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BOARD OF WATER SUPPLY OFFICE OF THE MAYOR

COUNTY OF MAU

200 SOUTH HIGH STREET WAILUKU, MAUI, HAWAII 96793-2155 TELEPHONE (808) 270-7816 • FAX (808) 270-7951 • www.mauiwater.org

March 1, 2018

Honorable Alan M. Arakawa Mayor County of Maui 200 S. High Street Wailuku, HI 96793

For Transmittal to:

Honorable Alika Atay Chair Water Resources Committee Maui County Council 200 S. High Street Wailuku, HI 96793

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Dear Chair Atay:

SUBJECT: WELLHEAD PROTECTION OVERLAY DISTRICT (WR-18)

The Maui Board of Water Supply met on February 15, 2018 but because of quorum issues we cannot respond by Tuesday, March 6, 2018. At the earliest, we will review this matter and respond to you and your committee after March 15, 2018.

Thank you for your patience and cooperation.

Sincerely,

MA WW

Anders Lyons Chair

attachment

xc: Alan Arakawa, Mayor

Gladys Baisa, Deputy Director of Water Supply Edward Kushi, Jr., First Deputy Corporation Counsel

"By Water All Things Find Life"

Council Chair Mike White

Vice-Chair Robert Carroll

Presiding Officer Pro Tempore Stacy Crivello

Councilmembers Alika Atay Elle Cochran Don S. Guzman Riki Hokama Kelly T. King Yuki Lei K. Sugimura



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COUNTY COUNCIL

COUNTY OF MAUI 200 S. HIGH STREET WAILUKU, MAUI, HAWAII 96793 WWWW.MauiCounty.us

January 25, 2018

Mr. Anders Lyons, Chair Board of Water Supply c/o Department of Water Supply County of Maui Wailuku, Hawaii 96793

Dear Mr. Lyons:

SUBJECT: WELLHEAD PROTECTION OVERLAY DISTRICT (WR-18)

At its meeting of January 24, 2018, the Water Resources Committee discussed the attached proposed bill entitled "A BILL FOR AN ORDINANCE AMENDING TITLE 19, MAUI COUNTY CODE, TO ESTABLISH A WELLHEAD PROTECTION OVERLAY DISTRICT." The purpose of the proposed bill is to 1) protect the public's health, welfare, and safety by minimizing the risks of contamination of aquifers; 2) preserve and protect existing and potential drinking water sources; 3) implement land use policies consistent with the Maui County General Plan and Community Plans; and 4) restrict and prohibit land uses that are incompatible with groundwater protection.

Also attached is a copy of testimony received from Mr. Robert Whittier, State Department of Health ("DOH"), Safe Drinking Water Branch, relating to the DOH's support of the proposed bill.

May I please request your review and comment of the proposed bill. The Water Resources Committee intends to schedule the matter for discussion at its meeting on March 14, 2018. Therefore, may I further request you transmit your comments no later than **Tuesday, March 6, 2018**, to meet internal posting deadlines.

Mr. Anders Lyons January 25, 2018 Page 2

Should you have any questions, please contact me or the Committee staff (Shelly Espeleta at 270-7134, or Stacey Vinoray at 270-8006).

Sincerely,

ALIKA ATAY, Chair

ALIKA ATAY, Chair Water Resources Committee

Attachments

wr:ltr:018a01:ske

3/19/14 DRAFT

ORDINANCE NO.

BILL NO. (2014)

A BILL FOR AN ORDINANCE AMENDING TITLE 19, MAUI COUNTY CODE, TO ESTABLISH A WELLHEAD PROTECTION OVERLAY DISTRICT

BE IT ORDAINED BY THE PEOPLE OF THE CAUNTY OF MAUL

SECTION 1. Title 19, Maui County Code is amended by anding a new chapter

to be appropriately designated and to read as follows "CHAPTER 19.9

WELLHEAD PROTECTION OVERLANDISTRICT

Sections:

- 19.94.010 se and intent.
- 19.94.020 Definitions.
- 19.94.030 Applicapility.

19.94.040 allha **d** protection overlay district zones and mag

Regulations for Zone A. Segulations for Zone B. Regulations for Zone C. 19.94.85

8.94.060

94.070

19.94.080 19.95.090 19.94.00 Ihead protection permits.

st Management Practices. B

- Design guidelines.
- 19.94.17 Liability.
- 19.94.120 Interpretation of District Boundaries.
- 19.94.130 Enforcement.
- 19.94.140 Administrative Rules.

