

March, 2007

EPA's Tentative Decision on the renewal of CWA 301(h) variance for Honouliuli Wastewater Treatment Plant

Fact Sheet

ACTION

The U.S. Environmental Protection Agency (EPA) is issuing a Tentative Decision Document (TDD) regarding an application from the City and County of Honolulu (CCH) for a renewed variance from full secondary treatment under section 301(h) of the Clean Water Act for its ocean discharge from the Honouliuli Wastewater Treatment Plant. EPA's tentative conclusion is that this treatment plant does not qualify for a renewed variance. A public comment period on this TDD is being held from March 28, 2007 to May 29, 2007. A public hearing is scheduled for May 15, 2007 at 6:30pm at the Kapolei Middle School.

BACKGROUND ON WASTEWATER TREATMENT AND FEDERAL REQUIREMENTS

Across the United States, municipal wastewater treatment plants handle sewage and other wastewater collected from homes, businesses, and industries. These treatment plants are designed to clean wastewater prior to discharging it to streams, oceans, the ground, or for reuse. There are two basic stages in the treatment of municipal wastewater: **primary and secondary treatment**.

Primary treatment generally involves screening out large objects (such as rags), removing grit (such as cinders, sand and small stones), and allowing the wastewater to settle (where objects that float, such as sticks, are skimmed off the surface, and materials that sink are removed from the bottom).

When secondary treatment is used, primary-treated wastewater flows into another facility where the wastewater is exposed to microorganisms (such as bacteria). There are a variety of different biological treatment techniques that allow the microorganisms to consume most of the waste's organic matter. The microorganisms are then removed prior to discharge.

Federal law provides expectations for how municipal wastewater will be treated. In 1972, Congress passed the Federal Water Pollution Control Act amendments, which required that Publicly Owned Treatment Works (POTWs) achieve secondary treatment capability by 1977. After this requirement was passed, some municipalities with POTWs discharging into marine waters argued that secondary treatment might not be necessary, given that there may be greater dilution and dispersion of wastewater discharged to the ocean, as compared to discharges to rivers and other freshwater. In 1977, Congress added section 301(h) to the Clean Water Act (CWA), which allows the U.S.

Environmental Protection Agency (EPA) to, on a case-by-case basis, grant variances from secondary treatment requirements. (Note that these variances are sometimes referred to as “301(h) waivers.”)

The CWA includes specific criteria the discharger must meet in order to receive a variance from secondary treatment under section 301(h) of the CWA. These criteria include requirements to:

- Attain or maintain water quality that allows recreational activities in and on the water;
- Attain or maintain water quality that allows protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife;
- Meet water quality standards (or federal guidance values for pollutants without standards);
- Establish a monitoring program to assess impacts;
- Provide a minimum of primary or equivalent treatment;
- Have an approved pretreatment program and establish toxics controls;
- Provide enhanced urban area pretreatment, for POTWs serving greater than 50,000 population;
- Protect water supplies and;
- Prohibit variances in stressed estuaries.

When EPA concludes that an applicant for a 301(h) variance meets the CWA’s criteria, EPA may issue a permit that allows an ocean discharge at less than full secondary treatment.

BACKGROUND ON THE HONOULIULI WASTEWATER TREATMENT PLANT

The Honouliuli Wastewater Treatment Plant (HWWTP) receives sewage and other wastewater from residences and businesses in the southern portion of the island of Oahu. The HWWTP serves a population of approximately 340,000 including the towns of Waipahu, Pearl City, and Halawa, as well as waste from liquid waste haulers, and sludge hauled by CCH from the Wahiawa and Paalaa Kai wastewater treatment plants. Approximately 27 million gallons per day (MGD) of raw wastewater is treated at the HWWTP at the present time. The HWWTP discharges treated wastewater via the Barbers Point deep ocean outfall. This outfall is located at a depth of approximately 200 feet below the ocean’s surface, approximately 8,760 feet offshore.

The HWWTP is currently operating under a permit EPA issued in May 1991. This permit contains a 301(h) variance allowing for less than full secondary treatment. In December 1995, CCH applied for a renewal of this permit, including a renewal of the 301(h) variance. CCH’s application was most recently updated in August 2004.

Since receiving the 1991 permit for the HWWTP, CCH has upgraded this treatment plant, with the objective of reusing treated water for purposes such as irrigation

and for industrial processes. In September 1996, a secondary treatment process became operational, which allows treatment of up to 13 MGD. In September 2000, construction was completed on a tertiary treatment facility designed to process up to 12 MGD of secondary treated effluent by filtration and reverse osmosis. The tertiary facility was constructed to fulfill a requirement under a 1995 Consent Decree between CCH, EPA, and the Hawaii Department of Health (HDOH) to conserve water by reusing treated wastewater. Tertiary treatment results in the production of filter backwash and brine, which are mixed with other waste streams and discharged to the ocean. The demand for reusable water can fluctuate. When wastewater receives secondary and tertiary treatment and is available for reuse, but there is no demand for it, it is mixed with the other waste streams and discharged to the ocean.

CCH is seeking a 301(h) variance that will allow them to operate under a range of treatment scenarios. In all scenarios, most of the discharge will consist of primary effluent. CCH indicates that the most likely scenario is that they will operate the secondary and tertiary treatment facilities to produce reusable water, but that some of the reusable water will be discharged to the ocean, because the demand for reusable water is not always predictable. The scenario that results in the worst quality discharge from the Barbers Point outfall is when the secondary and tertiary treatment facilities are used to their maximum capacities and all of the water that is therefore available for reuse is actually reused. This scenario results in a lower quality discharge than what CCH has actually been discharging under the existing permit, because the wastewater discharged will have received only primary treatment.

