

# **2006 STATE OF HAWAII WATER QUALITY MONITORING AND ASSESSMENT REPORT:**

Integrated Report To The U.S. Environmental Protection Agency  
and The U.S. Congress Pursuant To Sections §303(D) and §305(B),  
Clean Water Act (P.L. 97-117)



January 11, 2008  
The Hawaii State Department of Health  
Honolulu, Hawaii



January 14, 2008

Aloha,

The Hawaii State Department of Health (HIDOH) is pleased to announce the completion of the 2006 STATE OF HAWAII WATER QUALITY MONITORING AND ASSESSMENT REPORT: Integrated Report To The U.S. Environmental Protection Agency and The U.S. Congress Pursuant To Sections §303(d) and §305(b), Clean Water Act (P.L. 97-117)

The first three chapters of the report were prepared by different sections of HIDOH. The chapters are: Chapter I - Marine and Estuaries, Chapter II – Streams, Chapter III – Groundwater. Chapter IV summarizes the decisions into the Assessment Decision Table (for Streams and Coastal Waters) and Chapter V contains the Appendices. Also attached are the Comments received from the public during the public review period as well as the Response to Comments document

Attached to this letter are the executive summary for the report and the table of contents for each of the Marine Waters and Streams components.

The report was finalized and submitted to U.S. EPA on September 12, 2007

Mahalo nui loa,

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## EXECUTIVE SUMMARY

The 2006 Integrated Report is the first effort by the Hawaii State Department of Health (HIDOH) to integrate both reporting requirements of the Clean Water Act (CWA) section (§) 305(b) and §303(d). This report is comprised of five sections, each with a particular focus. Chapter I focuses on coastal waters, Chapter II focuses on inland waters and deals with inland streams and other waters, Chapter III addresses the states' groundwater, Chapter IV is the assessment tables that report impairment, and Chapter V contains the appendices.

The CWA §305(b) requires states to describe the overall status of water quality statewide and the extent to which water quality provides for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreational activities in and on the water. Additionally, the CWA §106(e) requires State reporting on the status of their groundwater resources to Congress every two years in the biennial 305(b) report. The CWA §303(d) requires States to submit a list of Water Quality-Limited Segments, waters that do not meet state water quality standards, plus a priority ranking of listed waters, based on the severity of pollution and the uses of the waters.

The §303(d) list leads to action. Total Maximum Daily Loads (TMDLs) are pollution budgets to bring §303(d)-listed pollutant/water body combinations into compliance with water quality standards. Computation of TMDLs for all 303(d) listed pollutant water body combinations, prepared in accordance with the priority rankings, must follow EPA approval of each state's list.

Hawaii's 2004 §303(d) List plus data collected from State surface water bodies over the past six years constitute the information reviewed for this 2006 Integrated Report. Decisions to list, de-list or not list a water body, for which data exist and have been reviewed, must be documented (40 CFR §130.7). The review of water quality requires a minimum amount data over a period of time, so extreme events of very short duration do not necessarily cause a water body to be listed. The periodic listing process allows Hawaii Department of Health (HIDOH) to list, de-list, or more clearly articulate or delineate the parameters for which the water bodies are listed.

HIDOH's 2006 303(d) List contains a total of 209 marine areas. The breakdown for the individual islands (number of listed waters per island/total number of listed waters) are: Kauai 28 (13% of total), Oahu 71 (34% of total), Molokai 3 (1% of total), Lanai 6 (3% of total), Maui 72 (34% of total), and Hawaii 31 (15% of total). Of the 209 marine areas, 39 new water bodies were added, a total of 4 water bodies were de-listed (no category 5 listing present): Analani Pond (Puala'a), Ala Moana Beach (Diamond Hd), Lanikai Beach, and Waimanalo Bay station. (Waimanalo Beach Co. Pk (North), all for enterococci), and 7 previously listed water bodies were listed for new pollutants.

Within the 93 listed inland freshwater perennial streams, there were a total of 296 individual pollutant/water body combinations. The most common listing was turbidity with 101 instances of exceedance. The next most common listings were Nitrite/Nitrates, Total Nitrogen, and Total Phosphorus with 75, 67, and 41 instances of exceedance, respectively. There were 5 instances of Dieldrin listings, 2 Chlordane, 2 Total Suspended Solids, and 1 listing for Metals/Lead.

Of the 209 listed marine waters, 56 were due to high *Enterococcus* indicator bacteria test results. In general the department does not consider these waters to represent a threat to human health, despite the results, because in tropical waters, *Enterococcus* may result from animal waste or soils, instead of human sewage which the indicator bacteria was intended to signal. Recent studies presented at the recent 2006 BEACH Conference suggest that *Enterococcus* reproduces in biofilm and is found in drainage pipes, concrete channels, river rocks and in beach sand. For these reasons, Hawaii uses a secondary indicator, *Clostridium perfringens* to determine if human fecal contamination is involved.

Hawaii's current bacterial water quality standard is 7 colony forming units (CFU)/100mL, as compared to the national standard of 35 cfu/100mL. During rain events, *Enterococcus* levels in the marine waters increase due to storm water runoff from streams and storm drains. For these reasons, HDOH intends to raise the Hawaii standard to 35 cfu/100mL to match the national standard. Nonetheless, when *Enterococcus* levels rise during non-storm related events, a sanitary survey is conducted to determine the cause of the rise.

Turbidity was the most common pollutant to marine water listings with 154 occurrences. The HDOH believes these are due to polluted runoff, and is focusing its polluted runoff control program on selected watersheds to make measurable improvements.

The 43 new marine areas were listed for one or a combination of pollutants that include *Enterococcus*, total nitrogen, nitrate + nitrite, total phosphorus, turbidity, chlorophyll a, and ammonium nitrogen. Similar to the existing listings, turbidity was the most common pollutant to trigger a marine water listing, with 24 occurrences.

Marine decision units (boundaries for water areas for analyses) were changed from the 2004 303(d) List to the 2006 Report, making direct comparison impractical. The boundaries will continue to be refined in the future. In general, 10 acceptable quality samples were required to change the status of a decision unit (water area) from its 2004 evaluation.

The groundwater report presents aquifer specific assessments for groundwater resources in the State of Hawaii for 2004 and 2005. The report shows that contamination continues to occur in Hawaii. In most cases, once a groundwater source has been contaminated, it remains contaminated for many years. Groundwater can become contaminated through natural processes, but anthropogenic, or human induced contamination poses more serious problems. Contaminants may come from herbicides, pesticides, industrial solvents, and other sources, which are applied, spilled, or leaked into the ground. Groundwater contamination is a significant concern because nearly all of Hawaii's drinking water comes from groundwater sources.

The overall quality of Hawaii's groundwater is generally considered excellent. The chemical contaminant concentrations that have been detected in public groundwater/drinking water sources are generally below state and federal drinking water standards. The percentage of Hawaii's population served by drinking water in compliance with State and Federal microbial and chemical standards called maximum contaminant levels (MCLs) was 99.1% in 2005. See attached Hawaii State Department of Health Indicators of Environmental Quality for drinking water.

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**CHAPTER I  
MARINE WATERS**



Prepared by The Hawaii State Department of Health  
Clean Water Branch

January 11, 2008

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*We thank the following people and organizations for providing information essential for preparation of this report:*

Richard E. Brock, PhD., Environmental Assessment Company.

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Department of Health, Clean Water Branch, Monitoring Section

## EXECUTIVE SUMMARY

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Bacteria. Of the 209 listed marine waters, 56 were due to high *Enterococcus* indicator bacteria test results. In general the department does not consider these waters to represent a threat to human health, despite the results, because in tropical waters, *Enterococcus* may result from animal waste or soils, instead of human sewage which the indicator bacteria was intended to signal. Recent studies presented at the recent 2006 BEACH Conference suggest that *Enterococcus* reproduces in biofilm found in drainage pipe, concrete channels and river rocks, and in beach sand. For these reasons, Hawaii uses a secondary indicator, *Clostridium perfringens* to determine if human fecal contamination is involved

Hawaii's bacterial water quality standard is only 7 colony forming units (CFU)/100mL, as compared to the national standard of 35 cfu/100mL. During rain events, *Enterococcus* levels in the marine waters increase due to storm water runoff from streams and storm drains. For these reasons, HIDOH intends to raise the Hawaii standard to 35 cfu/100mL to match the national standard. Nonetheless, when *Enterococcus* levels rise during non-storm related events, a sanitary survey is conducted to determine the cause of the rise.

Turbidity. Turbidity was the most common pollutant to trigger a marine water listing with 154 occurrences. The HIDOH thinks these are due to polluted runoff, and is focusing its polluted runoff control program on selected watersheds to make measurable improvements.

New Impairment Listings. The 39 new marine areas were listed for one or a combination of pollutants that include *Enterococcus*, total nitrogen, nitrate + nitrite, total phosphorus, turbidity, chlorophyll a, and ammonium nitrogen. Similar to the existing listings, turbidity was the most common pollutant to trigger a marine water listing, with 24 occurrences.

Methods. Marine decision units (boundaries for water areas for analyses) were changed from the 2004 303(d)/305(b) List to the 2006 List, making direct comparison impractical. The boundaries will continue to be refined in the future. In general, 10 acceptable quality samples were required to change the status of a decision unit (water area) from its 2004 evaluation.

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## PART A. INTRODUCTION

This report is intended to satisfy the requirements for State reporting pursuant to Sections §303(D) and §305(B), Clean Water Act (P.L. 97-117). These reports have previously been separated into two final products, however, EPA's guidance for compiling the 2006 Integrated Report for 303(d)/305(b) <sup>1</sup> urges states to integrate their 303(d) Lists and 305(b) Reports to ensure that consistent methodologies are applied in the preparation of both documents. The 305(b) report is "[t]he **National Water Quality Inventory Report to Congress ...** [and] is the primary vehicle for informing Congress and the public about general water quality conditions in the United States. This document characterizes our water quality, identifies widespread water quality problems of national significance, and describes various programs implemented to restore and protect our waters".<sup>2</sup> EPA recommends that states sort their surface waters into 5 Categories according to the following guidance:

- Category 1:** All designated uses are supported, no use is threatened;
- Category 2:** Available data and/or information indicate that some, but not all of the designated uses are supported.
- Category 3:** There is insufficient available data and/or information to make a use support determinations.
- Category 4:** Available data and/or information indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed.
  - 4a.** A TMDL to address a specific segment/pollutant combination has been approved or established by EPA.
  - 4b.** A use impairment caused by a pollutant is being addressed by the state through other pollution control requirements.
  - 4c.** A use is impaired, but the impairment is not caused by a pollutant.
- Category 5:** Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed.

The 303(d) List of Impaired Waters, identifies water bodies that are not expected to meet state water quality standards, even after application of technology-based effluent limitations. States are required to obtain and review all existing and readily available surface water quality data and related information to compare against the state's Water Quality Standards, and after applying listing criteria, determines the level of impairment for that water body. The list requirements apply to water bodies impaired by point and/or non-point sources of pollution and include a requirement for listing of those pollutants for which applicable water quality standards are exceeded.

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<sup>1</sup> Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (July 29, 2005)

<sup>2</sup> EPA Monitoring and Assessing Water Quality (n.d.). Retrieved September 27 2006, from <http://www.epa.gov/305b/>

The 2006 List of Water Quality-Limited Segments, plus a priority ranking of listed waters, based on the severity of pollution and the uses of the waters, must be submitted by HDOH to EPA for approval by April 1, 2006. Computation of Total Maximum Daily Loads (TMDLs) for all §303(d)-listed pollutant/waterbody combinations, prepared in accordance with the priority rankings, must follow with EPA approval of each state's List. Total Maximum Daily Loads (TMDLs) for all listed pollutant/waterbody combinations are prepared in accordance with the priority rankings and the State-EPA schedule for submission for TMDLs. This schedule is negotiated on a continuing basis and is influenced by federal funding, state policy, data availability and a host of other factors, which vary from year to year.

Hawaii's 2004 List plus data collected from these and other State water bodies over the past six years constitute the body of information reviewed for the 2006 Integrated Report. Decisions to list, de-list or not list a water body, for which data exist and have been reviewed, must be documented (40 CFR §130.7). The periodic listing process allows HDOH to list water bodies, which after recent sampling, show exceedance; de-list water bodies (from the 303(d) section), which do not, after further sampling show exceedance for listed parameters; and more clearly articulate the parameters for which previously listed water bodies should be listed. Additional information is also provided regarding attainment of known pollutants, pursuant to the 305(b) portion of the guidance as well.

HDOH's 2006 Integrated Report, 303(d) List of Impaired Waters contains a total of 93 stream segments and 209 marine segments for which decisions of attainment or non-attainment reflect the water bodies status as impaired. However, this year HDOH has segregated the decision units to classify the waters into water body types as described in HAR §11-54-1. Therefore, direct comparison of decision units between the 2004 List and that presented in the 2006 Report is not practical. There were 17 new inland water segments, and 39 new marine water bodies listed for 2006.

A known discrepancy exists within the 2006 IR List. The Hawaii Administrative Rules (HAR) Chapter 11, section 54 establishes the rules that guide the management of Hawaii's waters. Although the term "recreational waters" is used within HAR 11-54, a set definition does not exist within its pages. All marine waters are defined in 11-54-2(c) as falling within 3 general categories embayments, open coastal, or oceanic waters, and although these categories are subdivided, a reference to the definition of "recreational waters" is not made. However, 11-54-8(b) "In marine recreational waters:", specifies areas of applicability, and defines numerical criteria for microbiological parameters, but fails to define the umbrella category of marine recreational waters. This discrepancy allows known non-recreational areas to maintain a recreational status, with all applicable numerical and descriptive criteria. Such areas include posted or signed areas of non-recreation such as Honolulu and Barber's Point Harbors, Kewalo Basin, and Ala Wai Boat Harbor (see Figure 3a on page 21). It is hoped that this discrepancy and lack of definition within HAR 11-54 will be reviewed and addressed within the near future.

## **PART B. SCOPE OF WATERS IN THE INTEGRATED REPORT**

This chapter of the report covers all waters of salinity more than 0.5 parts per thousand, which include estuary and coastal waters. Assessment units were modified for the 2006 cycle. For previous cycles, the assessment units were the sampling stations. The 2006 cycle maintains the sampling stations, but expands the geographic scope to include a larger water body area. The 2004 listings were referenced to ensure proper placement of previously listed areas. Water bodies were partitioned according to HAR §11-54 by type and then listings renewed accordingly. Please see methodology section, Part C.2. for details regarding decision units for attainment decisions.

## **PART C. SURFACE WATER MONITORING AND ASSESSMENT**

### **C.1. Monitoring Program**

This part of the water quality assessment report discusses the condition of the various water bodies (estuaries, coastal shorelines). The entire monitoring program is examined from strategies and procedures to data assessment. The majority of the information used in this section was gathered mainly from the Clean Water Branch.

#### **Monitoring Strategy Overview**

Two main types of surface water monitoring data are used in this report: bacteriological, and chemical. Bacteriological monitoring of the shoreline areas continues under the auspices of the BEACH program, and the guidance of a Quality Assurance Project Plan (QAPP) (newer version in final stages of approval). Shoreline and offshore chemistry monitoring have been curtailed including the quarterly samples in Kaneohe and Pokai Bays for reasons described below within the Chemical Sampling section.

EPA's STORET databases are the repository of data and information collected by DOH. Water body assessments will utilize the most current data and information from these systems. The end-users of the database systems include not only government agencies but consultants, students and the general public.

As with other volunteer monitoring programs throughout the nation, the public sector contributions provide invaluable service not only to the communities but to government as well. In Hawaii, an example is the partnership with the Hanalei Watershed Hui and the DOH monitoring program. To a large extent the projects are currently part of the learning experience in which the participants hope to develop a model for other volunteer groups and communities elsewhere. It is hoped that future projects will involve other volunteer groups as well.

Collaboration between the Department of Health and other state and federal agencies, including private consulting firms, is another key component of the monitoring program. The permit requirements such as CWA §401 and §402 stipulate water quality monitoring by permit holders. It provides a source of data from which the State's monitoring program also benefits. Currently, this data does not reside in the STORET system, although it is a possible future consideration.

Water quality data generated by the permits result in greater Statewide coverage and comprehensive assessments at no increase in cost to the program. The coordination between multiple agencies and permit applicants also provides for expediting the permit process through early plan reviews and dialogues in preconstruction meetings.

## **Networks and Programs**

### **Microbiological Sampling**

The purpose of the CWB microbiological sampling is to focus mainly on the shoreline waters throughout the state for the purpose of assuring the safety of the swimmers, surfers, divers and other recreational users of the near shore waters. This program serves two purposes, first it identifies those areas where there is a potential for health related risks associated with the recreational use of shoreline waters. Secondly, monitoring provides an ongoing baseline from which to establish trends in the future, and from which to determine if additional sample results show unusual or abnormal levels, (i.e., indicating possible contamination, such as a sewage leak).

As of December 2005, the CWB bacteriological monitoring program was sampling at approximately 79 stations (lesser or greater depending on rotational series) throughout the state (Kauai 8, Oahu 37, Maui 13 and Hawaii 21). The approximate 79 stations are among the 363 stations established throughout the state (Kauai 31, Oahu 177, Maui 70, and Hawaii 85), most of which are sampled on a rotational basis. The sites are monitored on a twice-weekly (core sites) or bi-weekly (rotational sites) basis.

Water samples are analyzed for *Enterococcus*, the recommended EPA indicator bacteria for Marine Recreational Waters. However, limitations have been found in the accuracy of its use for this purpose. *Enterococcus* have been shown to multiply outside of the human body, and it is also found in fecal matter of various wildlife (such as feral pigs) in Hawaii. Also, there is a growing consensus that it may not be an effective indicator, as "...these fecal indicator bacteria [*E. coli* and enterococci] have previously been reported to occur naturally in water, soil and on plants in tropical locations such as Hawaii (Fujioka et al., 1988; Hardina and Fujioka, 1991), Guam (Fujioka et al., 1999), Puerto Rico (Hazen, 1988; Rivera et al., 1988) and south Florida (Desmarais et al., 2002). These results indicated that the assumptions incorporated in the current guidelines to interpret water quality standards were not applicable to all regions, particularly tropical locations."<sup>3</sup> Rain storm or high surf events raises the enterococci levels along the coastal areas and is not a result of human fecal contamination. In view of this, EPA has allowed Hawaii to use *Clostridium perfringens*, in conjunction with *Enterococci*, as a secondary tracer.

### **Chemical Sampling**

The coastal and offshore chemistry monitoring program is designed to monitor conditions in the marine environment, while compiling a database from which a baseline can be established. As mentioned above, both programs were curtailed indefinitely, due to personnel and resource limitations, a focus on supporting stream chemistry monitoring and watershed assessments, and

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<sup>3</sup> Byappanahalli, M and R. Fujioka, 2004. Indigenous soil bacteria and low moisture may limit but allow fecal bacteria to multiply and become a minor population in topical soils. Water Science and Technology. vol. 50, 1:27-32.

an increase in the frequency of shoreline sampling due to the inception of the BEACH program. Renewal of the offshore sampling is projected to occur within the next cycle. Regular shoreline chemistry sampling is projected to resume in late 2006. Special shoreline chemistry sampling was performed to a limited extent in the Ke'ehi Lagoon area in late 2005-early 2006.

### **Laboratory Analytical Support**

The DOH employed the use of two Hawaii-based laboratories for analysis of samples, the State DOH Laboratory, and the Natural Energy Laboratory of Hawaii (NELH). The Environmental Health Analytical Services Branch, Chemistry Section is responsible for the analysis of the samples collected by DOH personnel. The two basic types of samples, microbiological and chemical, are each handled by separate sections within the Chemistry Branch of the Laboratory Division. NELH was utilized on a limited basis for microbiology sampling for West Hawaii. Each of the four largest islands, Kauai, Oahu, Maui and Hawaii, has its own microbiology laboratory which conducts the analysis for their respective islands. Only the Oahu laboratory is currently capable of conducting chemical analyses; samples from the other islands are air-shipped to the Oahu laboratory.

### **Quality Assurance/Quality Control**

The monitoring program quality assurance/quality control is governed by the Quality Assurance Project Plan (QAPP), a comprehensive document which covers all aspects of the program. Currently, it has been rewritten and is in the final stages of approval. Two newly created positions within DOH will manage the QA/QC responsibilities. The Environmental Management Division will fill a division-wide QA/QC position in State FY07, while CWB had created and filled a new QA/QC position in early 2004.

### **Data Storage, Management and Sharing**

The main repository for monitoring data is EPA's STORage and RETrieval (STORET) system. All post 1999 sampling data obtained from the Clean Water Branch's fixed network of routine monitoring stations is first compiled into a CWB Access database, then entered, or will be entered into EPA's STORET system. Data prior to 1999 is stored in the "Legacy STORET Database". Monitoring data will continue to be entered into STORET via the DATASTOR program created specifically for this purpose by the EPA Region IX STORET coordinator. It is anticipated that by 2007 STORET will be replaced by the Water Quality Exchange system (WQX). All existing STORET data will be transferred to WQX, and all future monitoring data will then be submitted to WQX. The data is then uploaded to EPA's main database which can be accessed via the internet. Future plans also include to use the Exchange Network for data transfer ([www.exchangenetwork.net](http://www.exchangenetwork.net))

The Clean Water Branch also handles numerous requests for data from students, administrators, teachers, private citizens, consultants and many others, and freely shares its data with all of them. Such requests are filled utilizing the CWB Access database.

