552.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	19.00	PO4=	0.00	SIO=	43.00	SO4=	55.00	CO3=	0.00	HCO=	79.00	CAR=		HAR=	634.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	1086.00

10 ID#=6-5128-02 TYP=WELL COU=MAUI LOC=WAIKAPU LAT,LON= 205102. 1562825.00 DAT=1974.

PH =	7.40	SPC=		WED=	129.00	WAD=	4.20	TEM=	24.00	FLO=		EH =		SPC=	1850.00
ALK=	296.00	DIS=	1030.00	SUS=		LI =		NA =	300.00	K =		RB =		MG =	42.00
CA =	38.00	SR =		BA =		MN =	0.00	FE =	40.00	FET=		F =	0.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	400.00	BR =		I =		O2 =		CO2=	23.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.06	SIO=	9999.99	SO4=	53.00	CO3=		HCO=	361.00	CAR=		HAR=	270.00
SE =		PHE=		CD =		CR =		AG =		P =	0.02	N =	0.05	ELE=	126.00

11 ID#=6-5130-02 TYP=WELL COU=MAUI LOC=WAIKAPU 2 LAT,LON= 205154. 1563038.00 DAT=1974.

PH =	8.10	SPC=		WED=	1020.00	WAD=	10.30	TEM=		FLO=		EH =		SPC=	461.00
ALK=	194.00	DIS=	288.00	SUS=		LI =		NA =	74.00	K =	3.60	RB =		MG =	9.50
CA =	12.00	SR =		BA =		MN =	10.00	FE =	10.00	FET=		F =	0.50	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	16.00	BR =		I =		O2 =		CO2=	3.00	H2S=		NH4=		NO2=	
NO3=		PO4=	1.00	SIO=	34.00	SO4=	9.00	CO3=	0.00	HCO=	236.00	CAR=		HAR=	69.00
SE =		PHE=		CD =		CR =		AG =		P =	0.34	N =	2.80	ELE=	518.00

12 ID#=6-5328-01 TYP=WELL COU=MAUI LOC=CANNERY SHFT LAT,LON= 205320. 1562840.00 DAT=1975.

PH =		SPC=		WED=	28.00	WAD=	3.00	TEM=		FLO=		EH =		SPC=	
ALK=	180.00	DIS=		SUS=		LI =		NA =	96.00	K =	10.00	RB =		MG =	26.00
CA =	16.00	SR =		BA =	0.10	MN =	0.03	FE =	0.12	FET=		F =	0.25	CU =	0.02
ZN =	0.13	HG =		B =		AL =	2.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	159.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	2.90	PO4=		SIO=	47.10	SO4=	28.00	CO3=		HCO=		CAR=	0.00	HAR=	182.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	20.00

13 ID#=6-5329-04 TYP=WELL COU=MAUI LOC=WAR MEMORIAL LAT,LON= 205333. 1562933.00 DAT=1967.

PH =	6.90	SPC=		WED=	110.00	WAD=		TEM=		FLO=		EH =		SPC=	
ALK=	128.60	DIS=		SUS=		LI =		NA =	153.00	K =	13.30	RB =		MG =	37.00
CA =	26.00	SR =		BA =		MN =	0.05	FE =	0.03	FET=		F =	0.06	CU =	0.01
ZN =	0.01	HG =		B =		AL =	0.01	PB =	0.01	AS =	0.00	SB =		U =	
CL =	300.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.14
NO3=	4.34	PO4=		SIO=	42.00	SO4=	41.00	CO3=		HCO=		CAR=	0.00	HAR=	217.40
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	80.00

14 ID#=6-5330-05 TYP=WELL COU=MAUI LOC=WAILUKU SH33 LAT,LON= 205305. 1563043.00 DAT=1972.

PH =	7.60	SPC=		WED=		WAD=	26.00	TEM=	22.00	FLO=		EH =		SPC=	299.00
ALK=	74.00	DIS=	209.00	SUS=		LI =		NA =	26.00	K =	2.30	RB =		MG =	11.00
CA =	16.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	40.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	4.70	PO4=		SIO=	53.00	SO4=	12.00	CO3=		HCO=	90.00	CAR=		HAR=	85.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	400.00

15 ID#=-5330-06 TYP=WELL COU=MAUI LOC=WAILUKU LAT,LON= 205336. 1563045.00 DAT=1968.

PH =	7.40	SPC=		WED=	431.00	WAD=	27.30	TEM=		FLO=		EH =		SPC=	
ALK=	83.00	DIS=		SUS=		LI =		NA =	28.00	K =	2.70	RB =		MG =	14.10
CA =	15.00	SR =		BA =		MN =	0.05	FE =	0.02	FET=		F =	0.10	CU =	0.01
ZN =	0.01	HG =		B =		AL =	0.01	PB =	0.01	AS =	0.00	SB =		U =	
CL =	42.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	4.12	PO4=		SIO=	50.00	SO4=	16.00	CO3=		HCO=		CAR=		HAR=	97.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	310.00

16 ID#=6-5330-10 TYP=WELL COU=MAUI LOC=MOKUHAU 2 LAT,LON= 205329. 1563055.00 DAT=1974.

PH =	7.60	SPC=		WED=	600.00	WAD=	21.00	TEM=	23.00	FLO=		EH =		SPC=	340.00
ALK=	78.00	DIS=	242.00	SUS=		LI =		NA =	31.00	K =	2.60	RB =		MG =	13.00
CA =	20.00	SR =		BA =		MN =	0.00	FE =	20.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	54.00	BR =		I =		O2 =		CO2=	3.80	H2S=		NH4=		NO2=	
NO3=		PO4=	0.25	SIO=	53.00	SO4=	16.00	CO3=		HCO=	95.00	CAR=		HAR=	100.00
SE =		PHE=		CD =		CR =		AG =		P =	0.08	N =	1.10	ELE=	353.00

17 ID#=6-5330-11 TYP=WELL COU=MAUI LOC=WAILUKU LAT,LON= 205330. 1563054.00 DAT=1972.

PH =	7.60	SPC=		WED=		WAD=		TEM=	22.50	FLO=		EH =		SPC=	33000.00
ALK=	81.00	DIS=	255.00	SUS=		LI =		NA =	30.00	K =	2.20	RB =		MG =	13.00
CA =	18.00	SR =		BA =		MN =	0.05	FE =	0.02	FET=		F =	0.10	CU =	0.01
ZN =	0.01	HG =		B =		AL =	0.01	PB =	0.01	AS =	0.00	SB =		U =	
CL =	43.00	BR =		I =		O2 =		CO2=	4.00	H2S=		NH4=		NO2=	0.02
NO3=	4.43	PO4=		SIO=	76.00	SO4=	21.00	CO3=		HCO=	99.00	CAR=	81.00	HAR=	99.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =	2.60	ELE=	354.00

18 ID#=6-5332-02 TYP=TUNNEL COU=MAUI LOC=IAO TUNNEL LAT,LON= 205309. 1563230.00 DAT=1971.

PH =	8.30	SPC=		WED=		WAD=		TEM=		FLO=		EH =		SPC=	
ALK=	56.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	
CA =		SR =		BA =		MN =		FE =		FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =		BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.23	PO4=		SIO=	18.20	SO4=		CO3=		HCO=		CAR=		HAR=	32.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	787.00

19 ID#=6-5339-01 TYP=WELL COU=MAUI LOC=LAHAINA 1 LAT,LON= 205322. 1563945.00 DAT=1972.

PH =	7.60	SPC=		WED=	476.00	WAD=	2.60	TEM=	21.00	FLO=		EH =		SPC=	954.00
ALK=	119.00	DIS=	600.00	SUS=		LI =		NA =	120.00	K =	6.50	RB =		MG =	27.00
CA =	26.00	SR =		BA =		MN =	0.05	FE =	0.03	FET=		F =	0.20	CU =	0.10
ZN =	0.10	HG =		B =		AL =	2.90	PB =	0.01	AS =	0.01	SB =		U =	
CL =	210.00	BR =		I =		O2 =		CO2=	5.80	H2S=		NH4=		NO2=	0.00
NO3=	10.60	PO4=		SIO=	57.00	SO4=	29.00	CO3=		HCO=	145.00	CAR=	119.00	HAR=	176.00
SE =	0.03	PHE=		CD =		CR =		AG =		P =		N =	7.20	ELE=	497.00

20 ID#=6-5339-02 TYP=WELL COU=MAUI LOC=LAHAINA 2 LAT,LON= 205320. 1563945.00 DAT=1974.

PH =	7.60	SPC=		WED=	498.00	WAD=	1.80	TEM=	21.50	FLO=		EH =		SPC=	1060.00
ALK=	110.00	DIS=	586.00	SUS=		LI =		NA =	120.00	K =	6.70	RB =		MG =	30.00
CA =	30.00	SR =		BA =		MN =	0.05	FE =	20.00	FET=		F =	0.20	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.05	PB =	0.01	AS =	0.01	SB =		U =	
CL =	230.00	BR =		I =		O2 =		CO2=	5.40	H2S=		NH4=		NO2=	0.01
NO3=	6.20	PO4=	0.55	SIO=	57.00	SO4=	39.00	CO3=		HCO=	134.00	CAR=		HAR=	200.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =	0.18	N =	1.40	ELE=	441.00

21 ID#=6-5339-03 TYP=WELL COU=MAUI LOC=KANAHA 1 LAT,LON= 205344. 1563930.00 DAT=1977.

PH =	6.20	SPC=		WED=	642.00	WAD=	2.50	TEM=		FLO=		EH =		SPC=	960.00
ALK=	49.00	DIS=	547.00	SUS=		LI =		NA =	130.00	K =	6.30	RB =		MG =	19.00
CA =	26.00	SR =		BA =		MN =	10.00	FE =	20.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	260.00	BR =		I =		O2 =		CO2=	61.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.21	SIO=	42.00	SO4=	34.00	CO3=		HCO=	60.00	CAR=		HAR=	140.00
SE =		PHE=		CD =		CR =		AG =		P =	0.07	N =	0.01	ELE=	590.00

22 ID#=6-5339-04 TYP=WELL COU=MAUI LOC=KANAHA 2 LAT,LON= 205341. 1563923.00 DAT=1973.

PH =	8.00	SPC=		WED=	749.00	WAD=	3.20	TEM=	20.50	FLO=		EH =		SPC=	150.00
ALK=	56.00	DIS=	123.00	SUS=		LI =		NA =	11.00	K =	1.50	RB =		MG =	5.70
CA =	11.00	SR =		BA =		MN =		FE =	80.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	11.00	BR =		I =		O2 =		CO2=	1.10	H2S=		NH4=		NO2=	
NO3=		PO4=	0.34	SIO=	44.00	SO4=	3.70	CO3=		HCO=	68.00	CAR=		HAR=	51.00
SE =		PHE=		CD =		CR =		AG =		P =	0.08	N =	0.33	ELE=	654.00

23 ID#=6-5340-02 TYP=WELL COU=MAUI LOC=KAHOMA SH5 LAT,LON= 205343. 1564011.00 DAT=1972.

PH =	7.40	SPC=		WED=	323.00	WAD=	2.20	TEM=		FLO=		EH =		SPC=	1030.00
ALK=	75.00	DIS=	630.00	SUS=		LI =		NA =	160.00	K =	7.00	RB =		MG =	23.00
CA =	21.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	272.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	3.10	PO4=		SIO=	6.10	SO4=	38.00	CO3=		HCO=	91.00	CAR=		HAR=	147.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	322.00

24 ID#=6-5420-01 TYP=WELL COU=MAUI LOC=MAUI HIGH LAT,LON= 205458. 1562054.00 DAT=1965.

PH =	6.90	SPC=		WED=	371.00	WAD=	3.40	TEM=	22.20	FLO=		EH =		SPC=	
ALK=	77.00	DIS=		SUS=		LI =		NA =	82.00	K =	5.50	RB =		MG =	4.70
CA =	4.00	SR =		BA =	0.10	MN =	0.03	FE =	0.15	FET=		F =	0.35	CU =	0.02
ZN =	0.08	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	100.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	3.50	PO4=		SIO=	53.30	SO4=	33.00	CO3=		HCO=		CAR=		HAR=	32.60
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	349.00

25 ID#=6-5424-01 TYP=TUNNEL COU=MAUI LOC=SPRECKLESVIL LAT,LON= 205416. 1562443.00 DAT=1972.

PH =	7.60	SPC=		WED=		WAD=	3.50	TEM=		FLO=		EH =		SPC=	2040.00
ALK=	146.00	DIS=	1180.00	SUS=		LI =		NA =	340.00	K =	19.00	RB =		MG =	37.00
CA =	21.00	SR =		BA =		MN =		FE =		FET=		F =	0.50	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	515.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	17.00	PO4=		SIO=	66.00	SO4=	72.00	CO3=		HCO=	178.00	CAR=		HAR=	205.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	430.00

26 ID#=6-5430-01 TYP=WELL COU=MAUI LOC=WAIEHU HTS LAT,LON= 205430. 1563044.00 DAT=1975.

PH =		SPC=		WED=	675.00	WAD=	18.00	TEM=		FLO=		EH =		SPC=	405.00
ALK=	81.00	DIS=	272.00	SUS=		LI =		NA =	42.00	K =	3.10	RB =		MG =	11.00
CA =	18.00	SR =		BA =		MN =		FE =	20.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	53.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=	0.40	SIO=	54.00	SO4=	27.00	CO3=		HCO=	99.00	CAR=		HAR=	90.00
SE =		PHE=		CD =		CR =		AG =		P =	0.13	N =	3.20	ELE=	337.00

27 ID#=6-5519-02 TYP=WELL COU=MAUI LOC=HAIKU LAT,LON= 205550. 1561953.00 DAT=1974.

PH =		SPC=		WED=	228.00	WAD=	210.00	TEM=	0.00	FLO=		EH =		SPC=	
ALK=	67.00	DIS=		SUS=		LI =		NA =	96.00	K =	2.70	RB =		MG =	1.00
CA =	1.00	SR =		BA =	0.10	MN =	0.07	FE =	1.58	FET=		F =	0.80	CU =	0.02
ZN =	0.56	HG =		B =		AL =	0.07	PB =	0.01	AS =	0.01	SB =		U =	
CL =	21.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.20	PO4=		SIO=	40.80	SO4=	20.00	CO3=		HCO=		CAR=		HAR=	40.00
SE =	0.00	PHE=	0.00	CD =		CR =	0.00	AG =	0.01	P =		N =		ELE=	360.00

28 ID#=6-5522-01 TYP=WELL COU=MAUI LOC=KUAU PUMP12 LAT,LON= 205511. 1562221.00 DAT=1974.

PH =	6.90	SPC=		WED=		WAD=	4.00	TEM=	23.00	FLO=		EH =		SPC=	1300.00
ALK=	103.00	DIS=	710.00	SUS=		LI =		NA =	210.00	K =	11.00	RB =		MG =	17.00
CA =	14.00	SR =		BA =		MN =	10.00	FE =	230.00	FET=		F =	0.40	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	280.00	BR =		I =		O2 =		CO2=	0.25	H2S=		NH4=		NO2=	
NO3=		PO4=	0.34	SIO=	52.00	SO4=	46.00	CO3=		HCO=	125.00	CAR=		HAR=	110.00
SE =		PHE=		CD =		CR =		AG =		P =	0.11	N =	3.90	ELE=	156.00

29 ID#=6-5540-01 TYP=WELL COU=MAUI LOC=PUUKOLII LAT,LON= 205559. 1564028.00 DAT=1971.

PH =	7.70	SPC=		WED=	47200.00	WAD=	1.40	TEM=	23.30	FLO=		EH =		SPC=	1490.00
ALK=	120.00	DIS=	833.00	SUS=		LI =		NA =	225.00	K =	14.00	RB =		MG =	34.00
CA =	16.00	SR =		BA =		MN =	0.01	FE =	0.02	FET=		F =	0.30	CU =	0.08
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =		U =	
CL =	362.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	11.00	PO4=	0.19	SIO=	49.00	SO4=	50.00	CO3=		HCO=	146.00	CAR=		HAR=	180.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	444.00

30 ID#=6-5540-02 TYP=WELL COU=MAUI LOC=HAHAKEA 1 LAT,LON= 205514. 1564026.00 DAT=1971.

PH =	6.40	SPC=		WED=		WAD=		TEM=		FLO=		EH =		SPC=	1380.00
ALK=	87.00	DIS=	762.00	SUS=		LI =		NA =	192.00	K =	8.80	RB =		MG =	34.00
CA =	22.00	SR =		BA =		MN =		FE =		FET=		F =	0.40	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	340.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	6.40	PO4=		SIO=	54.00	SO4=	52.00	CO3=		HCO=	106.00	CAR=		HAR=	195.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	450.00

31 ID#=6-5540-03 TYP=WELL COU=MAUI LOC=HAHAKEA 2 LAT,LON= 205503. 1564016.00 DAT=1971.

PH =	7.00	SPC=		WED=	524.00	WAD=	2.70	TEM=		FLO=		EH =		SPC=	796.00
ALK=	136.00	DIS=	468.00	SUS=		LI =		NA =	122.00	K =	8.00	RB =		MG =	20.00
CA =	9.70	SR =		BA =		MN =		FE =		FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	149.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.30	PO4=	0.17	SIO=	46.00	SO4=	26.00	CO3=		HCO=	166.00	CAR=		HAR=	107.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	504.00

