

## GET Committee

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**From:** Juan Rivera <jrivera64@gmail.com>  
**Sent:** Thursday, May 16, 2019 10:10 PM  
**To:** GET Committee  
**Cc:** Michael.Victorino@co.maui.hi.us; Maui\_County Council\_mailbox; Kelly King; Keani N. Rawlins; Tasha A. Kama; Riki Hokama; Alice L. Lee; Mike J. Molina; Tamara A. Paltin; Shane M. Sinenci; Yukilei Sugimura  
**Subject:** GET-26 - Hawaii Wildlife v. County of Maui  
**Attachments:** GET-26 Testimony CC19-224.pdf

Aloha,

Please accept my written testimony on the subject issue.

Mahalo.

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## WRITTEN TESTIMONY TO THE COUNTY COUNCIL

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May 17, 2019

### **RE: Injection Wells Settlement**

CC-19-224 Hawaii Wildlife v. County of Maui  
CC-19-225 Hawaii Wildlife v. County of Maui  
GET-26 Hawaii Wildlife v. County of Maui

Aloha members of the council. I have been a resident of Maui since 2004. Full disclosure: I am a county employee, working as a project manager for the Wastewater Reclamation Division since 2005. However, today I give this testimony as a private citizen in my capacity as a professional engineer with over 30 years of experience working on industrial infrastructure design, both in the public and the private sector. I submit this testimony, freely and of my own volition.

The County of Maui is facing pressure to eliminate the use of injection wells in favor of alternatives that are *perceived* to have a lesser of an impact on the environment. Examination of the public record reveals those perceptions: There exists a vision of a "green" environment where all waste must be eliminated – at any cost. And why not? It is a noble goal to have a healthy environment where all living things can thrive. There is also a well-documented body of evidence of the environmental destruction caused by unchecked pollution. However, this vision of a "green" Maui often lacks basic understanding of what science and engineering can actually achieve. In the specific case of the Lahaina injection wells, there are perceptions that are demonstrably erroneous.

The first one is that injection wells are used for "sewage" disposal. This is a gross mischaracterization of their use, which completely ignores the purpose of the wastewater reclamation facility which is there solely to turn the raw sewage into R-1 effluent that meets department of health and EPA discharge requirements. No "sewage" goes into the injection wells and to say it does is simply wrong.

Another perception is that there are readily available "green" solutions just waiting for an opportunity to be used. The fact is that there is no simple - or even a "green" - answer to eliminating the injection wells.

Water reuse is the current alternative. But while it is possible to treat 100% of the effluent to reuse water quality, it is not always possible to reuse all the water as users do not irrigate during rain events. This makes water disposal necessary, unless large storage facilities are built.

Alternatives like Direct Potable Reuse (a.k.a. "Toilet to Tap") require massive infrastructure investment with long term maintenance and operational cost, and still leave behind a significant amount of excess water that needs to be disposed of when water quality standards cannot be achieved due to equipment malfunction. Moreover, there is not regulatory framework in the State of Hawaii for DPR and the public may not be receptive to drink water that "came from the toilet".

Land treatment application, where treated water is applied on the ground surface, has benefits in that it allows the soil to provide additional nutrient removal, however this would require hundreds of acres of land, and the land can only provide treatment for about 30 years before new land must be acquired.

It is important to note that even if it were possible to treat all the water, even to potable quality, nutrients and other dissolved and suspended solids must still be removed and disposed of. This brine must either be dried at a high electricity cost, and hauled to the landfill, or injected into a much deeper injection well. The sobering fact is that no disposal or reuse system will produce clean water without solid byproducts that need to be disposed of.

But perhaps the biggest misperception of all is that eliminating injection wells is the silver bullet for the removal of nutrients (nitrogen and phosphorus) from the ocean environment. However, scientific evidence suggests that eliminating the wells in favor of a "green" disposal system might have negligible environmental benefits or even detrimental effects over the status quo.

Alternatives to injection wells will require the construction of massive infrastructure and large quantities of electricity to further treat the water, and pump it several hundred feet uphill, around the clock, to reach those yet to be built storage basins, tanks, distribution systems and disposal sites. These projects do come with a significant environmental and economic costs of their that seem to be ignored in the public perception.

The County would be wise to look into the true environmental impact of these "green" solutions before committing to them. Otherwise getting rid of the wells would be a profoundly misguided decision. The wells are effective, cheap and may not be as bad for the environment as their alternatives.

Looking at the big picture, if the ultimate goal of this action is to remove nutrients from the ocean, then there is a far easier and cost-effective alternative the County needs to consider. For example, communities like Wahikuli in Lahaina are not on the County sewer system, but on septic tanks and cesspools which provide far less treatment than the treatment plants. They leach nutrients into the environment at much higher concentrations than the plant effluent. If the goal is to reduce the amount of solid mass going into the ocean, connecting Wahikuli to the sewer system and letting their treated effluent into the injection wells would keep far more solids out of the ocean environment

than providing advanced treatment at the plant. It would also cost much less. The same situation happens in communities like Maui Meadows in Kihei and Waiehu. Sewering these communities might well result in a healthier ocean environment than getting rid of the wells.

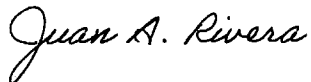
The County's wastewater reclamation facilities and others in the state are highly regulated. The Lahaina facility is regulated under the Underground Injection Control Program, which is under Hawaii Revised Statutes (HRS) 340E. Other Hawaii state laws that regulate uses and programs such as cesspools, septic systems, advanced treatment units, recycled water use on land can be found in HRS 340E, 342D, and 342E, and the related administrative rules.

The federal Clean Water Act's NPDES permitting program would be difficult if not impossible to apply to these uses and programs. I believe the U.S. Supreme Court's clarity on this matter is necessary in order to have a clear understanding of the legal requirements for this and future disposal systems.

Replacing injection wells will be neither simple, nor cheap, nor free of environmental impact. I would hope that as this information disseminates, the general public will have a more informed view of the environmental, engineering and economic challenges that must be overcome to achieve elimination of injection wells, and that the public will use this information when making decisions about their environment and their infrastructure.

I humbly submit this testimony for your consideration. Mahalo for your time.

Sincerely,

A handwritten signature in cursive script that reads "Juan A. Rivera".

Juan A. Rivera, P.E., Lic. No. 11715  
Wailuku, Hawaii