Permittee effluent monitoring also generates a significant amount of sampling data. However, the data is only on hard copy, not electronic form. Although the data is accessible, it must be gathered and then compiled by hand before analysis is performed. Hence, only those involved

with or concerned about a specific location normally reviews this type of information. CWB staff would like to have this data available as an additional source of information (especially in areas where no other sampling may exist), however, other responsibilities have higher priority (e.g. WBS assessments and the 305(b) report), and therefore, no progress has been made in inputting this data into STORET.

## **C.2. Assessment Methodology**

### **Data Sources**

A formal call for marine data was made in October 2005. All data was used with the exception of two sources. The list below details the major sources used. A complete listing can be found in the attached section at the end of the report entitled “Log of Data Received for 2006 Integrated Report (Brackish and Marine Waters)”.

#### **ENVIRONMENTAL ASSESSMENT COMPANY.**

EAC is a private research company headed by Richard Brock, PhD. An extensive data set was provided by Dr. Brock for the south-south-eastern coast of Lanai, and the Kona (western) coast of the Big Island (Hawaii). All data was produced following a prepared methodology, complying with the “West Hawaii Coastal Monitoring Program Monitoring Protocol Guidelines” (May, 1992). Laboratory analysis follows Standard Methods (1999).

#### **MARINE RESEARCH CONSULTANTS**

MRC is a private research company headed by Steve Dollar, PhD. The ongoing research was prepared for the Makena Resort Corp. to characterize coastal water quality (specifically targeting parameters set forth in HAR 11-54), in Makena, Maui. An extensive data set was provided, following prepared sampling methodology, documented analysis methodology (Strickland and Parsons 1968, Grasshoff 1983), and utilizing EPA rated laboratories (Marine Analytical Specialists). A data set was also provided for the Ewa (south-west) area of Oahu, focusing on the coastal areas near the Ocean Pointe Development.

#### **CLEAN WATER BRANCH**

With continued funding from EPA’s BEACH program, the existing bacteriological shoreline program was able to greatly expand both the number of sites and samples taken. The microbiological dataset extends from 1973 to present, however past reports have only included data from the previous 3 years, due to pollutant levels at sampling stations remaining fairly stable over time. This report maintains this methodology. The Monitoring Section provided a bacteriological data set of 10,114 samples for 4 of the main Hawaiian islands. The data was collected following the CWB QAPP. The data is routinely checked by the QA/QC officer.

#### **HANAIEI WATERSHED HUI**

In 2005, CWB began a cooperative bacteriological sampling program with the Hanalei Watershed Hui, in which the Hui would collect samples at several of the northern Kauai stations. However, due to inconsistencies in secondary checks (a QA/QC method requested by DOH), only microbiological and turbidity data were used for this cycle.

#### **GACCI-FM**

Data was submitted from this company for sampling performed at the Kauai Lagoon Resort site, located on the southeastern Kauai, from October 2004 to January 2005. The sampled water body is a man-made lagoon, and is not considered to be coastal or estuarine water; therefore the dataset was not used.

### **Assessment Methodology**

The EPA/DOH agreement requires a reassessment of those areas where sampling had been conducted in the two-year period. Since these water bodies had been evaluated previously, the existing records were updated with the current information. Assessments were conducted for those water bodies for which sampling data was available in the 2003 to 2005 time period. When necessary, and if data was available, data from previous years were also utilized. The assessments performed for this document by EPO and CWB staff, followed the Assessment Guidance document (July 2005) to the maximum extent practicable.

For this cycle, the multi-categorization method has been employed, yielding a better categorical description of each water. However, since the previous cycle employed a single category listing method, a 2004 listing labeled with one category may now be listed with multiple categories. Table 4 documents changes between the two reports, and the justifications for doing so.

The five categories that are prescribed by EPA for application to each state's water bodies are listed below. The guidance document itself can be accessed at the following web site: <http://www.epa.gov/owow/tmdl/2006IRG/#documents>. Figure 1 shows the steps taken as a flow chart. Waters must be placed into the following categories following assessment:

- Category 1:** All designated uses are supported, no use is threatened;
- Category 2:** Available data and/or information indicate that some, but not all of the designated uses are supported.
- Category 3:** There is insufficient available data and/or information to make a use support determinations.
- Category 4:** Available data and/or information indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed.
  - 4a.** A TMDL to address a specific segment/pollutant combination has been approved or established by EPA.
  - 4b.** A use impairment caused by a pollutant is being addressed by the state through other pollution control requirements.
  - 4c.** A use is impaired, but the impairment is not caused by a pollutant.
- Category 5:** Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed.

### **Assessment Utilizing Hawaii Water Quality Standards**

The HAR Chapter 11-54 defines the state standards for particular parameters for Hawaii waters, and is defined by both narrative and numerical criteria. §11-54-1.1 defines a general policy of water quality anti-degradation for all water types and is as follows:

- (a) Existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

- (b) Where the quality of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the director finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the state's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the director shall assure water quality adequate to protect existing uses fully. Further, the director shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.
- (c) Where high quality waters constitute an outstanding national resource, such as waters of national and state parks, and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

HAR §11-54-3(c) defines classifications for marine waters, and marine water bodies are separated by type into 3 main water body categories: embayment, open coastal, and oceanic. The classification uses a tiered system, defining two Classes, "AA" and "A." Class AA waters are described as: "It is the objective of class AA waters that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. To the extent practicable, the wilderness character of these areas shall be protected." Zones of mixing are not permitted within certain Class AA waters (HAR §11-54-3(c)(1)). Class A waters are described as: "It is the objective of class A waters that their use for recreational purposes and aesthetic enjoyment be permitted as long as it is compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters." New sewage discharges or industrial discharges are not permitted within Class A. embayments, with the exception of three industrial discharge types identified in HAR §11-54-3(c)(2).

The embayment and open coastal categories are further refined by inclusion of a wet or dry criterion, typically defined by levels of freshwater input (HAR §11-54-6(a)(3) and HAR §11-54-6(b)(3)). For the 2006 reporting cycle, these criteria were revised using maps of "Wet and Dry Marine Waters" provided in State 208 Plans and county Water Management Plans. In the embayment category, embayments are defined as "...land-confined and physically-protected marine waters with restricted openings to open coastal waters, defined by the ratio of total bay volume to the cross-sectional entrance area of seven hundred to one or greater." (HAR 11-54-6a(1)). Although many of the embayments meeting this definition are named in the standards, the standards do not specify the exact location of the "entrance" of each embayment to which the formula was applied. For purposes of this report, delineations of embayments were made using best professional judgment, and primarily drawn between the nearest land "points" (usually a named point, such as Palea and Pai'olu'olu points for Hanauma Bay) that form the mouth of each.

Two special area categories, Pearl Harbor, and Kona (west Hawaii) are defined for salt waters, and establish specific standards for their respective water type. In addition, defined limits are placed upon the application of the standard for enterococci. As stated by HAR §11-54, the standard is applicable "within 300 meters (one thousand feet) of the shoreline, including natural

public bathing or wading areas”. Therefore, all listings in the IR List are applicable only out to the stated boundary. Assessments of water bodies for this report adhere to these outlined definitions. Available assessment data was compiled using the defined methodology (geometric mean), and compared to each applicable standard. Each water body was categorized according to comparison with each particular standard. A more detailed description of the standards is available in the attached copy of this document as an appendix. It also can be accessed at the following website:

<http://www.hawaii.gov/health/about/rules/11-54.pdf>.

DOH’s Microbiological sampling utilizes *Enterococcus* indicator bacteria density measurements for the state standard, which has been found to be problematic in Hawaii and other BEACH programs across the country. As previously mentioned in the **Microbiological Sampling** section, several studies have shown that *Enterococcus* may not be an effective indicator in tropical locations such as Hawaii<sup>3</sup>. The use of *Enterococcus* bacteria as an indicator of human fecal contamination has been shown to be unreliable, multiplying outside of the human body, and is also found in fecal matter of various wildlife (such as feral pigs) in Hawaii. Additionally, a 2005 study at Mission Bay, San Diego, California focused upon tracking causes of bacterial contamination, and found that “...fecal coliform and *Enterococcus* bacteria can survive for prolonged periods of time in coastal storm drains...” and that “...the majority of the indicator bacteria in Mission Bay originates from birds and that the initial load generated from avian sources can then be amplified by irrigation runoff, storm drains, intertidal sediments, and the wrack line” (Gruber et al., 2005)<sup>4</sup>.

*Clostridium perfringens* has validity as an effective indicator of fecal contamination, and a viable option for monitoring water quality. Increasing numbers of research disproving the reliability of *Enterococcus* as an indicator, and a lawsuit initiated by the National Research Defense Council (NRDC) prompted action by EPA. In 2006-2007 EPA began formal processes to investigate the validity of current bacterial indicators, and the potential of other methodologies and/or indicators. The resulting workshop, the Experts Scientific Workshop on Critical Research and Science Needs for the Development of New or Revised Recreational Water Quality Criteria, produced a report that attempted to address the situation. Several potential indicators were reviewed in detail, and the report acknowledges that “The presence of *C. perfringens* (spores) in water, therefore provides evidence of existing human/urban fecal contamination...”, and adds that “although methods have been available for some time, confirmation of a robust and consistent method approach should be developed”<sup>5</sup>. As shown, both organisms have limitations in applicability. Usage of a single organism for water quality characterization therefore, is not desirable. To improve accuracy of Hawaii’s water quality monitoring, a two-organism approach is applied, utilizing *C. perfringens* as a companion indicator alongside *Enterococcus*.

Although the HAR does not specify the use of *Clostridium perfringens* as a companion indicator for *Enterococcus*, as noted earlier, it is has been allowable with EPA for its use in Hawaii, and

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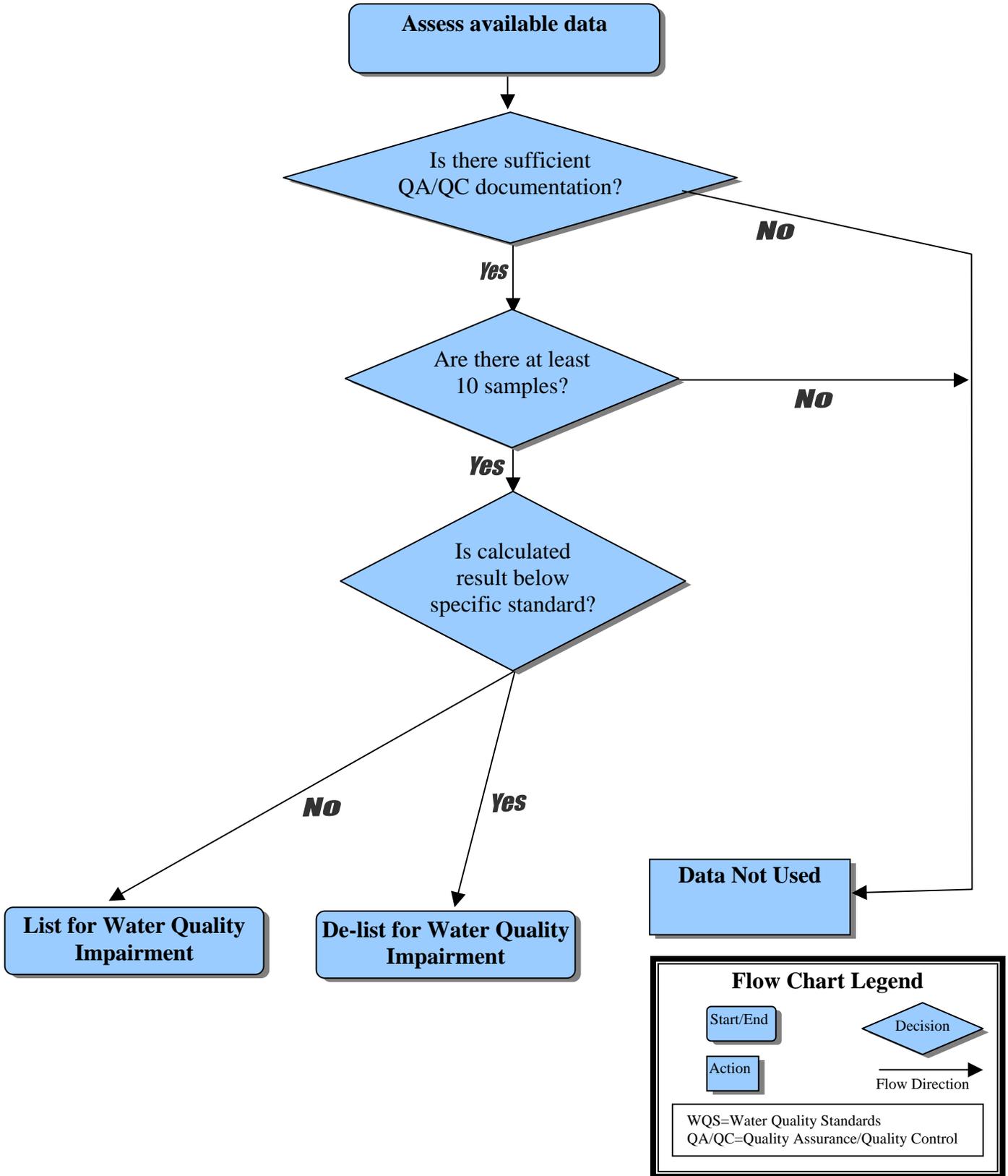
<sup>4</sup> Gruber, S.J, Kay, L.M., Kolb, R., and Henry, K. 2005. Mission Bay bacterial source identification study-A Clean Beaches initiative grant helps track causes of contamination. Stormwater. vol. 6, 3:40-51.

<sup>5</sup> EPA – Office of Water, Office of Research and Development. 2007. *Report of the Experts Scientific Workshop on Critical Research Needs For the Development of New or Revised Recreational Water Quality Criteria*. EPA 823-R-07-006. (June 15, 2007).

has been employed effectively in daily assessments. Therefore, for this report, exceedances of the *Enterococcus* standard were evaluated with that of the *C. perfringens* guideline for inclusion as impairment. The existing HAR 11-54-8b(1), stipulates that the running geometric mean for *Enterococcus* is calculated over not less than 5 samples within a 25-30 day period. Usage of *C. perfringens* to evaluate impairment status for a water body was performed ONLY if a *Enterococcus* geometric mean was found to be  $>7$  cfu/100 ml, and *C. perfringens* levels were  $>50$ cfu/100ml. Only if both situations occurred, the water body was assigned an impaired status.

**FIGURE 1: Flow Chart of Listing/De-listing Process for Conventional Pollutants**

(enterococci, TN, NO3+NO2, TP, turbidity, chl-a, NH4, others)



### **Changes to Assessment Methodology**

Modifications to the assessment units were instituted for the 2006 reporting cycle. With each ensuing cycle, it is encouraged that state's assessment units be refined to improve characterization of their waters. For the 2004 cycle, the units were comprised of individual monitoring stations. For 2006, assessment units are based upon defined named areas. The units maintain the focus on same monitoring stations; however they differ in that the represented area has been expanded to the named beach that the station resides within. For example, a 2004 listing shows a geographic scope of "Gray's Beach station [Halekulani]". For 2006, the geographic scope is now listed as the named area of "Gray's Beach", where the "Gray's Beach station [Halekulani]" is encapsulated within that area. This is justifiable since past monitoring has indicated similar sampling results from adjacent sampling stations at coastal areas, except in cases of inflow from point sources or streams. In addition, the use of the new assessment areas improves characterization of the geographic scope, and 3 other areas of importance. First, it defines areas for assessment that were not named in previous cycles, allowing for increased monitoring coverage and assessment. Second, the units are closely related to human use, which allows for improved monitoring and assessment in areas where the public has greatest concerns. Third, the new units utilize publicly familiar names, which will potentially improve relevance and comprehension of this report.

With the 2006 cycle, CWB will also move closer towards the EPA desired "Watershed Approach" to water quality assessment. Hawaii's topographical structure is comprised of generally short, small watersheds defined by steep mountain walls. Input of fresh waters into the fronting marine waters is generally limited to the specific watershed that feeds those streams. In future cycles it is hoped that watershed names will be included to organize listings for both inland and marine waters. It is hoped that the restructuring of the assessment units may provide a more seamless integration of both water-types. An existing watershed GIS layer developed by the Office of State Planning was used for delineation. The layer can be found along with metadata at the following website:  
<http://www.hawaii.gov/dbedt/gis/download.htm>.

Two boundaries are defined by HAR 11-54 to guide the application of the water quality standards: 1) a 1000' or 300m boundary and, 2) a 100 fathom depth contour boundary. The first boundary defines the marine recreational waters where the state enterococcus standard is applied "[w]ithin 300 meters (one thousand feet) of the shoreline, including natural public bathing or wading areas..." (HAR 11-54-8(b)(1)). The second boundary defines the open coastal waters, and is the "...marine waters bounded by the 183 meter or 600 foot (100 fathom) depth contour and the shoreline..." (HAR 11-54-6.3(b)(1)).

There are difficulties in combining the boundary guidelines of HAR 11-54, and defined boundary limits for coastal areas. The natural process of erosion forms each island's shoreline, and as a result, instead of a smooth circular coastline, there are myriad angles at which the sea meets the shore. Because of this, if defined shoreline boundaries (e.g., a defined beach area) are extended seaward, intersections of these boundary lines are difficult to avoid and do not result in easily defined segments. In addition, by definition in the rule, several other boundaries are also involved with the Class A and Class AA marine waters (HAR 11-54-3(c)). Waters that fall within marine and wildlife sanctuaries, and waters that are specified unique or critical habitats for threatened or endangered species as specified by the U.S. Fish and Wildlife Service are also included (HAR 11-54-6 (a-b)).

This report represents the first phase in creating a comprehensive, coherent interpretation of all pertinent assimilated guidelines. The boundary definitions used in the report utilizes the demarcated areas of the State Water Quality Maps (Class A and AA) as a guide, but does not adhere to them exactly. Since each island is unique, the boundaries for each island were delineated individually following a set of general guidelines. Where unique features of a particular island were encountered more detail was added to the delineation. Guiding principles included (but were not limited to) the following factors:

1. Historic and existing boundary delineations.
2. Marine geographic setting.
3. Watershed characteristics and coastal impacts.
4. Overlapping inter-island boundaries (quadrants and designated uses, e.g. Class AA, Whale Sanctuaries, NWHI).
5. Distance from shoreline to 100-fathom depth.

The resultant demarcations (figures 2 through 5) are the first phase in establishing these areas, however additional analysis on areas of overlap, and ambiguity must be performed before further decisions are made. Ensuing cycles will incorporate improvements upon completion. For current reporting purposes the focus will remain on the major units.

Figures 2, 3, 4 and 5 show the delineated areas that represent the assimilated boundary data for the 7 main Hawaiian Islands.<sup>6</sup> For this cycle, the complete inventory of marine waters assessment decision units are too complex and detailed to be fully captured in report-size pages (8.5x11 or 11x17). As a result, not all defined areas are displayed in the figures.