32 ID#=6-5640-01 TYP=TUNNEL COU=MAUI LOC=HONOKOWAI LAT,LON= 205651. 1564010.00 DAT=1974.

PH =	7.90	SPC=		WED=		WAD=		TEM=	20.50	FLO=		EH =		SPC=	850.00
ALK=	55.00	DIS=	475.00	SUS=		LI =		NA =	180.00	K =	5.90	RB =		MG =	14.00
CA =	12.00	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	200.00	BR =		I =		O2 =		CO2=	1.30	H2S=		NH4=		NO2=	
NO3=	4.60	PO4=	0.58	SIO=	45.00	SO4=	26.00	CO3=		HCO=	67.00	CAR=		HAR=	88.00
SE =		PHE=		CD =		CR =		AG =		P =	1.90	N =	1.80	ELE=	300.00

33 ID#=6-5840-01 TYP=WELL COU=MAUI LOC=ALAEOLA LAT,LON= 205856. 1564001.00 DAT=1964.

PH =	7.24	SPC=		WED=	274.00	WAD=	2.70	TEM=	21.10	FLO=		EH =		SPC=	
ALK=	72.00	DIS=		SUS=		LI =		NA =	185.00	K =	12.00	RB =		MG =	10.80
CA =	29.50	SR =		BA =		MN =	0.03	FE =	0.02	FET=		F =	0.30	CU =	0.10
ZN =	0.10	HG =		B =		AL =	0.03	PB =	0.01	AS =	0.01	SB =		U =	
CL =	352.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.60
NO3=	3.80	PO4=		SIO=	53.00	SO4=	48.00	CO3=		HCO=		CAR=		HAR=	148.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	257.00

34 ID#=6-4126-02 TYP=WELL COU=MAUI LOC=WAILEA 2 LAT,LON= 204128. 1562621.00 DAT=1972.

PH =	7.50	SPC=		WED=	198.00	WAD=	2.00	TEM=		FLO=		EH =		SPC=	2290.00
ALK=	109.00	DIS=		SUS=		LI =		NA =	325.00	K =	21.00	RB =		MG =	55.00
CA =	33.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	590.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	17.00	PO4=		SIO=	45.00	SO4=	93.00	CO3=		HCO=	133.00	CAR=		HAR=	301.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	181.00

35 ID#=6-4835-01 TYP=TUNNEL COU=MAUI LOC=UKUMEHAME LAT,LON= 204847. 1563558.00 DAT=1970.

PH =	7.50	SPC=		WED=	143.00	WAD=	6.00	TEM=	33.00	FLO=		EH =		SPC=	
ALK=	103.00	DIS=		SUS=		LI =		NA =	180.00	K =	15.00	RB =		MG =	29.00
CA =	85.00	SR =		BA =		MN =		FE =		FET=		F =	1.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	400.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	11.00	PO4=		SIO=	60.00	SO4=	50.00	CO3=		HCO=	130.00	CAR=		HAR=	330.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	79.00

36 ID#=6-4837-01 TYP=TUNNEL COU=MAUI LOC=OLOWALU LAT,LON= 204859. 1563709.00 DAT=1970.

PH =	7.60	SPC=		WED=	20.00	WAD=	2.00	TEM=	25.50	FLO=		EH =		SPC=	
ALK=	98.00	DIS=		SUS=		LI =		NA =	150.00	K =	5.00	RB =		MG =	67.00
CA =	90.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	460.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.90	PO4=		SIO=	45.00	SO4=	70.00	CO3=		HCO=	120.00	CAR=		HAR=	500.00
SE =		PHE=		CD =		CR =		AC =		P =		N =		ELE=	20.00

37 ID#=6-5224-02 TYP=TUNNEL COU=MAUI LOC=PUUNENE-9 LAT,LON= 205243. 1562432.00 DAT=1972.

PH =	7.70	SPC=		WED=	202.00	WAD=	4.30	TEM=	23.80	FLO=		EH =		SPC=	1480.00
ALK=	171.00	DIS=		SUS=		LI =		NA =	230.00	K =	17.00	RB =		MG =	31.00
CA =	17.00	SR =		BA =		MN =		FE =		FET=		F =	0.50	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	325.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	16.00	PO4=		SIO=	62.00	SO4=	48.00	CO3=		HCO=	208.00	CAR=		HAR=	176.00
SE =		PHE=		CD =		CR =		AC =		P =		N =		ELE=	267.00

38 ID#=6-5226-01 TYP=TUNNEL COU=MAUI. LOC=PUUNENE-5 LAT,LON= 205254. 1562658.00 DAT=1970.

PH =	7.30	SPC=		WED=	48.00	WAD=	4.60	TEM=	26.00	FLO=		EH =		SPC=	
ALK=	320.00	DIS=		SUS=		LI =		NA =	275.00	K =	19.00	RB =		MG =	62.00
CA =	58.00	SR =		BA =		MN =		FE =		FET=		F =	2.70	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	477.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	14.00	PO4=		SIO=	59.00	SO4=	44.00	CO3=		HCO=	390.00	CAR=		HAR=	398.00
SE =		PHE=		CD =		CR =		AC =		P =		N =		ELE=	40.00

39 ID#=6-5226-02 TYP=TUNNEL COU=MAUI LOC=PUUNENE-6 LAT,LON= 205201. 1562610.00 DAT=1970.

PH =	7.40	SPC=		WED=	176.00	WAD=	4.40	TEM=	23.50	FLO=		EH =		SPC=	
ALK=	148.00	DIS=		SUS=		LI =		NA =	230.00	K =	14.00	RB =		MG =	34.00
CA =	28.00	SR =		BA =		MN =		FE =		FET=		F =	2.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	376.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	13.00	PO4=		SIO=	56.00	SO4=	38.00	CO3=		HCO=	180.00	CAR=		HAR=	208.00
SE =		PHE=		CD =		CR =		AC =		P =		N =		ELE=	182.00

40 ID#=6-5240-01 TYP=TUNNEL COU=MAUI LOC=MILL PUMP C LAT,LON= 205255. 1564044.00 DAT=1970.

PH =	7.20	SPC=		WED=	39.00	WAD=	3.00	TEM=	24.50	FLO=		EH =		SPC=	
ALK=	159.00	DIS=		SUS=		LI =		NA =	430.00	K =	25.00	RB =		MG =	111.00
CA =	130.00	SR =		BA =		MN =		FE =		FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	980.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	22.00	PO4=		SIO=	55.00	SO4=	190.00	CO3=		HCO=	194.00	CAR=		HAR=	330.00
SE =		PHE=		CD =		CR =		AC =		P =		N =		ELE=	34.00

41 ID#=6-5240-03 TYP=TUNNEL COU=MAUI LOC=LAHAINA-B LAT,LON= 205227. 1564017.00 DAT=1970.

PH =	7.20	SPC=		WED=	31.00	WAD=	2.00	TEM=	28.00	FLO=		EH =		SPC=	
ALK=	202.00	DIS=		SUS=		LI =		NA =	170.00	K =	15.00	RB =		MG =	109.00
CA =	140.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	600.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	15.00	PO4=		SIO=	60.00	SO4=	120.00	CO3=		HCO=	246.00	CAR=		HAR=	800.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	30.00

42 ID#=6-5321-01 TYP=TUNNEL COU=MAUI LOC=KAHEKA-18 LAT,LON= 205327. 1562132.00 DAT=1970.

PH =	7.70	SPC=		WED=		WAD=	6.20	TEM=	21.00	FLO=		EH =		SPC=	
ALK=	57.00	DIS=		SUS=		LI =		NA =	60.00	K =	4.30	RB =		MG =	11.00
CA =	9.00	SR =		BA =		MN =		FE =		FET=		F =	1.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	76.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	8.60	PO4=		SIO=	53.00	SO4=	20.00	CO3=		HCO=	70.00	CAR=		HAR=	66.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	552.00

43 ID#=6-5323-01 TYP=TUNNEL COU=MAUI LOC=PAIA PUMP 2 LAT,LON= 205344. 1562346.00 DAT=1970.

PH =	7.20	SPC=		WED=		WAD=	3.90	TEM=	22.00	FLO=		EH =		SPC=	
ALK=	115.00	DIS=		SUS=		LI =		NA =	250.00	K =	14.00	RB =		MG =	46.00
CA =	25.00	SR =		BA =		MN =		FE =		FET=		F =	2.70	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	448.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	14.00	PO4=		SIO=	56.00	SO4=	36.00	CO3=		HCO=	140.00	CAR=		HAR=	250.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	125.00

44 ID#=6-5330-09 TYP=WELL COU=MAUI LOC=MOKUHAU-1 LAT,LON= 205329. 1563055.00 DAT=1970.

PH =	7.50	SPC=		WED=	600.00	WAD=	23.00	TEM=	21.80	FLO=		EH =		SPC=	
ALK=	61.00	DIS=		SUS=		LI =		NA =	24.00	K =	2.30	RB =		MG =	10.00
CA =	23.00	SR =		BA =		MN =		FE =		FET=		F =	0.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	45.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	4.60	PO4=		SIO=	31.00	SO4=	21.00	CO3=		HCO=	75.00	CAR=		HAR=	98.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	353.00

45 ID#=6-5340-01 TYP=TUNNEL COU=MAUI LOC=WAHIKULI-1 LAT,LON= 205324. 1564057.00 DAT=1970.

PH =	7.40	SPC=		WED=	27.00	WAD=	1.50	TEM=	24.50	FLO=		EH =		SPC=	
ALK=	123.00	DIS=		SUS=		LI =		NA =	150.00	K =	10.00	RB =		MG =	62.00
CA =	70.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	410.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	14.00	PO4=		SIO=	45.00	SO4=	60.00	CO3=		HCO=	150.00	CAR=		HAR=	430.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	26.00

46 ID#=6-5423-02 TYP=TUNNEL COU=MAUI LOC=LOW PAIA-16 LAT,LON= 205449. 1562310.00 DAT=1970.

PH =	7.20	SPC=		WED=		WAD=		TEM=	25.00	FLO=		EH =		SPC=	
ALK=	115.00	DIS=		SUS=		LI =		NA =	185.00	K =	14.00	RB =		MG =	40.00
CA =	27.00	SR =		BA =		MN =		FE =		FET=		F =	1.30	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	342.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	12.00	PO4=		SIO=	51.00	SO4=	37.00	CO3=		HCO=	140.00	CAR=		HAR=	230.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	25.00

47 ID#=6-5641-01 TYP=TUNNEL COU=MAUI LOC=KAANAPALI-D LAT,LON= 205635. 1564131.00 DAT=1970.

PH =	7.10	SPC=		WED=	28.00	WAD=	1.50	TEM=	22.00	FLO=		EH =		SPC=	
ALK=	141.00	DIS=		SUS=		LI =		NA =	440.00	K =	20.00	RB =		MG =	56.00
CA =	80.00	SR =		BA =		MN =		FE =		FET=		F =	0.40	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	850.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	13.00	PO4=		SIO=	50.00	SO4=	100.00	CO3=		HCO=	172.00	CAR=		HAR=	430.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	27.00

48 ID#=6-5641-02 TYP=TUNNEL COU=MAUI LOC=HONOKOWAI-F LAT,LON= 205657. 1564106.00 DAT=1970.

PH =	7.70	SPC=		WED=	65.00	WAD=	2.00	TEM=	23.00	FLO=		EH =		SPC=	
ALK=	97.00	DIS=		SUS=		LI =		NA =	550.00	K =	20.00	RB =		MG =	70.00
CA =	45.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	975.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	4.30	PO4=		SIO=	50.00	SO4=	100.00	CO3=		HCO=	118.00	CAR=		HAR=	400.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	65.00

49 ID#=6-5731-01 TYP=WELL COU=MAUI LOC=MENDES LAT,LON= 205734. 1563131.00 DAT=1969.

PH =	7.90	SPC=		WED=	530.00	WAD=	25.00	TEM=	23.50	FLO=		EH =		SPC=	
ALK=	96.00	DIS=		SUS=		LI =		NA =	34.00	K =	2.60	RB =		MG =	9.10
CA =	13.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	20.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	2.70	PO4=		SIO=	13.00	SO4=	13.00	CO3=		HCO=	118.00	CAR=		HAR=	70.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	475.00

50 ID#=6-5833-01 TYP=WELL COU=MAUI LOC=NAPILI-1 LAT,LON= 205837. 1563846.00 DAT=1971.

PH =	6.90	SPC=		WED=	893.00	WAD=	4.70	TEM=	21.00	FLO=		EH =		SPC=	604.00
ALK=	41.00	DIS=		SUS=		LI =		NA =	82.00	K =	5.30	RB =		MG =	13.00
CA =	10.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	142.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.80	PO4=		SIO=	51.00	SO4=	22.00	CO3=		HCO=	50.00	CAR=		HAR=	79.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	860.00

TABLE 3 Molokai

1 ID#=4-0449-01 TYP=WELL COU=MOLOKAI LOC=UALAPUE LAT,LON= 210402. 1564958.01 DAT=1974.

PH =	7.10	SPC=		WED=	43.00	WAD=	4.10	TEM=	21.50	FLO=		EH =		SPC=	310.00
ALK=	57.00	DIS=	204.00	SUS=		LI =		NA =	39.00	K =	3.70	RB =		MG =	7.70
CA =	9.20	SR =		BA =		MN =		FE =	10.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	54.00	BR =		I =		O2 =		CO2=	8.90	H2S=		NH4=		NO2=	
NO3=		PO4=	0.34	SIO=	47.00	SO4=	7.70	CO3=		HCO=	70.00	CAR=		HAR=	55.00
SE =		PHE=		CD =		CR =		AG =		P =	0.11	N =	0.23	ELE=	40.00

2 ID#=4-0457-01 TYP=TUNNEL COU=MOLOKAI LOC=KAWELA LAT,LON= 210419. 1565705.01 DAT=1975.

PH =	6.30	SPC=		WED=	38.00	WAD=	1.90	TEM=	23.00	FLO=		EH =		SPC=	380.00
ALK=	39.00	DIS=	223.00	SUS=		LI =		NA =	38.00	K =	3.60	RB =		MG =	11.00
CA =	13.00	SR =		BA =		MN =		FE =	20.00	FET=		F =		CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	84.00	BR =		I =		O2 =		CO2=	38.00	H2S=		NH4=		NO2=	
NO3=		PO4=	4.30	SIO=	32.00	SO4=	12.00	CO3=		HCO=	48.00	CAR=		HAR=	78.00
SE =		PHE=		CD =		CR =		AG =		P =	1.40	N =	0.28	ELE=	36.00

3 ID#=4-0601-01 TYP=WELL COU=MOLOKAI LOC=KAUNAKAKAI LAT,LON= 210605. 1570120.01 DAT=1975.

PH =	7.20	SPC=		WED=	59.00	WAD=		TEM=	24.50	FLO=		EH =		SPC=	270.00
ALK=	92.00	DIS=	170.00	SUS=		LI =		NA =	25.00	K =	1.70	RB =		MG =	11.00
CA =	13.00	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	29.00	BR =		I =		O2 =		CO2=	0.11	H2S=		NH4=		NO2=	
NO3=		PO4=	0.21	SIO=	28.00	SO4=	5.10	CO3=		HCO=	112.00	CAR=		HAR=	78.00
SE =		PHE=		CD =		CR =		AG =		P =	0.07	N =	0.44	ELE=	52.00

4 ID#=4-0603-01 TYP=WELL COU=MOLOKAI LOC=UMIPAA DW14 LAT,LON= 210638. 1570326.01 DAT=1975.

PH =	7.70	SPC=		WED=	17.00	WAD=	1.10	TEM=	21.50	FLO=		EH =		SPC=	2400.00
ALK=	176.00	DIS=	1320.00	SUS=		LI =		NA =	320.00	K =	28.00	RB =		MG =	55.00
CA =	57.00	SR =		BA =		MN =	110.00	FE =	60.00	FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	630.00	BR =		I =		O2 =		CO2=	6.80	H2S=		NH4=		NO2=	
NO3=		PO4=	3.10	SIO=	53.00	SO4=	63.00	CO3=		HCO=	214.00	CAR=		HAR=	370.00
SE =		PHE=		CD =		CR =		AG =		P =	1.00	N =	0.75	ELE=	17.00

5 ID#=4-0700-01 TYP=WELL COU=MOLOKAI LOC=KALUAKOI LAT,LON= 210711. 1570005.00 DAT=1974.

PH =	8.00	SPC=		WED=	1080.00	WAD=	8.00	TEM=	23.00	FLO=		EH =		SPC=	1700.00
ALK=	34.00	DIS=	883.00	SUS=		LI =		NA =	240.00	K =	15.00	RB =		MG =	36.00
CA =	22.00	SR =		BA =		MN =		FE =	50.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	440.00	BR =		I =		O2 =		CO2=	0.70	H2S=		NH4=		NO2=	
NO3=		PO4=	0.18	SIO=	49.00	SO4=	58.00	CO3=		HCO=	42.00	CAR=		HAR=	200.00
SE =		PHE=		CD =		CR =		AG =		P =	0.06	N =	0.38	ELE=	982.00

