

LINDA LINGLE  
GOVERNOR OF HAWAII



CHIYOME L. FUKINO, M.D.  
DIRECTOR OF HEALTH

**STATE OF HAWAII  
DEPARTMENT OF HEALTH**

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In reply, please refer to:  
EMD/SOWB

August 25, 2003

To All Interested Parties:

SUBJECT: 2002 Groundwater Contamination Maps for the  
State of Hawai`i

The Department of Health has been periodically updating the Groundwater Contamination Maps for the State of Hawai`i since August 1989. These maps identify locations where certain groundwater contaminants have been detected and confirmed.

Accompanying the 2002 Groundwater Contamination Maps is information about the basic health effects related to the contaminants. We emphasize that the detected levels reported in the maps are below existing Federal and State drinking water standards established for the protection of public health. Before contaminant levels reach these standards, appropriate public health protection measures are implemented.

The data presented in the maps and tables were collected between January 1999 and December 2002. Positive results are considered confirmed when verified by a follow-up test or by comparison with historical data.

If you have any questions or would like to obtain additional information related to groundwater contamination, please contact the Groundwater Protection Program, Safe Drinking Water Branch, at (808) 586-4258.

Sincerely,

A handwritten signature in black ink, appearing to read "Chiyome L. Fukino".

CHIYOME L. FUKINO, M.D.  
Director of Health

Enclosures

**State of Hawai`i  
Department of Health  
Groundwater Contamination Maps  
2002**

Attached are the 2002 Groundwater Contamination Maps for the State of Hawai`i. This is the seventh edition of the Maps since they were first published in August of 1989. The previous edition of the Maps was developed in 1998 and issued in May of 1999. The Maps were not prepared between 1999 and 2001 due to resource limitations.

**Where do these Maps come from?**

The 2002 Groundwater Contamination Maps for the State of Hawai`i were prepared by the Groundwater Protection Program, Safe Drinking Water Branch of the Hawai`i Department of Health (DOH). The Maps represent the most current information available to the DOH up through December 31, 2002, and are based on monitoring data for public drinking water wells and other testing data available to the DOH.

**What do these Maps represent?**

The 2002 Maps identify **organic chemical contaminants that have been detected and confirmed in wells used for drinking water** throughout the state. Groundwater can become contaminated through natural processes, but anthropogenic, or human-induced, contamination poses more serious problems. Contaminants may come from herbicides, pesticides, industrial solvents, and other sources which are applied, spilled, or leaked into the ground. Groundwater contamination is a significant concern because nearly all of Hawai`i's drinking water comes from groundwater sources.

The intent of the Maps is to identify only those wells with detectable levels of groundwater contamination. Some contaminated wells may not be reported because of lack of confirmed data, or the wells have not been tested. The contamination levels in this document refer to reported levels of contamination on a specific sampling date. Levels of groundwater contamination may fluctuate for a number of reasons, including actual diminishing or increasing levels of contamination, chemical breakdown of contaminants, variability in sampling and analytical methods, the effects of pumping rates, and other factors.

**What do these Maps tell us?**

The 2002 Maps show that groundwater contamination continues to occur in Hawai`i. In most cases, once a groundwater source has been contaminated, it remains

contaminated for many years. The Maps show that a few wells that were previously not contaminated by a particular chemical have now shown positive detections of chemicals known to be present in nearby wells. The chemical dieldrin, a termite pesticide, has been detected in three additional sources since 1998. No chemical contaminants have been detected in the drinking water wells on Moloka`i and Lana`i since the Maps were first prepared in 1989.

### **Is the water safe?**

The 2002 Maps indicate that the contaminant concentrations detected in Hawai`i's groundwater are generally below state and federal drinking water standards. As long as concentrations are below these standards and advisory levels, the water is considered safe and does not pose a serious health risk. If contamination levels approach state and federal drinking water limits, the well owner is required to take steps to reduce the contaminant concentration to a safe level. This could involve the installation of a treatment system, blending of the water with higher quality water, or removing the well from service.

### **How are the Maps organized?**

This report contains maps and tables for the islands of O`ahu, Hawai`i, Maui and Kaua`i. The Maps identify the locations of current and historic contaminated wells and well fields (an area where many wells in proximity share the same groundwater source). The tables relate information about the contaminated well, such as the use of the well (e.g. drinking water, irrigation, industrial or inactive), the contaminant(s) detected, the concentration of the contaminant (e.g. detected level), the sampling date when the contamination was detected, and the drinking water standards and health risks associated with each contaminant.

A contaminant which has been identified in prior editions will be removed from the report if subsequent monitoring no longer shows detection. A well will be removed from the map if it does not show any detectable concentrations of contamination. But a well and associated contaminant(s) will remain on the map until new information confirms that concentrations have decreased to non-detectable levels. This is the case with several non-drinking water wells in this report that have not been monitored regularly.

### **Where can I get more information about groundwater contamination and protection?**

More information about the Maps and groundwater protection is available from the Department of Health's Groundwater Protection Program. If you need more information, please call the Groundwater Protection Program using the following telephone numbers:

From: O`ahu 586-4258  
Hawai`i (toll free) 974-4000 ext. 64258  
Kaua`i (toll free) 274-3141 ext. 64258  
Maui (toll free) 984-2400 ext. 64258  
Moloka`i and Lana`i 1-800-468-4644, ext. 64258  
(toll free)

You may also visit the Groundwater Protection Program at our current address:

919 Ala Moana Blvd., Room 308  
Honolulu, Hawai`i 96814

Or you may visit our websites at:

<http://www.hawaii.gov/doh/>

<http://mano.icsd.hawaii.gov/doh/eh/sdwb/conmanps.htm>

## **Definitions**

The following are general definitions of the terms and abbreviations used in this report.

**Before:** water samples taken “before treatment”. Drinking water that contains a chemical contaminant above drinking water standards is treated to reduce the contaminant concentration to a safe level. All “after treatment” readings meet Federal and State drinking water standards.

**Contaminant:** organic chemical contaminants that have been detected and confirmed in wells used for drinking water, irrigation and industrial purposes.

The State Department of Health defines a contaminant as “...any physical, chemical, biological, or radiological substance or matter in water. An additive contaminant under this definition may have beneficial or detrimental effect on the potability of the water,” per Hawaii Administrative Rules, Title 11, Department of Health, Chapter 20, Rules Relating to Potable Water Systems.

**Current:** drinking water wells where new chemical contaminants have been detected since 1998 when the last Groundwater Contamination Maps were prepared.

**DOA:** Department of Agriculture.

**DW:** drinking water well.

**Date:** the date when the water sample was taken.

**Detected level:** the amount of a contaminant found in a sample. The numerical values are presented in “parts per billion” (ppb).

**Detection Limit:** the lowest concentration of a contaminant that can be detected by a laboratory through its testing equipment, analytical methods and personnel.

**Historic:** a well or well field where chemical contaminants have previously been detected.

**IND:** industrial well.

**IRR:** irrigation well.

**Inactive:** a well that is no longer in service.

**Montgomery composite:** water samples usually taken from two wells that are combined and tested for chemical contaminants by Montgomery Watson Laboratories in California.

**ND:** “non-detectable,” no presence of a contaminant at, or below the detection limit used by laboratory.

Indications below the detection limit are considered to be negative findings and are reported as: ND<0.05. “ND” identifies this as a “not detectable” result. The “<” is a “less than” sign, and “0.05” is the detection limit for the contaminant. Detection limits vary for different chemicals and analytical methods.

**NQ:** “non-quantifiable,” the lowest concentration of a contaminant to which a numerical value can be assigned. The level is also determined by the analytical method.