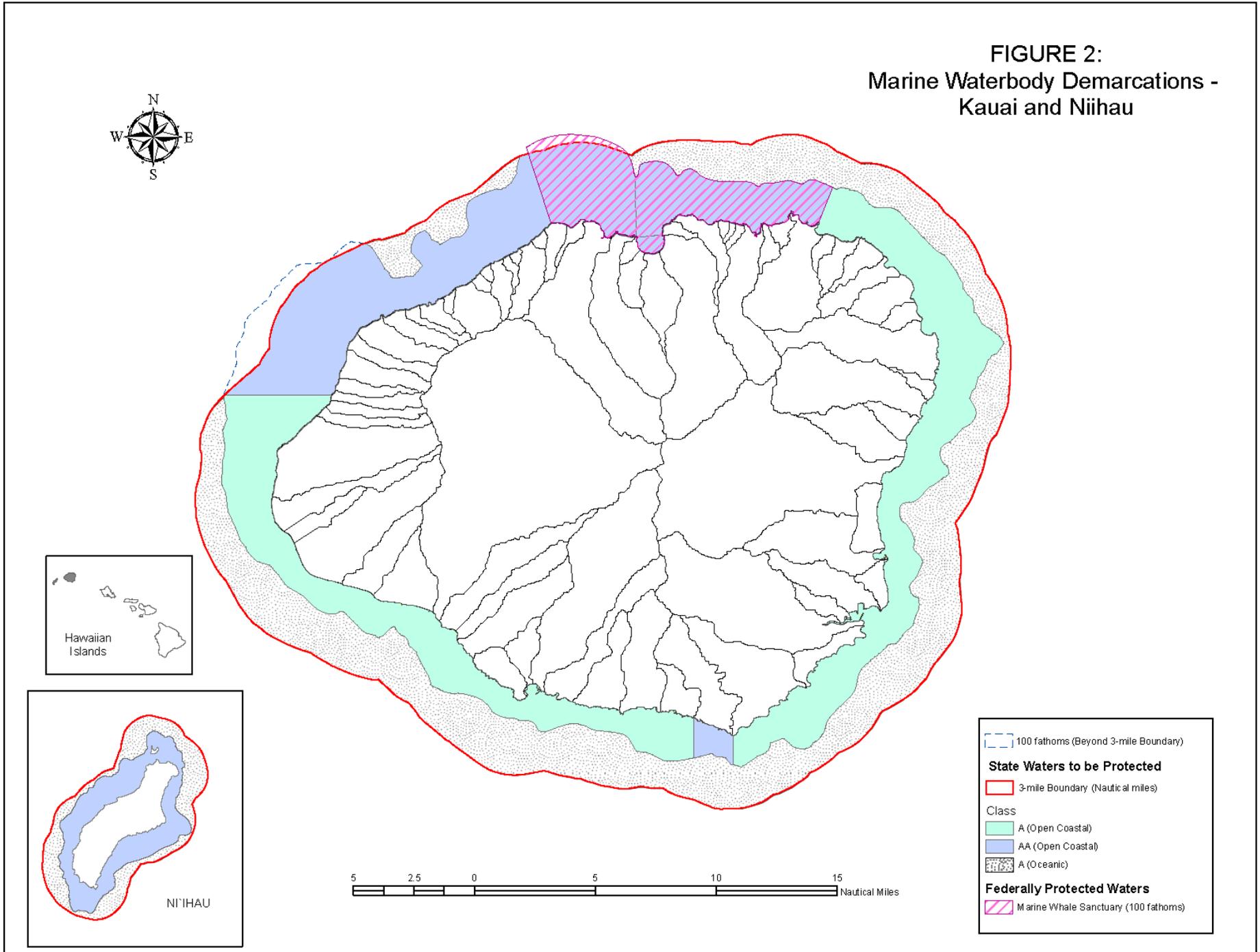
Figure 3a displays a larger scale view of a portion of the Oahu coastline, and the 300m (1000') marine recreational water boundary line. This figure illustrates how a watershed is composed of a number of individual segments, or assessment units. Each named segment corresponds to an identification alphanumeric geocode (e.g. Royal-Moana Beach is geocode HI898947) and both are used to identify the segments in Tables 1-8. A discussion on the geocodes can be found in the following section, Assessment Codes.

For this cycle (for enterococci), in the instances where new areas contain 2 or more sampling stations, the area is segmented to the corresponding number of stations rather than combining the data. This method was chosen due to the stipulated (HAR 11-54) use of a geometric mean used for a defined number of samples (>5). A geometric mean is temporally sensitive; therefore the last 5 consecutive samples of an area must be used in the calculations. However, because frequency of sampling varies between stations (due to a rotating schedule of areas), it is possible that an overrepresentation of a station may occur, skewing the data to the conditions of that particular area. Segmenting the area maintains the integrity of the data for each station, and keeps within the mandates of HAR 11-54. The use of visual assessments was not used for the 2006 cycle. Unlike previous cycles, visual assessment data was not available for 2006. Listings from previous cycles based on legacy visual

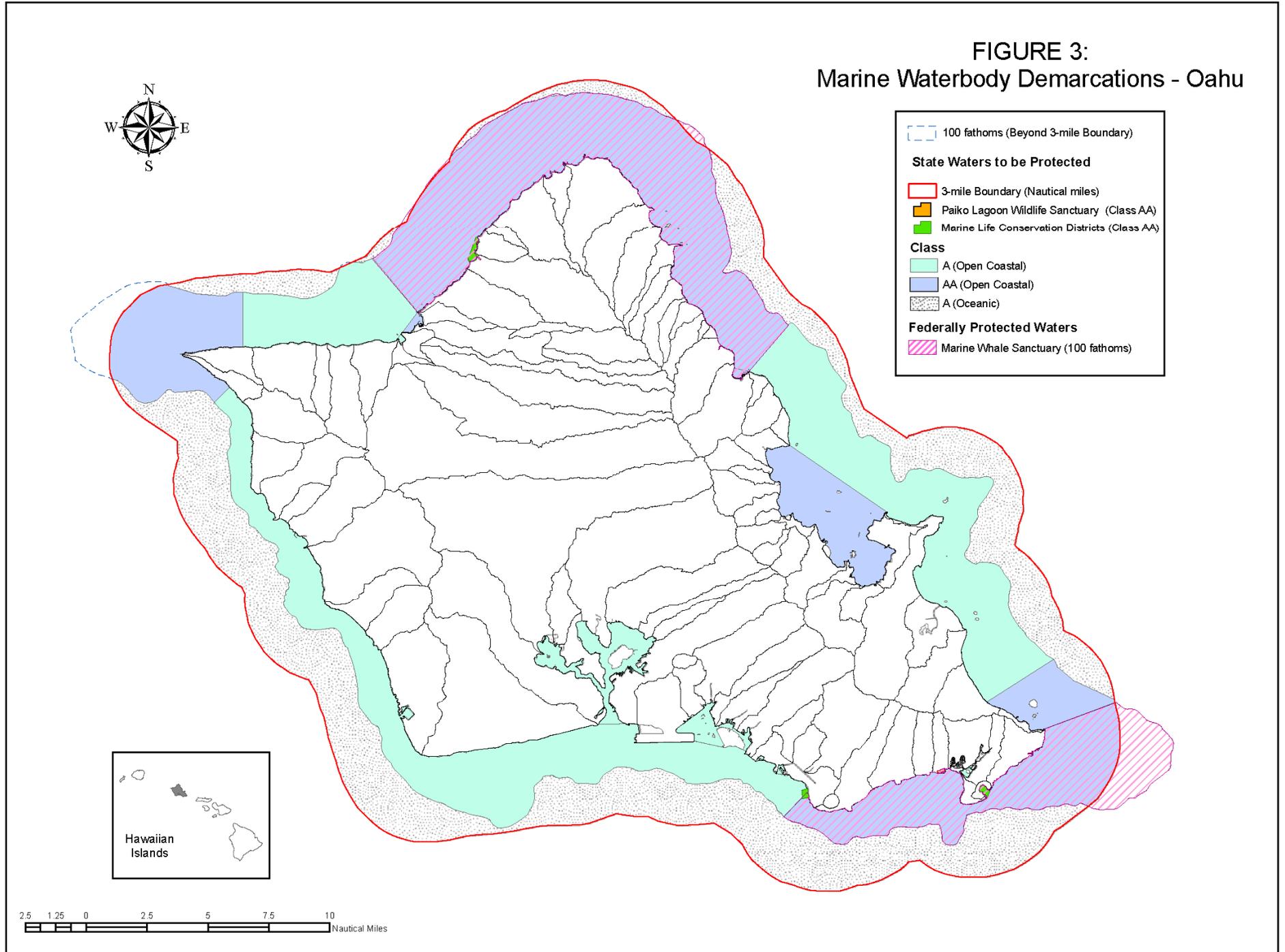
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<sup>6</sup> Jeffrey Walters of the State of Hawaii Department of Land and Natural Resources assisted with the acquisition and interpretation of Whale Sanctuary Boundary delineations. Michael Parke of the U.S. Department of Commerce (National Oceanic and Atmospheric Administration) provided provisional data for construction the 100 fathom boundary around Niihau.

**FIGURE 2:**  
**Marine Waterbody Demarcations -**  
**Kauai and Niihau**



**FIGURE 3:**  
**Marine Waterbody Demarcations - Oahu**





**FIGURE 4:**  
**Marine Waterbody Demarcations - Maui, Molokai, Lanai, and Kahoolawe**

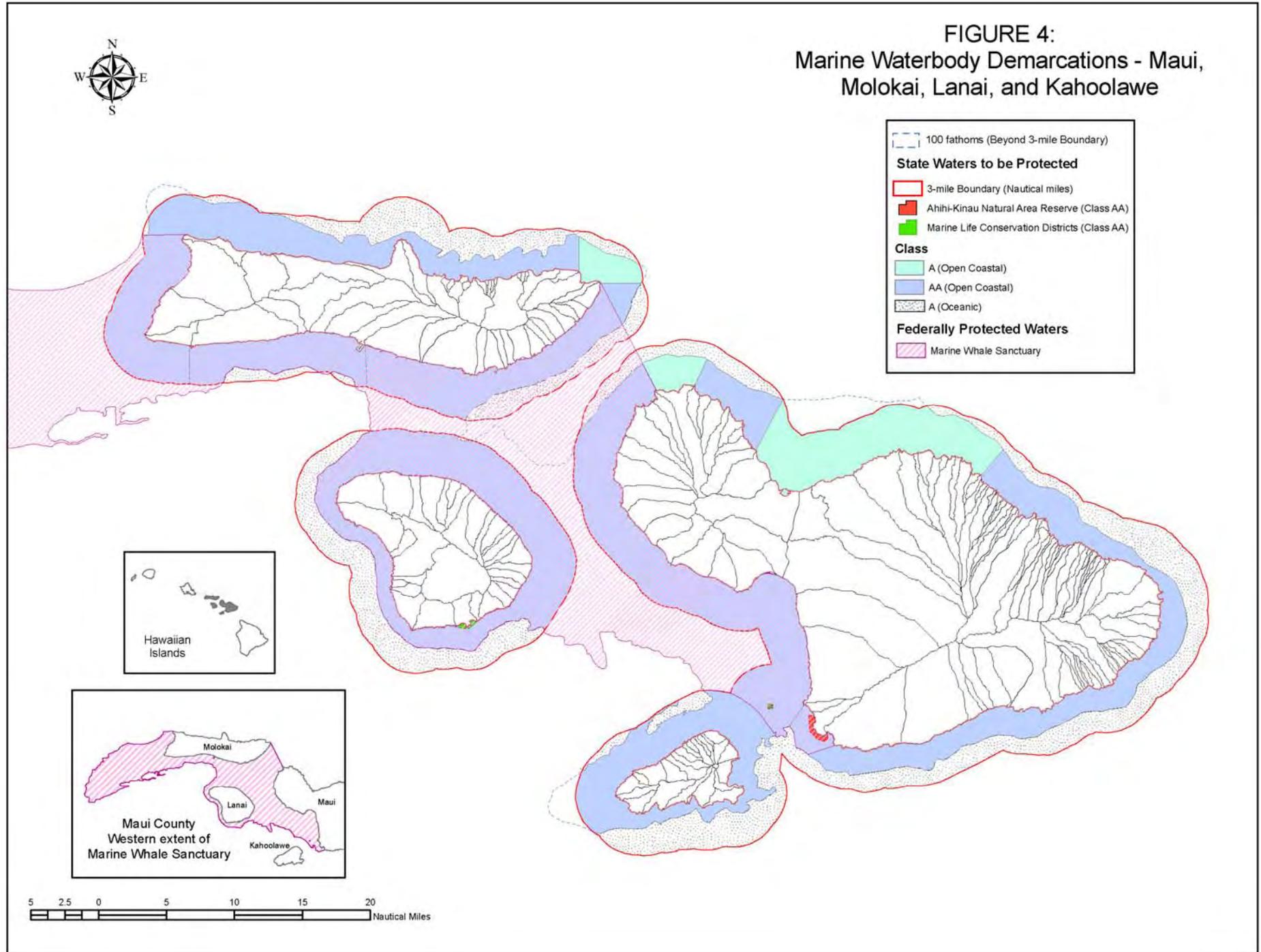
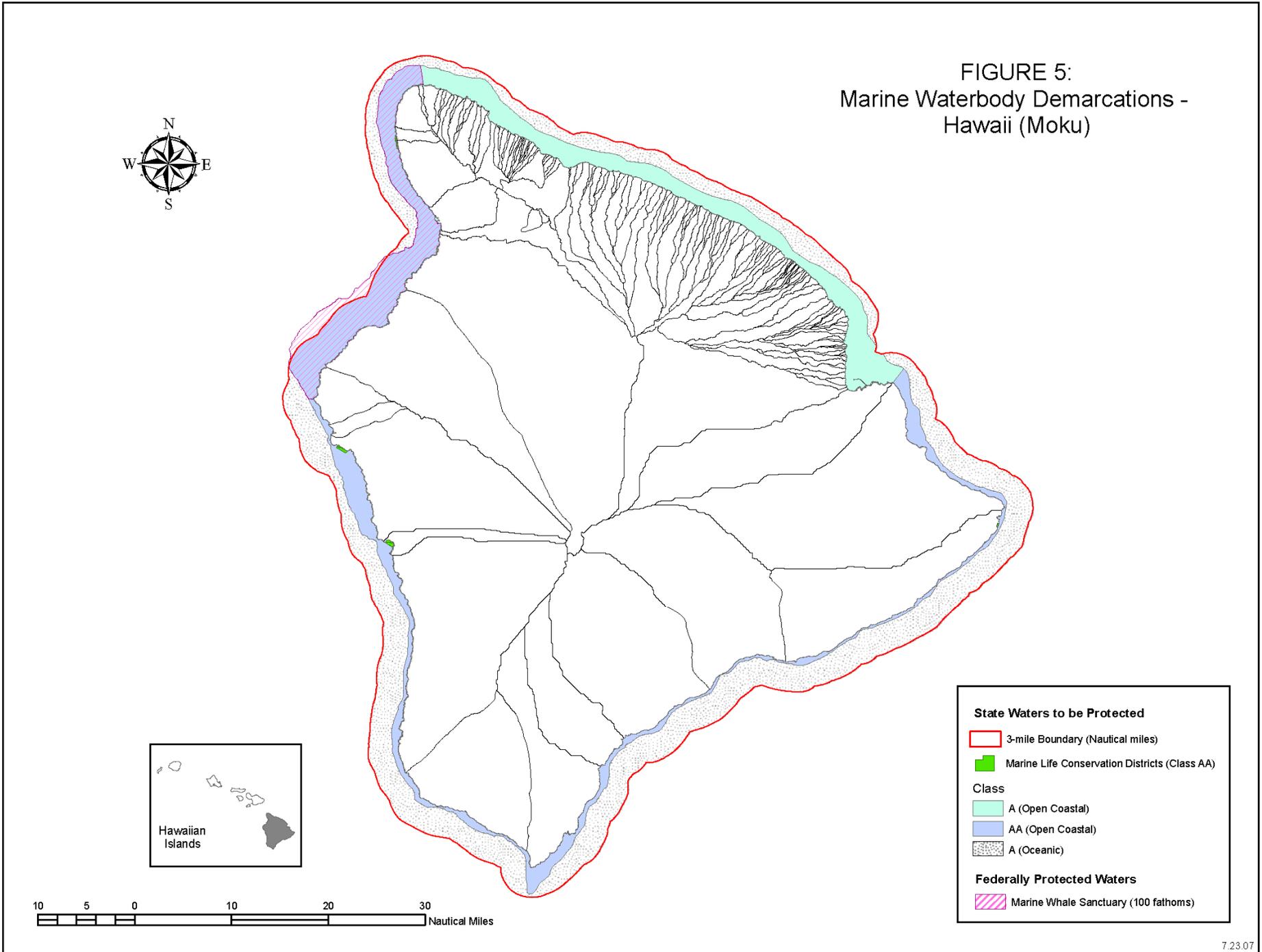


FIGURE 5:  
Marine Waterbody Demarcations -  
Hawaii (Moku)



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assessments have been carried over to the present listing. An example is the carry-over of the 2004 nutrient and turbidity listing for the geographic scope of “Kahului Bay inshore of breakwater”. In future cycles it is possible that this data will be revisited and/or reassessed.

**Assessment Codes (Geocodes)**

For the 2006 report, an alphanumeric code (geocode) was assigned to each marine water body. This code differs from previous reports which identified sampling areas via the DOH STORET sampling station number. Two sets of geocodes exist in the Hawaii structure, a 2 letter alphanumeric (HI), and a 3 letter alphanumeric (HIW). The numeric portion of both geocodes is preceded by the state abbreviation (HI) as suggested by EPA protocol. The 2 letter geocode is from an existing structure from the EPA BEACH program that identifies recreational waters across the state. Use of this code greatly streamlines compilation of data for future reports by utilizing matching codes and names, and improves compatibility between two programs that utilize similar data. The 3 letter code was generated in response to areas where BEACH codes do not exist, for example, legacy listings (e.g. South Molokai Coast Near shore waters to 18’ from southwest point – Waialua), and areas that are divided into smaller subsections (e.g. Kahana Bay which has 3 sections). Each code is comprised of a total of 8 characters, and is not ordered (due to the random generation process of BEACH codes).

**C.3. Assessment Results**

**TABLE 1. Category Totals by Island**

Island	Total Assessed	2,3	2,3,5	3,5	3	2	Newly Listed Waters	Newly Listed Pollutant	Total 5 (“3,5” + “2,3,5”)	Total 2 (“2,3” + “2,3,5”)	De-Listed Waters
Kauai	35	8	3	25	45	0	6	0	28	11	0
Oahu	99	28	14	53	80	0	11	2	67	42	3
Molokai	3	0	0	3	34	0	0	0	3	0	0
Lanai	8	2	6	0	9	0	6	0	6	8	0
Maui	73	1	17	55	49	0	2	4	72	18	0
Hawaii	45	12	21	12	44	0	14	1	33	33	1
<b>Totals</b>	<b>260</b>	<b>51</b>	<b>61</b>	<b>148</b>	<b>261</b>	<b>0</b>	<b>39</b>	<b>7</b>	<b>209</b>	<b>112</b>	<b>4</b>

The above table summarizes the results of the assessments. In total, there were 525 water bodies, of which 260 (50%) had available data for assessment (Kauai 44%, Oahu 54%, Molokai 8%, Lanai 44%, Maui 61%, Hawaii 53%). A total of 4 water bodies were de-listed (no category 5 listing present): Analani Pond (Puala’a) (HI707059), Ala Moana Beach (Diamond Hd) (HIW00002), Lanikai Beach (HI596989), Waimanalo Bay station (Waimanalo Beach Co. Pk (North)) (HIW00175). Assessment results for all four beaches showed that state standards were attained for enterococci, using the enterococci and *Clostridium perfringens* indicator bacteria as mentioned earlier in this document. No single category “2” was assigned to any water body, due to occurrences of category “3” (unknown, or no data) in at least one pollutant. A total of 39 new water bodies were listed with at least one category “5”, and a total of 7 previously listed water bodies had a pollutant added to category “5”. The following tables list the newly listed waters for each island, and the parameters for which they are listed.

Table 2 displays the total of 5 newly listed waters for the island of Kauai, Haena Beach Park (HI554189), Kapaa Beach Co. Park (HI972832), Lydgate Park (HI798758), Po'ipu Beach Co. Park (HI396850), and Salt Pond Beach Co. Park (HI701008). Assessments for all four water bodies showed that state standards were not attained for enterococci at Haena Beach, but not at Lydgate Park, using the enterococci and *Clostridium perfringens* indicator bacteria. Assessment results also showed that turbidity standards were not attained at Haena Beach.

**TABLE 2. Newly Listed Marine Waters: Kauai**

Kauai							
Geo scope	ASSESS ID	Entero	TN	NO3+NO2	TP	TURB	other
Haena Beach Park	HI554189	A	?	?	?	N	
Kapaa Beach Co. Park	HI972832	N	?	?	?	?	
Lydgate Park	HI798758	N	?	?	?	?	
Po'ipu Beach Co. Park	HI396850	N	?	?	?	?	
Salt Pond Beach Co. Park	HI701008	N	?	?	?	?	

Key: Entero=enterococci; TN=total nitrogen; NO3+NO2=nitrate+nitrite nitrogen; TP=total phosphate; TURB=turbidity; chl-a=chlorophyll a; NH<sub>4</sub>=ammonium nitrogen.

Table 3 displays the total of 11 newly listed waters for the island of Oahu. Sampling results for Ocean Pointe (HIW00129, HIW00130, and HIW00131) showed the water bodies did not attain state standards for total nitrogen, nitrate + nitrite, and ammonium, while attaining standards for total phosphorus, and chlorophyll a. Sampling results for Ocean Pointe (HIW00132) showed the water bodies did not attain state standards for total nitrogen, nitrate + nitrite, ammonium, and chlorophyll a, while attaining standards for total phosphorus. The remaining 7 listings were due to assessments indicating that state standards were not attained for enterococci, using the enterococci and *Clostridium perfringens* indicator bacteria.

**TABLE 3. Newly Listed Marine Waters: Oahu**

Oahu							
Geo scope	ASSESS ID	Entero	TN	NO3+NO2	TP	TURB	other
Kaaawa Beach Park	HI580360	N	?	?	?	?	
Kahana Park	HIW00103	N	?	?	?	?	
Kahanamoku Beach	HI366432	N	?	?	?	?	
Kawaiku'i Beach Park	HI304424	N	?	?	?	?	
Ocean Pointe	HIW00129	?	N	N	A	N	chl-a(A), NH4(N)
Ocean Pointe	HIW00130	?	N	N	A	N	chl-a(A), NH4(N)
Ocean Pointe	HIW00131	?	N	N	A	N	chl-a(A), NH4(N)
Ocean Pointe	HIW00132	?	N	N	A	N	chl-a(N), NH4(N)
Hawaiian Electric Beach	HI628972	N	?	?	?	?	
Waimanalo Beach Co. Pk (South)	HIW00174	N	?	?	?	?	
Waimea Bay	HIW00128	N	?	?	?	?	