6 ID#=4-0801-01 TYP=WELL COU=MOLOKAI LOC=KAULUWAI LAT,LON= 210856. 1570112.01 DAT=1975.

PH =	8.00	SPC=		WED=	1095.00	WAD=	10.70	TEM=	21.00	FLO=		EH =		SPC=	310.00
ALK=	39.00	DIS=	192.00	SUS=		LI =		NA =	30.00	K =	2.80	RB =		MG =	9.70
CA =	8.80	SR =		BA =		MN =	10.00	FE =	130.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	58.00	BR =		I =		O2 =		CO2=	0.80	H2S=		NH4=		NO2=	
NO3=		PO4=	0.25	SIO=	44.00	SO4=	13.00	CO3=		HCO=	48.00	CAR=		HAR=	62.00
SE =		PHE=		CD =		CR =		AG =		P =	0.08	N =	0.39	ELE=	1005.00

7 ID#=4-0901-01 TYP=WELL COU=MOLOKAI LOC=KALUALOHE LAT,LON= 210903. 1570130.00 DAT=1975.

PH =	8.00	SPC=		WED=	1064.00	WAD=	10.60	TEM=	21.50	FLO=		EH =		SPC=	260.00
ALK=	37.00	DIS=	159.00	SUS=		LI =		NA =	21.00	K =	2.80	RB =		MG =	8.00
CA =	7.80	SR =		BA =		MN =		FE =	60.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	41.00	BR =		I =		O2 =		CO2=	0.70	H2S=		NH4=		NO2=	
NO3=		PO4=	0.25	SIO=	47.00	SO4=	7.10	CO3=		HCO=	45.00	CAR=		HAR=	52.00
SE =		PHE=		CD =		CR =		AG =		P =	0.08	N =	0.32	ELE=	981.00

8 ID#=4-0902-01 TYP=WELL COU=MOLOKAI LOC=KUALAPUU LAT,LON= 210929. 1570218.00 DAT=1946.

PH =	8.10	SPC=		WED=	963.00	WAD=	10.50	TEM=		FLO=		EH =		SPC=	
ALK=	41.00	DIS=	1000.00	SUS=		LI =		NA =	66.00	K =		RB =		MG =	66.00
CA =	83.00	SR =		BA =		MN =		FE =		FET=		F =	0.60	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	375.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	4.00	PO4=		SIO=	41.00	SO4=	25.00	CO3=		HCO=	51.00	CAR=		HAR=	484.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	889.00

TABLE 4 Kauai

1	ID#=2-0044-03		TYP=WELL		COU=KAUAI				LOC=KAUNALEWA-2			LAT,LON=	220008.		1594442.00		DAT=1977.		
PH =	7.20	SPC=		WED=	195.00	WAD=	5.10	TEM=	23.50	FLO=		EH =				SPC=	10600.00		
ALK=	115.00	DIS=	5950.00	SUS=		LI =		NA =	910.00	K =	14.00	RB =				MG =	610.00		
CA =	400.00	SR =		BA =		MN =	20.00	FE =	60.00	FET=		F =				CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	3500.00	BR =		I =		O2 =		CO2=	14.00	H2S=		NH4=				NO2=			
NO3=		PO4=	0.40	SIO=	65.00	SO4=	380.00	CO3=		HCO=	140.00	CAR=				HAR=	3500.00		
SE =		PHE=		CD =		CR =		AG =		P =	0.13	N =	1.00			ELE=	8.00		

2	ID#=2-0044-04		TYP=WELL		COU=KAUAI				LOC=KAUNALEWA-3			LAT,LON=	220003.		1594442.00		DAT=1977.		
PH =	8.40	SPC=		WED=		WAD=	5.00	TEM=	28.00	FLO=		EH =				SPC=	1700.00		
ALK=	160.00	DIS=	765.00	SUS=		LI =		NA =	110.00	K =	2.90	RB =				MG =	82.00		
CA =	57.00	SR =		BA =		MN =	60.00	FE =	10.00	FET=		F =	0.10			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	350.00	BR =		I =		O2 =		CO2=	1.20	H2S=		NH4=				NO2=			
NO3=		PO4=		SIO=	31.00	SO4=	38.00	CO3=	0.00	HCO=	190.00	CAR=				HAR=	480.00		
SE =		PHE=		CD =		CR =		AG =		P =		N =				ELE=	9.00		

3	ID#=2-0044-10		TYP=WELL		COU=KAUAI				LOC=KAUNALEWA-12			LAT,LON=	220018.		1594447.00		DAT=1977.		
PH =	7.10	SPC=		WED=	210.00	WAD=	11.30	TEM=	23.50	FLO=		EH =				SPC=	4100.00		
ALK=	110.00	DIS=	2170.00	SUS=		LI =		NA =	320.00	K =	4.50	RB =				MG =	220.00		
CA =	170.00	SR =		BA =		MN =	250.00	FE =	20.00	FET=		F =	0.10			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	1200.00	BR =		I =		O2 =		CO2=	17.00	H2S=		NH4=				NO2=			
NO3=		PO4=		SIO=	50.00	SO4=	140.00	CO3=		HCO=	130.00	CAR=				HAR=	1300.00		
SE =		PHE=		CD =		CR =		AG =		P =		N =				ELE=	8.00		

4	ID#=2-0044-12		TYP=WELL		COU=KAUAI				LOC=KAUNALEWA-11			LAT,LON=	220005.		1594445.00		DAT=1977.		
PH =	7.50	SPC=		WED=	213.00	WAD=		TEM=	22.50	FLO=		EH =				SPC=	6300.00		
ALK=	150.00	DIS=	3650.00	SUS=		LI =		NA =	600.00	K =	10.00	RB =				MG =	360.00		
CA =	240.00	SR =		BA =		MN =	100.00	FE =	40.00	FET=		F =	0.00			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	2000.00	BR =		I =		O2 =		CO2=	9.10	H2S=		NH4=				NO2=			
NO3=		PO4=		SIO=	72.00	SO4=	280.00	CO3=		HCO=	189.00	CAR=				HAR=	2100.00		
SE =		PHE=		CD =		CR =		AG =		P =		N =				ELE=	4.00		

5	ID#=2-0044-13		TYP=WELL		COU=KAUAI				LOC=KAUNALEWA-7			LAT,LON=	220019.		1594448.00		DAT=1972.		
PH =	7.70	SPC=		WED=	244.00	WAD=	10.60	TEM=	22.00	FLO=		EH =				SPC=	3990.00		
ALK=		DIS=		SUS=		LI =		NA =	250.00	K =	4.70	RB =				MG =	228.00		
CA =	172.00	SR =		BA =		MN =		FE =		FET=		F =	0.10			CU =			
ZN =		HG =		B =		AL =		PB =		AS =		SB =				U =			
CL =	1180.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=			
NO3=	0.80	PO4=		SIO=	70.00	SO4=	143.00	CO3=		HCO=	138.00	CAR=				HAR=			
SE =		PHE=		CD =		CR =		AG =		P =		N =				ELE=	8.00		

6 ID#=2-0044-14 TYP=WELL COU=KAUAI LOC=KAUNALEWA-8 LAT,LON= 220019. 1594448.00 DAT=1977.

PH =	7.20	SPC=		WED=	245.00	WAD=	10.60	TEM=	23.00	FLO=		EH =		SPC=	1000.00
ALK=	110.00	DIS=	575.00	SUS=		LI =		NA =	71.00	K =	2.00	RB =		MG =	63.00
CA =	42.00	SR =		BA =		MN =	210.00	FE =	20.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	270.00	BR =		I =		O2 =		CO2=	13.00	H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	27.00	SO4=	36.00	CO3=		HCO=	130.00	CAR=		HAR=	360.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	8.00

7 ID#=2-0045-01 TYP=WELL COU=KAUAI LOC=CAMP 2 KS19 LAT,LON= 220053. 1594520.00 DAT=1972.

PH =		SPC=		WED=	192.00	WAD=	11.80	TEM=	22.50	FLO=		EH =		SPC=	1230.00
ALK=		DIS=		SUS=		LI =		NA =	49.00	K =	2.20	RB =		MG =	76.00
CA =	59.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	290.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.00	PO4=		SIO=	67.00	SO4=	43.00	CO3=		HCO=	150.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	8.00

8 ID#=2-0045-03 TYP=WELL COU=KAUAI LOC=CAMP 2 KS5 LAT,LON= 220055. 1594520.00 DAT=1972.

PH =	7.70	SPC=		WED=	262.00	WAD=	18.60	TEM=	21.40	FLO=		EH =		SPC=	760.00
ALK=		DIS=		SUS=		LI =		NA =	40.00	K =	1.70	RB =		MG =	47.00
CA =	32.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	145.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.90	PO4=		SIO=	71.00	SO4=	26.00	CO3=		HCO=	156.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	10.00

9 ID#=2-0120-01 TYP=WELL COU=KAUAI LOC=KALEPA RIDGE LAT,LON= 220136. 1592055.00 DAT=1975.

PH =	7.70	SPC=		WED=	240.00	WAD=	10.00	TEM=	24.50	FLO=		EH =		SPC=	650.00
ALK=	169.00	DIS=	530.00	SUS=		LI =		NA =	94.00	K =	2.40	RB =		MG =	33.00
CA =	32.00	SR =		BA =		MN =	20.00	FE =	40.00	FET=		F =	0.10	CU =	0.10
ZN =	0.03	HG =		B =		AL =	0.60	PB =	0.03	AS =	0.01	SB =		U =	
CL =	150.00	BR =		I =		O2 =		CO2=	6.60	H2S=		NH4=		NO2=	
NO3=	0.40	PO4=	0.28	SIO=	77.00	SO4=	32.00	CO3=		HCO=	206.00	CAR=		HAR=	220.00
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =	0.09	N =	1.80	ELE=	12.00

10 ID#=2-0120-02 TYP=WELL COU=KAUAI LOC=KALEPA RIDGE LAT,LON= 220134. 1592054.00 DAT=1972.

PH =	7.60	SPC=		WED=	312.00	WAD=	10.00	TEM=	27.50	FLO=		EH =		SPC=	722.00
ALK=	166.00	DIS=	457.00	SUS=		LI =		NA =	95.00	K =	2.60	RB =		MG =	23.00
CA =	8.00	SR =		BA =		MN =	0.05	FE =		FET=		F =	0.20	CU =	0.01
ZN =	0.01	HG =		B =		AL =	0.01	PB =	0.01	AS =	0.00	SB =		U =	
CL =	110.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	13.00	PO4=		SIO=	73.00	SO4=	23.00	CO3=		HCO=	202.00	CAR=		HAR=	140.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	12.00

11 ID#=2-0145-08 TYP=WELL COU=KAUAI LOC=MANA-4 LAT,LON= 220148. 1594535.00 DAT=1972.

PH =	7.80	SPC=		WED=	266.00	WAD=	11.00	TEM=	22.50	FLO=		EH =		SPC=	560.00
ALK=		DIS=		SUS=		LI =		NA =	41.00	K =	1.50	RB =		MG =	44.00
CA =	30.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	122.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.20	PO4=		SIO=	67.00	SO4=	22.00	CO3=		HCO=	183.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	29.00

12 ID#=2-0145-09 TYP=WELL COU=KAUAI LOC=MANA-5 LAT,LON= 220148. 1594535.00 DAT=1972.

PH =	7.90	SPC=		WED=	283.00	WAD=	10.80	TEM=	22.50	FLO=		EH =		SPC=	800.00
ALK=		DIS=		SUS=		LI =		NA =	58.00	K =	1.80	RB =		MG =	46.00
CA =	35.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	152.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.40	PO4=		SIO=	66.00	SO4=	29.00	CO3=		HCO=	192.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	29.00

13 ID#=2-0145-10 TYP=WELL COU=KAUAI LOC=MANA-6 LAT,LON= 220148. 1594535.00 DAT=1972.

PH =	7.90	SPC=		WED=	270.00	WAD=	10.80	TEM=	21.00	FLO=		EH =		SPC=	586.00
ALK=	141.00	DIS=	356.00	SUS=		LI =		NA =	31.00	K =	1.40	RB =		MG =	38.00
CA =	25.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	90.00	BR =		I =		O2 =		CO2=	3.50	H2S=		NH4=		NO2=	
NO3=	4.40	PO4=		SIO=	65.00	SO4=	16.00	CO3=		HCO=	172.00	CAR=		HAR=	220.00
SE =		PHE=		CD =		CR =		AG =		P =		N =	1.00	ELE=	31.00

14 ID#=2-0145-11 TYP=WELL COU=KAUAI LOC=MANA-7 LAT,LON= 220148. 1594535.00 DAT=1972.

PH =	7.70	SPC=		WED=	275.00	WAD=	10.80	TEM=	22.50	FLO=		EH =		SPC=	893.00
ALK=	143.00	DIS=	491.00	SUS=		LI =		NA =	51.00	K =	1.70	RB =		MG =	52.00
CA =	36.00	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	175.00	BR =		I =		O2 =		CO2=	5.60	H2S=		NH4=		NO2=	
NO3=	4.00	PO4=		SIO=	59.00	SO4=	27.00	CO3=		HCO=	174.00	CAR=		HAR=	300.00
SE =		PHE=		CD =		CR =		AG =		P =		N =	0.90	ELE=	30.00

15 ID#=2-0145-12 TYP=WELL COU=KAUAI LOC=MANA-8 LAT,LON= 220148. 1594535.00 DAT=1972.

PH =	8.00	SPC=		WED=	272.00	WAD=	10.70	TEM=	22.00	FLO=		EH =		SPC=	800.00
ALK=		DIS=		SUS=		LI =		NA =	50.00	K =	1.60	RB =		MG =	50.00
CA =	33.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	165.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.00	PO4=		SIO=	64.00	SO4=	26.00	CO3=		HCO=	172.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	31.00

16 ID#=2-0445-13 TYP=WELL COU=KAUAI LOC=MANA-9 LAT,LON= 220148. 1594535.00 DAT=1972.

PH =	7.70	SPC=		WED=	251.00	WAD=	10.70	TEM=	22.00	FLO=		EH =		SPC=	460.00
ALK=		DIS=		SUS=		LI =		NA =	24.00	K =	1.40	RB =		MG =	35.00
CA =	23.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	72.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.90	PO4=		SIO=	62.00	SO4=	13.00	CO3=		HCO=	165.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	31.00

17 ID#=2-0145-16 TYP=WELL COU=KAUAI LOC=MANA-11 LAT,LON= 220148. 1594535.00 DAT=1972.

PH =	7.70	SPC=		WED=		WAD=	10.70	TEM=	22.00	FLO=		EH =		SPC=	460.00
ALK=		DIS=		SUS=		LI =		NA =	24.00	K =	1.30	RB =		MG =	34.00
CA =	22.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	65.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.00	PO4=		SIO=	65.00	SO4=	12.00	CO3=		HCO=	170.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	31.00

18 ID#=2-0245-02 TYP=TUNNEL COU=KAUAI LOC=MANA SHAFT LAT,LON= 220210. 1594525.00 DAT=1972.

PH =	7.60	SPC=		WED=	105.00	WAD=		TEM=	23.00	FLO=		EH =		SPC=	500.00
ALK=		DIS=		SUS=		LI =		NA =	28.00	K =	1.90	RB =		MG =	36.00
CA =	22.00	SR =		BA =		MN =		FE =		FET=		F =	0.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	70.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	1.20	PO4=		SIO=	66.00	SO4=	12.00	CO3=		HCO=	181.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	102.00

19 ID#=2-0320-01 TYP=WELL COU=KAUAI LOC=NONOU-A LAT,LON= 220354. 1592056.00 DAT=1975.

PH =	7.60	SPC=		WED=	240.00	WAD=	20.00	TEM=	0.00	FLO=		EH =		SPC=	
ALK=	79.00	DIS=	250.00	SUS=		LI =		NA =	34.00	K =	1.70	RB =		MG =	15.00
CA =	9.20	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.09	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	48.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.90	PO4=		SIO=	63.40	SO4=	15.00	CO3=		HCO=		CAR=		HAR=	91.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =	0.30	ELE=	155.00

20 ID#=2-0320-03 TYP=WELL COU=KAUAI LOC=NONOU#9-1B LAT,LON= 220354. 1592056.00 DAT=1974.

PH =		SPC=		WED=	320.00	WAD=	21.20	TEM=	24.50	FLO=		EH =		SPC=	
ALK=	115.00	DIS=		SUS=		LI =		NA =	38.00	K =	2.30	RB =		MG =	8.40
CA =	12.10	SR =		BA =	0.30	MN =	0.03	FE =	0.05	FET=		F =	0.13	CU =	0.02
ZN =	0.03	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	48.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.30	PO4=		SIO=	51.10	SO4=	14.00	CO3=		HCO=		CAR=		HAR=	94.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	157.00