19.94.150 Severability.

19.94.010 Purpose and intent. Maui County recognizes that many residents rely on groundwater for their safe drinking water supply, and that certain land uses may contaminate groundwater sources. To ensure the protection of these drinking water sources, this ordinance establishes a zoning overlay district to be known as the Wellhead

Protection Overlay District ("WPOD"). The purpose and intent of the WPOD is to:

A. Protect the public's health, welfare, and safety by minimizing the risks of contamination of aquifers;

B. Preserve and protect existing and potential drinking water sources;

C. Implement land use policies consistent with the Maui County General Plan and Community Plans; and

D. Restrict and prohibit land uses that are incompatible with groundwater protection.

19.94.020 Definitions. The following definitions shall apply to this chapter. Terms not defined below shall have the meanings set forth in section 19.04.040 of this code, unless the control clearly indicates a different meaning:

"Confined animal feeding operation" means a lot a facility (other than an aquatic animal production facility) where animals where stabled or confined and fed or maintained for a task of 45 days or more in any 12 month period, and where crops, vegetation braze growth, or post harvest residues are not sustained in the normal growing season over any portion of the lot or facility. Pasture operations are maconfined animal feeding operations.

"Contamination" means an impaired of water quality by one or more of the regulated substances lister in Appendix A attached hereto.

"Dump" means a wfully operated and privately owned refuse disposal site.

"Hazardous machal" means substances that are identified as hazardous results the CS. Environmental Protection Agency set forth in 40 CFP Part 26 houbpart of identified as a hazardous substance design and by the US Environmental Protection Agency pursuant to 40 CFR part 02.

"Integrand Pest Management" means a decision-making process that considers outrial, mechanical, biological and chemical controls of pests such as insects or rodents. Control mechanisms are selected as each situation warrants. Where chemical control is indicated, specific pest populations are targeted for treatment when they are most vulnerable rather than a general pesticide application.

"Landfill" means any sanitary landfill maintained and operated by the County.

"Primary Containment Facility" means a tank, pit, container, pipe or vessel containing a liquid or chemical that is not a secondary containment facility.

"Public Water System" as per the administrative rules of the State of Hawaii Department of Health (HAR 11-20-2), means a water system which provides water for human consumption, through pipes or other constructed conveyances if the system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days out of any 12-month period. Such term includes: (1) any collection treatment, storage and distribution facility under control of the operator of such system, and (2) any collection or pretreatment storage facility not under such control which are used primarily in connection with such system.

"Regulated substances" means substances regulated under the National Drinking Water Regulations implementing the Safe Drinking Water Act or under the Rules Relating to Public Water Systems pursuant to Hawaii Administrative Rules Title 11 Chapter 10 and listed in Appendix A, attached hereto and incorporated herein by reference and may be amended in the same manner as any part of this chapter.

"Release" means any unplanned of unpermitted discharge, leak, or spill of a potential contaminant including a second material.

"Secondary Containment Facility" means second tank, catchment pit, pipe, or vessel that limits and contains liquic or chemical leaking or leaching from a primary containment and

"Sewage sludge" means any solid, semi-solid, or liquid waste generated from a social conmercial, or industrial wastewater treatment plant, water subly treatment plant, industrial process, or air pollution control factive exclusive of the freated effluent from a wastewater treatment plant.

"Time of the el" (OT") distance means the distance that groundwater will the el in a pecified time. This distance is generally a function of the permetaility and slope of the aquifer.

"We head protection area" means the surface and subsurface area surrounding a pater yiell or well field that supplies a public water system, through which pataminants are reasonably likely to move toward and reach the water yiell or well field.

"Wellhead protection overlay district" (WPOD) means the zoning district consisting of the wellhead protection areas as identified on the maps entitled "Wellhead Protection Overlay District Zones", dated June 4, 2013, on file in the Office of the County Clerk with certified copies being placed on file in the Department of Planning and the Department of Water Supply.

19.94.030 Applicability. This ordinance shall apply to wellhead protection overlay district zones as defined herein for Department of Water Supply wells. Nonconforming uses as defined in

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section 19.04.040 are subject to the provisions of section 19.500.110 of this code.

Wellhead protection overlay district zones and 19.94.040 WPOD zones are delineated by the University of Hawaii maps. Department of Geology and Geophysics utilizing a fixed distance for Zone A nearest to the well, and TOT distance criteria for Zones B and C using the United States Geological Survey three-dimensional numerical groundwater model MODFLOW followed by a particle tracking program MODPATH. Zone B is intended to designate a conservative estimate of the area that may contribute bacteria and viruses to the wellhead. A twoyear TOT criterion is based on survival times for bacteria and viruses in soil and groundwater. Zone C is based on a terveat TOT to allow sufficient time to implement management and tenedial measures to mitigate contamination from accidental contaminate spills and other causes.