EPA'S REVIEW OF CCH'S APPLICATION FOR 301(h) VARIANCE RENEWAL

EPA's review of CCH's application for a renewed variance from full secondary treatment utilized data provided by CCH on the actual wastewater discharged. This evaluation took into account CCH's data on the wastewater at the HWWTP just before it enters the outfall pipe, and CCH's data collected in offshore marine waters, including marine waters in the vicinity of the Barbers Point outfall. These samples reflect wastewater that has undergone various combinations of primary, secondary and tertiary treatment. EPA's review also takes into account that CCH is seeking a variance that would allow them to discharge a lower quality effluent than what they have actually been discharging.

Based on its review, EPA has concluded that the proposed discharge from the HWWTP will not meet several of the criteria under the CWA section 301(h) for granting variances from full secondary treatment, including:

- Meet water quality standards (or federal guidance values for pollutants without standards);
- Attain or maintain water quality that allows recreational activities in and on the water;
- Attain or maintain water quality that allows protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife.

BASIS FOR EPA'S TENTATIVE DENIAL OF CCH'S APPLICATION

In evaluating CCH's application for a renewed variance from secondary treatment requirements, EPA evaluated whether the discharges meet water quality standards. Water quality standards are the foundation of the water quality-based control program mandated by the Clean Water Act. Water quality standards define the goals for a waterbody by designating its uses, setting criteria to protect those uses, and establishing provisions to protect water quality from pollutants. HDOH has designated that the uses to be protected in the vicinity of the discharge are recreation, aesthetic enjoyment and the support and propagation of fish, shellfish and wildlife. Criteria to protect these uses have been established by both EPA and HDOH.

Water Quality Standards Allowing Recreational Activities

For the evaluation of whether the HWWTP discharge meets water quality standards allowing recreational activities, the relevant criteria became effective in December 2004. Criteria were established by EPA pursuant to the Beaches Environmental Assessment and Coastal Health Act of 2000. These criteria establish a maximum permissible level of bacteria in water in order to protect recreational users from gastrointestinal diseases. In its review of the Honouliuli application, EPA compared the levels of bacteria found by CCH in the vicinity of the Barbers Point outfall to the national criteria. EPA determined that the bacteria levels exceed the national criteria, and thus the wastewater discharge from the HWWTP cannot be determined to allow recreational activities.

Water Quality Standards Protecting Fish, Shellfish and Wildlife

In evaluating whether the discharge from the HWWTP meets water quality standards protecting fish, shellfish and wildlife, EPA evaluated the discharge with respect to Hawaii State standards established to protect indigenous aquatic life.

One of the standards established by HDOH that the HWWTP wastewater fails to meet is that discharges not have an observable toxic effect on test organisms exposed to the treated wastewater in a laboratory. CCH conducts tests of HWWTP wastewater using two aquatic species, one of which is a Hawaiian sea urchin. Treated wastewater samples are collected by CCH just before the wastewater enters the outfall pipe. In the laboratory, the wastewater samples are diluted with seawater prior to use in the test, to account for the dilution that occurs quickly when the HWWTP wastewater is discharged to the ocean. CCH submitted data on this type of testing as part of their application. The results showed that the diluted wastewater often produces toxic effects in the sea urchins.

The HWWTP treated wastewater, after accounting for initial dilution, also fails to meet the HDOH standard for ammonia. Ammonia contains nitrogen, excessive amounts of which can stimulate the growth of large numbers of algae that drift with the ocean currents. The algae can then reduce the amount of oxygen dissolved in the water and reduce the clarity of the water, adversely affecting other aquatic organisms.

Therefore, the wastewater discharge from the HWWTP is exceeding the toxicity standard and the ammonia standard, and it cannot be determined to be protective of indigenous fish, shellfish, and wildlife.

Water Quality Standards Protecting Human Health

HDOH has established numeric criteria for toxic pollutants in water to ensure that fish caught by anglers will be safe to eat. CCH collected samples of HWWTP wastewater just before it entered the outfall pipe and analyzed the samples for toxic pollutants. CCH submitted these results to EPA. EPA compared these data to the HDOH criteria, taking into account the dilution that occurs quickly when the HWWTP wastewater is discharged to the ocean. EPA's review of the data showed that recent wastewater samples exceeded HDOH criteria for two pesticides established to protect against carcinogenic effects. All three of the wastewater samples collected recently exceeded the HDOH criterion for dieldrin and two of the three exceeded the criterion for chlordane.

It is important to point out the EPA's evaluation of whether the HWWTP is meeting water quality standards to allow recreational activities, protect fish, shellfish and wildlife, and protect human health took into account wastewater that had more advanced treatment (a mix that included some wastewater receiving secondary and tertiary treatment) than the wastewater for which CCH has applied for a renewed variance. CCH's renewal application seeks a variance from full secondary treatment that would allow them to discharge a lower quality effluent than what they have actually been discharging. Thus, the proposed discharge is even less likely to meet water quality standards.

CONCLUSION AND NEXT STEPS

EPA's review of CCH's application for a renewed variance from full secondary treatment at the HWWTP has concluded that the statutory criteria in section 301(h) of the CWA have not been met. EPA's TDD documenting this conclusion can be found on the EPA Region 9 website <http://www.epa.gov/region09/water/npdes/pubnotices.html>, and is available for public comment through May 29, 2007. At the completion of this public comment period, EPA will consider all public comments and make a final decision on whether CCH should receive a renewed variance from full secondary treatment for the HWWTP.