21 ID#=2-0321-01 TYP=WELL COU=KAUAI LOC=WAILUA #3 LAT,LON= 220333. 1592105.00 DAT=1971.

PH =	7.20	SPC=		WED=	275.00	WAD=	17.40	TEM=		FLO=		EH =		SPC=	432.00
ALK=	105.00	DIS=	287.00	SUS=		LI =		NA =	39.00	K =	1.70	RB =		MG =	20.00
CA =	16.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	64.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	5.30	PO4=		SIO=	68.00	SO4=	10.00	CO3=		HCO=	128.00	CAR=		HAR=	123.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	72.00

22 ID#=2-0345-04 TYP=TUNNEL COU=KAUAI LOC=SAKI MANA SH LAT,LON= 220341. 1594539.00 DAT=1975.

PH =	7.80	SPC=		WED=	62.00	WAD=		TEM=	22.00	FLO=		EH =		SPC=	1100.00
ALK=	135.00	DIS=	742.00	SUS=		LI =		NA =	120.00	K =	3.90	RB =		MG =	65.00
CA =	89.00	SR =		BA =	0.10	MN =	0.08	FE =	10.00	FET=		F =	0.10	CU =	0.02
ZN =	0.11	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	310.00	BR =		I =		O2 =		CO2=	4.20	H2S=		NH4=		NO2=	0.01
NO3=	1.20	PO4=	0.34	SIO=	72.00	SO4=	46.00	CO3=		HCO=	165.00	CAR=		HAR=	370.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.11	N =	0.96	ELE=	57.00

23 ID#=2-0421-01 TYP=WELL COU=KAUAI LOC=WAILUA HMSTD LAT,LON= 220416. 1592136.00 DAT=1972.

PH =	7.70	SPC=		WED=	568.00	WAD=	29.10	TEM=	24.50	FLO=		EH =		SPC=	360.00
ALK=	116.00	DIS=	270.00	SUS=		LI =		NA =	21.00	K =	1.00	RB =		MG =	21.00
CA =	18.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	41.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	4.60	PO4=		SIO=	83.00	SO4=	7.50	CO3=		HCO=	142.00	CAR=		HAR=	132.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	462.00

24 ID#=2-0545-01 TYP=WELL COU=KAUAI LOC=KAULAULA W59 LAT,LON= 220530. 1594507.00 DAT=1975.

PH =	7.30	SPC=		WED=	138.00	WAD=	6.20	TEM=	22.00	FLO=		EH =		SPC=	800.00
ALK=	174.00	DIS=	492.00	SUS=		LI =		NA =	76.00	K =	1.60	RB =		MG =	42.00
CA =	27.00	SR =		BA =		MN =	10.00	FE =	20.00	FET=		F =	0.10	CU =	0.01
ZN =	0.01	HG =		B =		AL =	0.01	PB =	0.01	AS =	0.00	SB =		U =	
CL =	160.00	BR =		I =		O2 =		CO2=	17.00	H2S=		NH4=		NO2=	0.01
NO3=	4.47	PO4=	0.21	SIO=	57.00	SO4=	17.00	CO3=		HCO=	212.00	CAR=		HAR=	240.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =	0.07	N =	1.40	ELE=	81.00

25 ID#=2-0618-05 TYP=WELL COU=KAUAI LOC=KEALIA 7 LAT,LON= 220615. 1591837.00 DAT=1972.

PH =	7.00	SPC=		WED=	225.00	WAD=	6.00	TEM=	24.50	FLO=		EH =		SPC=	269.00
ALK=	66.00	DIS=	169.00	SUS=		LI =		NA =	21.00	K =	0.90	RB =		MG =	12.00
CA =	13.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	40.00	BR =		I =		O2 =		CO2=	13.00	H2S=		NH4=		NO2=	
NO3=	0.40	PO4=		SIO=		SO4=	6.30	CO3=		HCO=	80.00	CAR=		HAR=	82.00
SE =		PHE=		CD =		CR =		AG =		P =		N =	0.10	ELE=	6.00

26 ID#=2-0620-01 TYP=WELL COU=KAUAI LOC=KAPAA CANNER LAT,LON= 220604. 1592014.00 DAT=1972.

PH =	7.30	SPC=		WED=	466.00	WAD=	11.60	TEM=		FLO=		EH =				SPC=	276.00
ALK=	80.00	DIS=	177.00	SUS=		LI =		NA =	26.00	K =	1.80	RB =				MG =	12.00
CA =	12.00	SR =		BA =		MN =	0.05	FE =		FET=		F =	0.20			CU =	0.01
ZN =	0.04	HG =		B =		AL =	0.01	PB =	0.01	AS =	0.00	SB =				U =	
CL =	23.00	BR =		I =		O2 =		CO2=	7.90	H2S=		NH4=				NO2=	0.07
NO3=	0.90	PO4=		SIO=	30.00	SO4=	18.00	CO3=		HCO=	98.00	CAR=				HAR=	79.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =	0.20			ELE=	249.00

27 ID#=2-0622-01 TYP=TUNNEL COU=KAUAI LOC=AKULIKULI LAT,LON= 220631. 1592213.00 DAT=1975.

PH =		SPC=		WED=		WAD=		TEM=	19.00	FLO=		EH =				SPC=	
ALK=	64.00	DIS=		SUS=		LI =		NA =	9.00	K =	0.44	RB =				MG =	7.40
CA =	5.60	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.05			CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =				U =	
CL =	15.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=	0.01
NO3=	0.40	PO4=		SIO=	33.60	SO4=	4.80	CO3=		HCO=		CAR=				HAR=	50.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =				ELE=	360.00

28 ID#=2-0623-01 TYP=TUNNEL COU=KAUAI LOC=MAKALEHA #6 LAT,LON= 220628. 1592331.00 DAT=1975.

PH =		SPC=		WED=		WAD=		TEM=	19.10	FLO=		EH =				SPC=	
ALK=	62.00	DIS=		SUS=		LI =		NA =	8.00	K =	0.59	RB =				MG =	7.00
CA =	5.70	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.05			CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =				U =	
CL =	14.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=	0.01
NO3=	1.00	PO4=		SIO=	31.50	SO4=	4.30	CO3=		HCO=		CAR=				HAR=	46.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =				ELE=	574.00

29 ID#=2-0818-01 TYP=WELL COU=KAUAI LOC=ANALOLA 90-A LAT,LON= 220825. 1591854.00 DAT=1973.

PH =	7.30	SPC=		WED=	433.00	WAD=	12.50	TEM=	23.50	FLO=		EH =				SPC=	267.00
ALK=	66.00	DIS=	167.00	SUS=		LI =		NA =	40.00	K =	2.80	RB =				MG =	16.00
CA =	14.00	SR =		BA =	0.10	MN =	0.03	FE =	1.20	FET=		F =	0.34			CU =	0.01
ZN =	0.04	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =				U =	
CL =	32.00	BR =		I =		O2 =		CO2=	7.00	H2S=		NH4=				NO2=	0.01
NO3=	1.50	PO4=		SIO=	36.00	SO4=	81.20	CO3=		HCO=	87.00	CAR=				HAR=	88.00
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =	0.20			ELE=	270.00

30 ID#=2-0818-02 TYP=WELL COU=KAUAI LOC=ANAHOLA B LAT,LON= 220826. 1591854.00 DAT=1975.

PH =		SPC=		WED=	486.00	WAD=	14.00	TEM=	23.50	FLO=		EH =				SPC=	275.00
ALK=	86.00	DIS=		SUS=		LI =		NA =	29.00	K =	1.50	RB =				MG =	11.00
CA =	9.90	SR =		BA =	0.10	MN =	3000.00	FE =	0.01	FET=		F =	0.21			CU =	0.03
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =				U =	
CL =	23.00	BR =		I =		O2 =		CO2=		H2S=		NH4=				NO2=	0.01
NO3=	0.11	PO4=		SIO=	29.80	SO4=	25.00	CO3=		HCO=		CAR=				HAR=	76.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.00	AG =	0.01	P =		N =				ELE=	270.00

31 ID#=2-1020-02 TYP=WELL COU=KAUAI LOC=LIHUE W79 LAT,LON= 221030. 1591928.00 DAT=1972.

PH =	7.40	SPC=		WED=	581.00	WAD=	12.50	TEM=	21.50	FLO=		EH =		SPC=	213.00
ALK=		DIS=		SUS=		LI =		NA =	15.00	K =	0.60	RB =		MG =	11.00
CA =	10.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	19.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	35.00	SO4=	3.40	CO3=		HCO=	88.00	CAR=		HAR=	
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	400.00

32 ID#=2-1020-03 TYP=WELL COU=KAUAI LOC=MOLOAA LAT,LON= 221038. 1592038.00 DAT=1972.

PH =	7.60	SPC=		WED=	700.00	WAD=	16.60	TEM=	21.50	FLO=		EH =		SPC=	207.00
ALK=	72.00	DIS=	139.00	SUS=		LI =		NA =	14.00	K =	0.70	RB =		MG =	11.00
CA =	11.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	19.00	BR =		I =		O2 =		CO2=	3.50	H2S=		NH4=		NO2=	
NO3=		PO4=		SIO=	36.00	SO4=	3.40	CO3=		HCO=	88.00	CAR=		HAR=	73.00
SE =		PHE=		CD =		CR =		AG =		P =		N =	0.00	ELE=	350.00

33 ID#=2-1020-04 TYP=WELL COU=KAUAI LOC=ALIOMANU LAT,LON= 221006. 1592002.00 DAT=1974.

PH =		SPC=		WED=	600.00	WAD=	41.00	TEM=	20.80	FLO=		EH =		SPC=	217.00
ALK=	73.00	DIS=	147.00	SUS=		LI =		NA =	14.00	K =	0.70	RB =		MG =	11.00
CA =	11.00	SR =		BA =		MN =	0.00	FE =	0.00	FET=		F =	0.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	22.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=	0.15	SIO=	39.00	SO4=	4.30	CO3=		HCO=	89.00	CAR=		HAR=	73.00
SE =		PHE=		CD =		CR =		AG =		P =	0.05	N =	0.13	ELE=	307.00

34 ID#=2-5427-02 TYP=WELL COU=KAUAI LOC=KOLOA 2 LAT,LON= 215455. 2592742.00 DAT=1973.

PH =		SPC=		WED=	503.00	WAD=	45.00	TEM=	23.00	FLO=		EH =		SPC=	
ALK=	53.00	DIS=		SUS=		LI =		NA =	16.00	K =	1.50	RB =		MG =	15.00
CA =	7.20	SR =		BA =	0.10	MN =	0.03	FE =	0.05	FET=		F =	0.11	CU =	0.02
ZN =	0.03	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	30.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.54	PO4=		SIO=	36.80	SO4=	4.90	CO3=		HCO=		CAR=		HAR=	
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	245.00

35 ID#=2-5530-02 TYP=WELL COU=KAUAI LOC=LAWAI CANNER LAT,LON= 215458. 1593027.00 DAT=1956.

PH =	7.30	SPC=		WED=	394.00	WAD=	366.00	TEM=	22.50	FLO=		EH =		SPC=	
ALK=	60.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	8.90
CA =	5.80	SR =		BA =		MN =	0.10	FE =		FET=		F =	0.20	CU =	0.10
ZN =	0.03	HG =		B =		AL =		PB =	0.03	AS =	0.01	SB =		U =	
CL =	26.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.00
NO3=	4.00	PO4=		SIO=	52.00	SO4=	16.40	CO3=		HCO=		CAR=		HAR=	51.70
SE =	0.05	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	335.00

36 ID#=2-5530-03 TYP=WELL COU=KAUAI LOC=LAWAI DEEP W LAT,LON= 215535. 1593026.01 DAT=1975.

PH =	7.90	SPC=		WED=	695.00	WAD=	53.30	TEM=	23.00	FLO=		EH =		SPC=	210.00
ALK=	60.00	DIS=	170.00	SUS=		LI =		NA =	19.00	K =	0.94	RB =		MG =	9.40
CA =	5.80	SR =		BA =	0.10	MN =	0.03	FE =	10.00	FET=		F =	0.01	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	27.00	BR =		I =		O2 =		CO2=	1.50	H2S=		NH4=		NO2=	0.01
NO3=	0.54	PO4=	37.00	SIO=	59.00	SO4=	8.70	CO3=		HCO=		CAR=		HAR=	61.00
SE =	0.00	PHE=		CD =	0.00	CR =	0.01	AG =	0.01	P =	0.12	N =	0.51	ELE=	600.00

37 ID#=2-5531-01 TYP=WELL COU=KAUAI LOC=KALAHEO 24 LAT,LON= 215503. 1593117.00 DAT=1968.

PH =	9.80	SPC=		WED=	952.00	WAD=	43.00	TEM=	24.40	FLO=		EH =		SPC=	
ALK=	113.30	DIS=		SUS=		LI =		NA =	46.00	K =	10.90	RB =		MG =	1.10
CA =	2.60	SR =		BA =		MN =	0.05	FE =	0.03	FET=		F =	0.38	CU =	0.01
ZN =	0.01	HG =		B =		AL =	0.06	PB =	0.01	AS =	0.00	SB =		U =	
CL =	46.00	BR =		I =	0.00	O2 =		CO2=		H2S=		NH4=		NO2=	0.02
NO3=	8.59	PO4=		SIO=	59.00	SO4=	8.00	CO3=		HCO=		CAR=		HAR=	10.90
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =	0.00	ELE=	630.00

38 ID#=2-5533-01 TYP=WELL COU=KAUAI LOC=HANAPEPE LAT,LON= 215543. 1593345.01 DAT=1974.

PH =		SPC=		WED=	190.00	WAD=	9.90	TEM=	21.50	FLO=		EH =		SPC=	251.00
ALK=	73.00	DIS=	179.00	SUS=		LI =		NA =	22.00	K =	1.40	RB =		MG =	13.00
CA =	12.00	SR =		BA =		MN =	5.00	FE =	40.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	28.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=	0.12	SIO=	49.00	SO4=	9.30	CO3=		HCO=		CAR=		HAR=	84.00
SE =		PHE=		CD =		CR =		AG =		P =	0.04	N =	0.02	ELE=	98.00

39 ID#=2-5534-03 TYP=WELL COU=KAUAI LOC=HANAPEPE VAL LAT,LON= 215522. 1593426.01 DAT=1975.

PH =	7.30	SPC=		WED=	109.00	WAD=	17.10	TEM=	24.00	FLO=		EH =		SPC=	450.00
ALK=	129.00	DIS=	325.00	SUS=		LI =		NA =	76.00	K =	2.00	RB =		MG =	4.60
CA =	2.00	SR =		BA =	0.10	MN =	0.03	FE =	10.00	FET=		F =	0.46	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	4.80	BR =		I =		O2 =		CO2=	13.00	H2S=		NH4=		NO2=	0.01
NO3=	0.71	PO4=	0.77	SIO=	50.00	SO4=	25.00	CO3=		HCO=		CAR=		HAR=	30.00
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.25	N =	4.50	ELE=	78.00

40 ID#=2-5631-01 TYP=WELL COU=KAUAI LOC=KALAHEO LAT,LON= 215629. 1593141.01 DAT=1975.

PH =		SPC=		WED=	1125.00	WAD=	33.00	TEM=	20.70	FLO=		EH =		SPC=	201.00
ALK=	64.00	DIS=	142.00	SUS=		LI =		NA =	15.00	K =	1.00	RB =		MG =	9.00
CA =	9.20	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	22.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=	0.15	SIO=	42.00	SO4=	3.70	CO3=		HCO=		CAR=		HAR=	60.00
SE =		PHE=		CD =		CR =		AG =		P =	0.05	N =	0.25	ELE=	887.00

41 ID#=2-5635-01 TYP=WELL COU=KAUAI LOC=KAUMAKANI S7 LAT,LON= 215635. 1593550.01 DAT=1975.

PH =	7.80	SPC=		WED=	364.00	WAD=	20.00	TEM=	23.00	FLO=		EH =		SPC=	767.00
ALK=	111.00	DIS=		SUS=		LI =		NA =	109.00	K =	7.70	RB =		MG =	16.00
CA =	6.10	SR =		BA =	0.10	MN =	0.03	FE =	0.04	FET=		F =	0.37	CU =	0.02
ZN =	0.01	HC =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	149.00	BR =		I =		O2 =		CO2=	3.10	H2S=		NH4=		NO2=	0.01
NO3=	0.55	PO4=		SIO=	43.30	SO4=	37.00	CO3=	0.00	HCO=		CAR=		HAR=	100.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =	1.30	ELE=	376.00

42 ID#=2-5638-01 TYP=WELL COU=KAUAI LOC=MAHINAULI LAT,LON= 215612. 1593810.01 DAT=1973.

PH =	8.00	SPC=		WED=	56.00	WAD=	32.70	TEM=	23.00	FLO=		EH =		SPC=	380.00
ALK=	148.00	DIS=	261.00	SUS=		LI =		NA =	48.00	K =	3.30	RB =		MG =	15.00
CA =	9.80	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HC =		B =		AL =		PB =		AS =		SB =		U =	
CL =	20.00	BR =		I =		O2 =		CO2=	2.90	H2S=		NH4=		NO2=	
NO3=	9.70	PO4=		SIO=	52.00	SO4=	14.00	CO3=	0.00	HCO=		CAR=		HAR=	86.00
SE =		PHE=		CD =		CR =		AG =		P =		N =	2.20	ELE=	43.00