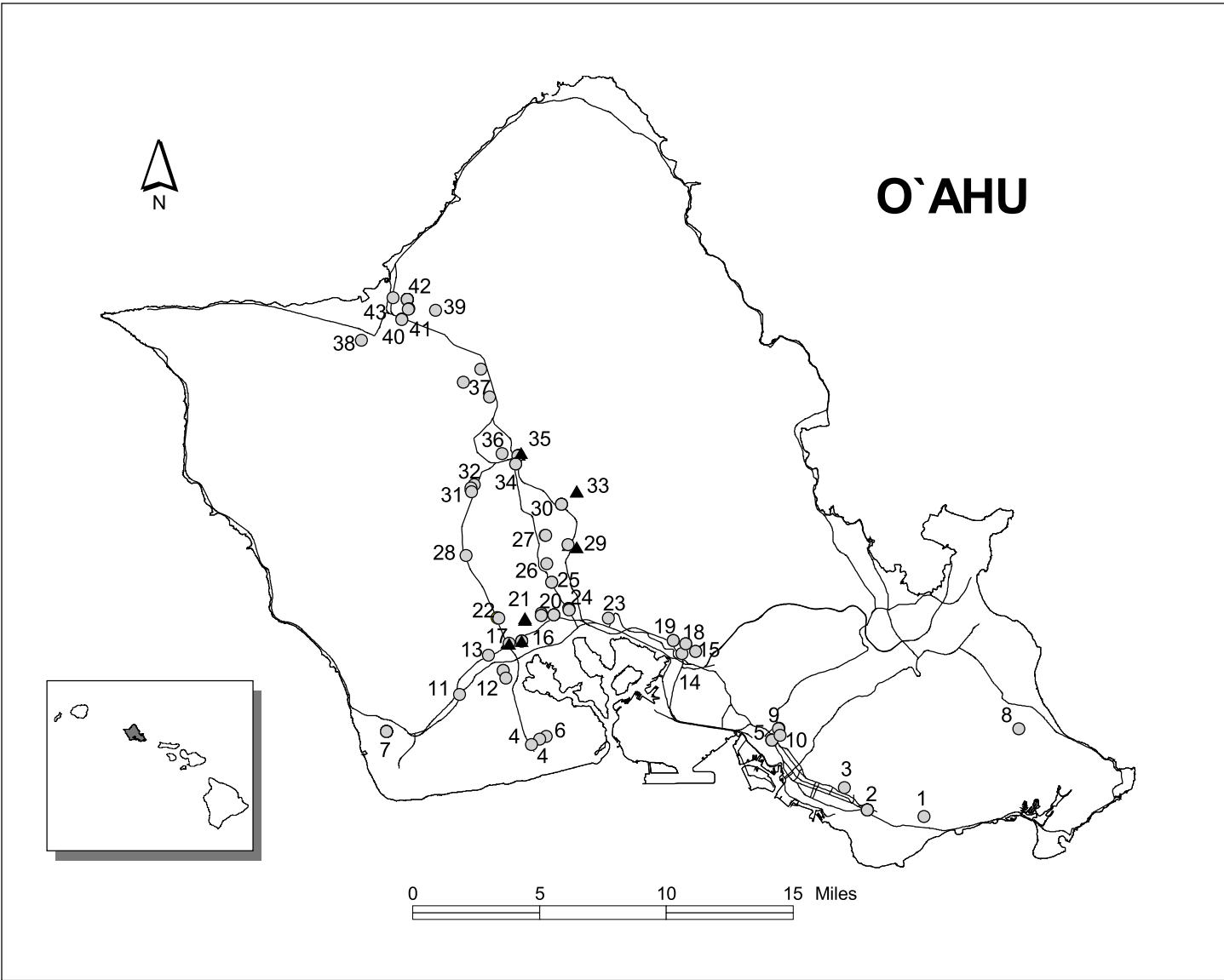
Indications below the quantification limit are reported as: NQ<0.10, where the “<” is a “less than” sign, and “0.10” is the quantification limit for the contaminant. As with detection limits, quantification limits differ for different chemicals and analytical methods. An “NQ” result means that the chemical concentration is between the quantification limit and the detection limit. Chemical concentrations above the quantification limit are given numerical values.

**Old Hawaiian Datum:** a geographic coordinate system used by the State Department of Land and Natural Resources (DLNR), Division of Water and Land Management of Hawai'i. The DLNR has assigned a six-digit number for each well, based on the latitude and longitude position of the well.

**Parts per billion (ppb):** a unit commonly used as an equivalent to “microgram per liter” (ug/L). One ug/L is approximately equivalent to a drop of contaminant in the volume of liquid contained in three Olympic-size swimming pools.

**Quantification limit:** the concentration level of a contaminant that can be confidently quantified by a laboratory’s testing equipment, analytical methods and personnel.

Definitions



- O`ahu Contaminated Wells
- ▲ Current
  - Historic
  - ∕ Major Roads

State Department of Health  
August 2003

O`AHU 2002 Contamination Map							
Map #	Old Haw'n Datum	Well Name	Use	Contaminant	Detected Level (ppb)	Date	
1	1746-01	Ainakoa Well	DW	Dieldrin	0.019	09/30/2002	
2	1748-HS	Kaimuki Station Wells	DW	Dieldrin	0.028	09/30/2002	
2	1748-HS	Kaimuki Station Wells	DW	Dieldrin	0.013	09/30/2002	
2	1748-03 to 10	Kaimuki Station Wells	DW	PCE	0.030	4/23/85*	
		*ND after this date. PCE detection levels raised from 0.01 ppb to 0.2 ppb.					
3	1849-14	Wilder Well 1	DW	Dieldrin	0.02	09/30/2002	
4	1900-01	OSCO Ewa Pump 20	Inactive	Ametryn	NQ <0.05	11/10/1992	
4	1900-01	OSCO Ewa Pump 20	Inactive	Atrazine	0.71	11/16/1993	
4	1900-01	OSCO Ewa Pump 20	Inactive	Diamino Atrazine	0.22	11/10/1993	
4	1900-01	OSCO Ewa Pump 20	Inactive	Desethyl Atrazine	1.20	11/16/1993	
4	1900-01	OSCO Ewa Pump 20	Inactive	Despropyl Atrazine	0.13	11/16/1993	
4	1901-01	OSCO Ewa Pump 24	Inactive	Ametryn	0.11	11/10/1992	
4	1901-01	OSCO Ewa Pump 24	Inactive	Atrazine	1.10	11/10/1992	
4	1901-01	OSCO Ewa Pump 24	Inactive	Diamino Atrazine	0.50	11/10/1992	
4	1901-01	OSCO Ewa Pump 24	Inactive	Desethyl Atrazine	1.59	11/10/1992	
4	1901-01	OSCO Ewa Pump 24	Inactive	Despropyl Atrazine	0.21	11/10/1992	
5	1952-HS	Kalihi Station Wells	DW	Dieldrin	0.023	10/23/2002	
5	1952-LS	Kalihi Station Wells	DW	Dieldrin	0.022	11/07/2002	
6	2000-01	OSCO Ewa Pump 21	Inactive	Atrazine	0.77	11/16/1993	
6	2000-01	OSCO Ewa Pump 21	Inactive	Diamino Atrazine	0.25	11/16/1993	
6	2000-01	OSCO Ewa Pump 21	Inactive	Desethyl Atrazine	1.00	11/16/1993	
6	2000-01	OSCO Ewa Pump 21	Inactive	Despropyl Atrazine	0.13	11/16/1993	
7	2006-01 to 11	OSCO Ewa Pump 10	Inactive	Atrazine	NQ <0.1	11/17/1992	
7	2006-01 to 11	OSCO Ewa Pump 10	Inactive	Desethyl Atrazine	0.15	11/17/1992	
8	2043-02	Waimanalo Well 1	Inactive	Alachlor	0.530	01/27/1998	
9	2052-07	Kamehameha School Well 1	Inactive	Chlordane	NQ <0.3	04/01/1998	
9	2052-07	Kamehameha School Well 1	Inactive	Dieldrin	0.046	11/16/1998	
9	2052-11	Kamehameha School Well 2	Inactive	Chlordane	0.40	01/30/1997	
9	2052-11	Kamehameha School Well 2	Inactive	Dieldrin	0.018	10/23/1996	
10	2052-12	Jonathan Springs Well	Inactive	Chlordane	0.30	11/08/1995	
10	2052-12	Jonathan Springs Well	Inactive	Dieldrin	0.06	11/08/1995	
11	2103-03	Barbers Point Shaft	DW	Atrazine	0.059	10/01/2002	
11	2103-03	Barbers Point Shaft	DW	Desethyl Atrazine	0.17	10/28/1992	
12	2202-03	OSCO Ewa Pump 3	Inactive	Atrazine	NQ <0.1	11/10/1992	
12	2202-03	OSCO Ewa Pump 3	Inactive	Desethyl Atrazine	0.13	11/10/1992	
12	2202-05	OSCO Pump 5	Inactive	Atrazine	0.15	11/10/1992	
12	2202-05	OSCO Pump 5	Inactive	Desethyl Atrazine	0.14	11/10/1992	
12	2202-15	OSCO Pump 7A	Inactive	Atrazine	NQ <0.1	11/10/1992	
12	2202-15	OSCO Pump 7A	Inactive	Desethyl Atrazine	NQ <0.1	11/10/1992	