Table 4 displays a total of 6 newly listed water bodies listed for the island of Lanai. Assessment results indicated that standards were attained for TN and TP for all 8 sites. Assessment results showed that turbidity standards were not attained at Awehi (HIW00134), Manele Boat Harbor (HIW00179), Kahemano Beach (HI801428), and Mahanalua (HIW00136). Assessment results indicated that standards were not attained for chl-a only at Manele Boat Harbor (HIW00179). Lastly, assessment results indicated that standards for NH4 were only attained at Hulupoe Bay (HIW00177), and Manele Bay Beach (HIW00178).

**TABLE 4. Newly Listed Marine Waters: Lanai**

Lanai							
Geo scope	ASSESS ID	Entero	TN	NO3+NO2	TP	TURB	other
Awehi	HIW00134	?	A	A	A	N	chl-a(A), NH4(N)
Hulupoe Bay	HIW00177	?	A	A	A	A	chl-a(A), NH4(A)
Manele Bay Beach	HIW00178	?	A	A	A	A	chl-a(A), NH4(A)
Manele Boat Harbor	HIW00179	?	A	N	A	N	chl-a(N), NH4(N)
Kahemano Beach	HI801428	?	A	A	A	N	chl-a(A), NH4(N)
Kaluakoi Point to Huawai Bay	HIW00135	?	A	A	A	A	chl-a(A), NH4(N)
Kawaiu Gulch-Makole Pt.	HIW00133	?	A	A	A	A	chl-a(A), NH4(N)
Mahanalua	HIW00136	?	A	A	A	N	chl-a(A), NH4(N)

Table 5 displays a total of 6 newly listed water bodies listed for the island of Maui. Assessment results indicated that state standards were attained for TP at 4 of the 7 sites, Honokowai Pt. to Kaanapali (HIW00139), Mala Wharf area (HIW00138), Oneuli Beach (HI756040), and Poolenalena-Makena Landing (HIW00143). Honokowai Pt. to Kaanapali (HIW00139) also attained state standards for NO3+NO2, turbidity, and chl-a. Microbiological sampling data was not available at these sites.

**TABLE 5. Newly Listed Marine Waters: Maui**

Maui							
Geo scope	ASSESS ID	Enterococci	TN	NO3+NO2	TP	TURB	other
Honokowai Pt. to Kaanapali	HIW00139	?	N	A	A	A	chl-a(A), NH4(N)
Mala Wharf area	HIW00138	?	N	N	A	N	chl-a(N), NH4(N)
Oneloa Beach (Big Beach)-Ahihi-Kinau	HIW00144	?	N	N	N	N	chl-a(N), NH4(N)
Oneuli Beach	HI756040	?	N	N	A	N	chl-a(N), NH4(N)
Poolenalena-Makena Landing	HIW00143	?	N	N	A	N	chl-a(N), NH4(N)
Makena Landing-Maluaka Beach	HIW00142	?	N	N	N	N	chl-a(N), NH4(N)

Table 6 displays a total of 14 newly listed water bodies listed for the island of Hawaii. Assessment results indicated that state standards were not attained for TN at all sites except Kamakaokahonu. All other assessment results indicated mixed results. Assessment results indicated that 8 of 14 sites attained state standards for Nitrate + nitrite, 9 of 14 sites attained state standards for total phosphate, 4 of 14 sites attained state standards for turbidity, 12 of 14 sites attained state standards for chlorophyll a, and 8 of 14 sites attained state standards for ammonium. Kamakaokahonu (HIW00032) was the only site that assessment results indicated that state standards were not attained for enterococci, using the enterococci and *Clostridium perfringens* indicator bacteria.

**TABLE 6. Newly Listed Marine Waters: Hawaii (Big Island)**

Hawaii							
Geo scope	ASSESS ID	Enterococci	TN	NO3+NO2	TP	TURB	other
Honokohau Beach	HI315174	?	N	N	A	A	chl-a(A), NH4(A)
Kahoiawa Bay	HIW00150	?	N	A	A	N	chl-a(A), NH4(A)
Kahoiawa Bay-Makalawena	HIW00151	?	N	A	A	N	chl-a(A), NH4(A)
Kakapa Bay	HIW00152	?	N	A	A	N	chl-a(A), NH4(A)
Kamakaokahonu	HIW00032	N	?	?	?	?	
Kealakekua Bay	HIW00149	?	N	N	N	N	chl-a(A), NH4(A)
Kahuwai Bay-Mano Pt.	HIW00153	?	N	A	A	A	chl-a(A), NH4(A)
Kuki'o Bay	HIW00154	?	N	N	N	N	chl-a(A), NH4(N)
Manini'owali	HI720408	?	N	A	A	N	chl-a(A), NH4(A)
Paaaoa Point to Keaweakeheka Point	HIW00145	?	N	A	A	N	chl-a(A), NH4(A)
Pine Trees	HI320616	?	N	A	A	A	chl-a(A), NH4(A)
Pine Trees-Honokohau	HIW00146	?	N	N	N	A	chl-a(N), NH4(N)
Waiulua Bay to Anaehoomalu Bay	HIW00148	?	N	N	N	N	chl-a(A), NH4(N)
Wawaloli Beach-Pine Trees	HIW00147	?	N	A	A	N	chl-a(A), NH4(A)

Two tables are provided to display changes that have occurred since the previous listing period, Table 7, and the 2006 Water Body Assessment Decisions table. Table 7 is provided to aid the reader in tracking water bodies from 2004 to the corresponding new water body for the 2006 cycle. The table lists any changes that have occurred to the 2004 303(d) listing of coastal/estuary waters. The first column is entitled 2004 Segment, and contains the specific name of the area that the 2004 assessment applied to. The second column is entitled 2004 Station ID and contains the sampling station code, if available, for the water body. The third column contains the new 2006 geocode for the water body. Column 4 contains the 2004 pollutants that, in 2006, a change has occurred. Column 5 contains *only new* pollutants for 2006 that the water body has been assessed to be impaired. Column 6 lists the action taken to categorize the water body as a result of assessed data. Column 7 describes a justification for each action is given. Column 8 lists the action taken, and a description of the reasons for the change in category. The last column contains each new respective 2006 category utilizing the multi-category method.

Assessment results for each water body were coded according to EPA methods, and placed in the 2006 Water Body Assessment Decisions table (Chapter IV). If the calculated level was found to be above the state standard, the parameter was entered as “Not Attaining” (N). If the calculated value was below the stated value, the parameter was entered as “Attaining” (A). It is important to note that the marine water bodies entered in the table are not reflective of all marine areas of the state, rather they indicate areas where sampling has taken place, and areas of higher incidence of human contact. Areas not show in the table do not have any sampling data available, and are considered to be in category “3”. Ensuing cycles may add waters as necessary. Parameters where no data was available were coded with a “?”. TMDL Priority rankings columns for marine water bodies were populated by the TMDL coordinator. The Water Body Assessment Decisions table is described in more detail below.

The Water Body Assessment Decisions table contains the assessment results for all waters, inland and marine. Inland waters are discussed in Chapter II. The following narrative will only apply to the marine sections. The first column contains the water body type, as distinguished by HAR 11-54. The second column contains the “Scope of Listing”, or the name of the specific area that the assessment applies to. The next column contains the Geocode ID, or assessment ID that is the alphanumeric identifier attached to each listing. Columns 5-10 contain common pollutants found in Hawaii’s waters. Column 11 contains other pollutants that were found with less frequency. The eleventh column contains the category that each water body has been assessed to. As described earlier, the multi-category assessment allows for a better description of each water body. For example, a waterbody that attains standards in enterococci, TN, NO<sub>3</sub>+NO<sub>2</sub>, but does not attain for TP, and has no data for turbidity will have a listing of “2, 3, 5”, instead of simply “5”.

The Water Body Assessment Decisions table contains a number of waterbodies that are similar in name to other waterbodies (indicated by an asterisk \*); these are not duplicates. These waterbody entries are from previous 303(d) listing cycles and were listed at that time as separate entities from similar named sampling stations.

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**TABLE 7: Category List of Changes to 2004 Listed Coastal Waters (excludes newly listed waters)**

- A multi-category listing method was employed for 2006 to better characterize water quality conditions; a single category method was employed for 2004. Therefore, a Category “2” is assigned to all water bodies that have shown attainments for one or more pollutants and a Category “3” has been assigned to all water bodies for one or more pollutants that have inadequate data available for assessing attainment status.
- \* = A new Category 3 has been assigned to this water body because no adequate data is available for assessing attainment status of one or more pollutants. See 2006 303(d)/305(b) list for more information.
- The 2004 and 2006 Pollutants columns are only populated with pollutants on which a *change* has occurred (e.g. new listing, delisting, etc.).
- Pollutants: entero=enterococci; TN=Total Nitrogen, NO3+NO2=Nitrate+Nitrite nitrogen, TP=Total Phosphorus, Turb=Turbidity, chl-a=chlorophyll a
- For the purposes of this report, listed water bodies are sorted by island, north to south, following the listing order of the 2004 list.
- Summary Rationale Codes: NND=New Numerical Data; NL=New Listing (category 5); DL=Delisting (category 5 to 2); A2=Assigning of category 2; CIC=Change in Coding (single to multi-parameter); CGS=Clarified Geographical Scope; TC=Textual Change.

KAUAI								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Anini Park Pavilion station <i>Anini Beach Park</i>	000801	HI418744			Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b>	2,3,5
Hanalei Bay Landing station (station 000804) <i>Hanalei Bay (Landing)</i>	000804	HIW00093			Modified	CGS, CIC	Both 2004 listed areas (000804 and 8HWH-HBL) absorbed by 2006 Decision Unit HIW00093. Data all from the same station. Station is also changed to estuary. <b>Assign cat. 3*</b>	3,5
Hanalei Bay Landing station (station 000804) <i>Hanalei Bay (Landing)</i>	000804	HIW00093	entero		Modified	CGS, CIC	Entero listing for both areas (000804 and 8HWH-HBL) applies to new 2006 Decision Unit HIW00093. Data all from the same station.	3,5
Hanalei Bay Landing station (station 000804) <i>Hanalei Bay (Landing)</i>	000804	HIW00093	Turb		Modified	CGS, CIC	Turb listing applies to new 2006 Decision Unit HIW00093. Represents combination of 000804 and 8HWH-HBL. Data all from the same station.	3,5
Hanalei Bay Landing station <i>Hanalei Bay (Landing)</i>	8HWH-HBL	HIW00093			Modified	CGS, CIC	Both 2004 listed areas (000804 and 8HWH-HBL) absorbed by 2006 Decision Unit HIW00093. Data all from the same station. <b>Assign cat. 3*</b>	3,5

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2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Hanalei Bay Landing station <i>Hanalei Bay (Landing)</i>	8HWH-HBL	HIW00093	Turb		Modified	CGS, CIC	Turb listing applies to new 2006 Decision Unit HIW00093. Represents combination of 000804 and 8HWH-HBL. Data all from the same station.	3,5
Hanalei Bay Mooring Station	8HWH-HBM	HIW00157	entero		Modified	CIC	<b>Assign cat. 3*</b>	3,5
Hanalei Bay at Pavilion Station <i>Hanalei Bay (Pavilion)</i>	8HWH-HBPA V	HIW00092			Modified	CGS, CIC	This station was absorbed by the 2006 Decision Unit HIW00092. <b>Assign cat. 3*</b>	3,5
Hanalei Bay at Pavilion Station <i>Hanalei Bay (Pavilion)</i>	8HWH-HBPA V	HIW00092	entero		Modified	CGS, CIC	This station was absorbed by the 2006 Decision Unit HIW00092. entero listing carried over. <b>Assign cat. 3*</b>	3,5
Hanalei Bay at Pinetrees station <i>Hanalei Bay (Waioli Beach)</i>	8HWH-HBPIN	HIW00091			Modified	NND, A2, NL, CIC	This station was absorbed by the 2006 Decision Unit HIW00091.	2,3,5
Hanalei Bay at Pinetrees station <i>Hanalei Bay (Waioli Beach)</i>	8HWH-HBPIN	HIW00091	entero			NND, A2, NL, CIC	<b>Assign cat. 2</b> ; The assessment of new data documents indicate that applicable WQS are meeting attainment for entero. <b>Assign cat. 3*</b>	2,3,5
Hanalei Bay at Pinetrees station <i>Hanalei Bay (Waioli Beach)</i>	8HWH-HBPIN	HIW00091		Turb		NND, A2, NL, CIC	<b>Assign cat. 5</b> ; The assessment of new data documents indicate that applicable WQS are not meeting attainment for Turb.	2,3,5
Hanalei River upstream of Dolphin	8HWH-HRD	HIW00160			Modified	CIC	<b>Assign cat. 3*</b>	3,5
Hanalei River (Weke Rd) station (station 000839) <i>Hanalei River</i>	000839	HI385259			Modified	CGS, CIC	This station was absorbed by the 2006 Decision Unit HI385259. Station is also changed to estuary. <b>Assign cat. 3*</b>	3,5

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2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Hanalei River (Weke Rd) station (station 000839) <i>Hanalei River</i>	000839	HI385259	entero		Modified	CGS, CIC	Entero listing for 000839 applies to new 2006 Decision Unit HI385259. Data all from the same station.	3,5
Hanalei River (Weke Rd) station (station 000839) <i>Hanalei River</i>	000839	HI385259	Turb		Modified	CGS, CIC	Turb listing for both areas (000839 and 8HWH-HRW) applies to new 2006 Decision Unit HI385259. Data all from the same station.	3,5
Hanalei River (Weke Rd) station <i>Hanalei River</i>	000839	HI385259			Modified	CGS, CIC	Both 2004 listed areas (000839 and 8HWH-HRW) absorbed by 2006 Decision Unit HI385259. Data all from the same station. <b>Assign cat. 3*</b> .	3,5
Hanalei River (Weke Rd) station <i>Hanalei River</i>	000839	HI385259	Turb		Modified	CGS, CIC	Turb listing for both 2004 listed areas (000839 and 8HWH-HRW) absorbed by 2006 Decision Unit HI385259. Data all from the same station. <b>Assign cat. 3*</b> .	3,5
Hanama'ulu Bay	8-HMB-L	HIW00063			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Hanama'ulu Beach (middle) station <i>Hanamaulu Bay (Beach Station)</i>	000806	HIW00094			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Hanapepe Bay from breakwater to shore and nearshore waters to 30' from Puolo Point to Paakehi Point	8-HPB-L	HIW00048			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Port Allen Pier Station <i>Port Allen Boat Harbor (Port Allen Pier station)</i>	000821	HIW00026			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Kalihiwai Bay Beach Staton <i>Kalihiwai Bay</i>	000811	HI264001			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Koloa Landing	000837	HI955435			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Waikoko Stream Estuary	2-1-16E	HIW00162			Modified	CIC	<b>Assign cat. 3*</b> .	3,5

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KAUAI								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Waioli Stream Estuary	2-1-18E	HIW00163			Modified	CIC	Assign cat. 3*.	3,5
Waipa Stream Estuary	2-1-17E	HIW00164			Modified	CIC	Assign cat. 3*.	3,5
Nawiliwili Bay from breakwater to shore	8-NB-L	HIW00059			Modified	CIC	Assign cat. 3*.	3,5
Nawiliwili Harbor-Coast Guard Pier station <i>Nawiliwili Bay (Nawiliwili Harbor)</i>	000817	HIW00115			Modified	CIC, TC	Change in name to Nawiliwili Bay (Nawiliwili Harbor); Assign cat. 3*.	3,5
Kalapaki Bech (middle) station <i>Nawiliwili Bay (Kalapaki Beach)</i>	000809	HIW00114			Modified	CIC	Assign cat. 3*.	3,5
Nawiliwili Bay offshore embayment station	000881	HIW00116			Modified	CIC	Assign cat. 3*.	3,5
Wailua River station <i>Wailua (Wailua River Station)</i>	000822	HI606168			Modified	CIC	Assign cat. 3*.	3,5
Waimea Bay nearshore waters to 18' from Kekaha Oomano Pt. to point 1.5 miles southeast of Mahinaui Stream	8-WB-L	HIW00057			Modified	CIC	Assign cat. 3*.	3,5
Waimea Bay Beach (near River) station	000823	HI862821			Modified	CIC	Assign cat. 3*.	3,5

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2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Ala Wai Canal and Boat Harbor	0-AWCH-L	HIW00050			Modified	CIC	Assign cat. 3*.	3,4a,5
Ala Wai Canal (Diamond Head end) station	ALWS 01	HIW00085			Modified	CIC	Assign cat. 3*.	3,5
Ala Moana Bridge station	000320	HIW00125			Modified	CIC	Assign cat. 3*.	3,5
Manoa Stream Fork station	ALWS 03	HIW00035			Modified	CIC	Assign cat. 3*.	3,5
Manoa-Palolo Stream mouth station	ALWS 05	HIW00087			Modified	CIC	Assign cat. 3*.	3,5
Manoa-Palolo Stream (KHS) station	ALWS 04	HIW00036			Modified	CIC	Assign cat. 3*.	3,5
Palolo Stream Fork station	ALWS 02	HIW00034			Modified	CIC	Assign cat. 3*.	3,5
McCully St. Bridge station	000321	HIW00086			Modified	CIC	Assign cat. 3*.	3,5
Ewa Beach Park	000189	HI319095		entero	Modified	NND, A2, CIC	Assign cat. 2; The assessment of the last 3 years of data documents indicate attainment status for entero. Assign cat. 3*.	2,3,5
Gray's Beach	000159	HI941499		entero	Modified	NND, A2, CIC	Assign cat. 2; The assessment of the last 3 years of data documents indicate attainment status for entero. Assign cat. 3*.	2,3,5
Hanauma Bay	O-HB-L	HIW00058			Modified	CIC	Assign cat. 3*.	3,5
Hanauma Bay (oceanic) station	000444	HIW00017			Modified	CIC	Assign cat. 3*.	3,5
Hanauma Bay (Beach)	000201	HIW00096		entero	Modified	NND, NL, CIC	ASSIGN cat. 5; The assessment of new data documents indicate that applicable WQS are not being attained for entero. Assign cat. 3*.	2,3,5
Hawaii Kai station	000229	HIW00117			Modified	CIC	Assign cat. 3*.	3,5
Honolulu Harbor and Shore Areas: Nearshore waters to 30' from 1 mile northwest of Honolulu Harbor/Sand Island channel to Waikiki Beach	O-HHSA-L	HIW00049			Modified	CIC	Assign cat. 3*.	3,5

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OAHU								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Ala Moana Beach (Diamond Hd)	000154	HIW00002	entero		Delist, Modified	NND, DL, CIC	<b>DELIST: cat. 2;</b> The assessment of new data documents indicate that applicable WQS are now being attained for entero, resulting in a category change from 5 to 2. <b>Assign cat. 3*.</b>	2,3
Ala Moana Beach (Center)	000153	HIW00001		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*.</b>	2,3,5
Honolulu Harbor and Shore Areas-Kewalo Basin	O- HNSA- KB-L	HIW00051			Modified	CIC	<b>Assign cat. 3*</b>	3,5
Kewalo Basin station <i>Kewalo Basin</i>	000361	HIW00126			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Honolulu Harbor & Shore area-Honolulu Waterfront- Aloha Tower	O- HNSA- HWAT- L	HIW00061			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Sand Island Point #2	000165	HI714359		entero	Modified	NND, A2, CIC	<b>ASSIGN cat. 2;</b> The assessment of new data documents indicate that applicable WQS are being attained for entero. <b>Assign cat. 3*.</b>	2,3,5
Sand Island Point #3	000166	HIW00181	TN, Turb, chl-a		Modified	CIC	<b>Correction of error:</b> This station was erroneously listed in 2004 as station 000165. The correct number is 000166. Pollutant listing is correct, and no new listings were made. <b>Assign cat. 3*.</b>	2,3,5
Lanikai Beach station <i>Lanikai Beach</i>	000194	HI596989	entero		Delisted	NND, DL, CIC	<b>DELIST: cat. 2;</b> The assessment of new data documents indicate that applicable WQS are now being attained for entero, resulting in a category change from 5 to 2. <b>Assign cat. 3*.</b>	2,3
Kaelepulu Stream station <i>Kaelepulu Stream-Kailua Bch</i>	000302	HIW00182			Modified	CIC	<b>Assign cat. 3*.</b>	3,5

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OAHU								
2004 Segment <i>2006 Segment (if altered)</i>	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Kahana Bay Nearshore waters to 30' from Mahie Point to a point one mile north of Kahana Bay station	O-KAHB-L	HIW00062			Modified	CIC	Assign cat. 3*.	3,5
Kahana Park (1) station <i>Kahana Bay Park</i>	000178	HIW00102			Modified	CIC	Assign cat. 3*.	3,5
Kahanamoku Lagoon-Diamond Head station <i>Kahanamoku Lagoon</i>	000157	HIW00003			Modified	CIC	Assign cat. 3*.	3,5
Kailua Beach Park station <i>Kailua Beach Park</i>	000193	HI482719	entero		Modified	NND, A2, CIC	ASSIGN cat. 2; The assessment of new data documents indicate that applicable WQS are being attained for entero. Assign cat. 3*.	2,3,5
Oneawa Beach station <i>Oneawa Beach</i>	000304	HI952205			Modified	CIC	Assign cat. 3*.	3,5
Kaiona Beach station <i>Kaiona Beach</i>	000227	HI234342			Modified	CIC	Assign cat. 3*.	3,5
Kaneohe Bay Nearshore waters at mouths of Kaneohe and Kawa streams	O-KANB-L	HIW00054			Modified	CIC	Assign cat. 3*.	3,5
Kaneohe Bay (Central Region) station <i>Kaneohe Bay (Central Region)</i>	000403	HIW00013			Modified	CIC	Assign cat. 3*.	3,5
Kaneohe Bay (Northern Region) station <i>Kaneohe Bay (Northern Region)</i>	000402	HIW00012			Modified	CIC	Assign cat. 3*.	3,5
Kaneohe Bay (Southern Region) station <i>Kaneohe Bay (Southern Region)</i>	000401	HIW00011			Modified	CIC	Assign cat. 3*.	3,5