43 ID#=2-5725-01 TYP=TUNNEL COU=KAUAI LOC=LIHUE GROV F LAT,LON= 215747. 1592534.00 DAT=1975.

PH =		SPC=		WED=	300.00	WAD=		TEM=	23.00	FLO=		EH =		SPC=	
ALK=	85.00	DIS=		SUS=		LI =		NA =	9.60	K =	1.20	RB =		MG =	11.00
CA =	8.60	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.16	CU =	0.02
ZN =	0.01	HC =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	19.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.44	PO4=		SIO=	36.60	SO4=	4.70	CO3=		HCO=		CAR=		HAR=	
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	300.00

44 ID#=2-5823-01 TYP=TUNNEL COU=KAUAI LOC=GARLINGHOUSE LAT,LON= 215845. 1592321.00 DAT=1977.

PH =	6.80	SPC=		WED=		WAD=	187.00	TEM=	22.00	FLO=		EH =		SPC=	181.00
ALK=	67.00	DIS=		SUS=		LI =		NA =	18.00	K =	1.30	RB =		MG =	5.10
CA =	7.20	SR =		BA =	0.30	MN =	0.03	FE =	10.00	FET=		F =	0.13	CU =	0.02
ZN =	0.15	HC =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	22.00	BR =		I =		O2 =		CO2=	15.00	H2S=		NH4=		NO2=	0.01
NO3=	0.90	PO4=		SIO=	32.00	SO4=	6.70	CO3=	0.00	HCO=		CAR=		HAR=	
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =	0.88	ELE=	187.00

45 ID#=2-5824-01 TYP=WELL COU=KAUAI LOC=COMM COLL LAT,LON= 215825. 1592403.01 DAT=1975.

PH =		SPC=		WED=	772.00	WAD=		TEM=	25.00	FLO=		EH =		SPC=	
ALK=	135.00	DIS=	203.00	SUS=		LI =		NA =	42.00	K =	4.50	RB =		MG =	12.00
CA =	11.00	SR =		BA =		MN =	0.00	FE =	10.00	FET=		F =	0.20	CU =	
ZN =		HC =		B =		AL =		PB =		AS =		SB =		U =	
CL =	17.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=		PO4=	0.34	SIO=	23.00	SO4=	4.00	CO3=		HCO=		CAR=		HAR=	77.00
SE =		PHE=		CD =		CR =		AG =		P =	0.11	N =	1.70	ELE=	328.00

46 ID#=2-5840-02 TYP=WELL COU=KAUAI LOC=WAIMEA 26 LAT,LON= 215803. 1594012.01 DAT=1975.

PH =	7.90	SPC=		WED=	190.00	WAD=	10.80	TEM=	24.00	FLO=		EH =		SPC=	510.00
ALK=	97.00	DIS=	363.00	SUS=		LI =		NA =	62.00	K =	3.00	RB =		MG =	12.00
CA =	4.40	SR =		BA =	0.10	MN =	0.03	FE =	50.00	FET=		F =	0.12	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	73.00	BR =		I =		O2 =		CO2=	2.40	H2S=		NH4=		NO2=	0.01
NO3=	0.95	PO4=	0.64	SIO=	73.00	SO4=	17.00	CO3=		HCO=		CAR=		HAR=	71.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.21	N =	1.40	ELE=	167.00

47 ID#=2-5842-02 TYP=TUNNEL COU=KAUAI LOC=KEKAHA PLS11 LAT,LON= 215854. 1594246.00 DAT=1975.

PH =		SPC=		WED=		WAD=	57.00	TEM=	24.50	FLO=		EH =		SPC=	710.00
ALK=	160.00	DIS=		SUS=		LI =		NA =	66.00	K =	44.00	RB =		MG =	26.00
CA =	15.00	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.10	CU =	0.02
ZN =	0.05	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	106.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	1.20	PO4=		SIO=	40.20	SO4=	23.00	CO3=		HCO=		CAR=		HAR=	154.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	60.00

48 ID#=2-5843-01 TYP=TUNNEL COU=KAUAI LOC=KEKAHA LAT,LON= 215857. 1594301.00 DAT=1975.

PH =		SPC=		WED=	53.00	WAD=	11.00	TEM=	24.00	FLO=		EH =		SPC=	
ALK=	149.00	DIS=		SUS=		LI =		NA =	54.00	K =	2.20	RB =		MG =	19.00
CA =	9.00	SR =		BA =	0.10	MN =	0.03	FE =	0.01	FET=		F =	0.27	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	67.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.94	PO4=		SIO=	56.10	SO4=	14.00	CO3=		HCO=		CAR=		HAR=	12.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	57.00

49 ID#=2-5921-01 TYP=WELL COU=KAUAI LOC=KALAPA RIDGE LAT,LON= 215958. 1592143.00 DAT=1954.

PH =	7.20	SPC=		WED=	540.00	WAD=	16.00	TEM=		FLO=		EH =		SPC=	
ALK=	134.00	DIS=		SUS=		LI =		NA =		K =		RB =		MG =	12.80
CA =	39.10	SR =		BA =		MN =	0.00	FE =		FET=		F =	0.20	CU =	0.01
ZN =	0.01	HG =		B =		AL =		PB =	0.01	AS =	0.01	SB =		U =	
CL =	23.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.70
NO3=	0.10	PO4=		SIO=	32.00	SO4=	52.70	CO3=		HCO=		CAR=		HAR=	151.10
SE =	0.01	PHE=	0.01	CD =		CR =		AG =		P =		N =		ELE=	302.00

50 ID#=2-5923-01 TYP=WELL COU=KAUAI LOC=KILOHANA LAT,LON= 215901. 1592353.01 DAT=1974.

PH =	3.30	SPC=		WED=	920.00	WAD=	46.80	TEM=	26.50	FLO=		EH =		SPC=	289.00
ALK=	121.00	DIS=	174.00	SUS=		LI =		NA =	34.00	K =	3.80	RB =		MG =	11.00
CA =	9.00	SR =		BA =		MN =	40.00	FE =	20.00	FET=		F =	0.50	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	16.00	BR =		I =		O2 =		CO2=	1.20	H2S=		NH4=		NO2=	
NO3=		PO4=	0.28	SIO=	23.00	SO4=	2.80	CO3=	0.00	HCO=		CAR=		HAR=	68.00
SE =		PHE=		CD =		CR =		AG =		P =	0.09	N =	0.02	ELE=	371.00

51 ID#=02-5923-02 TYP=WELL COU=KAUAI LOC=KILOHANA LAT,LON= 215901. 1592353.02 DAT=1977.

PH =	6.70	SPC=		WED=	180.00	WAD=	225.00	TEM=	23.50	FLO=		EH =		SPC=	190.00
ALK=	55.00	DIS=	132.00	SUS=		LI =		NA =	17.00	K =	1.10	RB =		MG =	9.00
CA =	7.20	SR =		BA =		MN =	0.00	FE =	70.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	22.00	BR =		I =		O2 =		CO2=	21.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.55	SIO=	33.00	SO4=	5.30	CO3=	0.00	HCO=		CAR=		HAR=	55.00
SE =		PHE=		CD =		CR =		AG =		P =	0.18	N =	0.84	ELE=	371.00

52 ID#=02-5939-01 TYP=TUNNEL COU=KAUAI LOC=WAIMEA 9 LAT,LON= 215906. 1593956.00 DAT=1975.

PH =	7.30	SPC=		WED=	43.00	WAD=		TEM=		FLO=		EH =		SPC=	
ALK=	138.00	DIS=		SUS=		LI =		NA =	33.00	K =	1.90	RB =		MG =	20.00
CA =	12.00	SR =		BA =	0.10	MN =	0.07	FE =	0.12	FET=		F =	0.21	CU =	0.02
ZN =	0.03	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	54.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.60	PO4=		SIO=	36.10	SO4=	7.90	CO3=		HCO=		CAR=		HAR=	118.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =		N =		ELE=	40.00

53 ID#=02-5942-01 TYP=WELL COU=KAUAI LOC=PAUA VALLEY LAT,LON= 215911. 1594247.00 DAT=1970.

PH =	7.60	SPC=		WED=	210.00	WAD=	9.40	TEM=	24.00	FLO=		EH =		SPC=	418.00
ALK=	133.00	DIS=	275.00	SUS=		LI =		NA =	55.00	K =	1.80	RB =		MG =	17.00
CA =	10.00	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	41.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	9.10	PO4=		SIO=	48.00	SO4=	10.00	CO3=		HCO=		CAR=		HAR=	95.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	191.00

54 ID#=02-5943-01 TYP=WELL COU=KAUAI LOC=WAIAWA LAT,LON= 215937. 1594342.01 DAT=1975.

PH =	7.50	SPC=		WED=	57.00	WAD=		TEM=	23.00	FLO=		EH =		SPC=	920.00
ALK=	164.00	DIS=	570.00	SUS=		LI =		NA =	93.00	K =	5.20	RB =		MG =	43.00
CA =	25.00	SR =		BA =		MN =	10.00	FE =	30.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	180.00	BR =		I =		O2 =		CO2=	10.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.49	SIO=	77.00	SO4=	33.00	CO3=		HCO=		CAR=		HAR=	240.00
SE =		PHE=		CD =		CR =		AG =		P =	0.16	N =	2.10	ELE=	57.00

55 ID#=02-0320-02 TYP=WELL COU=KAUAI LOC=WAILUA LAT,LON= 220346. 1592053.00 DAT=1960.

PH =	7.40	SPC=		WED=	230.00	WAD=	55.00	TEM=		FLO=		EH =		SPC=	
ALK=	96.00	DIS=		SUS=		LI =		NA =	30.00	K =		RB =		MG =	12.00
CA =	14.00	SR =		BA =		MN =		FE =		FET=		F =	0.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	25.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.40	PO4=		SIO=	59.00	SO4=	21.00	CO3=	0.00	HCO=		CAR=		HAR=	85.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	90.00

56 ID#=2-1120-01 TYP=TUNNEL COU=KAUAI LOC=MOLOAA TUN-3 LAT,LON= 221111. 1592031.00 DAT=1973.

PH =		SPC=		WED=		WAD=		TEM=	25.50	FLO=		EH =		SPC=	251.00
ALK=		DIS=	168.00	SUS=		LI =		NA =	33.00	K =	1.10	RB =		MG =	7.00
CA =	2.80	SR =		BA =		MN =		FE =		FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	25.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	15.00	PO4=		SIO=	13.00	SO4=	14.00	CO3=	0.00	HCO=	6.00	CAR=		HAR=	36.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	250.00

57 ID#=2-1126-02 TYP=WELL COU=KAUAI LOC=ECDC2 HANALE LAT,LON= 221151. 1592650.00 DAT=1975.

PH =	7.70	SPC=		WED=	760.00	WAD=		TEM=	23.50	FLO=		EH =		SPC=	200.00
ALK=	68.00	DIS=	143.00	SUS=		LI =		NA =	12.00	K =	0.90	RB =		MG =	8.70
CA =	13.00	SR =		BA =		MN =	0.05	FE =	40.00	FET=		F =	0.00	CU =	0.04
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =		U =	
CL =	17.00	BR =		I =		O2 =		CO2=	2.60	H2S=		NH4=		NO2=	0.01
NO3=	0.50	PO4=	0.28	SIO=	47.00	SO4=	2.60	CO3=		HCO=	83.00	CAR=		HAR=	68.00
SE =	0.01	PHE=		CD =		CR =		AG =		P =	0.09	N =	0.20	ELE=	333.00

58 ID#=2-1126-01 TYP=WELL COU=KAUAI LOC=EC-1 LAT,LON= 221150. 1592645.00 DAT=1969.

PH =	0.67	SPC=		WED=	763.00	WAD=	27.00	TEM=		FLO=		EH =		SPC=	
ALK=	68.60	DIS=		SUS=		LI =		NA =	6.00	K =	0.20	RB =		MG =	2.50
CA =	26.00	SR =		BA =		MN =	0.01	FE =	0.02	FET=		F =	0.14	CU =	0.01
ZN =	0.02	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.00	SB =		U =	
CL =	17.30	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	0.01
NO3=	0.11	PO4=		SIO=	32.80	SO4=	2.00	CO3=		HCO=		CAR=		HAR=	60.00
SE =	0.01	PHE=	0.00	CD =		CR =		AG =		P =		N =		ELE=	347.00

59 ID#=2-1125-01 TYP=WELL COU=KAUAI LOC=KILAUEA-1 LAT,LON= 221141. 1592525.00 DAT=*****

PH =	7.10	SPC=		WED=	790.00	WAD=	16.50	TEM=	23.00	FLO=		EH =		SPC=	150.00
ALK=	54.00	DIS=	112.00	SUS=		LI =		NA =	10.00	K =	0.90	RB =		MG =	6.80
CA =	8.90	SR =		BA =		MN =		FE =		FET=		F =	0.00	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	13.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	0.70	PO4=	0.00	SIO=	39.00	SO4=	1.00	CO3=		HCO=	66.00	CAR=		HAR=	50.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	390.00

60 ID#=2-1229-03 TYP=WELL COU=KAUAI LOC=MAKA RIDGE LAT,LON= 221201. 1592934.00 DAT=1975.

PH =	7.50	SPC=		WED=	466.00	WAD=	28.00	TEM=	22.00	FLO=		EH =		SPC=	190.00
ALK=	72.00	DIS=	146.00	SUS=		LI =		NA =	14.00	K =	0.90	RB =		MG =	9.90
CA =	14.00	SR =		BA =	0.10	MN =	0.03	FE =	10.00	FET=		F =	0.20	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.02	PB =	0.01	AS =	0.01	SB =		U =	
CL =	20.00	BR =		I =		O2 =		CO2=	4.50	H2S=		NH4=		NO2=	0.01
NO3=	0.24	PO4=	0.25	SIO=	38.00	SO4=	4.10	CO3=	0.00	HCO=	88.00	CAR=		HAR=	76.00
SE =	0.01	PHE=	0.00	CD =	0.00	CR =		AG =	0.01	P =	0.03	N =	0.22	ELE=	119.00

61 ID#=2-1327-01 TYP=TUNNEL COU=KAUAI LOC=ANINI TUNNEL LAT,LON= 221335. 1592748.00 DAT=1972.

PH =	7.20	SPC=		WED=		WAD=		TEM=	23.00	FLO=		EH =		SPC=	20.50
ALK=	57.00	DIS=	140.00	SUS=		LI =		NA =	20.00	K =	1.10	RB =		MG =	7.70
CA =	7.50	SR =		BA =		MN =		FE =		FET=		F =	0.20	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	23.00	BR =		I =		O2 =		CO2=		H2S=		NH4=		NO2=	
NO3=	2.00	PO4=		SIO=	36.00	SO4=	8.90	CO3=		HCO=	69.00	CAR=		HAR=	50.00
SE =		PHE=		CD =		CR =		AG =		P =		N =		ELE=	28.00

62 ID#=2-1333-01 TYP=WELL COU=KAUAI LOC=HAENA DEEP LAT,LON= 221318. 1593359.00 DAT=1975.

PH =	7.40	SPC=		WED=	159.00	WAD=	14.20	TEM=	21.50	FLO=		EH =		SPC=	200.00
ALK=	74.00	DIS=	139.00	SUS=		LI =		NA =	18.00	K =	1.10	RB =		MG =	9.00
CA =	11.00	SR =		BA =	0.10	MN =	0.03	FE =	29.00	FET=		F =	0.10	CU =	0.02
ZN =	0.01	HG =		B =		AL =	0.04	PB =	0.01	AS =	0.01	SB =		U =	
CL =	18.00	BR =		I =		O2 =		CO2=	5.70	H2S=		NH4=		NO2=	
NO3=		PO4=	0.15	SIO=	33.00	SO4=	3.20	CO3=		HCO=	90.00	CAR=		HAR=	65.00
SE =	0.01	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.05	N =	0.20	ELE=	83.00

63 ID#=2-5426-04 TYP=WELL COU=KAUAI LOC=KOLOA C LAT,LON= 215418. 1592604.00 DAT=1977.

PH =	7.00	SPC=		WED=	576.00	WAD=	25.10	TEM=		FLO=		EH =		SPC=	366.00
ALK=	91.00	DIS=	252.00	SUS=		LI =		NA =	36.00	K =	1.40	RB =		MG =	17.00
CA =	13.00	SR =		BA =		MN =	10.00	FE =	20.00	FET=		F =	0.10	CU =	
ZN =		HG =		B =		AL =		PB =		AS =		SB =		U =	
CL =	55.00	BR =		I =		O2 =		CO2=	18.00	H2S=		NH4=		NO2=	
NO3=		PO4=	0.40	SIO=	58.00	SO4=	12.00	CO3=	0.00	HCO=	111.00	CAR=		HAR=	100.00
SE =		PHE=		CD =		CR =		AG =		P =	0.13	N =	1.00	ELE=	222.00