A. The WPOD zones are superingesed on all current zoning districts and identified on the maps entitled "Wellhead Protection Overlay District Zones", dated June 4, 2013, capitle in the Office of the County Clerk with certified copies being placed on the in the Department of Planning and the Department of Water Supper Said Wellhead Protection Overlay District zone maps shall be deemed to be incorporated herein by reference, and may be amended to the same manner as any part of this chapter.

B. The WPOD zones are destricted as follows:
1. ZONE A - 50 feet arect cremical contamination zone.
Zone A is defined as the fixed 50-foot radius around each well. The purpose of his zone is to provide protection from vandalism, tampering, conther preats at a cell site.
2. NET relative creating the parties of a service protection zone. Zone

B consists of the surface area overlying the portion of an aquifer that onto the way to the well within two years.. 3. ONE is indirect chemical contamination zone. Zone

consists of the surface area overlying the portion of an aquifer the contributes vater to the well within ten years.

19.94. **Gegulations for Zone A.** Permitted uses: Necessary public utilities/factives including the construction, maintenance, repair, and enlargement of minking water supply-related facilities including but not limited to wells, pipelines, aqueducts, and tunnels.

19.94.060 **Regulations for Zone B.**

Permitted uses: All uses permitted in the underlying zoning Α. districts, unless required to obtain a wellhead protection permit pursuant to subsection B below, or prohibited in subsection C below.

Permit required. The following uses in Zone B shall require a Β. wellhead protection permit issued by the director of Water Supply pursuant to section 19.94.080.

> Commercial automobile body/repair shops. 1.

2. Car washes.

3. Cement/concrete plants.

Gas stations. 4.

5. Fleet/trucking/bus terminals.

6. Dry cleaners.

7. Irrigated crops using soil fumigants (>50 acres) or pesticides rated by the U.S. Environmental Protection Agency as having high leachability potential.

Commercial machine shops. 8.

9. Commercial wood preserving/treating facilities.

10. Confined animal feeding operations.

11. Commercial equipment maintenance/fueling areas.

12. Hospitals.

Parking lots/malls (>50 spaces) 13.

13. Parking lots/mails (>50 spaces).
14. Waste transfer/recycling stations.
15. All non-residential facilities involving collection, handling, manufacture, use, storage transfer or or posal of more than 55 gallons of petroleum products or more than 5 gallons for any other regulated substance as the fined herein.
16. Subdivisions that create three (3) or more residential or residential mixed use developable lots.

Prohibited uses. To following use are prohibited within C. Zone B.

- New cesspools 1.
- electrical ectronic 2. Commercial manufacturing factures that utilize regulated substances as defined fereir
- Mortuares/gravey 3.

lf c∕a

Connerciar metal plating/finishing/fabricating facilities that the regulated substances as defined herein. communication chemical processing/storage facilities. A stics synthetic production facilities that utilize

6.

7. requiated substances as defined herein.

C mmercial junk/scrap/salvage vards.

ines.

4.

andfills/dumps.

- 11.) Injection wells/dry wells/sumps on non-residential properties.
- 12. Irrigation with reclaimed wastewater classes R2 and R3.

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- 13. Sewage sludge land applications.
- 14. Commercial slaughterhouses.
- 15. Wastewater percolation ponds.

19.94.070 **Regulations for Zone C.**

Permitted uses: All uses permitted in the underlying zoning Α. districts, unless required to obtain a wellhead protection permit pursuant to subsection B below, or prohibited in subsection C below.

Permit required. The following uses in Zone C shall require a Β. wellhead protection permit issued by the director of Water Supply pursuant to section 19.94.080.

- 1. Commercial automobile body/repair shops.
- 2. Gas stations.
- 3. Fleet/trucking/bus terminals.
- 4. Dry cleaners.
- Golf courses. 5.
- 6. Commercial machine shops.
- 7. Commercial wood preserving/treating facilities.
- 8. Confined animal feeding operations.
- Commercial equipment maintenance/fueling areas. 9.

10. All nonresidential facilities involving collection, handling, manufacture, use, storage, transferor disposal of more than 55 gallons of petroleum products or more than 10 gallons of any other regulated substance as defined herein.

11. Subdivisions that create the (3) or man developable residential lots, including residential mixed use lots.

C. Prohibited uses. The following isses are prohibited within Zone C:

1. New cessport

- New cessport
 Commercial electronic manufacturing facilities that utilize regulation obstances as defined herein.
 Commercial chamical professing/storage facilities.
 Commercial plastics/synthetic production facilities that dtilize regulated substances as defined herein
 Commercial junk/scrap/salvage yards.
 Commercial metar plating/finishing/fabricating facilities the substances as defined herein
- that tillze requated substances as defined herein.
- Mine 8.
- andfine lemps. Rection wells/dry wells/sumps on non-residential 9. pupperties.
 - 10. Westewater percolation ponds.