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OAHU								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Kokokahi Pier	000191	HIW00005			Modified	CIC	Assign cat. 3*.	3,5
Kaneohe Beach Park station <i>Kaneohe Beach Park</i>	000190	HIW00004			Modified	CIC	Assign cat. 3*.	3,5
Heeia Kea Small Boat Harbor station <i>Heeia Kea Small Boat Harbor</i>	000362	HIW00097			Modified	CIC	Assign cat. 3*.	3,5
Kawela Bay station <i>Kawela Bay</i>	000173	HI698581			Modified	CIC	Assign cat. 3*.	3,5
Keehi Lagoon waters and nearshore waters to 30' from lagoon mouth to Pearl Harbor	O-KL-L	HIW00055			Modified	CIC	Assign cat. 3*.	3,5
Keehi Lagoon Point X	000342	HIW00010			Modified	CIC	Assign cat. 3*.	3,5
Kualoa Beach Park Station <i>Kualoa Co. Regional Park</i>	000208	HI848207			Modified	CIC	Assign cat. 3*.	3,5
Kuhio Beach station <i>Kuhio Beach</i>	000161	HI681782			Modified	CIC	Correction: Correct station number from 00161 to 000161. Assign cat. 3*.	3,5
Makaha station <i>Makaha Beach</i>	000185	HI632106		entero	Modified	NND, A2, CIC	Assign cat. 2; The assessment of the last 3 years of data documents indicate attainment status for entero. Assign cat. 3*.	2,3,5
Mamala Bay (oceanic) station <i>Mamala Bay (oceanic)</i>	000442	HIW00015			Modified	CIC	Assign cat. 3*.	3,5
Mamala Bay (Sand Island offshore) station <i>Mamala Bay (Sand Island offshore)</i>	000441	HIW00014			Modified	CIC	Assign cat. 3*.	3,5
Maunalua Bay (open coastal) station <i>Maunalua Bay (open coastal)</i>	000443	HIW00016			Modified	CIC	Assign cat. 3*.	3,5

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OAHU								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Pearl Harbor waters and nearshore waters to 30' from Keehi Lagoon to Oneula Beach	O-PH-L	HIW00119			Modified	CIC	Assign cat. 3*.	3,5
Blaisdell Park Pearl Harbor (Blaisdell Park)	000223	HIW00006			Modified	CIC	Assign cat. 3*.	3,5
Pokai Bay (oceanic) station Pokai Bay (oceanic)	000452	HIW00019			Modified	CIC	Assign cat. 3*.	3,5
Pokai Bay (open coastal) station Pokai Bay (open coastal)	000451	HIW00018			Modified	CIC	Assign cat. 3*.	3,5
Public Bath Beach station Kuhio Beach (Public Bath)	000162	HI851298		entero	Modified	NND, A2, CIC	Assign cat. 2; The assessment of the last 3 years of data documents indicate attainment status for entero. Assign cat. 3*.	2,3,5
Salt Lake	O-SL-L	3-3-12-Salt Lake			Modified	CIC	Listed Under Freshwater Portion of report	
Sandy Beach	000200	HI776760		entero	Modified	NND, A2, CIC	Assign cat. 2; The assessment of the last 3 years of data documents indicate attainment status for entero. Assign cat. 3*.	2,3,5
Wai'ala'e-Kahala Beach station Wai'ala'e Beach Co. Park	000214	HI997368			Modified	CIC	Assign cat. 3*.	3,5
Waialua/Kaiaka Bays Nearshore waters to 60' from Puaena Point to a point 1.5 miles west of Kaiaka Point	O-W/KB-L	HIW00083			Modified	CIC	Assign cat. 3*.	3,5
Kaiaka Bay	000170	HIW00106	entero		Modified	NND, A2, CIC	ASSIGN cat. 2; The assessment of new data documents indicate that applicable WQS are being attained for entero. Assign cat. 3*.	2,3,5

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OAHU								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Haleiwa Beach Park station <i>Haleiwa Beach Park</i>	000171	HI994019		entero	New Listing	NND, NL, CIC	<b>ASSIGN cat. 5;</b> The assessment of new data documents indicate that applicable WQS are not being attained for entero. <b>Assign cat. 3*</b> .	2,3,5
Waimanalo Bay station <i>Waimanalo Bay station (Waimanalo Beach Co. Park North)</i>	000196	HIW00175		entero	Delisted	NND, DL, CIC	<b>DELIST: cat. 2;</b> The assessment of 3 years of data documents indicate that applicable WQS are now being attained for entero, resulting in a category change from 5 to 2. <b>Assign cat. 3*</b> .	2,3
Bellows Beach (Waimanalo Stream mouth) station <i>Bellows Field Beach Co. Pk. (Waimanalo strm mouth)</i>	Bellows5	HIW00081			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Bellows Beach (north runway) station <i>Bellows Field Beah Co. Pk. (N. runway)</i>	Bellows4	HI798011			Modified	CIC	<b>Assign cat. 3*</b> .	3,5

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MAUI								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
H.A. Baldwin Park Station <i>H.A. Baldwin Beach Co. Pk</i>	000689	HI846900			Modified	CIC	Assign cat. 3*.	3,5
Hanaka'o'o Beach station <i>Hanaka'o'o Beach Co. Pk</i>	000693	HI797917		entero	New Listing	NND, NL, CIC	ASSIGN cat. 5; The assessment of new data documents indicate that applicable WQS are not attained for entero. Assign cat. 3*.	3,5
Hanakao Station	6-EL1	HIW00165			Modified	CIC	Assign cat. 3*.	3,5
Honomanu Bay station <i>Honomanu Bay</i>	000653	HI985873			Modified	CIC	Assign cat. 3*.	3,5
Ho'okipa station <i>Ho'okipa Beach Co. Pk</i>	000688	HIW00024			Modified	NND, A2, CIC	Assign cat. 2; The assessment of the last 3 years of data documents indicate attainment status for entero. Assign cat. 3*.	2,3,5
Airport (Kahekili Beach) station <i>Ka'anapali (Kahekili Beach)</i>	000695	HI643627		entero	Modified	NND, A2, CIC	Assign cat. 2; The assessment of the last 3 years of data documents indicate attainment status for entero. Assign cat. 3*.	2,3,5
Kahului Bay inshore of breakwater	6-KB-L	HIW00053			Modified	CIC	Assign cat. 3*.	3,5
Hukilau Hotel station <i>Kahului Harbor</i>	000654	HIW00104		entero	Modified	NND, NL, CIC	ASSIGN cat. 5; The assessment of new data documents indicate that applicable WQS are not being attained for entero. Assign cat. 3*.	3,5
Kahului Bay station <i>Kahului Harbor (Bay)</i>	000680	HIW00105			Modified	CIC	Assign cat. 3*.	3,5
Kihei Coast-Kalepolepo	6-EL2	HIW00039			Modified	CIC	Assign cat. 3*.	3,5
Kaa Shoreline station <i>Kanaha Beach (Kaa Shoreline)</i>	000655	HIW00020			Modified	CIC	Assign cat. 3*.	3,5
Kanaha Beach Park station <i>Kanaha Beach</i>	000677	HI797225		entero	Modified	NND, A2, CIC	Assign cat. 2; The assessment of the last 3 years of data documents indicate attainment status for entero. Assign cat. 3*.	3,5
Kihei Coast-Kaunoulu Estuary	6-EL3	HIW00040			Modified	CIC	Assign cat. 3*.	3,5
Kihei Coast-Kealia Pond	6-EL4	HIW00070			Modified	CIC	Assign cat. 3*.	3,5
Kihei Coast - Estuary Boat Ramp	6-EL5	HIW00166			Modified	CIC	Assign cat. 3*.	3,5

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2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Kihei Coast-Cove Park	6-EL6	HIW00167			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Kihei Coast-Nearshore waters to 60' from Kihei North - Kalama Beach	6-KC-L	HIW00056			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Kalama Beach station <i>Kalama Beach Co. Park (Beach)</i>	000679	HIW00023		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b> .	2,3,5
Kalama Beach station	6-EL7	HIW00168			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Kamaole Beach #1 station. <i>Kamaole Beach 1</i>	000681	HI761092		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b> .	2,3,5
Kamaole Beach #2 station <i>Kamaole Beach 2</i>	000682	HI097179		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b> .	2,3,5
Kihei Coast-South Kam II	6-EL8	HIW00071			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Kamaole Beach #3 station <i>Kamaole Beach 3</i>	000683	HI496115			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Keawakapu Beach station <i>Keawakapu Beach</i>	000685	HI607763		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b> .	2,3,5
Kihei Coast-Keawakapu	6-EL9	HIW00074			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Kihei North station <i>Mai Poina Oe Iau Beach Co. Pk. (Kihei N. station)</i>	000671	HI715975			Modified	CGS, CIC	Station name changed to include Mai Poina Oe Iau Beach	3,5
Kihei South station <i>Kalepolepo (Waimahaihai)</i>	000676	HIW00141		entero	Modified, New Listing	NND, NL, CIC	<b>ASSIGN cat. 5;</b> The assessment of new data documents indicate that applicable WQS are not being attained for entero. <b>Assign cat. 3*</b> .	2,3,5
Kihei Coast-Lipoa South	6-EL10	HIW00072			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Ulua Beach station <i>Ulua Beach Park</i>	000686	HI588333			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Launiupoko Wayside Park station <i>Launiupoko St. Wayside Park</i>	000694	HI558359		entero	Modified	NND, NL, CIC	<b>ASSIGN cat. 5;</b> The assessment of new data documents indicate that applicable WQS are not being attained for entero. <b>Assign cat. 3*</b>	3,5

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2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Kihei Coast-Luana Kai	6-EL11	HIW00041			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Kihei Coast - Maui Coast	6-EL12	HIW00073			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Kihei Coast-Mokulele	6-EL13	HIW00042			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Kihei Coast-Kulanihako	6-EL14	HIW00043			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Ma'alaea Condo station <i>Ma'alaea Beach</i>	000687	HI058731		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b> .	2,3,5
Maalaea Small Boat Harbor station <i>Ma'alaea Small Boat Harbor</i>	000659	HIW00140			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Maalaea Boat Harbor station <i>Ma'alaea Boat Harbor station*</i>	6-EL15	HIW00082			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Mai Poina Oe Iau Station <i>Mai Poina Oe Iau Beach Co. Pk</i>	000702	HIW00025			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Makena Beach station <i>Oneloa Beach (Big Beach) (Makena Bch Station)</i>	000661	HI279887			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Teen Challenge (mi 14) station <i>Olowalu (Teen Challenge)</i>	000697	HI491359		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b> .	2,3,5
Pa'ia Outfall station <i>Lower Pa'ia (Pa'ia Outfall station)</i>	000664	HI864937		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b> .	2,3,5
Pu'unoa (Baby) Beach station <i>Pu'unoa Beach</i>	000696	HI373055		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b> .	2,3,5
Spreckelsville Beach station <i>Spreckelsville</i>	000700	HI789952		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b> .	2,3,5
Ukumehame Beach station	000698	HI814309			Modified	CIC	<b>Assign cat. 3*</b> .	3,5

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2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Wailea Beach Station <i>Wailea Beach Park</i>	000691	HI278988		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*.</b>	2,3,5
West Maui Coast- Hanakeana Cove	6-EL16	HIW00044			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
West Maui Coast- Kahana Cove	6-EL17	HIW00045			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
West Maui Coast-Kahana Sunset	6-EL18	HIW00075			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
West Maui Coast-Kahana Village	6-EL19	HIW00076			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
West Maui Coast -Kaopala Bay	6-EL20	HIW00046			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
West Maui Coast- Nearshore waters to 60' from Honolua - Lahaina	6- WMC- L	HIW00060			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Olowalu Shore Front station <i>Olowalu (Shorefront)</i>	000663	HIW00021			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
West Maui Coast-Lokelani	6-EL21	HIW00077			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Lahaina Small Boat Harbor station <i>Lahaina Small Boat Harbor</i>	000657	HIW00137			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Mala Warf – West Maui Coast	6-EL22	HIW00123			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
West Maui Coast-Napili Bay	6-EL23	HIW00078			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Mala Wharf station <i>Mala Wharf</i>	000662	HIW00171			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Waihikuli Beach station <i>Waihikuli State Wayside Park</i>	000678	HI169380			Modified	CIC	<b>Assign cat. 3*.</b>	3,5

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MAUI								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Sheraton Kaanapali Shoreline station <i>Ka'anapali (Sheraton Kaanapali Shoreline)</i>	000666	HIW00022			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Hale Onoloa Condominium Shore station <i>Honokowai Beach Co. Pk. (Hale Onoloa Condo)</i>	000651	HI412391			Modified	TC, CIC	Station name changed to Honokowai Beach Park	3,5
Mahinahina Condo Shoreline station. <i>Kahana (Mahinahina Condo Shoreline)</i>	000660	HI160433			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Fleming Beach station <i>Kapalua (Fleming's) Beach</i>	000650	HI391006			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
West Maui Coast -S-Turns (Pohaku)	6-EL24	HIW00047			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
West Maui Coast-Papakea	6-EL25	HIW00079			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
West Maui Coast- Puamana	6-EL26	HIW00080			Modified	CIC	<b>Assign cat. 3*</b> .	3,5
Fleming Beach North station <i>Fleming Beach North</i>	000674	HI253548		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*</b> .	2,3,5

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MOLOKAI								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Kawaaloo and Moomomi Bays <i>Kawa'aloa Bay</i>	MO-KMB-L	HI384043			Modified	CGS, CIC	2004 station separated into 2 distinct bays. This 2006 station is for Kawa'aloa Bay. <b>Assign cat. 3*</b> .	3,5
Kawaaloo and Moomomi Bays <i>Mo'omomi Beach</i>	MO-KMB-L	HI204811			Modified	CGS, CIC	2004 station separated into 2 distinct bays. This 2006 station is for Mo'omomi Bay. <b>Assign cat. 3*</b> .	3,5
South Molokai-Nearshore waters to 18' from southwest point - Waialua	MO-SMC-L	HIW00052			Modified	CIC	<b>Assign cat. 3*</b> .	3,5

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HAWAII (BIG ISLAND)								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Hapuna Beach station <i>Hapuna Beach St. Rec. Area</i>	001200	HI621002		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*.</b>	2,3,5
Hilo Bay inshore of Breakwater and near shore waters from Wainaku to Paukaa	11HB-L	HIW00098			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Hilo Bay Boat Landing station <i>Hilo Bay (Boat Landing)</i>	001106	HIW00027			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Hilo Bay Canoe Beach station <i>Hilo Bay (Canoe Beach)</i>	001138	HI315019			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Exit of Ice Pond station <i>Hilo Bay (Exit of Ice Pond)</i>	001102	HI659453	entero		Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*.</b>	2,3,5
Hilo Bay Lighthouse station <i>Hilo Bay (Ligh</i>	001107	HIW00028			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Hilo Bay Offshore station <i>Hilo Bay (Offshore)</i>	001141	HIW00031			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Honoli'i Cove station <i>Honoli'i Beach Co. Park</i>	001110	HI857411			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Leleiwi Beach Park station <i>Leleiwi Beach Co. Pk.</i>	001121	HI540868	entero		Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of new data documents indicate that applicable WQS are now being attained for entero, resulting in a category change from 5 to 2. <b>Assign cat. 3*.</b>	2,3,5
Kailua Pier A-1 station <i>Kamakaokahonu (Kailua Pier A-1)</i>	001205	HI261474		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*.</b>	2,3,5
Kawaihae Harbor/ Pelekane Bay	12KH/ PB	HIW00155			Modified	CIC	<b>Assign cat. 3*.</b>	3,5

2006 State of Hawaii Water Quality Monitoring and Assessment Report

HAWAII (BIG ISLAND)								
2004 Segment 2006 Segment (if altered)	2004 Stn. ID	2006 Assmnt ID	2004 Pollutants	2006 Pollutants	Decision Action	Summary Rationale	Reason for Changes of Category	2006 Cat.
Spencer Beach Park station <i>Spencer Beach Co. Pk.</i>	001225	HI936372		entero	New Listing	NND, DL, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*.</b>	2,3
Kealakekua Bay - off curio stand station <i>Kealakekua Bay (Off Curio Stand)</i>	001211	HIW00183			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Kolekole Gulch station <i>Kolekole Beach Co. Park</i>	001118	HI693485			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Magic Sands Beach station <i>White Sands Beach Co. Pk. (Magic Sands)</i>	001215	HI436267		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*.</b>	2,3,5
Vacationland station <i>Kapoho Tidepools (Vacationland)</i>	001142	HI122881		entero	Modified	NND, A2, CIC	<b>Correction:</b> Correct station number from 1142 to 001142. <b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*.</b>	2,3,5
Puala'a Beach Park station <i>Analani Pond (Puala'a Beach Park Station)</i>	001143	HI707059			Delist, Modified	NND, DL, A2, CIC	<b>DELIST;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*.</b>	2,3
Puhi Bay #3 station <i>Onekahakaha Beach Co. Pk. (Puhi Bay #3)</i>	001130	HIW00029			Modified	CIC	<b>Assign cat. 3*.</b>	3,5
Richardson Ocean Center station <i>Lelewi Beach Co. Pk. (Richardson Ocean Ctr.)</i>	001136	HIW00030		entero	Modified	NND, A2, CIC	<b>Assign cat. 2;</b> The assessment of the last 3 years of data documents indicate attainment status for entero. <b>Assign cat. 3*.</b>	2,3,5
Wailoa River Boat Ramp station <i>Wailoa River (Boat Ramp)</i>	001132	HIW00172			Modified	CIC	<b>Assign cat. 3*.</b>	3,5



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**2006 STATE OF HAWAII WATER QUALITY MONITORING AND  
ASSESSMENT REPORT:**

Integrated Report To The U.S. Environmental Protection Agency and The U.S. Congress  
Pursuant To Sections §303(D) and §305(B), Clean Water Act (P.L. 97-117)

**Chapter II  
Inland Freshwaters**



Hawaii State Department of Health  
Environmental Planning Office  
Prepared by L. Koch, D. Penn and H. Lao

January 11, 2008

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Dr. Letty Colmenares, Windward Community College

## EXECUTIVE SUMMARY

The 2006 Integrated Report is the first effort by the Hawaii State Department of Health (DOH) to integrate both reporting requirements of the Clean Water Act (CWA) §305(b) and §303(d). The CWA §305(b) requires states to describe the overall status of water quality statewide and the extent to which water quality provides for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreational activities in and on the water. The CWA §303(d) requires States to submit a list of Water Quality-Limited Segments, plus a priority ranking of listed waters, based on the severity of pollution and the uses of the waters. This report must be submitted by DOH to EPA for approval by April 1, 2006. Computation of Total Maximum Daily Loads (TMDLs) for all §303(d)-listed pollutant/waterbody combinations, prepared in accordance with the priority rankings, must follow with EPA approval of each state's List.

Hawaii's 2004 §303(d) List, plus readily-available data collected from any State water bodies over the past six years constitute the information reviewed for this 2006 Integrated report. Decisions to list, de-list or not list a waterbody, for which data exist and have been reviewed, must be documented (40 CFR §130.7). The periodic listing process allows DOH to list, delist, or more clearly articulate or delineate the parameters for which the waterbodies are listed.

Public health concerns may be underreported. Leptospirosis is not included as a water quality standard parameter. However, all freshwaters within the state are considered potential sources of Leptospirosis infection by the epidemiology section of the Hawaii State Department of Health. No direct tests have been approved or utilized to ascertain the extent of the public health threat through water sampling. Epidemiologic evidence has linked several illness outbreaks to contact with freshwater, leading authorities to issue blanket advisories for all fresh waters of the state. Additionally, there are several locations that have been identified and posted as areas where fish and shellfish should not be consumed. These areas include: Pearl Harbor, Ala Wai Canal and urban streams of Honolulu. Contamination of fish and shellfish include organochlorine pesticides and/or PCBs and lead.

DOH's 2006 303(d) List contains a total of 93 stream segments. Kolekole stream on Hawaii was entirely delisted and several modifications for other waterbodies were made within listings. Seventeen new streams were listed. Within the 93 listed inland freshwater perennial streams, there were a total of 296 individual pollutant/waterbody combinations. The most common listing was turbidity with 101 instances of exceedance. The next most common listings were Nitrite/Nitrates, Total Nitrogen, and Total Phosphorus with 75, 67, and 41 instances of exceedance, respectively. There were 5 instances of Dieldrin listings, 2 Chlordane, 2 Total Suspended Solids, and 1 listing for Metals/Lead.