64 ID#=2-5427-01 TYP=WELL COU=KAUAI LOC=KOLOA-A LAT,LON= 215454. 1592742.00 DAT=*****

PH =	7.60	SPC=		WED=	455.00	WAD=	45.20	TEM=	24.00	FLO=		EH =		SPC=	240.00
ALK=	71.00	DIS=	179.00	SUS=		LI =		NA =	21.00	K =	1.40	RB =		MG =	10.00
CA =	9.80	SR =		BA =	0.10	MN =	0.03	FE =	10.00	FET=		F =	0.10	CU =	0.02
ZN =	0.03	HG =		B =		AL =	0.10	PB =	0.01	AS =	0.01	SB =		U =	
CL =	27.00	BR =		I =		O2 =		CO2=	3.50	H2S=		NH4=		NO2=	0.01
NO3=	0.49	PO4=	0.43	SIO=	59.00	SO4=	5.80	CO3=		HCO=	86.00	CAR=		HAR=	66.00
SE =	0.00	PHE=	0.00	CD =	0.00	CR =	0.01	AG =	0.01	P =	0.14	N =	0.43	ELE=	245.00

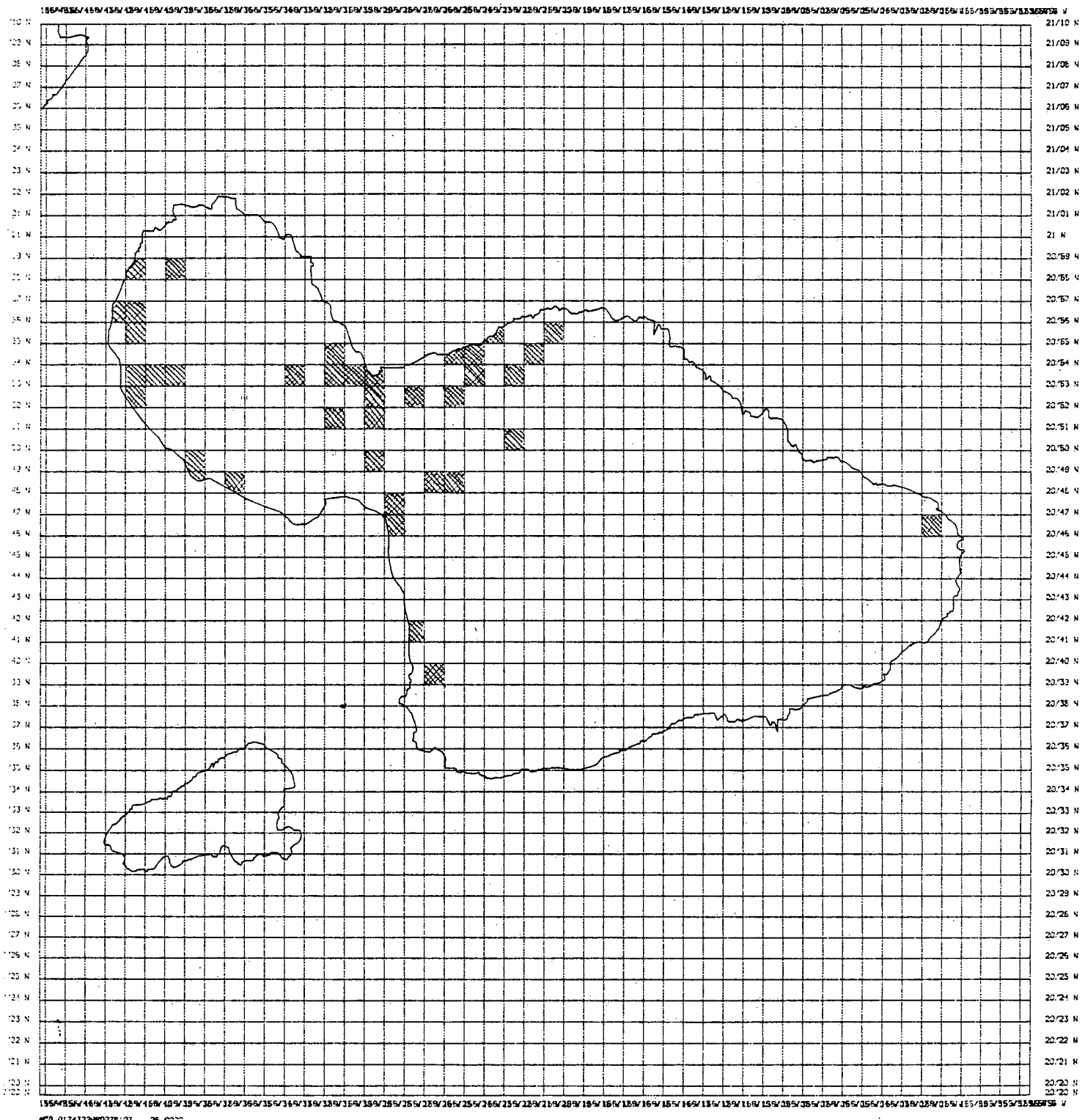
APPENDIX B

Areas of Possible Geothermal Potential

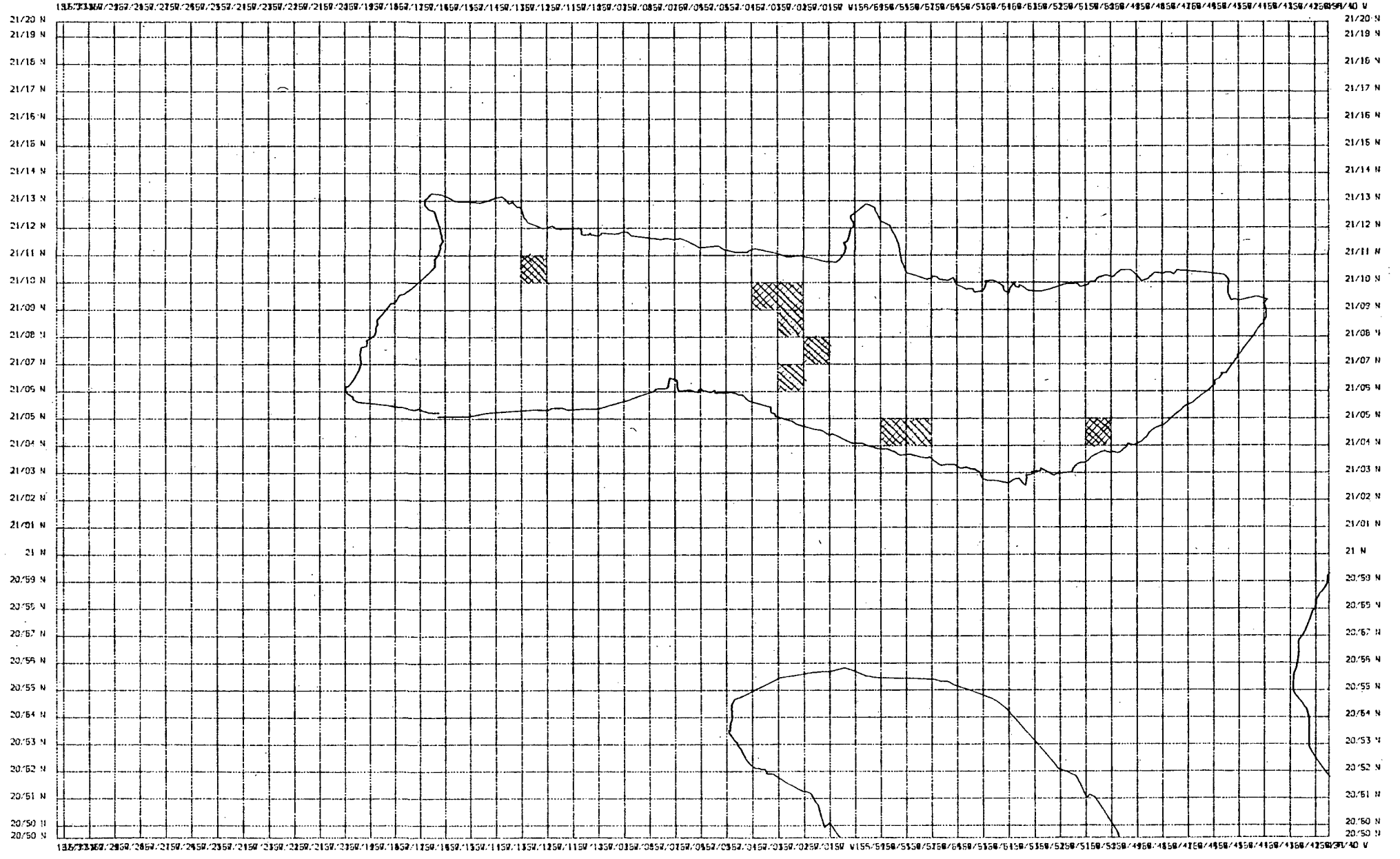
The following maps of Hawaii, Maui, Molokai, and Kauai are intended to show areas where there are concentrations of wells with some geothermal indicators. It should be noted that the wells which were used on these maps are predominantly high silica wells and do not necessarily have high temperatures. The number and distribution of wells on the map of Kauai indicate that our silica criterion for inclusion in our data base, for Kauai at least, should be modified. The map of Kauai suggests an erroneous geothermal potential for the island.

The grid on each map is one square minute of latitude and longitude (1 mile spuare). Each quadrangle which has one or more wells from Tables 1-4, has been shaded.

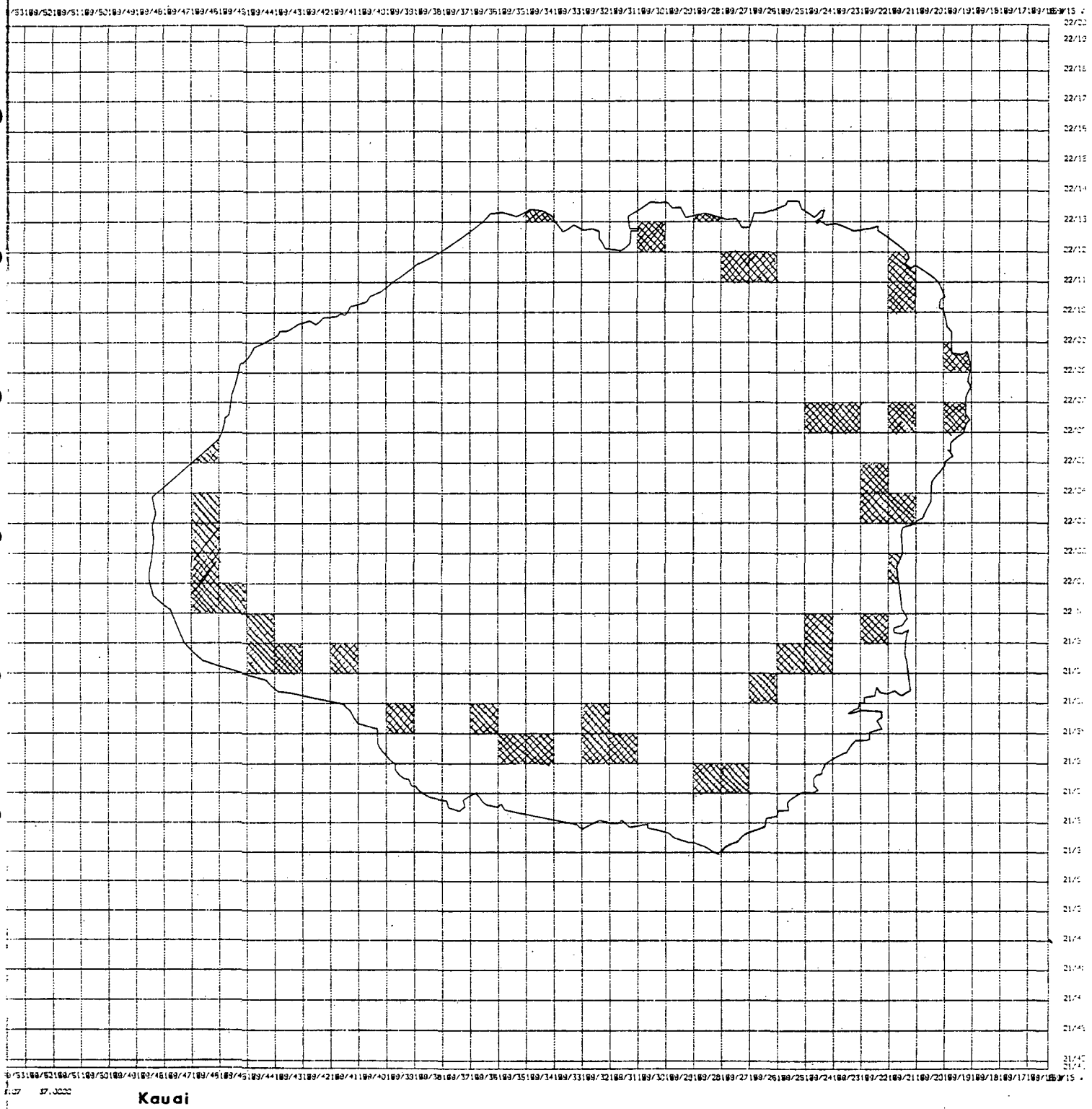
Hawaii



Maui


21/20 N
21/19 N
21/18 N
21/17 N
21/16 N
21/15 N
21/14 N
21/13 N
21/12 N
21/11 N
21/10 N
21/09 N
21/08 N
21/07 N
21/06 N
21/05 N
21/04 N
21/03 N
21/02 N
21/01 N
21 N
20/59 N
20/58 N
20/57 N
20/56 N
20/55 N
20/54 N
20/53 N
20/52 N
20/51 N
20/50 N
20/49 N

Molokai



Kauai

HIG 78-010

Proposal Submitted to

Department of Energy, Division of Geothermal Energy

by

Hawaii Institute of Geophysics, University of Hawaii

2525 Correa Road, Honolulu, Hawaii 96822

for

DOE/DGE-State Cooperative Program

for Assessment of Direct Heat Resources of Hawaii

Title: Assessment of Direct Heat Resources of Hawaii

Principal Investigator: Charles E. Helsley
Director, Hawaii Institute of Geophysics
Social Security No.: 563-50-4577

Amount: $107,247

Endorsements:

Principal Investigator and Institute Head	Institutional Admin. Official
Name: Charles E. Helsley	Philip Helfrich
Signature:	
Title: Director, HIG	Assoc. Dean, Organized Research
Telephone No.: (808) 948-8760	(808) 948-8658
Date:	

DOE-STATE PROGRAM FOR ASSESSMENT OF DIRECT HEAT RESOURCES

Introduction

During the Hawaii Geothermal Project (HGP), a general survey of the geothermal potential of the Hawaiian Islands was made. Various data sets were accumulated for this purpose, and thus some of the data required for the State compilation is already in hand. This initial data base can readily be extended to include data from areas not included in the original HGP study, but in many areas these data will have to be supplemented by additional field work in order for an optimally useful data set to emerge.

The general types of data that are readily available and reasonably complete are: (1) geologic data including location of rift zones, dike swarms, recent cones, Quaternary cones, faults, etc.; (2) hydrologic data including temperature, chemistry and productivity of most wells drilled for water supply (many of which are >20°C); and (3) infrared imagery data for coastal areas indicating the presence of warm water springs. All of these data sets should be useful to low temperature resource identification.

Based upon our preliminary evaluation of the geothermal resources of Hawaii conducted as part of the HGP, we feel that there are more than a dozen areas that are potentially useful either as high T or low T resources. Unfortunately, the available data on these areas is very limited for the reasons discussed below. Thus, we feel that the objectives of the DOE-USGS-State program can best be achieved by implementing field programs in selected areas in order to develop additional data for resource evaluation.

Unusual Aspects of Hawaii as Related to the Program

The mean annual temperature for much of Hawaii is in excess of 20°C and, as a result, most well waters have temperatures near or slightly in excess of 20°C. Water temperatures probably do not become indicative of a geothermal resource until they are in excess of 25°C. Thus, it may be appropriate to modify the requirements of the survey for this tropical area.

The water table throughout most of Hawaii is very near sea level, and since much of the area has moderate to high rainfall, most of the islands above sea level have been cooled to near ambient (i.e. mean annual) temperatures by rain water percolating through very porous material. Most wells have been drilled to about sea level to tap the upper part of the Ghyben-Herzburg fresh water lens, and very few wells penetrate to depths significantly below sea level, where most of the geothermal potential is located. Despite these facts, a few wells in Hawaii show

temperatures of 30° or 40°C even when large volumes of water are removed for domestic or irrigation use. Thus, there is abundant evidence for warm or hot water resources on most of the islands. The real question is how to interpret the existing data in terms of useful geothermal resources.

Since the current well data yields little data about "source" regions, we believe that chemical and geophysical techniques need to be applied if we are to successfully define areas where the geothermal resource potential is high. We therefore propose that limited field programs be started concurrently with the data compilation efforts.

Proposed Efforts

In order to achieve the goals set forth in the DOE Western State Cooperative Direct Heat Geothermal Program, we propose to initiate the following efforts:

1. Assemble all data for wells, preferably using 25°C as the level of geothermal significance;
2. Identify and tabulate geothermal gradients when possible;
3. Tabulate water chemistry and identify those of apparent geothermal interest;
4. Calculate subsurface temperatures based on chemical geothermometers (this is difficult in Hawaii due to sodium contamination);
5. Compile geologic and geophysical data pertinent to geothermal resources;
6. Initiate field programs (as described below) to acquire additional data for geothermal resource identification in selected areas. These areas will be selected on the basis of favorable geology, existing warm water wells, and proximity to potential geothermal customers.