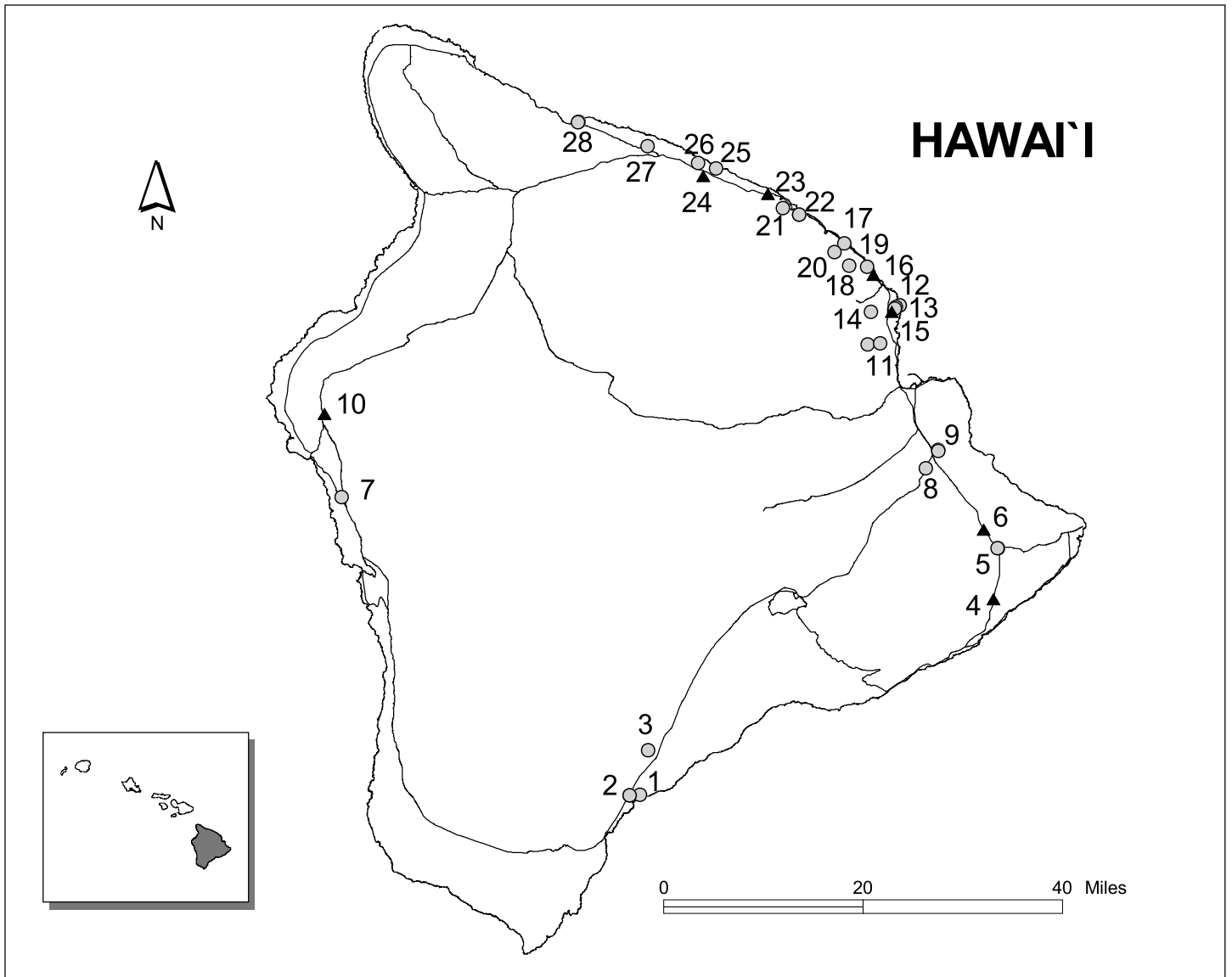


O`AHU 2002 Contamination Map						
Map #	Old Haw'n Datum	Well Name	Use	Contaminant	Detected Level (ppb)	Date
13	2202-21	OSCO Ewa Pump 15	Inactive	Atrazine	0.15	11/17/1992
13	2202-21	OSCO Ewa Pump 15	Inactive	Desethyl Atrazine	0.12	11/17/1992
14	2255-32	Halawa Plant (Navy)	DW	Dieldrin	0.02	07/12/2002
15	2255-37	BWS Halawa Well 2	DW	Chlordane	0.03	10/23/2002
15	2255-37	BWS Halawa Well 2	DW	Dieldrin	0.026	10/23/2002
15	2255-39	BWS Halawa Well 1	DW	Dieldrin	0.018	07/10/2002
16	2301	Hoaeae/Kunia blend	DW	TCP	0.28	10/31/2002
16	2301-34	Hoaeae, P1	DW	TCP	NQ <0.5	12/07/1998
16	2301-35	Hoaeae, P2	DW	TCP	0.42	10/31/2002
16	2301-36	Hoaeae, P4	DW	Atrazine	0.093	11/25/2002
16	2301-36	Hoaeae, P4	DW	Dieldrin	0.022	07/12/2002
16	2301-36	Hoaeae, P4	DW	TCP	0.57	11/25/2002
16	2301-37	Hoaeae, P3	DW	TCP	0.36	11/14/2002
16	2301-38	Hoaeae, P5	DW	TCP	0.39	02/21/2002
16	2301-39	Hoaeae, P6	DW	TCP	0.3	11/14/2002
16	2301-34 to 39	Hoaeae	DW	Atrazine	0.063	08/28/1996
16	2301-34 to 39	Hoaeae	DW	Desethyl Atrazine	<0.1	09/28/1993
17	2302-01	Kunia Wells I, P1 (before)	DW	Atrazine	0.068	11/06/1998
17	2302-01	Kunia Wells I, P1 (before)	DW	TCE	NQ<0.5	02/12/2002
17	2302-01	Kunia Wells I, P1 (before)	DW	TCP	1.17	02/12/2002
17	2302-02	Kunia Wells I, P2 (before)	DW	TCE	ND<0.5	10/18/2002
17	2302-02	Kunia Wells I, P2 (before)	DW	TCP	0.85	10/18/2002
17	2302-03	Kunia Wells I, P3 (before)	DW	TCP	0.78	10/18/2002
17	2302-04	Kunia Wells I, P4 (before)	DW	Atrazine	0.065	07/12/2002
17	2302-04	Kunia Wells I, P4 (before)	DW	TCE	NQ<0.5	11/25/2002
17	2302-04	Kunia Wells I, P4 (before)	DW	TCP	0.85	11/25/2002
17	2302-01 to 04	Kunia Wells I	DW	Desethyl Atrazine	<0.1	09/28/1993
17	2302-01 to 04	Kunia Wells I	DW	TCP	0.70	05/21/1997
18	2355-06	Aiea Well Pump 1	DW	Dieldrin	0.01	10/01/2002
18	2355-07	Aiea Well Pump 2	DW	Dieldrin	0.014	02/17/2000
19	2356-58	Kaamilo Wells	DW	Dieldrin	0.015	10/23/2002
19	2356-59	Kaamilo Wells	DW	Dieldrin	0.140	04/01/1998
19	2356-58 & 59	Kaamilo Wells	DW	PCE	0.03	04/20/1985
20	2400-01	Waipahu I, P2 (before)	DW	EDB	NQ<0.04	10/18/2002
20	2400-01	Waipahu I, P2 (before)	DW	TCP	0.41	10/18/2002
20	2400-02	Waipahu I, P1 (before)	DW	EDB	NQ<0.04	10/25/2002
20	2400-02	Waipahu I, P1 (before)	DW	TCP	0.46	10/25/2002
20	2400-03	Waipahu I, P4 (before)	DW	EDB	NQ<0.04	10/18/2002
20	2400-03	Waipahu I, P4 (before)	DW	TCP	0.43	10/18/2002