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## **PART A. INTRODUCTION**

The federal Clean Water Act (CWA) requires states to prepare and submit biennial reports of waterbodies that have been assessed. These reports have previously been separated into two final components. One report identifies waterbodies that are not expected to meet state water quality standards, even after application of technology-based effluent limitations. This component is referred to as the 303(d) List of Impaired Waters, the 303(d) List, or simply “The List.” States are required to obtain and review all existing and readily available surface water quality data and related information to compare against the state’s Water Quality Standards, and after applying listing criteria, make a decision as to the level of impairment for that waterbody. The List requirements apply to water bodies impaired by point and/or nonpoint sources of pollution and include a requirement for listing of those pollutants for which applicable water quality standards are exceeded. The second required report is prepared under section 305(b) of the Clean Water Act, where states are required to report biennially on the overall status of water quality. EPA’s guidance for compiling the 2006 Integrated Report for 303(d)/305(b) <sup>1</sup> urges states to integrate their 303(d) Lists and 305(b) Reports to ensure that consistent methodologies are applied in the preparation of both documents. EPA recommends that states sort their surface waters into 5 Categories according to the following guidance:

Category 1: All designated uses are supported, no use is threatened.

Category 2: Available data and/or information indicate that some, but not all of the designated uses are supported.

Category 3: There is insufficient available data and/or information to make a use support determinations.

Category 4: Available data and/or information indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed.

4a. A TMDL to address a specific segment/pollutant combination has been approved or established by EPA.

4b. A use impairment caused by a pollutant is being addressed by the state through other pollution control requirements.

4c. A use is impaired, but the impairment is not caused by a pollutant.

Category 5: Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed.

Hawaii State Department of Health (DOH) has sorted State surface waters into these five categories, insofar as sorting decisions are supported by the available data.

The 2006 List of Water Quality-Limited Segments, plus a priority ranking of listed waters, based on the severity of pollution and the uses of the waters, must be submitted by DOH to EPA for approval by April 1, 2006. Total Maximum Daily Loads (TMDLs) for all listed pollutant/waterbody combinations are prepared in accordance with the priority rankings and the State-EPA schedule for submission for TMDLs. This schedule is negotiated on a continuing

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<sup>1</sup> Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (July 29, 2005)

basis and is influenced by federal funding, state policy, data availability and a host of other factors, which vary from year to year.

Hawaii's 2004 List plus data collected from State water bodies over the past six years constitute the body of information reviewed for the 2006 Integrated Report. Decisions to list, de-list or not list a water body, for which data exist and have been reviewed, must be documented (40 CFR §130.7). The periodic listing process allows DOH to list waterbodies which, after recent sampling, show exceedances of numeric water quality criteria; delist waterbodies (from the 303(d) section), which do not, after further sampling, show exceedances for listed parameters; and more clearly articulate the parameters for which previously listed waterbodies should be listed.

DOH's 2006 Integrated Report, 303(d) List of Impaired Waters contains a total of 93 stream segments for which decisions of attainment or non-attainment reflect the waterbodies status as impaired. One stream was entirely delisted and there were many changes within the parameters of listed waterbodies. Usually, DOH reports the previous year totals plus any new additions to the list. However, this year DOH has segregated the decision units to classify the waters into waterbody types as described in HAR §11-54-1. Therefore, the comparison between the 2004 List and that presented in the 2006 Report is somewhat more complicated. DOH has attempted to clearly articulate the fate of previously listed waterbodies in the table of changes. There were 17 new inland water segments listed for 2006.

## **PART B. BACKGROUND INFORMATION**

### **B.1. Scope of Waters in the Integrated Report**

This chapter covers all freshwaters of salinity less than 0.5 parts per thousand. The original visual non-attainment data reports from the 1998 303(d) List were revisited to determine the geographic scope of the original listings. Waterbodies were partitioned according to HAR §11-54-1 by type and then listings renewed accordingly. Please see methodology section, Part C.2. for details regarding decision units for attainment decisions.

## **PART C. SURFACE WATER MONITORING AND ASSESSMENT**

### **C.1 Assessment Methodology**

#### **Basic Attainment Decision Unit**

As in previous Clean Water Act Section 303(d) listing cycles (and reflected in past/present 303(d) listing criteria, the basic (Tier I) attainment decision unit (hereafter "ADU" or "decision unit") for fresh inland Hawaii waters is the entire network (EN in report tables) of hydrologically connected freshwater segments (salinity <0.5 ppt) associated with a single listed stream, stream segment, or stream tributary. These freshwater segments, and thus the basic ADU, can include one or more waterbody types [as defined by Hawaii Administrative Rules Title 11 Chapter 54 (HAR §11-54; see Tables 2. and 3.), including but not limited to intermittent streams, reservoirs, and wetlands.

#### **Tiered Approach**

A tiered approach, linked with the assessment decision criteria first adopted in the 2002 303(d) listing cycle, is currently used to refine decision units for freshwater stream networks. Tier I ADUs are used for initial attainment decisions as governed by the current 303(d) listing criteria and for defining the geographic scope of "legacy" listings based on visual assessments. Tier II decision units encompass segments and partial segments that can be more narrowly defined and assessed based on existing monitoring locations, data, and boundaries between waterbody types, and are used for attainment decisions on a case-by-case basis. Tier III decision units are those established for TMDL development and other intensive monitoring and analysis purposes. Tier IV decision units are parts of Tier III decision units that can be defined based on the most detailed assessment information. Examples of Tier I, II, and III decision units are discussed below. Although no Tier IV freshwater decision units have been established for this reporting cycle, the 2006 Integrated Report guidance provides a summary of factors that can be used to structure the Tier IV decision process (see **Future Directions** below).

#### **Decision Unit Rationale and Implementation**

Decision units, in general, are intended to represent a combination of hydrologic and regulatory truth and are constrained by water quality monitoring logistics, resources and data. DOH's current focus on defining attainment decision units for streams is based on:

- (a) an assumption that streams as the most widespread fresh inland waterbody type and the most important fresh inland waterbody type to assess for reaching marine water quality goals;
- (b) the lack of numeric water quality standards criteria for conventional chemical and physical pollutants in most other fresh waterbody types; and
- (c) the unavailability of a complete comprehensive waterbody inventory and present limitations for monitoring and assessing all waterbodies, water quality criteria, and use attainment within each waterbody type.

ADUs for fresh inland Hawaii waterbodies do not include marine waters or inland brackish or saline waterbody types, such as estuaries and anchialine pools. Thus in the 2006 Integrated Report, the estuary components of previously listed stream systems (inland brackish waterbodies) are explicitly removed from the freshwater listing, and the freshwater tributary networks of these estuaries are explicitly added if they were not previously listed (see Table 1):

**TABLE 1. Revised Decision Units for Stream Systems**

Previously Listed Stream System/Estuary	Newly (N)/ Previously (P) Listed Freshwater Tributaries
Wailoa River (Hawaii)	Alenaio (P)
	Waiakea (P)
Kahaluu (Oahu)	Kahaluu (P)
Kiiikii (Oahu)	Poamoho (N)
	Kaukonahua (N)
Paukauila (Oahu)	Opaeuila (N)
	Helemano (N)
Anahulu (Oahu)	Kawailoa (N)
Waimea (Kauai)	Waimea (P)

As noted above, Tier II decision units encompass segments and partial segments that can be more narrowly defined and assessed based on existing monitoring locations, data, and boundaries between waterbody types. Tier II attainment decisions for three stream segments are included in the 2006 Integrated Report:

- Kalauao (Oahu) – Lack of appropriate upstream sampling locations prohibits a Tier I decision unit. Based on data from two downstream sampling locations and an assessment of upstream flow conditions, a Tier II decision unit is established in the stream segment from the H-I freeway down to the brackish receiving waters (Pearl Harbor Estuary).
- Moanalua (Oahu) - Lack of appropriate upstream sampling locations prohibits a Tier I decision unit. Based on data from two downstream sampling locations and an assessment of upstream flow conditions, a Tier II decision unit is established in the stream segment from DOH's current upstream sampling location (3-3-12-U) down to the marine receiving waters (Keehi Lagoon).
- Hanamaulu (Kauai) – Lack of sufficient data from an upstream sampling location prohibits a Tier I decision unit. Based on data from a downstream sampling locations and an assessment of upstream flow conditions, a Tier II decision unit is established in the stream segment from DOH's current upstream sampling location (2-3-12-U) down to the marine receiving waters (Hanamaulu Bay)

Decision unit boundaries for other fresh inland waterbody types are defined on a case-by-case basis when monitoring data and other assessment information is available, but generally encompass the entire waterbody. Attainment decisions for three non-stream waterbodies are included in the 2006 Integrated Report:

- Kawainui Marsh (Oahu) – Major wetland component of stream network separated as a Tier II decision unit from downstream receiving segment (Kawainui Stream) and upstream tributary segment (Kapaa Stream).
- Salt Lake (Oahu) – Tier I "legacy" decision unit (waterbody type under review).
- Wahiawa Reservoir (Oahu) - Impoundment of the north and south forks of Kaukonahua Stream separated as a Tier III decision unit from downstream receiving segment (Kaukonahua Stream) and upstream tributary segments.

### **Decision Unit Delineation, Naming, Coding, and Geolocation**

Numerous conventions for naming, coding, and geolocating Hawaii waterbodies and decision unit boundaries discussed above have been designed and used over time. Building a comprehensive statewide waterbody inventory that standardizes these conventions for use by DOH and others is an ongoing, intergovernmental resource management task (see **Future Directions** below). In the 2006 integrated Report, waterbody IDs for freshwater decision units are based upon the Hawaii Stream Assessment (HSA) Coding System (Hawaii Cooperative Park Service Unit, 1990). Modifications to the HSA include:

- All "s" code suffixes [identifying "stream systems," which by DOH definition (HAR §11-54) includes estuaries] in the 2004 reporting are removed from the freshwater codings for this 2006 Integrated Report.
- New suffixes are added to stream codes to indicate non-stream components of the freshwater hydrologic network, e.g. "W" for wetland (see Kawainui Marsh, Oahu, 3-2-13-W) and "R" for reservoir (see Wahiawa Reservoir, Oahu, 3-6-06.02-R), and "E" for estuary (see Kiikii Estuary, Oahu 3-6-06-E).
- Codes not included in the HSA report are created by employing the conventions described in the HSA report, consultation with related coding systems [primarily those employed by the State of Hawaii Department of Land and Natural Resources (Commission on Water Resource Management and Division of Aquatic Resources)], or using other specific rationale devised by DOH.

Geolocation of freshwater decision units is based upon various public domain digital coverages, DOH field data (GPS coordinates, station descriptions, field mapping, stream surveys, and stream assessments), and similar spatial location data submitted with third-party data packages.

### **Application of the criteria to attainment decisions**

For streams, 303(d) listings apply to the entire freshwater (<0.5 parts per thousand-salinity) portion of a stream system (including all hydrologically-connected reaches) unless a case is documented in which smaller decision units are justified. Similarly, for other waterbody types, 303(d) listings apply to the entire freshwater (<0.5 parts per thousand-salinity) portion of the waterbody (including all hydrologically-connected reaches) unless a case is documented in which smaller decision units are justified. During the course of DOH water quality monitoring and watershed analysis and planning, these hydrologic networks may be partitioned into smaller decision units and information may be gathered (including new monitoring data) to support attainment decisions for these smaller units.

We urge non-DOH entities conducting similar monitoring, analysis, and planning activities to consult with DOH about sampling designs and information management protocols that will facilitate DOH's ability to use secondary data for attainment decisions. The entire hydrologic network within a watershed is the largest possible unit of decision units for inland fresh water bodies, and may include the boundaries of the following waterbody types as defined by HAR §11-54-1.

**TABLE 2. Applicable Water Quality Criteria and Decision Unit Boundaries for Inland Fresh Waterbodies**

Waterbody type <sup>1</sup>	Applicable Water Quality Criteria <sup>2</sup>	Decision unit boundary <sup>3</sup>
Flowing seep	Basic/Recreational	Flowpath/Flow surface
Flowing spring	Basic/Recreational	Flowpath/Flow surface
Elevated wetland	Basic/Recreational/Wetland	1987 Corps delineation <sup>4</sup>
Low wetland	Basic/Recreational	1987 Corps delineation <sup>4</sup>
Intermittent stream	Basic/Recreational/Water Column/Bottom	Entire network or sub-network <sup>5</sup>
Perennial stream	Basic/Recreational/Water Column/Bottom	Entire network or sub-network <sup>5</sup>
Natural freshwater lake	Basic/Recreational	Lake
Freshwater impoundment <sup>6</sup>	Basic/Recreational	Impoundment
Reservoir	Basic/Recreational	Reservoir
Ditch	Basic/Recreational	Ditch
Flume	Basic/Recreational	Flume
Drainage ditch <sup>7</sup>	Basic/Recreational	Drainage ditch
Canal <sup>7</sup>	Basic/Recreational	Canal

<sup>1</sup>Inland freshwater (<0.5 ppt dissolved organic ion concentration) waterbody types as defined by Hawaii Administrative Rules Title 11 Chapter 54, Water Quality Standards (HAR §11-54-1). These definitions are applied to the definition of decision units.

<sup>2</sup>Basic criteria (Narrative "free of" and numeric standards for toxic pollutants) established by HAR §11-54-4; Specific (numeric) criteria for inland recreational waters established by HAR §11-54-8(a); Specific (numeric) criteria for stream water column established by HAR §11-54-5.2(b); Specific (numeric) criteria for stream bottom established by HAR §11-54-5.2(b)(2); Specific (numeric) criteria for elevated wetlands established by HAR §11-54-5.2(c).

<sup>3</sup>HAR §11-54-5.1(a) establishes a system of waterbody classification (waterbody class is defined by underlying land use classification) and associated designated uses.

<sup>4</sup>HAR §11-1: "... the identification and delineation of wetland boundaries shall be done following the procedures described in the U.S. Army Corps of Engineers Wetlands Delineation Manual (USACE 1987)."

<sup>5</sup>According to HAR §11-54-1 "'Stream system', means the aggregate of water features comprising or associated with a stream, including the stream itself and its tributaries, headwaters, ponds, wetlands, and estuary. A stream system is geographically delineated by the boundaries of its drainage basin or watershed." For stream attainment decision purposes, "associated" is interpreted as "hydrologically connected," and estuaries, ditches, flumes, drainage ditches, and canals are not included in the assessment.

<sup>6</sup>This waterbody type is not defined by rule but is included in the definition of "Standing waters."

<sup>7</sup>These waterbody types are not defined by rule but are included in the definition of "State waters."

DOH encourages monitoring, analysis, and planning activities that acknowledge and consider the regulatory boundaries between specific waterbody types, and that demonstrate a rationale for segmenting each waterbody into smaller decision units. The 2006 Integrated Report guidance provides a summary of factors to consider in developing these rationales:

- Partition waters to represent homogeneity in expected (v. actual) physical, biological, and chemical conditions
- Segmentation reflects *a priori* knowledge of flow, channel morphology, substrate, riparian conditions, adjoining land uses, confluence with other water bodies, and potential sources of pollutant loadings
- The expected natural variability of the measured criteria associated with the WQS
- Physical characteristics of the waterbody (segment)
- Time of travel of a parcel of water in the waterbody or segment
- The amount and type of data and information necessary to provide a reasonable accurate characterization of the criteria (or core indicators) associated with the designated uses in the segment or waterbody
- Any expected changes in significant influences in the watershed (Land use, point or nonpoint sources of pollutants)
- Any site-specific concerns such as patchy or unique habitat distribution patterns or biological population distributions
- Segments should be small enough to represent a relatively homogeneous parcel of water (with regard to hydrology, land use influences, pollutant loadings, etc.).

### **Methodology for Attainment Decisions**

To provide both documentation and consistency when making listing decisions, DOH has utilized the same methodology as for preparing the 2004 List (Appendix A). The "2004 Listing & Delisting Criteria for Hawaii State Surface Waters Compiled under Clean Water Act 303(d)" describes the sources of Hawaiian water quality data, data quality requirements, limit on the age of data and sample sizes, and the amount of narrative information needed to sort data into one of three priority categories. Use of these standardized criteria will enable the DOH to periodically collect and/or assess data sets and make decisions on whether a water body should be listed, delisted or not listed in any subsequent listing cycle. The steadfast requirement for photographs is flexible for coastal areas. Photos are still required for inland waters to ensure location information is correct. Many places in Hawaii are named identically; photos help to identify the exact location of the sampling event.

Please note that the same information requirements apply to delisting as well as listing decisions. Data sets and supporting documentation were evaluated against both numeric and narrative criteria where applicable. For streams, listings generally apply to the entire freshwater (<0.5 parts per thousand-salinity) portion of a stream system unless a case is documented in which the watershed approach is not applicable.

State Water Quality Standards (WQS)<sup>2</sup> for conventional pollutants, such as nutrients and sediments, are expressed in a statistical format that presents criteria in the form of geometric means not to be exceeded by the geometric mean values computed from data sets. Two storm event allowances are included (the 10% geometric mean, not to be exceeded by more than 10% of the sample values, and the 2% geometric mean, not to be exceeded by more than 2% of the sample values). The WQS are further divided into "wet" and "dry" criteria, which, for streams, refer to the "wet" season as November through April and the remainder of the year as the "dry" season. For embayments and coastal waters, these terms refer to shorelines where more than 3 million gallons per day (mgd) of water are discharged from land per shoreline mile ("wet") and shorelines with less than 3 mgd discharge ("dry").

In accordance with the priority ranking and listing/delisting criteria (Appendix A), waterbodies were sorted into one of three priority categories. Priority 1 waters have sufficient data to clearly support a listing/delisting decision based on separate wet and/or dry conditions. Priority 2 waters have limited data, which requires DOH to use a weight-of-evidence approach for listing/delisting decisions. Priority 3 waters have extremely limited data and require future monitoring before a listing decision can be made. For conventional pollutants, a minimum of ten samples from the wet season and/or ten samples from the dry season is required for Listing Priority 1 eligibility<sup>3</sup>. A minimum sample size of ten from a combined grouping of wet and dry conditions is required for Listing Priority 2a, and five to nine samples are required for eligibility for Listing Priority 2b. Any fewer than five samples result in the assignment of the water body and its numeric data into Listing Priority 3 (waters needing additional monitoring before a decision can be made to list, or not list).

When sample sizes are near ten, only the overall sample geometric mean can be computed. If larger sample sizes are available, the sample measurements can be sorted into 10%, 2%, wet and dry criteria tables as a function of the number of measurements available in any of these categories. FIGURE 1 illustrates the general process for priority ranking and listing/delisting conventional pollutants.

For toxic pollutants such as pesticides and heavy metals, which often require expensive analyses, a minimum sample size of three is required for eligibility for Listing Priority 1. Toxic pollutants are characterized by freshwater and saltwater acute and chronic concentration criteria and fish consumption criteria. FIGURE 2 describes the general process for priority ranking and listing/delisting toxic pollutants.

Criteria for indicator bacteria, used to evaluate waters for public health risks, are now both utilizing enterococci for inland and marine waters. Indicator bacteria counts are evaluated using data within a 25 to 30 day temporal increment and also contain applicable single sample maximum values.

Biological surveys of aquatic communities, fish consumption advisories and reports of contaminated sediments are also eligible sources of listing information. These surveys are most

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<sup>2</sup> Hawaii Administrative Rules, Chapter § 11-54

<sup>3</sup> These priority listings are also applicable to marine systems where the freshwater discharge volume determines wet and dry conditions.

likely to be placed in Listing Priority 3. Data sets for evaluation of narrative criteria must include at least 3 sampling events and represent conditions in both the wet and dry seasons. These narrative criteria may be evaluated using DOH-approved habitat or biological assessment methodologies as long as they can be directly correlated to specific narrative criteria in HAR §11-54-04. Also, in accordance with HAR §11-54-04(b)(2)(A), acute toxicity standards for the contamination of sediment may be evaluated using broadly accepted standards such as those developed in Canada and New York, provided that DOH deems them appropriate for use in the Hawaiian environment (CCME 1999; NYSDEC 1999). FIGURE 3 describes the general process for priority ranking and listing/delisting based on narrative criteria.

Basic methods for analysis remained the same among all data sources reviewed. Data were combined and sorted by station number based on the coding system adopted from the Hawaii Stream Assessment (COWRM and NPS 1990). DOH is currently working on refining this coding system. Please see discussion of coding and decision units found in Part C.2. Data for all streams were separated into the three priority categories according to sample size. All data sets were distributed over time (within the six-year window from 1999-2005) and space (for inland waters, from upper and lower sampling sites. For instance, if several data values were available from one day and one site, the geomean would not be deemed sufficiently representative (temporally) to support a listing decision. More data would need to be collected to evaluate that waterbody. Photographs, visual assessments, written descriptions and appropriate QA/QC measures also should exist for the sampling sites.

### **Basic Process for Priority Ranking and Listing/Delisting Conventional Pollutants (FIGURE 1)**

Priority 1 waterbodies were sorted by station number. The data were then reviewed to determine whether 10 samples existed for comparison to either the wet or the dry season standard. If a waterbody had 10 samples in the wet or dry condition or both, the samples were sorted by condition, and the geometric mean was calculated and evaluated against the corresponding wet and/or dry season standards. In Chapter IV, the decision is represented by: A = attainment or N = non-attainment.