As an initial focus for the field effort, we have identified 12 regions (see figure) where additional data sets will be acquired (these do not include the East Rift of Kilauea where the HGP well has been drilled). On the island of Hawaii these regions include the SW Rift of Kilauea, the SW Rift of Mauna Loa, the SE Rift of Mauna Loa, the NE Rift of Mauna Loa, the NW Rift of Hualalai and an area around Waimea. Each of these areas has some evidence for elevated temperature groundwater or a geologic environment in which elevated temperatures could be expected to exist.

On Maui, we need additional data from the SW Rift of Haleakala and from two regions in West Maui where warm groundwaters have been reported but adequate documentation is lacking. A warm well has also been drilled on Molokai but again no adequate data is available for the region.

On the Island of Oahu, two areas appear promising on the basis of elevated groundwater temperatures. These areas are near Waimanalo and Lualualei. Neither data set is very complete and additional data would be helpful.

Techniques to be Employed

Compilation of data from existing records is a routine (even if laborious) process and needs no further explanation. Much of the necessary data exists in tabulations in various State depositories. However, our past experience has taught us that some of this data is unreliable, and thus, field checks will be necessary especially where particularly important anomalies may be indicated.

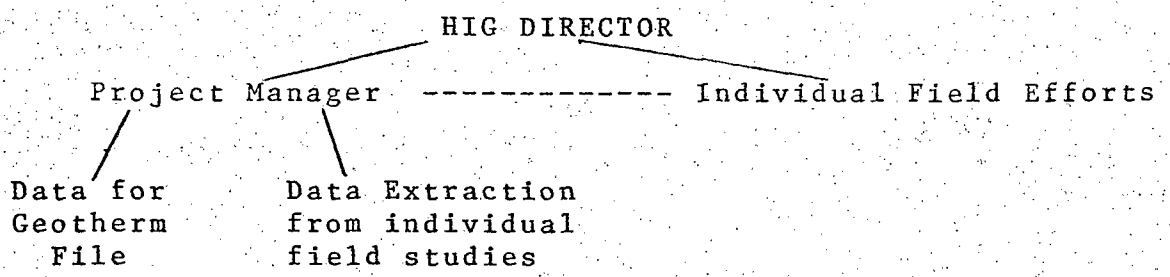
In order to make the existing data set more useful, we plan to gather additional temperature and water chemistry (including dissolved silica determinations) in each of the 12 areas mentioned above and at any other anomalously warm area that is identified during our data compilation.

Many of the target areas, however, have no wells or perhaps only one, and thus, we will need to apply geophysical techniques such as passive seismic studies (microearthquake and ground noise coherence), magnetotelluric studies, and electrical self-potential studies to these areas. These four techniques are believed to be the most definitive of geothermal resources in Hawaii based upon our experience on the East Rift of Kilauea during the Hawaii geothermal project.

Management Structure

In order to provide a focal point for the project, and to increase the effectiveness of the effort a full-time scientific manager will be appointed to supervise the project on a day-to-day basis. This manager's primary responsibility will be to oversee the gathering and extraction of data for the GEOTHERM file. A secondary responsibility will be to coordinate the collection of data from each of the 12 critical areas that we at present believe to be of highest interest and usefulness.

Individual field programs will be under the direction of various members of faculty with each member of faculty being responsible for an area in which he is an expert. The Director of the Hawaii Institute of Geophysics will be responsible for the overall project, and he will direct both the individual field efforts and the efforts of the project manager. The envisaged structure is shown below:



The personnel tentatively assigned to this project include:

Donald Thomas - a recent Ph.D. at U.H. (Dec. 1977) who will be responsible for the assembly of past geochemical data as well as being responsible for the acquisition of new geochemical data.

Dale Erlandson - (M.S. from U.H.) who will assist in the compilation of existing data for the geothermal file. His past work has dealt with the management synthesis of marine geophysical data at H.I.G.

David Epp - A Ph.D. candidate at U.H. who was responsible for most of the well temperature data collection done under the Hawaii Geothermal Project. He will assist in collecting the existing temperature data set as well as being responsible for additional data collection in the selected areas.

These individuals and the associated faculty will be supported by a project secretary, chemical technician and field assistants as necessary.

Statement of Work

The Hawaii Institute of Geophysics of the University of Hawaii as part of the DOE western states cooperative direct heat geothermal program will

1) Provide to DOE a summary of the available data for all wells of potential geothermal significance within the state, including water chemistry data where available;

2) Initiate a quality control program for spot checking the existing temperature and chemical data set;

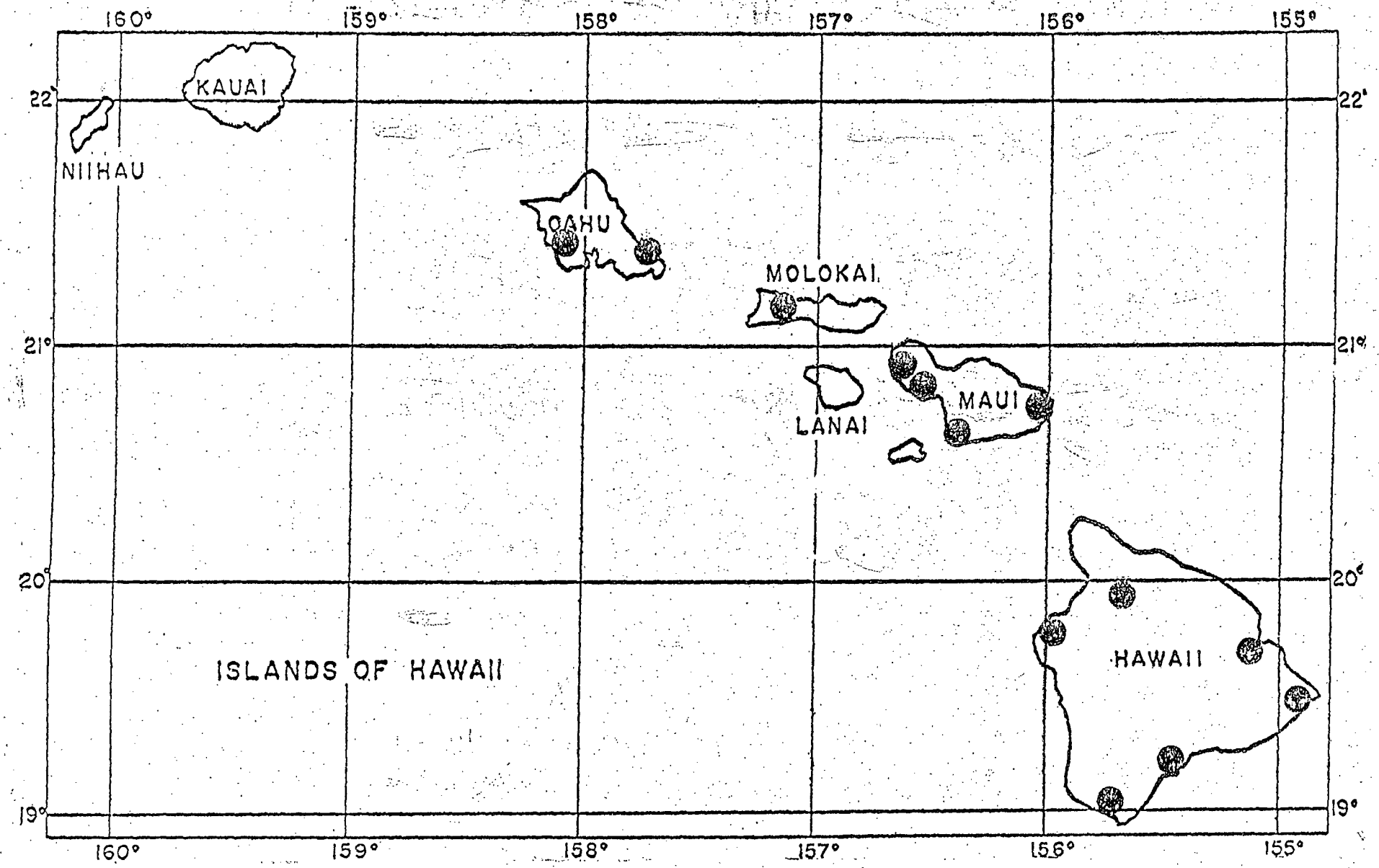
3) Assist in the compilation of geological and geophysical data pertinent to the geothermal resources of Hawaii;

4) Commence a field program aimed at refinement of the temperature and water chemistry of selected areas of greatest geothermal interest;

5) Undertake a geophysical field program aimed at definition of the source of the warm waters observed in west Maui; and

6) Formulate a plan for further exploration of other areas of high geothermal interest.

Task listed under items 1, 2 and 3 will be completed by September 1, 1978 with progress reports to be submitted bimonthly with the first report being due April 1.



Areas of potential direct heat resource in Hawaii.

BUDGET

A. Project Management and Data Synthesis

1. Salaries	
C. E. Helsley, Project Director, 1 mo.	$ 3,663
Dale Erlandson, 8 mos.	9,000
Donald Thomas, 6 mos.	7,700
David Epp, Research Assistant, 4 mos. @ 50%, 2 mos. @ 100%	4,208
Secretary, 8 mos.	7,560
Total Salaries and Wages	$32,131
2. Fringe Benefits	7,390
Total Salaries, Wages & Fringe Benefits	39,521
3. Permanent Equipment	
Typewriter	895
File Cabinets, 2 @ $125	250
Total Permanent Equipment	1,145
4. Expendable Supplies	500
5. Computer Time	1,500
6. Communications	800
7. Travel - mainland meetings	
Air fare	2,000
Per diem, 20 days @ $40/day	800
8. Publications	800
Total Direct Costs	47,066
9. Indirect Costs (48.2% of Salaries & Wages)	15,487
Total (A)	62,553

B. Water Chemistry and Temperature Field Program

1. Salaries	
Donald Thomas, 2 mos.	$ 2,567
David Epp, Research Assistant, 2 mos. @ 100%	2,104
Field Assistant, 3 mos.	3,000
Total Salaries and Wages	7,671
2. Fringe Benefits	1,764
Total Salaries, Wages & Fringe Benefits	9,435
3. Expendable Supplies and Equipment	2,000
4. Computer	500
5. Publications	500
6. Communications	200
7. Travel	
25 round trips to other islands	1,500
Per diem @ $30/day for 60 mandays	1,800
Field transportation @ $20/day	1,200
Total Travel	4,500
8. Chemical Analyses	3,000
Total Direct Costs	20,135
9. Indirect Costs (48.2% of Salaries & Wages)	3,697
Total (B)	23,832

C. Passive Seismology Field Program

1. Salaries	
C. E. Helsley, 1 mo.	3,663
Joe Gettrust, 1 mo.	1,524
Student Assistant for analysis, 5 mos. @ 50%, 3 mos. @ 100%	5,786
Total Salaries and Wages	10,973
2. Fringe Benefits	1,540
Total Salaries, Wages & Fringe Benefits	12,513

3.	Expendable Supplies (batteries, tape, etc.)	$ 600
4.	Field Travel	
	6 round trips to other islands	360
	Per diem, 2 men x 15 days @ $30/man day	900
	Field transportation @ $20/day for 15 days	300
	Total Field Travel	1,560
5.	Publications	400
6.	Computer	500
	Total Direct Costs	15,573
7.	Indirect Costs (48.2% of Salaries & Wages)	5,289
	Total (C)	20,862

SUMMARY

A.	Project Management and Data Synthesis	$ 62,553
B.	Water Chemistry and Temperature Field Program	23,832
C.	Passive Seismology Field Program	20,862
	GRAND TOTAL	107,247

HIG 78-010

Proposal Submitted to

Department of Energy, Division of Geothermal Energy

by

Hawaii Institute of Geophysics, University of Hawaii

2525 Correa Road, Honolulu, Hawaii 96822

for

DOE/DGE-State Cooperative Program

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Director, Hawaii Institute of Geophysics
Social Security No.: 563-50-4577

Amount: $107,247

Endorsements:

Principal Investigator and Institute Head	Institutional Admin. Official
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Signature: _____	_____
Title: Director, HIG	Assoc. Dean, Organized Research
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Compilation of data from existing records is a routine (even if laborious) process and needs no further explanation. Much of the necessary data exists in tabulations in various State depositories. However, our past experience has taught us that some of this data is unreliable, and thus, field checks will be necessary especially where particularly important anomalies may be indicated.

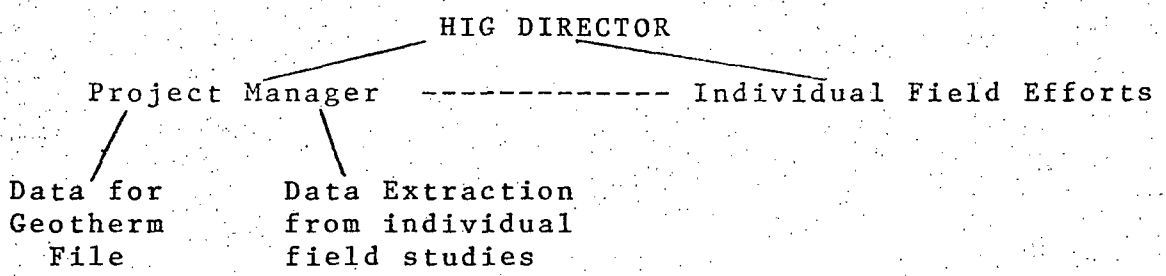
In order to make the existing data set more useful, we plan to gather additional temperature and water chemistry (including dissolved silica determinations) in each of the 12 areas mentioned above and at any other anomalously warm area that is identified during our data compilation.

Many of the target areas, however, have no wells or perhaps only one, and thus, we will need to apply geophysical techniques such as passive seismic studies (microearthquake and ground noise coherence), magnetotelluric studies, and electrical self-potential studies to these areas. These four techniques are believed to be the most definitive of geothermal resources in Hawaii based upon our experience on the East Rift of Kilauea during the Hawaii geothermal project.

Management Structure

In order to provide a focal point for the project, and to increase the effectiveness of the effort a full-time scientific manager will be appointed to supervise the project on a day-to-day basis. This manager's primary responsibility will be to oversee the gathering and extraction of data for the GEOTHERM file. A secondary responsibility will be to coordinate the collection of data from each of the 12 critical areas that we at present believe to be of highest interest and usefulness.

Individual field programs will be under the direction of various members of faculty with each member of faculty being responsible for an area in which he is an expert. The Director of the Hawaii Institute of Geophysics will be responsible for the overall project, and he will direct both the individual field efforts and the efforts of the project manager. The envisaged structure is shown below:



The personnel tentatively assigned to this project include:

Donald Thomas - a recent Ph.D. at U.H. (Dec. 1977) who will be responsible for the assembly of past geochemical data as well as being responsible for the acquisition of new geochemical data.

Dale Erlandson - (M.S. from U.H.) who will assist in the compilation of existing data for the geothermal file. His past work has dealt with the management synthesis of marine geophysical data at H.I.G.

David Epp - A Ph.D. candidate at U.H. who was responsible for most of the well temperature data collection done under the Hawaii Geothermal Project. He will assist in collecting the existing temperature data set as well as being responsible for additional data collection in the selected areas.

These individuals and the associated faculty will be supported by a project secretary, chemical technician and field assistants as necessary.