O`AHU 2002 Contamination Map						
Map #	Old Haw'n Datum	Well Name	Use	Contaminant	Detected Level (ppb)	Date
20	2400-04	Waipahu I, P3 (before)	DW	EDB	NQ<0.04	10/18/2002
20	2400-04	Waipahu I, P3 (before)	DW	TCE	NQ<0.5	10/18/2002
20	2400-04	Waipahu I, P3 (before)	DW	TCP	0.43	10/18/2002
20	2400-05	Waipahu II P1 (before)	DW	EDB	NQ <0.04	07/02/2002
20	2400-05	Waipahu II P1 (before)	DW	TCP	0.56	10/25/2002
20	2400-06	Waipahu II P2 (before)	DW	EDB	NQ <0.04	10/31/2002
20	2400-06	Waipahu II P2 (before)	DW	TCP	0.57	10/31/2002
20	2400-08	Waipahu II P3 (before)	DW	EDB	NQ<0.04	10/31/2002
20	2400-08	Waipahu II P3 (before)	DW	TCP	0.53	10/31/2002
21	2401-04	Kunia III, P1 (before)	DW	TCP	0.17	10/18/2002
21	2401-05	Kunia III, P2 (before)	DW	TCP	0.17	07/19/2002
21	2401-06	Kunia III, P3 (before)	DW	TCP	0.17	10/18/2002
22	2402-01	Kunia Wells II, P1(before)	DW	DBCP	ND<0.2	11/09/1998
22	2402-01	Kunia Wells II, P1(before)	DW	TCE	ND<0.2	11/09/1998
22	2402-01	Kunia Wells II, P1(before)	DW	TCP	1.20	11/09/1998
22	2402-02	Kunia Wells II, P2 (before)	DW	DBCP	NQ<0.04	10/18/2002
22	2402-02	Kunia Wells II, P2 (before)	DW	TCE	NQ<0.5	10/18/2002
22	2402-02	Kunia Wells II, P2 (before)	DW	TCP	1.11	10/18/2002
22	2402-03	Kunia Wells II, P3 (before)	DW	DBCP	ND<0.04	07/18/2002
22	2402-03	Kunia Wells II, P3 (before)	DW	TCE	NQ<0.5	05/24/2002
22	2402-03	Kunia Wells II, P3 (before)	DW	TCP	1.23	10/31/2002
22	2402-01 to 03	Kunia Wells II, P2 (before)	DW	Desethyl Atrazine	<0.026	09/28/1993
23	2458-01	Manana Shaft	DW	PCE	0.03	4/18/1985*
				*ND after this date. PCE detection levels raised from 0.01 ppb to 0.2 ppb.		
24	2459-19	Waipio Hts P2	DW	TCP	0.23	10/25/2002
24	2459-20	Waipio Hts P1	DW	EDB	NQ <0.04	06/18/2002
24	2459-20	Waipio Hts P1	DW	TCP	0.32	10/18/2002
24	2459-23	Waipio Hts I, P1	DW	TCP	0.09	10/18/2002
24	2459-24	Waipio Hts I, P2	DW	TCP	0.19	10/25/2002
25	2500-01	Waipio Hts. II, P1	DW	TCE	0.6	10/31/2002
25	2500-01	Waipio Hts. II, P1	DW	TCP	0.58	10/31/2002
25	2500-02	Waipio Hts. II, P2	DW	TCP	NQ<0.5	10/30/1996
26	2600-02	Dairy Co.	DW	TCE	NQ<0.5	07/15/2002
26	2600-02	Dairy Co.	DW	TCP	0.57	07/15/2002
26	2600-02	Dairy Co.	DW	TCE	0.6	10/25/2002
26	2600-02	Dairy Co.	DW	TCP	0.57	10/25/2002
27	2600-03	Mililani III, P7 (before)	DW	DBCP	0.09	12/02/2002
27	2600-03	Mililani III, P7 (before)	DW	TCP	2.05	12/02/2002
27	2600-04	Mililani III, P8 (before)	DW	DBCP	0.09	07/18/2002
27	2600-04	Mililani III, P8 (before)	DW	DCP	NQ<1	12/13/2002
27	2600-04	Mililani III, P8 (before)	DW	TCP	2.29	07/18/2002