Likewise, Priority 2a waterbodies were sorted by station number. If at least 10 samples were spread between both wet and dry conditions, the data were combined and the geometric means for each waterbody were first evaluated against the wet season standard, then if >5 dry samples exist, tested against the dry season standard. If data from wet and dry seasons are combined because insufficient sample sizes exist to evaluate against the standards separately and the geometric mean of these data only exceeds the dry standard, a majority (>50%) of the raw data from dry seasons must exceed the dry standard to warrant listing. In Chapter IV, the decision for combined data is represented by: Ac = attainment (combined data) or Nc = non-attainment (combined data).

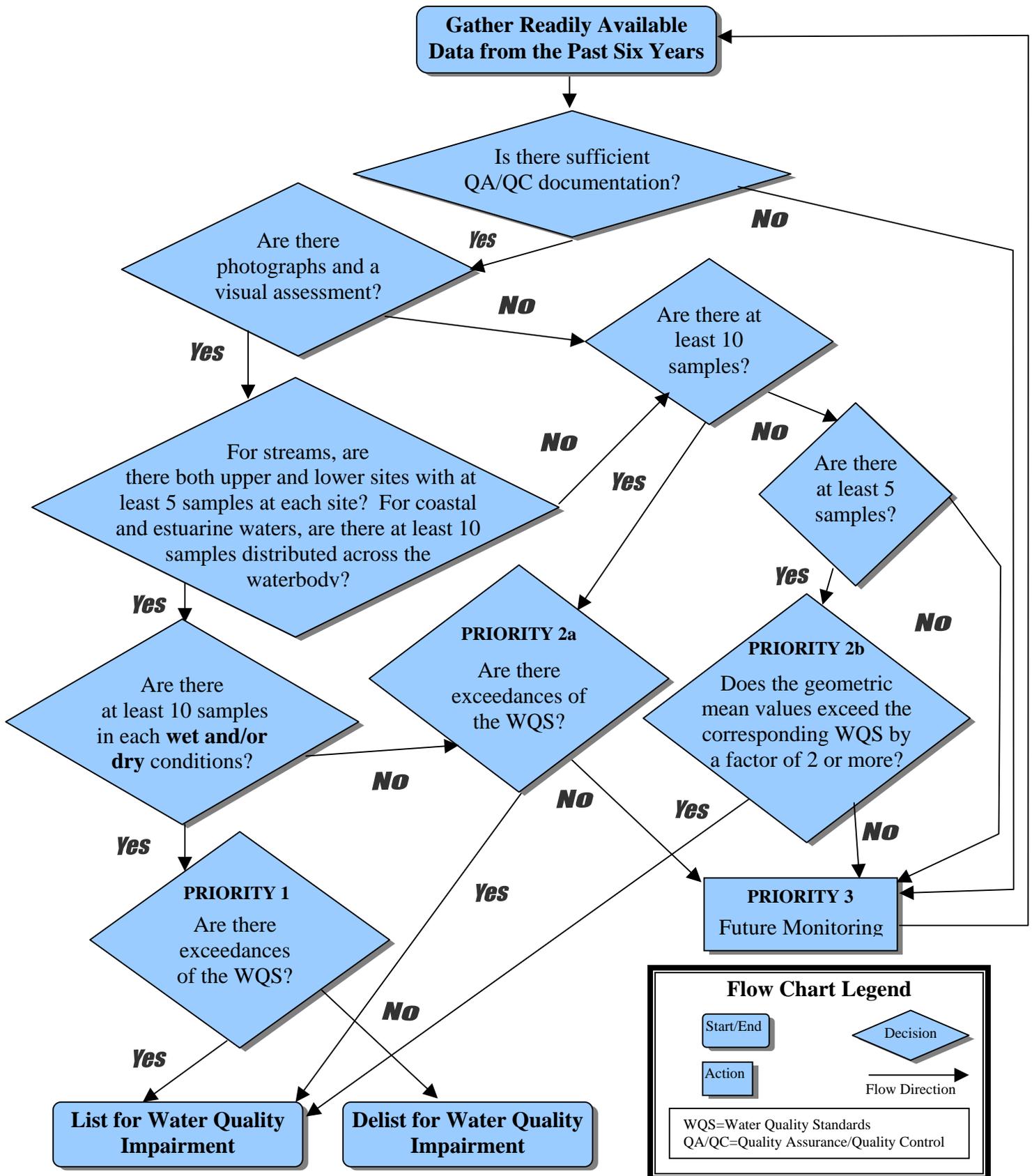
The Listing Criteria specifies that for statistical significance, the “10% of the time” criteria be evaluated with a minimum sample size of 100 samples, allowing for 10+ samples being above the 10% threshold. The “2% of the time” criteria are evaluated with a minimum sample size of 500 samples, allowing for 10+ samples being above the 2% threshold. DOH believes that

environmental variability precludes the application of these criteria to smaller data sets due to the sizeable fluctuations that occur in natural systems. For example, if there were 10 data points, only 2 would be required to exceed the 10% rule, and it would require 50 data points for 2 to exceed the 2% rule. If, by chance the sampling event occurred temporally near a significant rain event, the data could be biased toward an unrealistic exceedance. In many instances, due to Hawaii's storm prone events, this could be the case. If we applied the 10% or 2 % rule, many waterbodies may be listed in error. The geometric means method removes this bias in smaller sample sizes and DOH considers it the best way to prevent statistical errors within the data set. In any event, according to the Listing Criteria, the data sets for inland waters were not large enough to apply the 10% or 2% standards, but we have included a table which analyses the data for the 10% and 2% rule with Priority 1 data (at least 10 samples), please see Table 5. Although not utilized for this report, the data is provided to allow commenters an opportunity to evaluate the potential significance of including this evaluation in future listing criteria and reports.

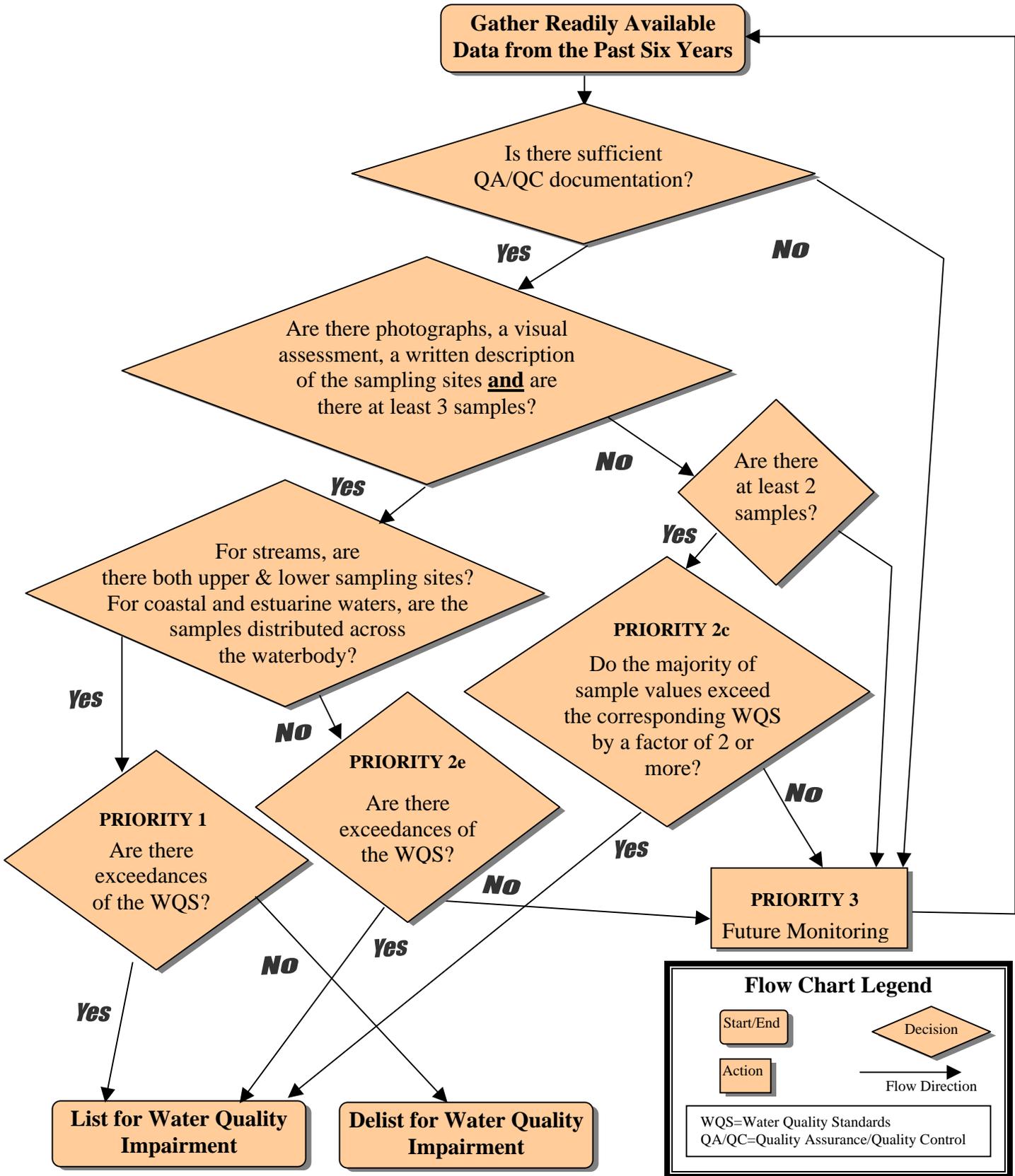
Waterbodies with 5-9 samples were placed in the Priority 2b category, sorted by station number and then reviewed to determine if any of the samples exceeded the corresponding wet or dry season standards. If any of the samples from a particular waterbody exceeded the standard by a factor of 2 or more, the data set was reviewed to see if there were at least 5 samples from the corresponding wet or dry condition. If sufficient data were present, the geometric mean was calculated to determine whether the corresponding standard was exceeded by a factor of 2. In Chapter IV, the decision for combined data exceedance by a factor of 2 is represented by: N1 = non-attainment (X2). Waterbodies and their corresponding conventional pollutant data that did not meet Priority 2 criteria were compiled for future monitoring in Priority 3 and assigned a question mark (?) in Chapter IV.

**FIGURE 1: Flow Chart of Priority Ranking and Listing/Delisting Process - Conventional Pollutants**

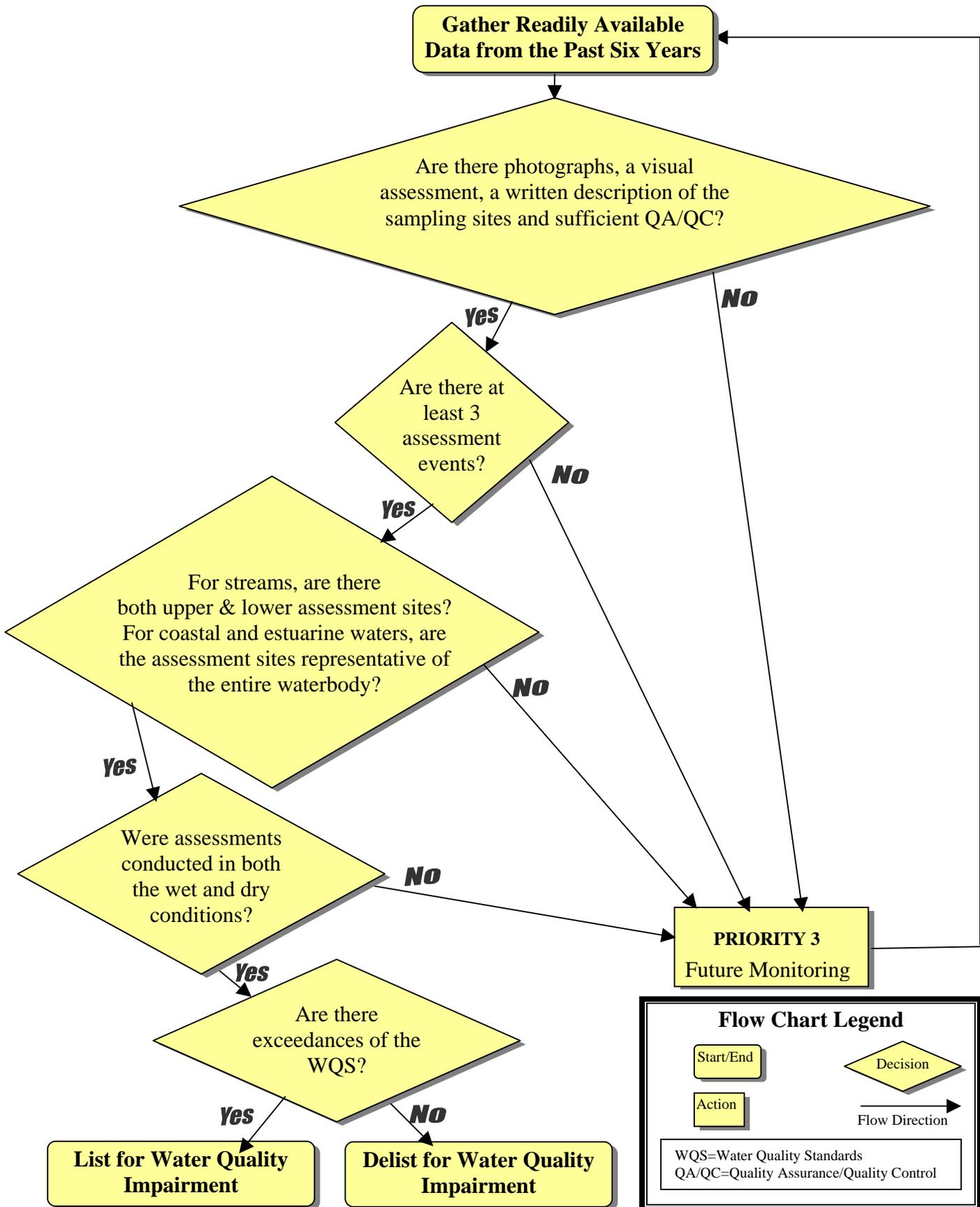
(turbidity, total suspended solids, nutrients, chlorophyll a, temperature, dissolved oxygen, pH and indicator bacteria)



**FIGURE 2: Flow Chart of Priority Ranking and Listing/Delisting Process - Toxic Pollutants**



**FIGURE 3: Flow Chart of Priority Ranking and Listing/Delisting Process -Narrative Criteria**



### Data Sources Reviewed

A formal call for data was published statewide in October 2005; a few responses were received. Environmental Planning Office staff also contacted a variety of organizations seeking water quality data that met minimum requirements. A summary of the communications log is attached as Appendix B. Appendix C summarizes the data submitted for consideration.

Major data sources reviewed include the following:

1. Data collected by DOH's Clean Water Branch  
Environmental Planning Office staff summarized data collected from streams and coastal monitoring sites by the Clean Water Branch, Monitoring Section. Lab samples and field samples were sorted separately using the same methodology.
2. Biological Assessments  
There were no new biological assessments to review.
3. Other Environmental Assessments and Investigations and permit applications  
There were no Environmental Assessments related to surface waters available for this report. Permit files were reviewed for the past 6 years. One data set was found within the files but significant issues were discovered and the data contained inadequate QA/QC to make the data defensible.
4. Other Data Sources

#### Hanalei Watershed areas

Data for turbidity, nutrients and enterococcus from the Hanalei Watershed Hui were reviewed for this report.

#### Heeia Stream, Kapaa Stream and Ka'elepulu area.

Under the supervision of Drs. Leticia Colmenares and Dave Krupp, Windward Community College students have been sampling water quality parameters at a number of sites along Heeia, Haiku and Kapaa, including stream, estuary and coastal areas sampling sites. Data are available at <http://www.wcc.hawaii.edu/usda/Heeia> and <http://www.wcc.hawaii.edu/water/>.

### **Quality Assurance/Quality Control Considerations**

Quality Assurance/Quality Control (QA/QC) procedures document data quality by describing data collection and analysis procedures. QA/QC basically answers the questions "Where did those numbers come from, and why should anyone believe them?" DOH's Clean Water Branch, Environmental Planning Office, and Laboratory operate under the terms of a "Quality Management Plan for Surface Water Quality Monitoring," approved by EPA Region IX and dated December 9, 1999.

The USGS/NAQWA program operates under written QA/QC plans approved by the USGS.

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Various other submitted data were evaluated as to containing accessible written procedures and lab assurance documentation to validate data.

### C.2 Assessment Results

#### C.2.1 Review of Data

##### Inland Streams

Seventy-four streams throughout the islands had sufficient data to evaluate whether an exceedance of the Water Quality Standards occurred. Forty-four of these streams were already listed on Hawaii's 2004 303(d) List for at least one parameter. The majority of the data used for the assessment of fresh waters came from the CWB database. Please see Tables 3 and 4 for summaries of the data evaluation.

##### Bacterial Data

The current WQS require the use of enterococci as the indicator bacteria for evaluating public health risks in inland waters; however, no new data was available for this parameter in inland waters. CWB efforts have been focused on coastal areas. There were no new listings for bacteria based on the data for from the Clean Water Branch.

##### Other Data Sources

##### Hanalei River - Kauai

Data for nutrients and enterococci were available from the Hanalei Watershed Hui for listing/delisting and prioritization decisions. Data were of sufficient quality and were incorporated into the master table.

##### Heeia, Haiku and Kapaa Streams

Sufficient data and QA/QC procedures were available from Dr. Letty Colmenares of Windward Community College for listing/delisting and prioritization decisions. The data represented sampling events over several years in three watersheds. The data agree with those collected by the Clean Water Branch of DOH (where available).

TABLE 3: Analytical Summary of Priority 1 and 2a Data – All Data Combined for Streams

Stream Code	Waterbody Name	Island	Stream on 2004 List (Y/N)	Pollutants on 2004 List	Combined Data for Conventional 1999-2005 Numeric Exceedances				
					TSS	NO3	Total N	Total P	Turb
2-1-12	Limahuli	Kauai	N		NE**	D**	NE**	NE**	NE*
2-1-13	Manoa	Kauai	N		NE*	NE*	NE*	NE*	W*
2-1-14	Wainiha	Kauai	N		NE*	NE*	NE*	NE*	NE*
2-1-17	Waipa	Kauai	N		NE**	NE**	NE**	NE**	NE**
2-1-18	Waioli	Kauai	N		NE**	NE**	NE**	NE**	NE**
2-1-19	Hanalei	Kauai	Y	Turb (V-D)	NE****	NE****	NE****	NE****	D****
2-1-28	Kilauea	Kauai	Y	Turb (W)	NE**	NE**	NE**	NE**	D**
2-1-34	Moloaa	Kauai	N		NE**	NE**	NE**	NE**	W/D****
2-1-35	Papaa	Kauai	N		NE*	D*	D*	NE*	NE*
2-2-01	Anahola	Kauai	N		NE**	NE**	NE*	NE**	W/D****
2-2-04	Kapaa	Kauai	Y	Turb (V-D) Turb (W)	NE*	NE*	NE*	NE*	W/D****
2-2-04.01	Kealia	Kauai	N		-	-	-	-	D**
2-2-08.01	Opaekaa	Kauai	N		-	-	-	-	W*
2-2-08.02	Wailua N. Fork	Kauai	N		NE*	NE*	NE*	NE*	NE***
2-2-08.03	Wailua S. Fork	Kauai	N		-	-	-	-	W***
2-2-12	Hanamaulu	Kauai	Y	Turb (W)					W/D****
2-2-13	Nawiliwili	Kauai	Y	Turb (V-D) Turb (W) NO2-NO3(W) Total N (W)	NE****	W/D****	W/D****	NE****	NE***
2-2-14	Puali	Kauai	Y	NO2-NO3 (W)	NE**	D**	D**	NE**	W*
2-2-15	Huleia	Kauai	Y	Turb (V) NO2-NO3(W)	NE****	D****	D****	NE****	NE***
2-3-02	Waikomo	Kauai	N		NE*	W*	W*	NE*	W*
2-3-04	Lawai	Kauai	Y	NO2-NO3 (D) Turb (W)	NE**	D**	D**	NE**	W/D****
2-3-06	Wahiawa	Kauai	N		NE*	W*	W*	NE*	W*
2-3-07	Hanapepe	Kauai	Y	Turb (V-W) Turb (D)	NE**	NE**	NE**	NE**	D**
2-4-04	Waimea	Kauai	Y	Turb (V)	NE**	D**	NE**	NE**	D**
3-1-16	Punaluu	Oahu	N		NE****	NE***	NE****	NE****	NE****
3-1-18	Kahana	Oahu	N		NE****	D****	NE****	NE****	D**
3-2-02	Waikane	Oahu	N		NE**	D**	NE**	NE**	NE**
3-2-04	Waiahole	Oahu	Y	NO2-NO3(W)	NE**	D**	NE**	NE**	NE**
3-2-05	Kaalaea	Oahu	Y	NO2NO3(W/D) Total N (W/D)	NE**	W/D****	W/D****	NE****	D****
3-2-07.01	Waihee	Oahu	Y	Nutrients (V)	NE**	D**	D**	NE**	D**
3-2-07.02	Kahaluu	Oahu	Y	Turbidity (V)	NE**	D**	NE**	NE**	NE**

