Layer Name: DOH Aquifers

Layer Type: Polygon

Status: Complete

Geog. Extent: Islands of Hawaii, Kauai, Lanai, Maui, Molokai and Oahu

Projection: Universal Trans Mercator, Zone 4

Datum: NAD 83 HARN

Description: Aquifers, as determined/defined by DOH, 2011. (Note: DLNR maintains another version of aquifers, which is more administrative in nature, and which has different boundaries than the DOH version, which is more resource-oriented in nature).

The attribute data represent aquifer type codes and status codes that describe an aquifer's geology and status (ie. development stage, utility, salinity, uniqueness, and vulnerability).

Source: Original maps prepared by John F. Mink and L. Stephen Lau (Water Resources Research Center) for the Department of Health's Groundwater Protection Program in the Safe Drinking Water Branch. Digitized by DOH - Environmental Planning Office from the original mylars, based on USGS 1:24,000 scale maps.

History: Digitized in 1992 by DOH - Environmental Planning Office, on behalf of the Safe Drinking Water Branch, from the original mylars, based on USGS 1:24,000 scale maps. Updated by DOH to correct 2 attribute errors, June 2011.

Citation/Credit should be given to DOH Safe Drinking Water Branch.

Attributes: Polygons:

AREA	area of polygon (sq. meters)
PERIMETER	perimeter of polygon (meters)
ISLAND	Island Code
SECTOR	Aquifer Sector
SYSTEM	Aquifer System
TYPEA	Aquifer Type (see Note 1, below)
TYPEB	Lower Aquifer Type, when present (see Note 1, below)
STATA	Aquifer Status
STATB	Lower Aquifer Status, when present (see Note 1, below)
Note:	*STATUS field value is made up of values for DEV, UTILITY, SALINITY, UNIQUE and VULN*
DEVA	Aquifer Status
UTILITYA	Aquifer Utility
SALINITYA	Aquifer Salinity (mg/l Cl-)
UNIQUEA	Aquifer Uniqueness
VULNA	Aquifer Vulnerability
DEVB	Lower Aquifer Status, when present (see Note 1, below)
UTILITYB	Lower Aquifer Utility, when present (see Note 1, below)
SALINITYB	Lower Aquifer Salinity, when present (see Note 1, below)
UNIQUEB	Lower Aquifer Uniqueness, when present (see Note 1, below)
VULNB	Lower Aquifer Vulnerability, when present (see Note 1, below)

Attribute Descriptions (Polygons):

ISL.	**SECTOR**	**SYSTEM**
02 Kauai	01 Lihue	01 Koloa
		02 Hanamaulu
		03 Wailua
		04 Anahola
		05 Kilauea
	02 Hanalei	01 Kalihiwai
		02 Hanalei
		03 Wainiha
		04 Napili
	03 Waimea	01 Kekaha
		02 Waimea
		03 Makaweli

			04 Hanapepe
	03 Oahu	01 Honolulu	01 Palolo
			02 Nuuanu
			03 Kalihi
			04 Moanalua
			05 Waialae
		02 Pearl Harbor	01 Waimalu
			02 Waiawa
			03 Waipahu
			04 Ewa
			05 Kunia
		03 Waianae	01 Nanakuli
			02 Lualualei
			03 Waianae
			04 Makaha
			05 Keaau
		04 North	01 Mokuleia
			02 Waialua
			03 Kawailoa
		05 Central	01 Wahiawa
			02 Koolau
		06 Windward	01 Koolauloa
			02 Kahana
			03 Koolaupoko
			04 Waimanalo
	04 Molokai	01 West	01 Kaluakoi
			02 Punakou
		02 Central	01 Hoolehua
			02 Manawainui
			03 Kualapuu
		03 Southeast	01 Kamiloloa
			02 Kawela
			03 Ualapue
			04 Waialua

	04	Northeast	01 Kalaupapa
			02 Kahanui
			03 Waikolu
			04 Haupu
			05 Pelekunu
			06 Wailau
			07 Halawa
05	Lanai	01 Central	01 Windward
			02 Leeward
		02 Mahana	01 Hauola
			02 Maunalei
			03 Lapaiki
		03 Kaa	01 Honopu
			02 Kaumalapau
		04 Manele	01 Kealia
			02 Manele
06	Maui	01 Wailuku	01 Waikapu
			02 Iao
			03 Waihee
			04 Kahakuloa
		02 Lahaina	01 Honokohau
			02 Honolua
			03 Honokowai
			04 Launiupoko
			05 Olowalu
			06 Ukumehame
		03 Central	01 Kahului
			02 Paia
			03 Makawao
			04 Kamaole
		04 Koolau	01 Haiku
			02 Honopou
			03 Waikamoi
			04 Keanae
		05 Hana	01 Kuhiwa