O`AHU 2002 Contamination Map						
Map #	Old Haw'n Datum	Well Name	Use	Contaminant	Detected Level (ppb)	Date
28	2603-01	Hawaii Country Club (before)	DW	DBCP	0.07	11/14/2002
28	2603-01	Hawaii Country Club (before)	DW	EDB	NQ <0.04	07/30/2002
28	2603-01	Hawaii Country Club (before)	DW	TCP	0.29	11/14/2002
29	2659-02	Waipio Hts III, P2	DW	EDB	NQ <0.04	01/22/1998
29	2659-02	Waipio Hts III, P2	DW	TCP	0.49	10/31/2002
29	2659-03	Waipio Hts III, P1	DW	DBCP	NQ<0.04	06/18/2002
29	2659-03	Waipio Hts III, P1	DW	TCP	0.49	10/31/2002
30	2800-01	Mililani I, P1 (before)	DW	DBCP	0.15	11/06/2002
30	2800-01	Mililani I, P1 (before)	DW	TCP	2.07	11/06/2002
30	2800-02	Mililani I, P2 (before)	DW	DBCP	0.11	11/06/2002
30	2800-02	Mililani I, P2 (before)	DW	TCP	1.3	11/06/2002
30	2800-03	Mililani I, P3 (before)	DW	DBCP	0.13	11/06/2002
30	2800-03	Mililani I, P3 (before)	DW	DCP	NQ<1.0	11/06/2002
30	2800-03	Mililani I, P3 (before)	DW	TCP	2.5	11/6/02
30	2800-04	Mililani I, P4 (before)	DW	DBCP	0.13	11/06/2002
30	2800-04	Mililani I, P4 (before)	DW	DCP	NQ<1.0	12/08/1998
30	2800-04	Mililani I, P4 (before)	DW	TCP	3.20	12/08/1998
31	2803-03 & 04	Kunia Battery	IND	Atrazine	NQ 0.05	09/28/1993
31	2803-03 & 04	Kunia Battery	IND	Desethyl Atrazine	NQ 0.05	09/30/1992
31	2803-03 & 04	Kunia Battery	IND	PCE	1.65	04/23/1985
31	2803-03 & 04	Kunia Battery	IND	TCE	3.70	07/24/1985
32	2803-05	Del Monte Kunia 3 (before)	DW	CTC	0.6	12/04/2002
32	2803-05	Del Monte Kunia 3 (before)	DW	DCP	NQ<1.0	12/04/2002
32	2803-05	Del Monte Kunia 3 (before)	DW	TCE	4.1	12/04/2002
32	2803-05	Del Monte Kunia 3 (before)	DW	TCP	0.12	12/04/2002
32	2803-07	Del Monte Kunia 4 (before)	DW	TCE	0.7	12/04/2002
32	2803-07	Del Monte Kunia 4 (before)	DW	TCP	0.09	12/04/2002
33	2859-01	Mililani II, P5 (before)	DW	DBCP	0.15	12/02/2002
33	2859-01	Mililani II, P5 (before)	DW	DCP	NQ<1	12/02/2002
33	2859-01	Mililani II, P5 (before)	DW	TCP	2.64.	12/02/2002
33	2859-02	Mililani II, P6 (before)	DW	1,2,4-Trichlorobenzene	NQ<1	06/18/2002
33	2859-02	Mililani II, P6 (before)	DW	DBCP	0.16	07/11/2002
33	2859-02	Mililani II, P6 (before)	DW	DCP	NQ<1	06/18/2002
33	2859-02	Mililani II, P6 (before)	DW	TCP	2.75	12/02/2002
34	2901	Schofield Battery (before)	DW	PCE	NQ <0.5	12/05/2002
34	2901	Schofield Battery (before)	DW	TCE	15.8	12/05/2002
35	2901-08	Wahiawa Wells 1, P3	DW	CTC	NQ<0.5	12/03/2002
35	2901-08	Wahiawa Wells 1, P3	DW	PCE	1.4	07/16/2002
35	2901-11	Wahiawa Wells 1, P1	DW	CTC	NQ<0.5	07/16/2002
35	2901-11	Wahiawa Wells 1, P1	DW	PCE	0.8	12/03/2002
35	2901-11	Wahiawa Wells 1, P1	DW	TCE	NQ<0.5	12/03/2002
35	2901-12	Wahiawa Wells 1, P2	DW	CTC	0.6	04/17/1997
35	2901-12	Wahiawa Wells 1, P2	DW	PCE	0.6	04/17/1997

O`AHU 2002 Contamination Map						
Map #	Old Haw'n Datum	Well Name	Use	Contaminant	Detected Level (ppb)	Date
36	2902-01	Wahiawa Wells II, P1	DW	CTC	NQ <0.5	12/04/2002
36	2902-01	Wahiawa Wells II, P1	DW	PCE	0.6	07/16/2002
36	2902-01	Wahiawa Wells II, P1	DW	TCP	0.13	12/04/2002
37	3102-02	Waialua Sugar P24	IRR	DBCP	0.02	08/20/1984
37	3102-02	Waialua Sugar P24	IRR	TCP	0.50	06/03/1985
37	3203-01	Waialua Sugar P25	IRR	DBCP	0.12	06/07/1983
37	3203-02	Waialua Sugar P26	IRR	DBCP	0.01	06/03/1985
37	3203-02	Waialua Sugar P26	IRR	TCP	0.80	06/03/1985
38	3307-01	Waialua Battery P2	DW	Atrazine	0.12	11/04/1992
38	3307-01	Waialua Battery P2	DW	Desethyl Atrazine	0.15	11/14/1992
39	3404-02	Waialua Sugar P17	IRR	DBCP	0.06	11/09/1993
39	3404-02	Waialua Sugar P17	IRR	TCP	1.10	11/09/1993
40	3405-01	Waialua Wells P1	DW	TCE	0.5	12/03/2002
40	3405-01	Waialua Wells P1	DW	TCP	0.62	12/03/2002
40	3405-02	Waialua Wells P2	DW	TCE	NQ <0.5	07/16/2002
40	3405-02	Waialua Wells P2	DW	TCP	0.67	12/03/2002
41	3405-03	Haleiwa Well P1	DW	DBCP	NQ <0.04	12/03/2002
41	3405-03	Haleiwa Well P1	DW	TCE	NQ <0.5	12/03/2002
41	3405-03	Haleiwa Well P1	DW	TCP	0.55	12/03/2002
41	3405-04	Haleiwa Well P2	DW	DBCP	NQ <0.04	12/31/2002
41	3405-04	Haleiwa Well P2	DW	TCE	NQ<0.5	12/03/2002
41	3405-04	Haleiwa Well P2	DW	TCP	0.55	12/03/2002
42	3505-01 to 20	Waialua Sugar P3	Inactive	DBCP	NQ < 0.04	07/24/1997
42	3505-01 to 20	Waialua Sugar P3	Inactive	TCP	NQ <0.5	07/24/1997
43	3506-03	Haleiwa Battery	IRR	Atrazine	0.13	11/04/1992
43	3506-03	Haleiwa Battery	IRR	Lindane	0.002	11/12/1987
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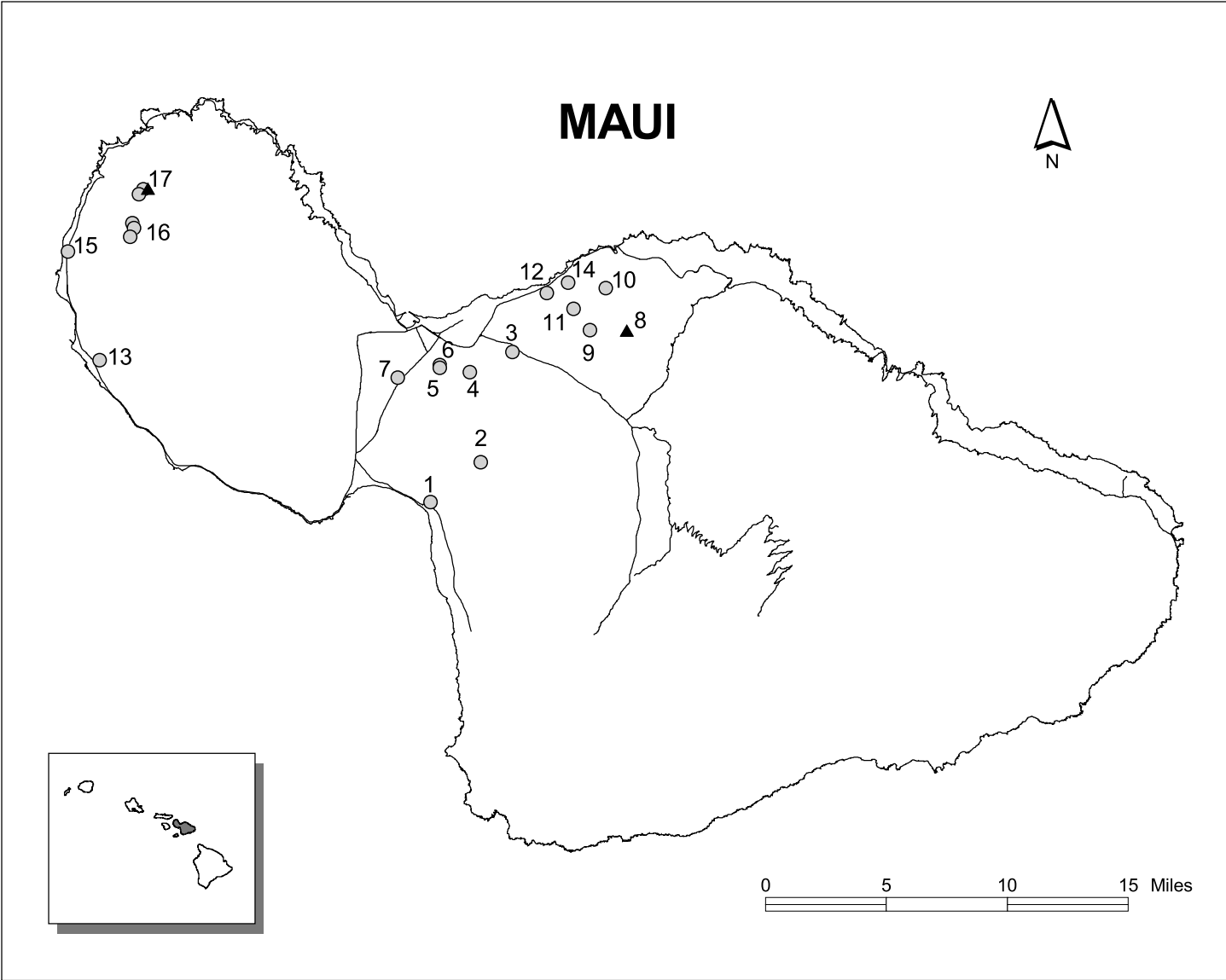
Hawai'i Contaminated Wells