Statement of Work

The Hawaii Institute of Geophysics of the University of Hawaii as part of the DOE western states cooperative direct heat geothermal program will

1) Provide to DOE a summary of the available data for all wells of potential geothermal significance within the state, including water chemistry data where available;

2) Initiate a quality control program for spot checking the existing temperature and chemical data set;

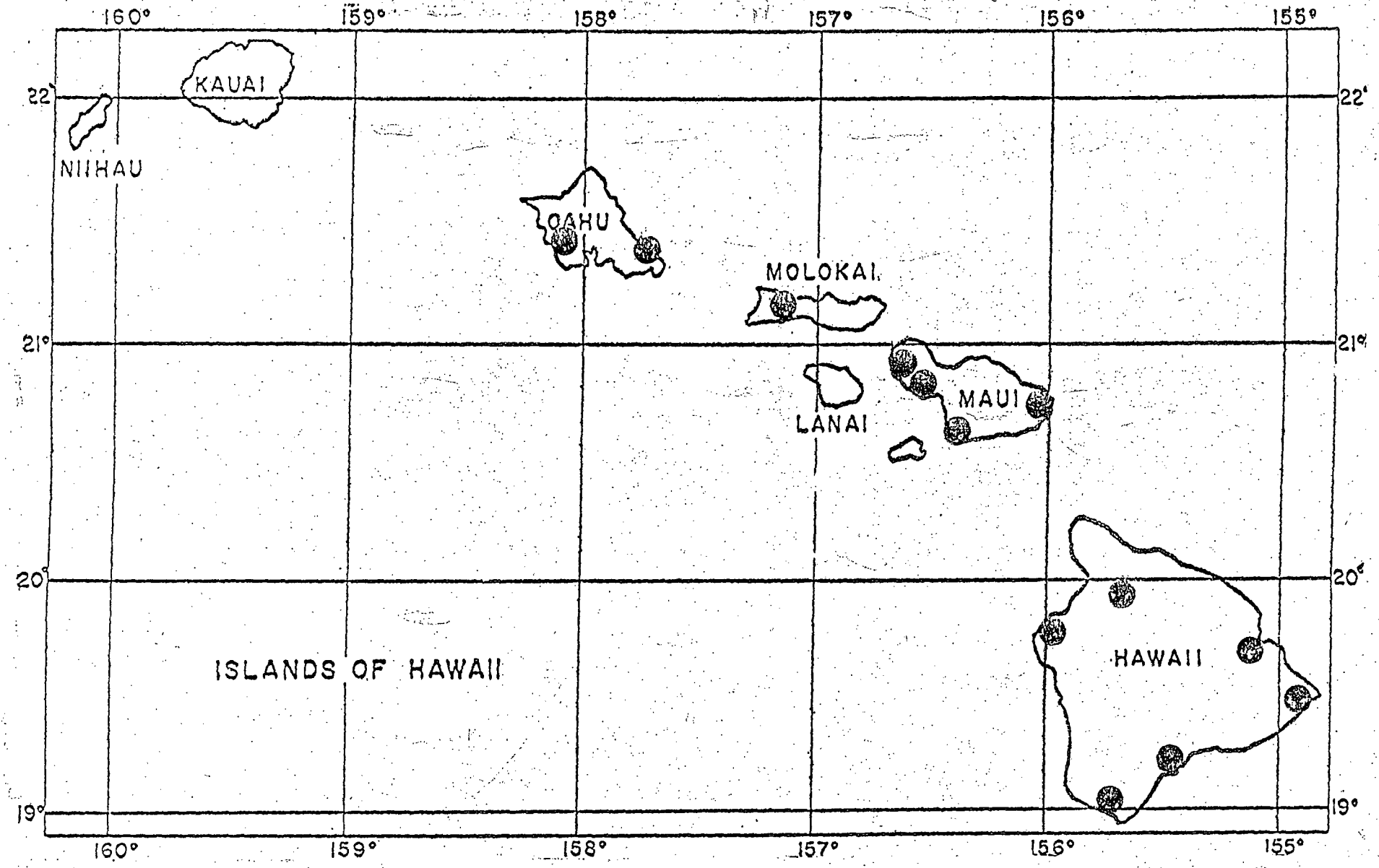
3) Assist in the compilation of geological and geophysical data pertinent to the geothermal resources of Hawaii;

4) Commence a field program aimed at refinement of the temperature and water chemistry of selected areas of greatest geothermal interest;

5) Undertake a geophysical field program aimed at definition of the source of the warm waters observed in west Maui; and

6) Formulate a plan for further exploration of other areas of high geothermal interest.

Task listed under items 1, 2 and 3 will be completed by September 1, 1978 with progress reports to be submitted bimonthly with the first report being due April 1.



Areas of potential direct heat resource in Hawaii.

BUDGET

A. Project Management and Data Synthesis

1. Salaries	
C. E. Helsley, Project Director, 1 mo.	$ 3,663
Dale Erlandson, 8 mos.	9,000
Donald Thomas, 6 mos.	7,700
David Epp, Research Assistant, 4 mos. @ 50%, 2 mos. @ 100%	4,208
Secretary, 8 mos.	7,560
Total Salaries and Wages	$32,131
2. Fringe Benefits	7,390
Total Salaries, Wages & Fringe Benefits	39,521
3. Permanent Equipment	
Typewriter	895
File Cabinets, 2 @ $125	250
Total Permanent Equipment	1,145
4. Expendable Supplies	500
5. Computer Time	1,500
6. Communications	800
7. Travel - mainland meetings	
Air fare	2,000
Per diem, 20 days @ $40/day	800
8. Publications	800
Total Direct Costs	47,066
9. Indirect Costs (48.2% of Salaries & Wages)	15,487
Total (A)	62,553

B. Water Chemistry and Temperature Field Program

1. Salaries	
Donald Thomas, 2 mos.	$ 2,567
David Epp, Research Assistant, 2 mos. @ 100%	2,104
Field Assistant, 3 mos.	3,000
Total Salaries and Wages	7,671
2. Fringe Benefits	1,764
Total Salaries, Wages & Fringe Benefits	9,435
3. Expendable Supplies and Equipment	2,000
4. Computer	500
5. Publications	500
6. Communications	200
7. Travel	
25 round trips to other islands	1,500
Per diem @ $30/day for 60 mandays	1,800
Field transportation @ $20/day	1,200
Total Travel	4,500
8. Chemical Analyses	3,000
Total Direct Costs	20,135
9. Indirect Costs (48.2% of Salaries & Wages)	3,697
Total (B)	23,832

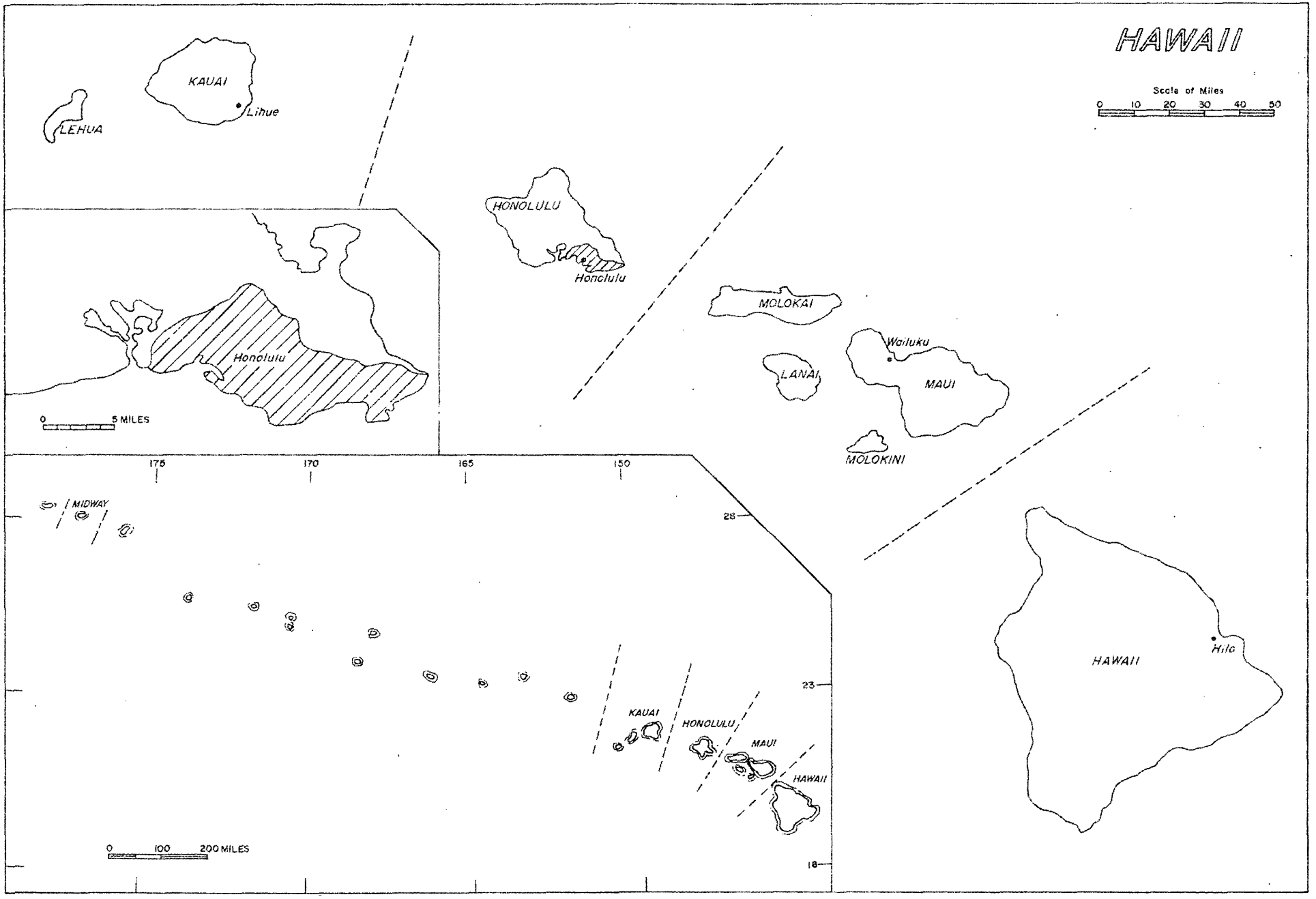
C. Passive Seismology Field Program

1. Salaries	
C. E. Helsley, 1 mo.	3,663
Joe Gettrust, 1 mo.	1,524
Student Assistant for analysis, 5 mos. @ 50%, 3 mos. @ 100%	5,786
Total Salaries and Wages	10,973
2. Fringe Benefits	1,540
Total Salaries, Wages & Fringe Benefits	12,513

3.	Expendable Supplies (batteries, tape, etc.)	$ 600
4.	Field Travel	
	6 round trips to other islands	360
	Per diem, 2 men x 15 days @ $30/man day	900
	Field transportation @ $20/day for 15 days	300
	Total Field Travel	1,560
5.	Publications	400
6.	Computer	500
	Total Direct Costs	15,573
7.	Indirect Costs (48.2% of Salaries & Wages)	5,289
	Total (C)	20,862

SUMMARY

A.	Project Management and Data Synthesis	$ 62,553
B.	Water Chemistry and Temperature Field Program	23,832
C.	Passive Seismology Field Program	20,862
	GRAND TOTAL	107,247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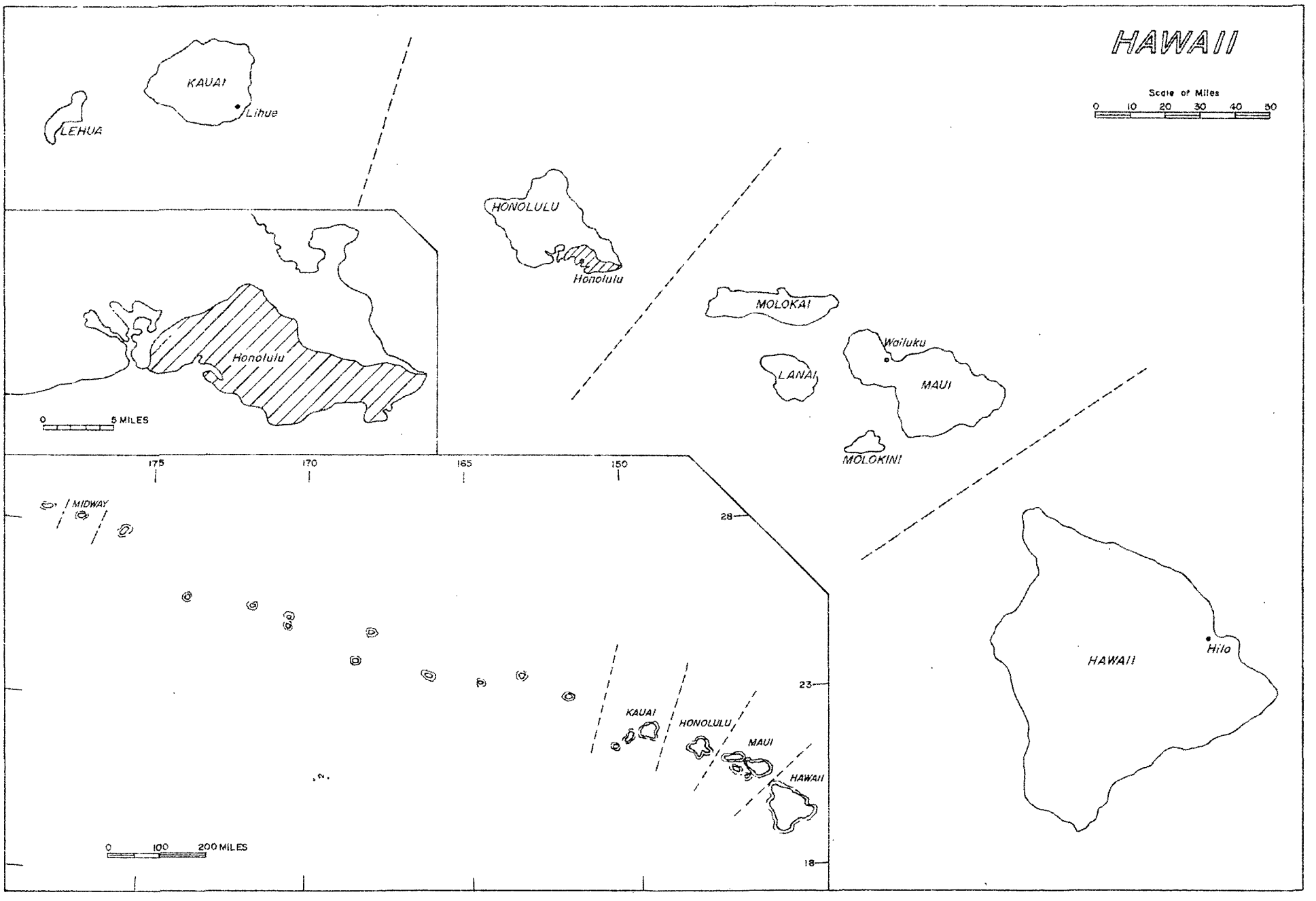
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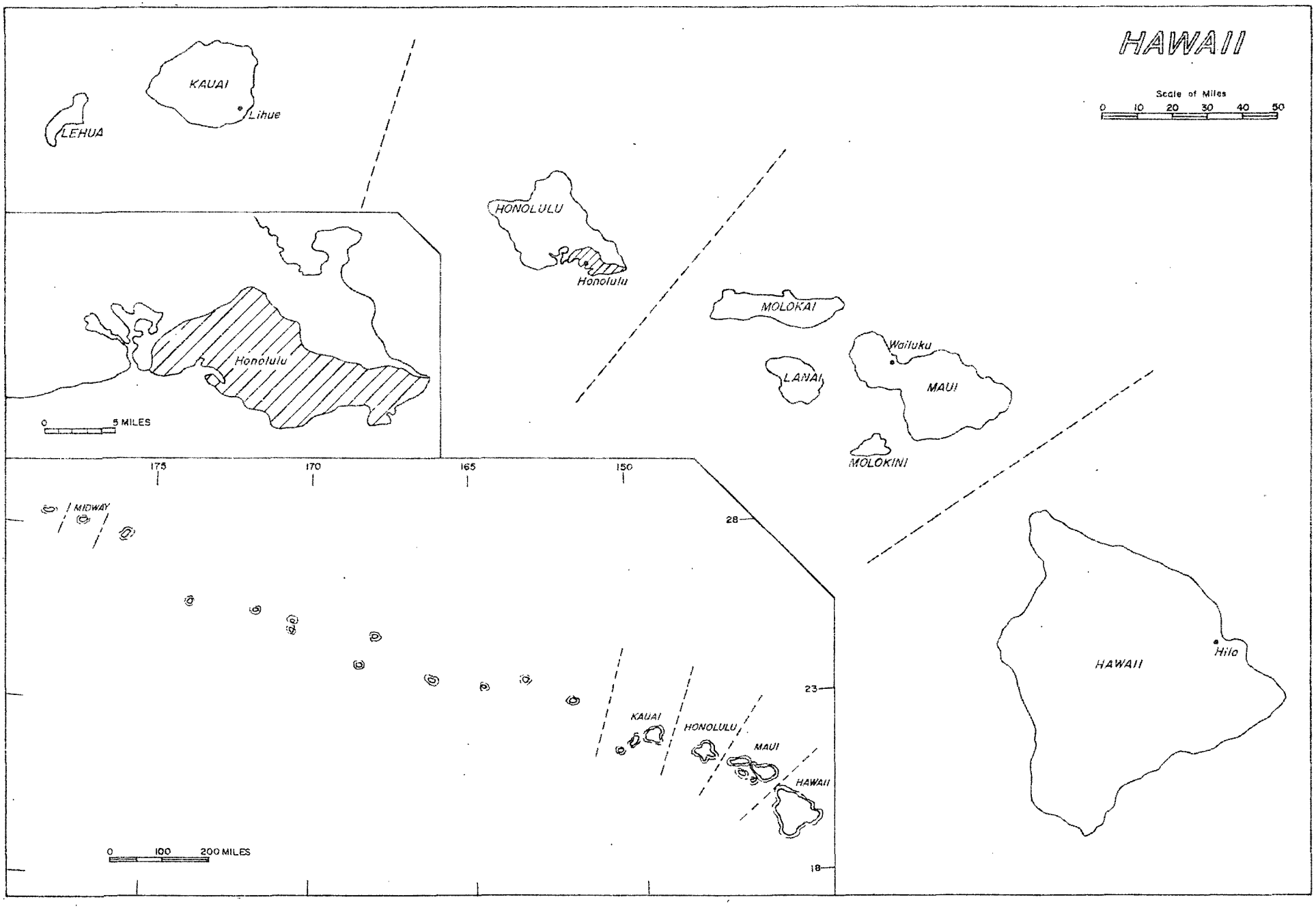
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