19.94.080 Wellhead protection permits.

We head protection permit applications shall be submitted to the A. director of Water Supply, and shall include:

> The name, address, and phone number of the 1. applicant who will be responsible for implementation of best management practices;

> Verification of property ownership; authorization by all 2. property owners if the applicant is not the sole owner of the subject property.

The tax map key of the project site; 3.

4. A plot plan showing the project location on the tax map key parcel;

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5. A description of the proposed use, including names and quantities of any regulated substances collected, handled, manufactured, used, stored, transferred or disposed of at the project site;

A Best Management Plan addressing all activities 6. subject to the Wellhead Protection Permit:

Additional information as may be requested by the 7. director of Water Supply.

Permit processing. Β.

1. Upon receipt of a complete application, the director of Water Supply shall approve or deny the application pursuant to the requirements of this chapter, and may impose conditions upon the proposed use to ensure that the purpose and intent of this chapter are met. If a complete application does not need the requirements of this chapter, it shall be denied.

2. Initial permits shall be valid for a period of up to five (5) years. Subsequent permit renewals and permit an andments may be granted by the director of Water Supply for longe duration. In reviewing applications for renewals, the director of Vater Supply shall require evidence of compliance with applicable best management practices and any other semit conditions. 3. All permits and renewals shall contain a provision for inspection at reasonable times and upon presentation of appropriate credentials.

appropriate credentials.

C. Revocation and Appeal, any we need protection permit may be revoked at the time and/or may not be renewed by the director of Water Supply the permit terms and conditions have been violated of the re-uirements of this chapter have not been met. Appeals of pamit unials, revocations, non-renewals or alleging errors shall be said and determined by the board of variances and appeal pursent to chapter 19.520 of this code.

94.090 ast Management Practices. The following standard hall apply uses in Zones B and C of any WPOD. A. Any non-residential facility involving the collection, handling, manufacture, the, storage, transfer or disposal of more than 55 gallons of petroleum products or more than 10 gallons of any regulated substance as defined herein, must have a secondary containment system which shall be apply uses and whose purpose in the interpret apply look are released. easily inspected and whose purpose is to intercept any leak or release containment the primary from vessel or structure. Β. Confined animal facilities shall meet the minimum requirements for operating a confined animal facility set forth in Department of Health "Guidelines for Livestock Waste Management dated January 19, 2010" as may be amended.

The irrigation of crops shall follow Integrated Pest C. Management in accordance with U.S. Department of Agriculture Natural Resources Conservation Service Technical Guide dated 1989, as may be amended.

Đ. Subdivisions that create three (3) or more residential or residential mixed use developable lots in unsewered areas resulting in septic systems that serve more than one residential unit per acre shall install aerobic treatment units or alternative treatment units achieving equal or higher level of wastewater treatment.

Parking lots shall be maintained on a yearly basis, including Ε. cleaning catch basins, and sweeping and sealing cracks. Runoff from parking lots should be diverted to storm water drains.

Waste transfer/recycling stations shall have an operating manual to insure that only clean, marketable recyclables are collected. Storage of residuals shall be accomplished to prevent spillage and leaking.

G. Golf course development shall meet best management practices for use of nutrients and pesticides as sectorth in "Golf Course Management Measure", Hawaii's Coastal Norpolity Pollution Control Program Management Plan, dated June 1996, as may be amended. H. Construction activities shall be in accordance with chapter

20.08 of this code and these standards:

of this code and these standards: 1. There shall be a conjuncted person on site during operating hours who shall be responsible for supervising the use, storage, and handling of hazardous underial and who shall take appropriate mitigating actions necessary of the event of fire or spill. 2. Hazardous underials left ownsite when the site is unsupervised must be inauces the to the public. Locked storage sheds, locked fencing, locked functions on construction vehicles, or other techniques may be used if the will preclude access. 3. Construction vehicles and stationary equipment that are found to be leaded fuel, hydraulic fluid, and/or other hazardous

5. Consultion venticles and stationary equipment that are found to be leaving fuel, hydraulic fluid, and/or other hazardous materials and be inmoved from the site and from any wellhead protection zone. The wehicle or equipment may be repaired in place, provided to leakage a completely contained. Hazardous materials shall not be allowed to enter starmwater statems.

13.04.100 Design guidelines. A. The following design guidelines hall apply to subdivisions that create three (3) or more residential or fixed use developable lots.

Proposed development and uses should be located as far from the wellhead as feasible.

Storm-water infiltration basins should be located 2. outside the WPOD where feasible.