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State Department of Health  
August 2003

HAWAII 2002 Contamination Map						
Map #	Old Haw'n Datum	Well Name	Use	Contaminant	Detected Level (ppb)	Date
1	0830-02	Punaluu Th-2	IRR	Atrazine	0.12	12/21/1993
1	0830-02	Punaluu Th-2	IRR	Desethyl-Atrazine	0.16	12/21/1993
2	0831-02	Ninole A	DW	Atrazine	0.089	08/26/2002
2	0831-03	Ninole B	DW	Atrazine	0.095	08/13/2002
2	0831-00	Ninole Field	DW	Atrazine	0.087	08/13/2002
3	1229-01	Pahala Well	DW	Atrazine	0.13	06/04/2002
3	1229-01	Pahala Well	DW	Desethyl-Atrazine	0.19	12/18/1992
4	2487-02	Keauohana 2	DW	Atrazine	0.05	09/16/2002
4	2487-AB	Keauohana 1 & 2	DW	Atrazine	0.05	09/16/2002
5	2986-01	Pahoa Well 1	DW	Desethyl-Atrazine	0.08	12/15/1993
5	2986-01	Pahoa Well 1	DW	Diuron	0.8	08/05/1991
5	2986-02	Pahoa Well 2	DW	Desethyl-Atrazine	NQ 0.5	12/15/1992
5	2986-02	Pahoa Well 2	DW	Diuron	0.8	08/05/1991
6	3188-02	Keonepoko Nui 2	DW	Isophorone	0.5	04/24/2001
7	3557-02	Kahaluu Well B	Inactive	Isophorone	0.8	08/04/1998
8	3603-01	Olaa Station 3 Well	DW	Desethyl-Atrazine	0.06	12/21/1993
9	3802-01	Keaau Well 1	DW	Desethyl-Atrazine	NQ 0.03	12/15/1992
9	3802-03 & 04	Keaau	IND	Ametryne	0.88	02/27/1984
9	3802-03 & 04	Keaau	IND	Atrazine	0.26	02/27/1984
10	4258-03	Hualalai Well	DW	Isophorone	0.6	08/07/2000
11	4708-00	Kaieie Spring	DW	Atrazine	0.37	06/06/2002
12	5005-01	Pepeekeo Sugar Makai	Inactive	Atrazine	NQ <0.500	01/22/1996
12	5005-01	Pepeekeo Sugar Makai	Inactive	Desethyl-Atrazine	0.8	12/14/1993
12	5005-01	Pepeekeo Sugar Makai	Inactive	Diuron	0.5	08/05/1991
12	5005-01	Pepeekeo Sugar Makai	Inactive	Hexazinone	0.3	08/05/1991
12	5005-02	Pepeekeo Sugar	Inactive	Atrazine	NQ <0.500	01/22/1996
12	5005-02	Pepeekeo Sugar	Inactive	Desethyl-Atrazine	1.2	12/14/1993
12	5005-02	Pepeekeo Sugar	Inactive	Despropyl-Atrazine	0.15	12/14/1993
12	5005-02	Pepeekeo Sugar	Inactive	Diamino-Atrazine	0.14	12/14/1993
12	5005-02	Pepeekeo Sugar	Inactive	Diuron	0.8	08/05/1991
12	5005-02	Pepeekeo Sugar	Inactive	Hexazinone	0.9	08/05/1991
13	5005-03	HCPC Makai Well 2	Inactive	Atrazine	0.27	12/01/1992
13	5005-03	HCPC Makai Well 2	Inactive	Desethyl-Atrazine	0.22	12/01/1992
13	5005-04	HCPC Makai Well	Inactive	Atrazine	0.05	12/14/1993
13	5005-04	HCPC Makai Well	Inactive	Desethyl-Atrazine	0.07	12/14/1993
14	5006-00	Maukaloa Spring	DW	Atrazine	0.14	06/06/2002
14	5006-00	Maukaloa Spring	DW	Simazine	0.084	06/06/2002
14	5006-00	Maukaloa Spring	DW	Hexazinone	0.56	09/24/1986
15	5006-01	Kulaimano Deep Well	DW	Atrazine	0.28	06/06/2002
15	5006-01	Kulaimano Deep Well	DW	Diuron	0.6	08/05/1991
15	5006-01	Kulaimano Deep Well	DW	Hexazinone	0.3	08/05/1991

