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Posted on: Thursday, April 12, 2007

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COMMENTARY

Secondary treatment unneeded, wasteful

By Roy K. Abe

I am a licensed civil engineer with more than 25 years of experience in the sanitary engineering field. The huge volume of work generated by the construction of new secondary wastewater treatment facilities at the Honouliuli and Sand Island wastewater treatment plants would be a financial windfall for the profession. Like most professionals in the field, however, I am opposed to them.

The water pollution regulations developed in the 1970s were in response to fish kills and heavy pollution in rivers and lakes on the Mainland. Secondary treatment, which removes dissolved organic matter in sewage, is justified when discharging to the limited confines of rivers and lakes. Decomposition of the organic matter consumes oxygen required by fish and other aquatic life. The higher level of disinfection achievable with secondary treatment is warranted when the river or lake water is a drinking water source, or if the effluent is reused for irrigation.

In 1977, the Environmental Protection Agency implemented the 301(h) waiver program to allow primary treatment for ocean discharges, where oxygen depletion is not a problem. The city's ocean outfalls, which are more than 200 feet deep, promote natural decomposition of organic constituents in primary effluent without harm to marine life though dispersion and dilution.

Nutrients are allowed to naturally recycle back into the aquatic food chain. Pathogenic microorganisms do not thrive well outside the human body and the ocean's natural disinfection process is aided by exposure to salt water and sunlight.

The city's Honouliuli and Sand Island wastewater treatment plants are well-engineered systems that combine primary treatment with "natural" degradation/assimilation of remaining constituents in the ocean.

In more than 20 years of intensive monitoring around outfall discharges, there have been no documented negative impacts to the marine environment or public health. The EPA's finding that some water-quality standards are being exceeded points to the need to reevaluate the standards based on local monitoring data.

The presence of pesticides noted by the EPA is likely because of pesticide-

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contaminated groundwater leaking into the sewer system. Why spend hundreds of millions of dollars to eliminate this from a deep-ocean discharge when much more contaminated groundwater leaches into our streams and nearshore waters?

Secondary treatment does not promote sustainability, and is detrimental to the environment when cross-media pollution and global warming impacts are considered. Secondary treatment is an energy-intensive process using mechanical equipment to supply oxygen to microorganisms feeding on the wastes.

Like humans, the microorganisms produce carbon dioxide as a byproduct of respiration. A 2005 research study found that typical secondary treatment facilities produce 0.26 kilograms of CO₂-equivalent per cubic meter of wastewater treated, which is more than 50 times that estimated for primary treatment. For Honouliuli's flow of 15 million gallons per day, secondary treatment facilities would generate an estimated 32,000 pounds of CO₂ greenhouse gases per day.

In addition to fossil fuels powering the secondary treatment facilities, there is also the "embodied" energy in the concrete, steel and other materials used to construct the large tanks, massive machinery and buildings required for secondary treatment.

Secondary treatment converts soluble organic matter into residual solids, or sludge. With the city hard-pressed to dispose of its existing sewage sludge, the sludge generated by secondary treatment will further strain O'ahu's landfill capacity.

The EPA, unfortunately, does not consider the severe costs of secondary treatment. It is senseless to create more financial hardships and social problems by wasting money on something that will provide no measurable public health and environmental benefits. Fixing our deteriorating sewer lines will be costly, but at least it will reduce spills.

The EPA is concerned that lab testing showed that primary effluent had some toxic effects on sea urchins. Why inflict financial pain on our residents to minimize theoretical impacts on a small patch of ocean floor?

Regarding the EPA's health risk concerns, why not just place buoys with signs around the outfall discharge (located 1.5 miles offshore) to warn folks?

Let's work cooperatively, keep an open mind, and take a broad scientific and common sense approach to resolving the secondary treatment waiver issue.

Roy K. Abe, a Kane'ohe resident, wrote this for The Advertiser.

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