3. Active parks and schools should implement Integrated Pest Management.

If development or use is proposed on property which is partially within a WPOD, the proposed development or use should be located to the maximum extent feasible on the portion of the property that is outside the WPOD

19.94.110 Liability. Nothing in this ordinance shall be construed to imply that the County of Maui has accepted any of an

owner/developer's liability if a permitted facility or use contaminates groundwater in any aquifer.

19.94.120 Interpretation of District Boundaries.

A. If parts of a parcel lie within one or more of the delineated zones of the WPOD, the parts shall be governed by the restrictions applicable to the zone in which the part of the property is located.

B. Where the boundary between two WPOD zones passes through a facility, the entire facility shall be considered to be in the more restrictive zone.

C. Where the facility, or portion thereof, is overlapped by delineated zones of the WPODs of different wells or wellfields, the stricter zone(s) shall apply.

19.94.130 Enforcement. Any violation of the chapter shall be enforced pursuant to chapter 19.530 of this code, and though revocation or non-renewal as prescribed herein.

19.94.140 Administrative Rules The Planning director and the director of Water Supply may adopt administrative rules regarding the administration of this chapter, pursuant to capter 91, Hawaii Revised Statutes.

19.94.150 Severability. Should any section or provision of this ordinance be declared invalid, such declared shall not affect the validity of the ordinance as a whole or any other part thereof. A determination that any portion or provision of this overlar protection district is invalid shall not invalidate any permit previously issued thereunder.

SECTION 2. This order are small sike effect upon its approval.

APPROVED AS TO FORMAND LEGAL Y:

EDWARD S. KUSHI, JF First Deputy Corporation Counsel

S:VALL\ESK\Ords\Title 19, Chapter 19.24 Wellhead Protection Overlay District.wpd

Appendix A. REGULATED SUBSTANCES

CONTAMINANT	CHEMICAL TYPE	SOURCE OF CONTAMINANT	CASRN
1,1,1,2-tetrachloroethane	Organic chemical	Industrial chemical used in the	630-20-6
		production of other substances	
1,1,1-Trichloroethane	Organic chemical	Metal degreasing sites and other	71-55-6
		factories	
1,1,2-Trichloroethane	Organic chemical	Industrial chemical factories	79-00-5
1,1-Dichloroethylene	Organic chemical	Discharge from industrial chemical	75-35-4
(DCE)		factories	
1,2 Dibromo-3-	Organic chemical	Soil fumigant, banned	96-12-8
chloropropane (DBCP)			
1,2,3-Trichloropropane	Synthetic chemical	Industrial chemical used in paint	96-18-4
(TCP)		manufacture	
1,2,4-Trichlorobenzene	Organic chemical	Textile finishing factories	120-82-1
1,2-Dichloroethane	Organic chemical	Discharge from industrial chemical	107-06-2
		factories	
1,2-Dichloropropane	Organic chemical	Discharge from industrial chemical	78-87-5
		factories	
2,4,5-TP (Silvex)	Synthetic chemical	Residue of banned herbicide	93-72-1
2.4-D	Synthetic chemical	Herbicide on row crops	94-75-7
Acrylamide	Organic chemical	Added to water during	
		sewage/wastewater treatment	
Alachlor	Synthetic chemical	Herbicide on row crops	15972-60-8
Antimony	Inorganic chemical	Discharge from petroleum	7440-36-0
		refineries, fire retardants, ceramics,	
		electronics, solder	
Arsenic	Inorganic chemical	Runoff from orchards, glass &	7440-38-2
	Ĵ	electronics production wastes	
Asbestos fiber>10 microm.	Inorganic chemical		
Atrazine	Synthetic chemical	Herbicide	912-24-9
Barium	Inorganic chemical	Drilling wastes, metal refineries	7440-39-3
Benzene	Organic chemical	Factory discharge, leaching from	71-43-2
	_	gas storage tanks and landfills	
Benzo(a)pyrene	Synthetic chemical	Leaching from lining of water	50-32-8
		storage tanks and landfills	
Beryllium	Inorganic chemical	Metal refineries, coal burning	7440-41-7
•		factories, electrical and defense	
		industry	
Beta particles and photon	Radionuclide		
emitters			
Bromate		Byproduct of drinking water	· ·
		disinfection	
Bromodichloromethane	Trihalomethane		
Bromoform	Trihalomethane		
Cadmium	Inorganic chemical	Corrosion of galvanized pipes,	7440-43-9
		discharge from metal refineries,	
		runoff from waste batteries and	
		paints -	
Carbofuran	Synthetic chemical	Soil fumigant	1563-66-2
Carbon tetrachloride	Organic chemical	Discharge from chemical plants and	56-23-5
		other industry	
Chlordane	Organic chemical	Residue of banned termiticide	57-74-9
Chlorite		Byproduct of drinking water	