HAWAII 2002 Contamination Map						
Map #	Old Haw'n Datum	Well Name	Use	Contaminant	Detected Level (ppb)	Date
15	5006-01	Kulaimano Deep Well	DW	Atrazine	0.66	09/11/2002
15	5006-01	Kulaimano Deep Well	DW	Dieldrin	0.011	09/11/2002
16	5307-01	Hakalau Well	DW	PCE	0.13	5/6/1985*
16	5307-01	Hakalau Well	DW	Atrazine	0.24	10/29/2002
				*Detection level changed from 0.01 ppb to 0.2 ppb.		
17	5610-00	Chaves Spring	DW	Atrazine	0.24	06/06/2002
18	5611-00	Kaiaakea Spring	Inactive	Hexazinone	0.47	09/09/1986
19	5613-00	Kihalani Spring	Inactive	Hexazinone	0.57	09/09/1986
20	5713-00	Papaaloa Spring	Inactive	Atrazine	0.56	02/28/1995
21	5814-00	Manowaiopae Spring	Inactive	Atrazine	0.13	6/6/2002**
					** Composite with Laupahoehoe	
22	5814-01	Laupahoehoe Well 1	DW	Atrazine	0.11	6/6/02
22	5814-02	Laupahoehoe Well 2	DW	Atrazine	0.11	06/06/2002
22	5814-01 & 02	Laupahoehoe Well 1 & 2	DW	Desethyl-Atrazine	0.82	01/12/1993
22	5814-01 & 02	Laupahoehoe Well 1 & 2	DW	Despropyl-Atrazine	0.23	01/12/1993
22	5814-01 & 02	Laupahoehoe Well 1 & 2	DW	Diamino-Atrazine	0.17	01/12/1993
22	5814-01 & 02	Laupahoehoe Well 1 & 2	DW	Hexazinone	1.3	09/25/1990
22	5814-LM	Laupahoehoe Well	DW	Atrazine	0.13	6/6/02**
					** Composite with Manawaiopae	
23	6017-05	Ookala Well	DW	Atrazine	0.68	06/13/2002
23	6017-05	Ookala Well	DW	Isophorone	0.7	7/26/00***
					***Composite with Paauilo	
23	6117-07	Ookala Shaft	Inactive	Atrazine	0.6	09/11/1996
23	6117-07	Ookala Shaft	Inactive	Desethyl-Atrazine	1	01/12/1993
23	6117-07	Ookala Shaft	Inactive	Despropyl-Atrazine	0.16	01/12/1993
23	6117-07	Ookala Shaft	Inactive	Diamino-Atrazine	0.15	01/12/1993
24	6223-01	Paauilo Well	DW	Atrazine	1.2	10/29/2002
24	6223-01	Paauilo Well	DW	Isophorone	0.7	7/26/02***
					***Composite with Ookala	
25	6321-02	Paauilo Shaft	Inactive	Atrazine	0.59	02/28/1995
25	6321-02	Paauilo Shaft	Inactive	Hexazinone	1.1	09/09/1986
26	6323-01	Big Island Meat	Inactive	Atrazine	NQ <0.500	01/22/1996
26	6323-01	Big Island Meat	Inactive	Desethyl-Atrazine	0.55	01/12/1993
26	6323-01	Big Island Meat	Inactive	Despropyl-Atrazine	0.15	01/12/1993
26	6323-01	Big Island Meat	Inactive	Diamino-Atrazine	0.12	01/12/1993
27	6528-01	Haina Well	DW	Atrazine	0.47	11/26/2002
27	6528-01	Haina Well	DW	Desethyl-Atrazine	0.38	01/12/1993
27	6528-01	Haina Well	DW	Despropyl-Atrazine	0.15	01/12/1993
27	6528-01	Haina Well	DW	Diamino-Atrazine	0.11	01/12/1993
28	6734-01	Waiuliuli Spring	DW	Atrazine	0.14	06/13/2002
28	6734-01	Waiuliuli Spring	DW	Hexazinone	0.72	09/09/1985
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**Maui Contaminated Wells**  
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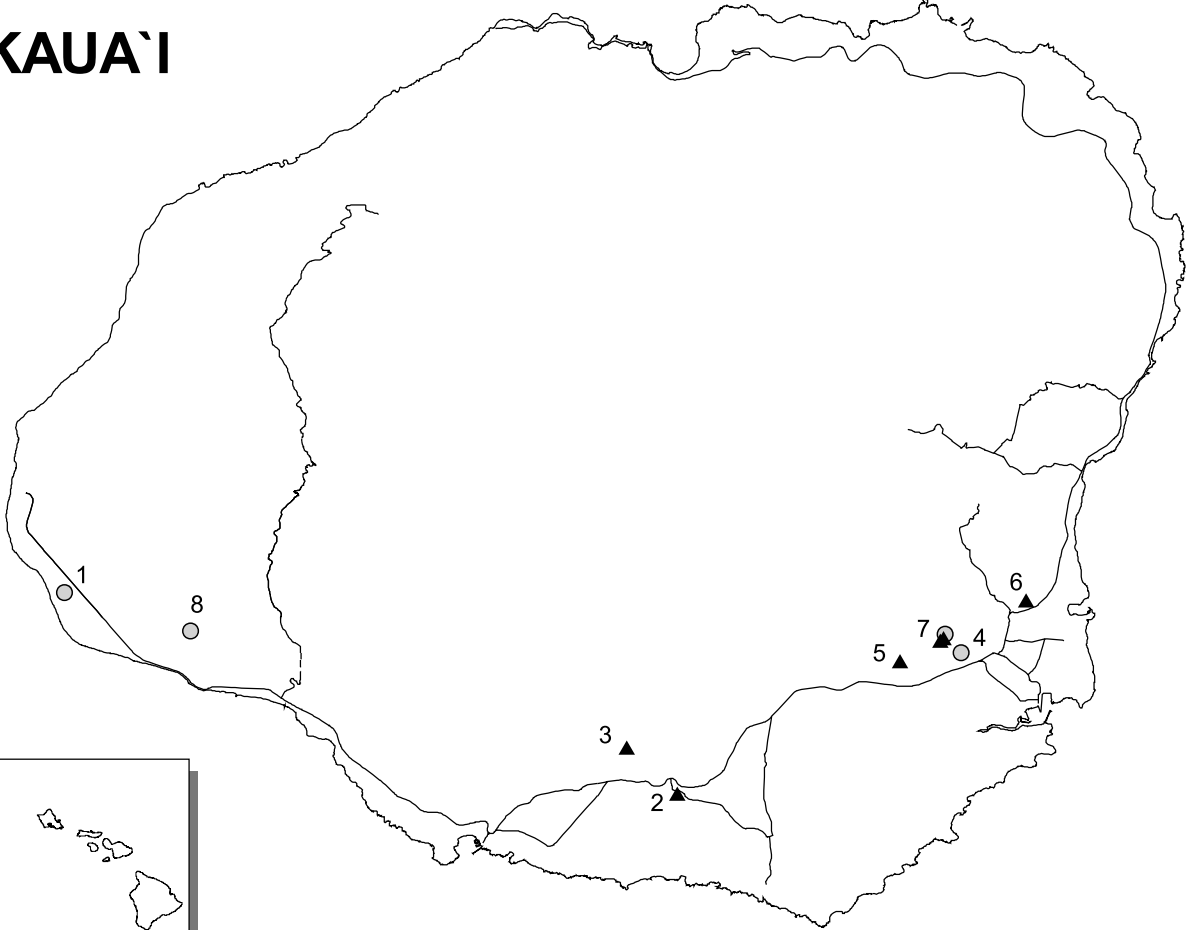
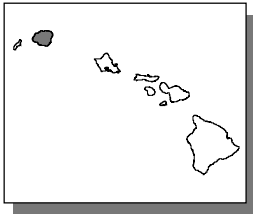
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MAUI 2002 Contamination Map						
Map #	Old Haw'n Datum	Well Name	Use	Contaminant	Detected Level (ppb)	Date
1	4727-01	Kihei Well 1	IRR	Ametryn	N.Q. <0.10	06/22/1993
1	4727-01	Kihei Well 1	IRR	Atrazine	0.18*	3/17/98
1	4727-01	Kihei Well 1	IRR	Desethyl Atrazine	0.32	06/22/1993
1	4727-01	Kihei Well 1	IRR	Diamino Atrazine	N.Q. <0.10	06/22/1993
2	4825-01	Kihei Well 3	IRR	Atrazine	0.17*	3/17/98
2	4825-01	Kihei Well 3	IRR	Desethyl Atrazine	0.19*	03/15/1994
3	5224-02	Puunene Pump 9	IRR	Atrazine	0.14*	3/17/98
3	5224-02	Puunene Pump 9	IRR	Desethyl Atrazine	N.Q. <0.10	06/15/1993
4	5226-02	Puunene Pump 6	IRR	Atrazine	0.18*	3/17/98
4	5226-02	Puunene Pump 6	IRR	Desethyl Atrazine	0.23	03/15/1994
5	5227-04	Puunene Pump 7A	IND	Atrazine	1.00	07/29/1985
5	5227-04	Puunene Pump 7A	IND	EDB	0.04	03/12/1985
6	5227-05	Puunene Mill Pump 19	IRR	Ametryn	0.45*	03/11/1997
6	5227-05	Puunene Mill Pump 19	IRR	Atrazine	0.29*	3/17/98
6	5227-05	Puunene Mill Pump 19	IRR	Desethyl Atrazine	0.33	03/15/1994
6	5227-05	Puunene Mill Pump 19	IRR	Diamino Atrazine	N.Q. <0.10	06/22/1993
7	5228-06	Reynolds Food Well #1	Inactive	DBCP	N.Q. <0.040	02/16/1993
8	5320-01	Hamakuapoko Well 2	DW	Atrazine	0.1	3/32/01**
8	5320-01	Hamakuapoko Well 2	DW	Bromacil	3.4	3/23/01**
9	5321-01	Kaheka #18	IRR	DBCP	0.018	08/16/1989
9	5321-01	Kaheka #18	IRR	EDB	0.05	08/16/1989
9	5321-01	Kaheka #18	IRR	TCP	0.13	08/16/1989
10	5420-01	Maui High School	Inactive	DBCP	0.091	03/04/1985
10	5420-01	Maui High School	Inactive	EDB	0.067	03/04/1985
10	5420-01	Maui High School	Inactive	TCP	0.430	03/04/1985
11	5422-02	Paia #7	IRR	Atrazine	0.23*	03/11/1997
11	5422-02	Paia #7	IRR	EDB	0.028	03/04/1985
12	5423-02	Paia #16	IRR	Atrazine	0.10*	3/17/98
12	5423-02	Paia #17	IRR	Atrazine	0.15*	3/17/98
13	5440-02	Lahaina Pump A	IRR	Atrazine	0.11	11/02/1983
14	5522-01	Kuau Pump 12	IRR	TCP	0.43	03/04/1985
15	5641-01	Kaanapali Pump D	IRR	Ametryn	1.40	06/01/1993
15	5641-01	Kaanapali Pump D	IRR	Atrazine	1.66*	03/11/1997
15	5641-01	Kaanapali Pump D	IRR	Despropyl Atrazine	0.12	06/01/1993
15	5641-01	Kaanapali Pump D	IRR	Diamino Atrazine	0.15	06/01/1993
15	5641-01	Kaanapali Pump D	IRR	Simazine	0.82	06/01/1993
					*DOA	**Montgomery