			02	Kawaipapa
			03	Waihoi
			04	Kipahulu
		06 Kahikinui	01	Kaupo
			02	Nakuula
			03	Lualailua
08	Hawaii	01 Kohala	01	Hawi
			02	Waimanu
			03	Mahukona
		02 E. Mauna Kea	01	Honokaa
			02	Paauilo
			03	Hakalau
			04	Onomea
		03 W. Mauna Kea	01	Waimea
		04 NE. Mauna Loa	01	Hilo
			02	Keaau
		05 SE. Mauna Loa	01	Olaa
			02	Kapapala
			03	Naalehu
			04	Ka Lae
		06 SW. Mauna Loa	01	Manuka
			02	Kaapuna
			03	Kealakekua
		07 NW. Mauna Loa	01	Anaehoomalu
		08 Kilauea	01	Pahoa
			02	Kalapana
			03	Hilina
			04	Keaiwa
		09 Hualalai	01	Keauhou
			02	Kiholo

TYPEA/TYPEB - 3 digit/character code describing aquifer hydrology and geology:

1st Digit: Hydrology

Value	Definition	Description
1	Basal	Fresh water in contact with sea water
2	High Level	Fresh water not in contact with sea water

2nd Digit: Hydrology

Value	Definition	Description
1	Unconfined	Where water table is upper surface of saturated aquifer
2	Confined	Aquifer bounded by impermeable or poorly permeable formations, and top of saturated aquifer is below groundwater surface
3	Confined or Unconfined	Where actual condition is uncertain

3rd Digit: Geology

Value	Definition	Description
1	Flank	Horizontally extensive lavas
2	Dike	Aquifers in dike compartments
3	Flank/Dike	Indistinguishable
4	Perched	Aquifer on impermeable layer
5	Dike/Perched	Indistinquishable
6	Sedimentary	Nonvolcanic lithology

Status Code (Groundwater) - 5 digit/character code describing aquifer status:

1st Digit: Developmental Stage

Value	**Definition**
1	Currently used
2	Potential use
3	No potential use

2nd Digit: Utility

Value	**Definition**
1	Drinking
2	Ecologically important
3	Neither

3rd Digit: **Salinity (mg/l Cl-)**

Value	Definition
1	Fresh (<250)
2	Low (250-1,000)
3	Moderate (1,000-5,000)
4	High (5,000-15,000)
5	Seawater (>15,000)

4th Digit: **Uniqueness**

Value	Definition
1	Irreplaceable
2	Replaceable

5th Digit: **Vulnerability to Contamination**

Value	Definition
1	High
2	Moderate
3	Low
4	None

NOTES

Note 1:

In order to distinguish areas where there are aquifers above other aquifers (such as coastal caprock areas), the fields have been labeled *typea* and *typeb*, and *stata* and *statb*. Typea and stata represent the upper aquifers, while typeb and statb represent the lower aquifers, when they occur.

Note 2:

Although these layers are complete, final QA/QC procedures have not yet been performed. Attribute data on the aquifer codes and status codes were entered manually and are correct to the best of our knowledge.

An explanation of these delineations and protocols can be found in the following documents WRRC documents:

Technical Report No. 179 - Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii. Feb. 1990 (Rev.)

Technical Report No. 185 - Aquifer Identification and Classification for Maui: Groundwater Protection Strategy for Hawaii. Feb. 1990.

Technical Report No. 186 - Aquifer Identification and Classification for Kauai: Groundwater Protection Strategy for Hawaii. Sept. 1992.

Technical Report No. 187 - Aquifer Identification and Classification for Molokai: Groundwater Protection Strategy for Hawaii. Oct. 1992.

Technical Report No. 190 - Aquifer Identification and Classification for Lanai: Groundwater Protection Strategy for Hawaii. April 1993.

Technical Report No. 191 - Aquifer Identification and Classification for the Island of Hawaii: Groundwater Protection Strategy for Hawaii. May 1993.

These technical reports are available from the Groundwater Protection Program, Department of Health. For more information contact DOH, Environmental Planning Office, (808) 586-4337.

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