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		disinfection	1
Chlorobenzene	Organic chemical	Discharge from chemical and	1
		agricultural chemical factories	
Chloroform	Synthetic chemical		
Chromium	Inorganic chemical	Discharge from steel and pulp mills	7440-47-3
cis-1,2-Dichloroethane	Organic chemical	Discharge from industrial chemical	
		factories, solvent for resins and fats,	
	1	photography, photocopying,	
		cosmetics, drugs, and as a fumigant	1
		for grains and orchards	
cis-1,2-Dichloroethylene	Organic chemical	Discharge from industrial chemical	156-59-2
		factories	·
Coliform	Microbe		
Copper	Inorganic chemical		
Coxsackieviruses	Enterovirus	Corrosion of household plumbing	· · ·
Cryptosporidium -	Microorganism	Human and animal fecal waste	
Cyanide	Inorganic chemical	Discharge from steel/metal	
		ractories, plastic and fertilizer	1
		tactories	77.00 -
Dalapon	Organic chemical	Herbicide on right of way	/5-99-0
Di(2-ethylhexyl)adipate	Organic chemical	Discharge from chemical factories	103-23-1
Di(2-ethylhexyl)phthalate	Organic chemical	Discharge from rubber & chemical factories	117-81-7
Dibromochloromethane	Trihalomethane		
Dichloromethane	Organic chemical	Discharge from drug & chemical factories	75-09-2
Dinoseb	Organic chemical	Herbicide used on soybeans &	88-85-7
		vegetables	
Dioxin (2,3,7,8-TCDD)	Synthetic chemical	Incineration of waste, discharge	1746-01-6
••••		from chemical factories	
Diquat	Organic chemical	Herbicide	85-00-7
Endothall	Organic chemical	Herbicide	145-73-3
Endrin	Organic chemical	Banned insecticide	72-20-8
Epichlorohydrin	Synthetic chemical	Discharge from industrial chemical	
F		factories, impurity of some water	}
		treatment chemicals	
Ethelynedibromide (EDB)	Synthetic chemical	Discharge from petroleum refineries	106-93-4
Ethylbenzene	Synthetic chemical	Discharge from petroleum refineries	100-41-4
Fluoride	Inorganic chemical	Water additive, discharge from	16984-48-8
	· · · · · · · · · · · · · · · · · · ·	fertilizer and aluminum factories	
Giardia lamblia	Microorganism	Human and animal fecal waste	
Glyphosate	Synthetic chemical	Herbicide	1071-53-6
Gross alpha particle activity	Radionuclide	· · · · ·	
HAA5 (Haloacetic acids)	Haloacetic acids	Byproduct of drinking water disinfection	
Hentachlor	Synthetic chemical	Residue of banned termiticide	76-44-8
Hentachlor enoxide	Organic chemical	Breakdown of heptachlor	1024-57-3
Heterotrophic Plate Count	Microorganism	HPC measures a range of bacterial	
		that are naturally present in the	1
		environment	ļ
Hevenhorobenzene	Organic chemical	Discharge from metal refineries and	118-74-1
FIEXAGENIOTODENZENE		agricultural chemical factories	
Havapharaqualipartadiana		Discharge from chemical factories	77-47-4
mexachicitorycilletilduletie			1