MAUI 2002 Contamination Map						
Map #	Old Haw'n Datum	Well Name	Use	Contaminant	Detected Level (ppb)	Date
16	5738-01	Kaanapali P5 (before)	DW	DBCP	0.06	11/07/2002
16	5738-01	Kaanapali P5 (before)	DW	TCP	0.67	11/07/2002
16	5739-01	Kaanapali P4 (before)	DW	DBCP	NQ<0.04	05/20/2002
16	5739-01	Kaanapali P4 (before)	DW	TCP	0.49	07/22/2002
16	5739-02	Kaanapali P6 (before)	DW	DBCP	0.12	11/07/2002
16	5739-02	Kaanapali P6 (before)	DW	TCP	0.45	11/07/2002
17	5838-01	Napili A	Inactive	DBCP	0.36	06/04/1993
17	5838-03	Honokohau (Napili D)	DW	TCP	0.04	07/23/2002
17	5838-04	Napili C	DW	TCP	0.05	11/01/2002
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# KAUA'I



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### Kaua'i Contaminated Wells

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KAUA'I 2002 Contamination Map						
Map #	Old Haw'n Datum	Well Name	Use	Contaminant	Detected Level (ppb)	Date
1	0045-04	Barking Sands	IRR	Ametryn	0.800	07/12/1988
1	0045-04	Barking Sands	IRR	Atrazine	3.500	07/12/1988
1	0045-04	Barking Sands	IRR	Simazine	0.200	07/12/1988
2	5530-02	Lawai Cannery Deep Well	Inactive	Aroclor	>0.33	08/05/1999
3	5631-01	Kalaheo Deep Well 1	DW	Isophorone	0.7	9/20/01*
4	5823-01	Garlinghouse Tunnel	DW	Desethyl Atrazine	N.Q. < 0.10	03/09/1993
5	5824-06	Puhi Well 4	DW	TCE	NQ<0.5	10/31/2002
5	5824-06	Puhi Well 4	DW	TCP	0.080	10/31/2002
6	5921-01	Kalepa	DW	Isophorone	0.5	9/19/02*
7	5923-02	Kilohana B	DW	Isophorone	1.6	9/5/01*
7	5923-03	Kilohana C	DW	Atrazine	0.19	10/31/2002
8	5942-01	Paua Valley Well	DW	Atrazine	<0.05	11/15/01*
					*Montgomery composite	
	kauai02F1.xls					

**Federal and State Drinking Water Standards  
and  
Health Advisories**

<b>Contaminant</b>	<b>Contamina- tion level in ppb (parts per billion)</b>	<b>Applicable Drinking Water Standard</b>	<b>Potential Health Effects from Ingestion of Water</b>	<b>Potential Contamination Sources</b>
Alachlor	2	MCL	Eye, liver, kidney or spleen problems; anemia; increased risk of cancer.	Herbicide
Ametryn	60	LHA	Liver damage.	Herbicide
Atrazine Desethyl Atrazine Despropyl Atrazine Diamino Atrazine	3	MCL	Cardiovascular system or reproductive problems.	Herbicide
Bromacil	300	LHA	Possible human carcinogen.	Herbicide
Carbon tetrachloride (CTC)	5	MCL	Liver problems; increased risk of cancer.	Solvent, dry cleaning agent
Chlordane	2	MCL	Liver or nervous system problems; increased risk of cancer.	Pesticide (termiticide)
1,2 Dibromo 3-chloropropane (DBCP)	0.04	SMCL	Reproductive difficulties; increased risk of cancer.	Pesticide (soil fumigant)
1,2-Dichloropropane (DCP)	5	MCL	Increased risk of cancer.	Pesticide, solvent
Dieldrin	0.2	10 –4	Central nervous system; liver and kidney damage.	Pesticide
Diuron	10	LHA	Central nervous system depression; damaged red blood cells causing spleen damage; altered fetal development.	Herbicide
Ethylene dibromide (EDB)	0.04	SMCL	Problems with liver, stomach, reproductive system, or kidneys; increased risk of cancer.	Gas additive, soil fumigant, solvent
Hexazinoine	200	LHA	Reduced body weight or possibly reduced growth.	Herbicide
Isophorone	100	LHA	No studies on developmental or reproductive effects in humans.	Solvent, herbicide, pesticide
Lindane	0.2	MCL	Nerve damage and central nervous system seizures; liver and kidney damage; suppression of immune system.	Insecticide

Simazine	4	MCL	Liver, kidney and brain damage	Herbicide
Tetrachloroethylene (PCE)	5	MCL	Liver problems; increased risk of cancer.	Solvent, dry cleaning agent
Trichloroethylene (TCE)	5	MCL	Central nervous system depression; liver and kidney damage.	Solvent
1,2,3-Trichloropropane (TCP)	0.8	SMCL	Decreased red blood cells; liver and kidney damage.	Solvent, trace contaminant in certain pesticides
1,2,4-Trichlorobenzene	70	MCL	Changes in adrenal glands.	Herbicide, solvent, termiticide

### **Definitions of Applicable Drinking Water Standards**

**Lifetime Health Advisory (LHA)** – This EPA advisory describes a non-regulatory concentration of a drinking water contaminant at which health effects would not be anticipated to occur over a lifetime exposure of 70 years duration. The advisories are based on data describing non-carcinogenic risk from exposure. This is a non-regulatory standard.

**Maximum Contaminant Level (MCL)** – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.

**Maximum Contaminant Level Goal (MCLG)** – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.

**State Maximum Contaminant Level (SMCL)** – The State maximum contaminant level (SMCL) may be more stringent than the EPA's maximum contaminant level (MCL) of a contaminant in water as defined in Hawai'i Administrative Rules, Title 11, Department of Health, Chapter 20, Rules Relating to Potable Water Systems.

**10-4** – This number refers to EPA's estimate of a "cancer risk level" of one-in-ten-thousand chance of developing cancer as a direct result of drinking water containing the contaminant over a lifetime of 70 years. This is a non-regulatory standard.