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Inorganic Mercury	Inorganic chemical	Erosion of natural deposits;	
		factorize: runoff from londfille and	
		Croplanda	
l ead	Inorganic chemical	Corrosion of household nlumbing	
Legionalla	Microorganism	Eound naturally in water multiplies	
Legionena .	Microorganism	in heating systems	
Lindane	Organic chemical	Insecticide used on cattle, lumber,	58-89-9
		gardens	
Mercury (inorganic)	ĵ.	Discharge from refineries, factories.	7439-97-6
		Runoff from landfills and croplands	
Methoxychlor	Organic chemical	Insecticide used on fruits,	72-43-5
		vegetables, alfalfa, livestock	
Monochlorobenzene			108-90-7
Naphthalene	Synthetic hydrocarbon	Manufacturing dyes, explosives, plastics, and lubricants.	
Nitrate (Nitrogen)	Inorganic chemical	Fertilizer use, septic tanks, sewage	14797-55-8
Nitrite (Nitrogen)	Inorganic chemical	Fertilizer use, septic tanks, sewage	
o-Dichlorobenzene	Organic chemical	Discharge from industrial chemical factories	95-50-1
Oxamyl (Vydate)	Organic chemical	Insecticide on apples, potatoes,	3135-22-0
		tomatoes	
p-Dichlorobenzene	Organic chemical	Discharge from industrial chemical	106-46-7
Pentachlorophenol	Organic chemical	Discharge from wood-preserving	87-86-5
Picloram	Organic chemical	Herbicide	1918-02-1
Polychlorinated hinberyls	Organic chemical	Landfills waste chemicals	1336-36-3
Padium 226 Radium 228	Radionuclide	Caranio, Waste onernouis	1000 00-0
(combined)			
Selenium	Inorganic chemical	Petroleum and metal refineries, mines	7882-49-2
Simazine	Organic chemical	Herbicide	122-34-9
Styrene	Organic chemical	Rubber and plastic factories,	100-42-5
		landfills	
Tetrachloroethylene	Organic chemical	Factories and drycleaners	127-18-4
Thallium	Inorganic chemical	Ore processing, electronics, glass	4770-28-0
		and drug factories	
Toluene	Organic chemical	Petroleum factories	108-88-3
Total Coliforms (decal	Microorganism		
coliform, E. coli)			
Total Trihalomethanes	Organic chemical	Byproduct of drinking water disinfection	
Toxaphene	Organic chemical	Insecticide used on cattle & cotton	8001-35-2
trans-1,2-Dichloroethylene	Organic chemical	Discharge from industrial chemical factories	156-60-5
Trichloroethylene (TCE)	Organic chemical	Metal degreasing sites and other factories	79-01-6
Turbidity	Microorganism	Human and animal fecal waste	
Uranium	radionuclide		
Vinyl chloride	Hydrocarbon	Leaching from PVC pipes,	75-01-4
		discharge from plastic factories	
Viruses (enteric)	Microorganism	Human and animal fecal waste	
Xvlenes	Organic chemical	Petroleum and chemical factories	1330-20-7

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Appendix B: U.S. ENVIRONMENTAL PROTECTION AGENCY LIST OF HIGH-LEACHABILITY CHEMICALS THAT ARE PESTICIDES OF NATIONAL CONCERN

Common Name	Brand/Other Name
Alachlor	
Acephate	
Acetochlor	Surpass, Fultime, Topnotch
Acifluorfen	
Aldicarb	Temik
Atrazine	Aatrex
Bentazon	Basagran
Azinphos-methyl	Guthion, azinphosmethyl, azinphos
Azoxystrobin	Azoxystrobine, Heritage, Amistar, Quadris, Bankit
Bensulfuron methyl	
Bispyribac-sodium	· · · · · · · · · · · · · · · · · · ·
Bromaci	Krovar, Hyvar
Carbaryl	Carbaryl
Chioropicrin	Prove Descrit totrashersionanthalenitrite Descrit Oslanta Descrit Associate
	Dravo, Dawnii, letrachioroisophinalonitrile, Daconii, Celeste, Bronco, Agronii, Aminii
Clomezono	Dimethazone
Cycloate	
Dadhal	Dacthal
2 4-D 2-ethylhevyl ester	
2.4-D diethanolamine salt	
2.4-D dimethylamine salt	
2.4-D. isooctyl ester	
2.4-DP-P, dimethylamine salt	
(dichlorprop-P, dimethylamine	
salt)	
Dazomet .	Mylon; Basamid, Thiazone; Mylone; Tiazon; DMTT; Dimethylformocarbothialdine;
Diminon	Diethowy (/2 is opported for methyl A pyrimidinyl) evel this yophorphorane
Diazinon	
Dicamba, digiycolamine sait	······································
Dicamba, unicuryianinge sait	Dicamba
Dichlohenil	
Dichloran	
Diflufenzopyr, sodium salt	
Dimethenamid-P	Frontier Herbicide, Dimethenamid-P ((S)-isomer)
Dimethoate	O, O-dimethyl S-methylcarbamoylmethylphosphorodithioate
	Phosphorodithiok acid, U, U-Dimethyl S-(2-(methylamino)-2-oxoethylyl)ester
Dinotefuran	A)- 1-metry-2-nitro-3-((tetranyoro-3-turanyi) metnyi) guanioine, wi 1-440
Diquatdibromide	
Dithiopyr	Diumon Karmov Krowar
	Ciurun, Namies, Nuvai
Endothall, dipotassium sait	
Enoomall, monu (N,N-olmethy)	
EPTC	
Ethofumesate	
Ethoprop	
Fenoxycarb	Varikill, Insegar, Logic
Fludioxonil	
Flutolanil	
Fosetyi-AI (aluminum tris)	
Halosulfuron-methyl	
Hexazinone	Hexazinone, Pronone, Velpar
Imazamox, ammonium salt	
Imazapic, ammonium sait	
Imazethapyr, ammonium salt	
Imidacloprid	
Iprodione	Giycophene, Promidione
Isoxaben	Benzamizole, Flexidor, Gallery, X-Pand, Prolan
Lindano	Agrox, Kernal Guard, Lindane

Common Namo	Brand/Othor Namo
Common Name	
Linuron	
Malathion	2-(dimethoxyphosphinothio) butaneoloic acid diethyl ester, Malathion, Carboros, Maldison, Mercaptothion, Ortho malathion
Mefenoxam	
Metaldehyde	2,4,6,8-tetramethyl-1,3,5,7-tetraoxocanemetacetaldehyde
Metalaxyl	Allegiance, Apron, Gaucho, Raxil, Ridomil, Rival, Subdue
Methiocarb	Mercaptodimethur, Mesurol
Methomyl	Bluestreak, Deosect, Lannate, Mesomile, Methomex, Nudrin
Methyl isothiocyanate	MITC
Methyl parathion	
Metolachlor	Drexel, Parallel, Bicep, Dual, Cinch, Lexar, Medal
(S)-Metolachlor	Dual, Pirnagram, Bicep, CGA-24/05, Pennant
Metribuzin	Axium, Metribuzin, Sencor
Napropamide	
Nitrapynn	
Oryzalin	
Dxydemeton-methyl	Metryimercaptophos oxide
Penoxsulam	The set (keedsmode)
Phorate	Thirnet (Jademark)
Picioram	Tordun, Grazon, Pathway
	Enforcer Dramitol Turf King
Promotoin	
Propanil	Propanide
Pronyzamide	
Purazon	
Rimsulfuron	
Siduron	
Simazine	Pramitol, Princep, Simazine
Sulfometuron-methyl	
rebuthluron	Brulan; Brush Bullet; EL-103; Graslan; Perflan; Herbec; Herbic; Reclaim, Spike, Sprakel
lerrazole	
Thiamethoxam	
Thiobencarb	
Thiophanate methyl	
Friallate	
riclopyr, butoxyethyl ester	
Friclopyr, triethylamine salt	
Iniconizole-P	
/inclozolin	Ronilan, Curalan, Vorlan, Touche, Vinclozoline

. . Oral Testimony to the Maui County Council, Water Resources Committee Re: Maui Department of Water Supply Wellhead Protection Overlay District (WR-18) Testimony given by Robert Whittier, HDOH Source Water Protection Geologist Date: January 24, 2018

Good morning Chair Atay and members.

This testimony is submitted to present the Hawaii Department of Health's (DOH) position on the Wellhead Protection Overly District (WHPOD) ordinance proposed by the Maui Department of Water Supply (MDWS). We would like to make four (4) points:

- 1. DOH supports Maui County's proposed Wellhead Protection Overlay District ordinance;
- 2. DOH believes that the County is the proper level for such an ordinance and it will not conflict with or be superseded by State regulations;
- 3. Such an ordinance is needed to fully protect drinking water wells from contamination: and
- 4. Numerical modeling done at the State level is the optimum method to delineate the Wellhead Protection Overlay Districts.

Point 1 - One of the many functions of DOH is to ensure that public drinking water sources are free from contamination. The State Wellhead Protection Program (WHPP) is one of the approaches used by DOH to ensure that contaminant free drinking water is delivered to the public. As such DOH supports this ordinance as a critical component of the State WHPP.

Point 2 - The development of the WHPPs commonly falls to the local government and the water system operator. Local governments frequently implement WHPPs using land use tools. For example Pennsylvania, Wisconsin, Utah, and Nebraska delegate wellhead protection to county and municipal governments and list zoning as a management tool. In Hawaii, delegating Wellhead Protection implementation to the county governments is even more logical since, unlike the other states, Hawaii's aquifers do not cross county boundaries.

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Point 3 - The current State and Federal laws have made great strides in preventing groundwater contamination and in improving groundwater quality. However, weaknesses such as the rate of new chemical development exceeding our ability to assess their health risks results in regulatory gaps. Having knowledge of activities occurring within well capture zones will enable Maui County to more fully assess contaminant risk and take actions to mitigate that risk.

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Point 4 - To properly protect drinking water wells from contamination the path that water takes to the well must be estimated. The USGS MODFLOW and MODPATH modeling codes, are recognized as the optimum approach for delineating well capture zones. The zones are not exact since uncertainty is an inherent characteristic of modeling. The approach to dealing with uncertainty is to continually review and test the models. DOH does this through collaborations with the University of Hawaii on a wide variety of groundwater quality and modeling projects.

In summary, DOH supports the Maui WHPOD ordinance as a proactive measure to protect the drinking water supplies for Maui. This ordinance is needed to ensure that high quality of drinking water continues to be delivered to the residents by the Maui Department of Water Supply. This ordinance is in addition to and does not conflict with State and Federal efforts intended to protect groundwater.