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Cont. Stream Code	Waterbody Name	Island	Stream on 2004 List (Y/N)	Pollutants on 2004 List	Combined Data for Conventional 1999-2005 Numeric Exceedances				
					TSS	NO3	Total N	Total P	Turb
3-2-08	Haiku/Heeia	Oahu	Y	NO2-NO3 (W)	NE****	W/D****	D****	NE****	W****
3-2-09	Keaahala	Oahu	Y	NO2-NO3(W/D) Total N (W/D) Total P (D) Turb (D) Trash	NE****	W/D****	W/D****	D****	D****
3-2-10	Kaneohe	Oahu	Y	Nutrients (V) Turb (W) Dieldrin	-	-	-	-	D**
3-3-09	Nuuanu	Oahu	Y	NO2-NO3(W) Total N (W/D) Turb (W/D) Trash Dieldrin Chlordane	D****	W/D****	W/D****	D****	W/D****
3-3-11	Kalihi	Oahu	Y	NO2NO3(W/D) Total N (W) Turb (D) Trash	NE****	W/D****	W/D****	NE****	D****
3-4-04	Kalauao	Oahu	Y	NO2-NO3 (W) Total N (W)	NE***	W***	W***	NE***	D**
3-4-06	Waiawa	Oahu	Y	Nutrients (V) Turb (V) Trash	NE***	NE***	NE***	NE***	-
3-4-10	Waikele	Oahu	Y	Nutrients Turbidity	NE****	W/D****	W/D****	NE****	-
3-6-06	Kiikii	Oahu	Y	Nutrients (V) Turbidity (V)	NE****	W/D****	W/D****	NE****	W*
3-6-06.01	Poamoho	Oahu		Previous Kiikii listings	-	-	-	-	-
3-6-06.02	Kaukonahua	Oahu		Previous Kiikii listings	NE***	W***	W***	NE***	W*
4-2-03	Honouliwai	Molokai	N						NE*
4-2-04	Waialua	Molokai	N		NE***	NE***	NE***	NE***	NE***
6-1-01	Ukumehame	Maui	Y	Turbidity (D)	NE**	D**	NE**	NE**	NE****
6-1-11	Honokohau	Maui	N		NE**	NE**	NE**	NE**	NE****
6-2-03	Kahakuloa	Maui	N		NE**	NE**	NE**	NE**	NE****
6-2-06	Makamakaole	Maui	Y	Turbidity (D)	NE****	NE****	NE****	NE****	D****
6-2-07	Waihee	Maui	Y	Nutrients (V)	NE**	NE**	NE**	NE**	NE****
6-2-10	Waikapu	Maui	N		NE*	NE*	NE*	NE*	NE*
6-3-08	Honopou	Maui	N						NE*
6-4-12	Ohia	Maui	Y	Nutrients (V) Turbidity (V) Trash					NE*
6-5-13	Oheo	Maui	N		NE**	NE**	NE**	NE**	NE*
8-1-09	Wainaia	Hawaii	Y	Turbidity (W)	NE*	NE*	NE*	NE*	W****

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Cont. Stream Code	Waterbody Name	Island	Stream on 2004 List (Y/N)	Pollutants on 2004 List	Combined Data for Conventional 1999-2005 Numeric Exceedances				
					TSS	NO3	Total N	Total P	Turb
8-1-12	Aamakao	Hawaii	Y	Turbidity (D)	NE****	NE****	NE****	NE****	D****
8-1-14	Waikama	Hawaii	Y	Turbidity (D)	NE****	NE****	NE****	NE****	D****
8-1-15	Pololu	Hawaii	N						NE*
8-1-44	Wailoa/Waipio	Hawaii	Y	NO2-NO3 (D)	NE**	D**	D**	D**	NE****
8-1-45	Lalakea	Hawaii	Y	Turbidity (D)	NE*	NE*	NE*	NE*	D****
8-1-47	Waiulili	Hawaii	N						NE*
8-2-33	Kolekole	Hawaii	Y	Nutrients (V-D)	NE****	NE****	NE****	NE****	NE****
8-2-34	Paheehee	Hawaii	N		NE*	NE*	NE*	NE*	NE**
8-2-37	Kapeha	Hawaii	Y	Turbidity (D)	NE****	D****	NE****	NE****	D****
8-2-47	Kalaoa	Hawaii	N		NE*	NE*	NE*	NE*	NE**
8-2-49	Kaieie	Hawaii	Y	Nutrients (V)	NE**	NE**	NE**	NE**	-
8-2-53	Kapue	Hawaii	N		NE*	NE*	NE*	NE*	D**
8-2-56	Honolii	Hawaii	Y	Nutrients (V-D) Turbidity (V-D)	NE****	NE****	NE****	NE****	D****
8-2-57	Maili	Hawaii	N		NE*	NE*	NE*	NE*	D**
8-2-59	Pukihae	Hawaii	N		NE*	NE*	NE*	NE*	NE**
8-2-60	Wailuku	Hawaii	Y	Nutrients (V-D)	NE****	D****	NE****	NE****	NE**
8-2-61	Wailoa/Waialeale	Hawaii	Y	Nutrients (V)					

W (Wet Standard Exceedance), D (Dry Standard Exceedance), NE (No Exceedance), - (Insufficient Data)

\*indicates that both wet and dry season samples were combined for analysis because data were not adequate to compare each season separately

\*\*indicates that enough samples from the dry season were present to compare those samples against the dry season standard

\*\*\*indicates that enough samples from the wet season were present to compare those samples against the wet season standard

\*\*\*\*indicates that enough samples were present from both the wet and dry seasons to compare those wet season sample geometric means against the wet season standard and dry season sample geometric means against the dry season standard



No Exceedance found in stream listed in 2004



Exceedance found in stream not listed in 2004

TABLE 4: Analytical Summary of Priority 2b Data – Streams (2 times the WQS)

Stream Code	Waterbody Name	Island	Stream on 2002 List (Y/N)	Pollutants on 2004 List	DOH Clean Water Branch Data 1999-2005 Numeric Exceedances				
					TSS	NO3	Total N	Total P	Turbidity
2-1-13	Manoa		N						D**
2-1-34	Moloaa		N						D**
2-1-35	Papaa		N						D**
2-2-08.01	Opaekaa	Kauai	N						D**
2-2-08.03	Wailua S. Fork	Kauai	N						D**
2-2-14	Puali		Y	NO2-NO3 (W)					D**
2-3-02	Waikomo		N			D**			D**
2-3-06	Wahiawa		N			D**	D**		D**
3-4-03	Aiea		Y	Turbidity (V) Trash		W*	W*		
3-4-05	Waimalu		Y	Turbidity (W)					W*
3-6-06.02	Kaukonahua	Oahu	Y			D**	D**		D**
3-6-06.02.1	Kaukonahua S. Fork		Y						D**
4-2-04	Waialua		N						D**
6-3-01	Maliko		Y	Turbidity (W)					W*
6-3-10	Waipio		Y	Turbidity (W)					W*
8-1-10	Halelua		N						W*
8-1-44	Wailoa/Waipio		Y	NO2-NO3 (D)		W***			

W (Wet Standard Exceedance), D (Dry Standard Exceedance), NE (No Exceedance), - (Insufficient Data)

\*indicates that both wet and dry season samples were combined for analysis because data were not adequate to compare each season separately

\*\*indicates that enough samples from the dry season were present to compare those samples against the dry season standard

 No Exceedance found in stream listed in 2004

 Exceedance found in stream not listed in 2004

TABLE 5: Analytical Summary of Priority 1 Data – for 10% and 2% exceedance

Stream Code	Waterbody Name	Island	Season	2006 listed	10%* and 2%** Rule Application 1999-2005 Exceedances				
					TSS	NO3	Total N	Total P	Turb
2-1-19	Hanalei	Kauai	D	Turb-D					**
2-1-28	Kilauea	Kauai	D	Turb-D/W					*
2-1-34	Moloaa	Kauai	D/W	Turb-D/W					*/*
2-2-01	Anahola	Kauai	D/W	Turb-D/W					**/*
2-2-04	Kapaa	Kauai	D/W	Turb-D/W					**/**
2-2-04.01	Kealia	Kauai	D	Turb-D					*
2-2-12	Hanamaulu	Kauai	D	Turb-D/W		*			**
2-2-13	Nawiliwili	Kauai	D/W	Turb-D NO3-D/W TN-D/W		**/**	**/**		
2-2-14	Puali	Kauai	D	Turb-D/W NO3-D/W TN-D/W		**	**		
2-3-04	Lawai	Kauai	D	Turb-D/W NO3-D TN-D		**	**		**
2-3-07	Hanapepe	Kauai	D	Turb-D		**	*		*
2-4-04	Waimea	Kauai	D	Turb-D		*			*
3-1-16	Punaluu	Oahu	W						**
3-1-18	Kahana	Oahu	D	Turb-D NO3-D					*
3-2-02	Waikane	Oahu	D	NO3-D		*			
3-2-04	Waiahole	Oahu	D	NO3-D TP-D		*			
3-2-05	Kaalaea	Oahu	D/W	Turb-D NO3-D/W TN-D/W		**/**	**/**		*/-
3-2-07.01	Waihee	Oahu	D	Turb-D NO3-D TN-D		**	*		
3-2-07.02	Kahaluu	Oahu	D	Turb-D/W NO3-D		*			
3-2-08	Haiku/Heeia	Oahu	W	Turb- W NO3-D/W TN-D					*
3-2-09	Keaahala	Oahu	D	Turb-D NO3-D/W TN-D/W TP-D		**/**	*/-		

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Stream Code	Waterbody Name	Island	Season	2006 listed	10%* and 2%** Rule Application 1999-2005 Exceedances				
					TSS	NO3	Total N	Total P	Turb
3-3-09	Nuuanu	Oahu	D/W	Turb-D/W NO3-D/W TN-D/W TP-D TSS-D		**/*	**/-	**/-	**/-
3-3-11	Kalihi	Oahu	D/W	Turb-D NO3-D/W TN-W		**/**			**/-
3-4-04	Kalauao	Oahu	W	Turb-D NO3-D/W TN-D/W		**	**		
6-1-01	Ukumehame	Maui	D/W	NO3-D		*		**	-/*
6-2-06	Makamakaole	Maui	D	Turb-D	*				**
6-2-07	Waihee	Maui	D	Nuts-W-V				*	
8-1-09	Wainaia	Hawaii	W	Turb-W					**
8-1-12	Aamakao	Hawaii	D/W	Turb-D					*/*
8-1-13	Nuilii	Hawaii	D/W	Turb-D					**/**
8-1-14	Waikama	Hawaii	D/W	Turb-D					**/*
8-1-44	Wailoa/Waipio	Hawaii	D	NO3-D/W TN-D/W TP-D		**	*		
8-1-45	Lalakea	Hawaii	W	Turb-D					*
8-2-37	Kapehu	Hawaii	D/W	Turb-D NO3-D		**/*	**/-		*/-
8-2-56	Honolii	Hawaii	D	Turb-D					**

### C.2.2. Hawaii's 2006 303(d) List

The 2006 303(d) List includes the waterbodies on the revised 2004 List of Impaired Waterbodies minus one stream being delisted plus an additional 17 newly listed streams. Complete assessment information is found in Chapter IV. Station numbers and names are based on the Hawaii Stream Assessment (CWRM and NPS 1990). Waterbodies were prioritized as High, Medium or Low for Total Maximum Daily Load (TMDL) development. High, medium or low priorities were assigned to each water based on number of parameters listed and severity of exceedances.

#### **TMDL Development Priorities:**

TMDLs have been established for the Ala Wai Canal (revised 2002), Waimanalo Stream (approved 2001), Kawa Stream (revised 2005), and Kapaa Stream (approved 2007). TMDLs for listed streams in Kauai's Nawiliwili Bay Watershed (Nawiliwili, Puali, and Huleia); the Hanalei stream system (Kauai); Kamooalii and Kaneohe streams (Oahu); and Waiakea and Alenaio streams (Hilo Bay Watershed, Hawaii) are scheduled for completion in 2007. TMDLs for listed streams in Oahu's Pearl Harbor Watershed (Waikale, Kapakahi, Waiawa, Waimano, Waimalu, Aiea, Kalauao, and Halawa); Kaelepulu stream system (Oahu); and N. and S. Fork Kaukonahua Stream (Oahu) are expected to be completed in 2008, with ongoing phased TMDL development in Kaukonahua receiving waters (Wahiawa Reservoir, lower reaches of Kaukonahua Stream, Ki'iki'i estuary, and Kaiaka Bay). TMDL development for S. Molokai coastal waters began in 2006 (basic data collection by the U.S. Geological Survey Pacific Islands Water Science Center).

In each case, TMDLs will be established for pollution by sediment, nutrients, and bacterial indicators. Other detected pollutants in these waterbodies (e.g. trash in Kapakahi; metals in Kapaa; and pathogens, metals, organochlorine pesticides and lead in the Ala Wai Canal) are not currently scheduled for TMDL development. Depending on the availability of funding and community partnerships, DOH will begin developing TMDLs for the Iao Stream (Maui), Nuuanu and Kalihi streams (Oahu), Hanalei Bay marine waters (Kauai), and other priority waterbodies in subsequent years.

The 2006 List is shown in Chapter IV – Decision Table; all changes to the 2004 list are graphically highlighted (see table legend) throughout the 2006 List. Waters previously listed on the basis of legacy data or visual assessment will remain on the list until there are sufficient numeric data to validate or invalidate previous listing using listing Priority 1 criteria (see p14, or Appendix A). Factors considered for prioritizing waters on the 303(d) list as High (H), Medium (M) or Low (L) include the following:

- severity of pollution (number of pollutants listed and degree that levels of pollutants exceed the standard),
- uses of the waters,
- type and location of waterbody,
- degree of public interest and
- vulnerability of particular waters,
- NPDES permitting schedule for facilities that discharge to the waterbody or its upstream tributaries
- relationship with watersheds designated by EPA and DOH as priority areas for achieving measurable water quality improvements

*Assignment of Streams into EPA's Five-Part Categorization Scheme*

In the process of identifying waters that meet the listing criteria for the Impaired Waters List, DOH was also able to indicate where waters should be placed in the categories recommended in EPA's integrated 303(d)/305(b) guidance (<http://www.epa.gov/owow/tmdl/2006IRG/#documents>).

- (1) All designated uses are met;
- (2) Some designated uses are met, but data are insufficient to support a decision on the remaining designated uses;
- (3) Data are insufficient to support a decision on whether any designated uses are met;
- (4) A waterbody is impaired or threatened but a Total Maximum Daily Load (TMDL) is not needed if:
  - a. A TMDL has been completed for all listed parameters;
  - b. Required control measures are expected to result in Water Quality Standards (WQS) attainment in a reasonable period of time;
  - c. The impairment or threat is not caused by a pollutant;
- (5) Water is impaired or threatened and a TMDL is needed.

**Hawaii's Designated Use Attainment and Water Quality Standards Alignment**

In general, the water quality criteria and antidegradation requirements of the Hawaii State Water Quality Standards (WQS), Chapter §11-54, are not explicitly associated with the support of particular designated uses. Numeric water quality criteria are assigned by waterbody type, not by designated use. There are no direct links tying the pollutant parameters of the WQS to the designated uses. In limited cases DOH can link certain parameters directly to the uses. These are included in the framework listed below. Refining the WQS to add biological criteria and to methods to evaluate attainment of designated uses within waterbodies may be proposed in future revisions of the WQS and 303(d) listing criteria. The WQS will need significant adjustments to ascertain attainment of designated uses through sampling of conventional and toxic pollutants. Hawaii's WQS revisions are scheduled for evaluation and review on a 3-year cycle and the Integrated 305(b) and 303(d) Report (and Listing Criteria) are required on a 2-year cycle and both are subject to public review and comment.

Logical framework for making waterbody attainment decisions (Rules of Logic):

1. Neither the State Water Quality Standards nor existing state policy explain the relationship between water quality criteria attainment and designated use attainment.
2. Attainment of one or more water quality criterion (including all narrative and numeric criterion) does not establish attainment of one or more designated uses (with exceptions, see below)
3. Non-attainment of a single water quality impairment criterion (including all narrative and numeric criterion) establishes water quality impairment.
4. Categorization designations (waterbody attainment decisions) have the following meanings, and are applied to all waterbodies according to these Rules of Logic (1-4) and the 2004 Priority Ranking and Listing/Delisting Criteria for Hawaii State Surface Waters:
  - a. Category 5 - one or more designated use non-attainments or water quality impairments.
  - b. Category 4 - one or more designated use non-attainments or water quality impairments.

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- c. Category 3 - insufficient data for determining designated use attainment and water quality impairment.
- d. Category 2 - one or more designated use attainments
- e. Category 1 - all designated uses attained

5. Limited Designated use attainment is considered established as follows:

### Class 1 uses:

- **recreational purposes - attainment of enterococci criteria (exception to 2. above)**
- **support and propagation of aquatic life - Subsistence fishing use - results of tissue toxicity testing (and human health risk assessment if warranted) or results of bioassessment (including designated reference sites)**
- agricultural and industrial water supplies – undefined parameter combination shipping, and navigation - undefined parameter combination

### Class 1.a uses:

- scientific and educational purposes- undefined parameter combination
- **protection of native breeding stock - results of bioassessment (including designated reference sites)**
- baseline references from which human caused changed can be measured - undefined parameter combination
- **compatible recreation - attainment of enterococci criteria (exception to 2. above)**
- aesthetic enjoyment- undefined parameter combination
- other nondegrading uses which are compatible with the protection of the ecosystems associated with waters of this class - undefined parameter combination

### Class 1.b uses:

- domestic waters supplies – undefined parameter combination
- food processing – undefined parameter combination,
- **protection of native breeding stock - results of bioassessment (including designated reference sites)**
- **the support and propagation of aquatic life - results of bioassessment (including designated reference sites) and/or results of tissue toxicity testing (and human health risk assessment if warranted)**
- baseline references from which human-caused changes can be measured, - undefined parameter combination
- scientific and educational purposes - undefined parameter combination
- **compatible recreation - attainment of enterococci criteria (exception to 2. above)**
- aesthetic enjoyment- undefined parameter combination

### Class 2 uses:

- protection and propagation of fish, shellfish, and wildlife- undefined parameter combination
- **recreation in and on these waters - attainment of enterococci criteria (exception to 2. above)**

Note: Any use - results of Use Attainability Analysis

### **Classification of the States Waterbodies into EPA Categories**

Determining whether a water body can be appropriately classified in Category 1, “All designated uses are met,” requires extensive knowledge of the health and status of the water body. Collection of physical, chemical and biological data indicating that all water quality standards and uses are being attained is fundamental to this classification. At this time, DOH has determined that not enough data has been collected to assign any waterbody to this category. DOH considers this category to be mutually exclusive.

Category 2 contains 17 streams that have data that show attainment of some of the water quality standards; however, none of the data sets are complete and/or consistent with the state’s listing methodology and WQS. Only two designated uses are directly tied to the WQS, a) human recreational use utilizing the enterococcus standard for attainment and b) native aquatic life support utilizing a biological assessment protocol. Therefore, DOH cannot determine whether each designated use is met. DOH proposes the following inland water bodies to be listed in the Category 2: Pukihae, Kalaoa, Paheehē, Nanue and Hakalau streams on Hawaii Island, Honokohau, Hanawi, Alelele and Kahakuloa streams on Maui, Pelekunu, Wailau and Honouliwai streams on Molokai, Punaluu Stream on Oahu, and Hanakapiai, Limahuli, Wainiha and Waioli streams on Kauai. Although limited numerical data exists for Nanue and Hakalau streams on Hawaii Island, Hanawi and Alelele streams on Maui, Wailau on Molokai, and Hanakapiai and Limahuli streams on Kauai, these streams are included in Category 2 due to their status as reference sites for biological resources as utilized in the Hawaii Stream Bioassessment Protocol (HSBP, 2002), and as such, are deemed to be meeting the designated use of native aquatic life support. No data exists for recreational use attainment decisions for streams.

All of the state’s waterbodies fall into Category 3, “data are insufficient to support a decision...” for at least one of the designated uses. DOH reasons that different standards are needed to apply the designated use attainment assertions for all uses inherent in this category. Waterbodies may be cross-categorized into Category 2 and Category 3 if some designated uses are supported but there is insufficient data and/or information to make a support determination for other uses. The waterbodies that are currently 303(d) listed for specific water quality parameters, but need more data to determine compliance with other water quality standards or use attainments, are sorted into Categories 3 and 5.

Only 4 waterbodies are in Category 4a. Waimanalo and Kawa stream TMDLs have been approved for all listed parameters, and some listed parameters have been approved for the Ala Wai Canal Estuary and Kapaa Stream. As previously mentioned, all Hawaii streams remain in Category 3, the Ala Wai Canal Estuary and Kapaa Stream also have listed parameters not addressed by a TMDL, therefore, they will also retain the Category 5 listing as well. There are no waterbodies in Category 4b; where control measures are expected to result in WQS attainment in a reasonable period of time. There may be potential for some waterbodies to be assigned to Category 4c. More study is required to determine if the cause of impairments or threats to many of Hawaii’s waterbodies is caused by any pollutant or caused by other factors such as invasive species or water diversions.

Many streams listed in the table have multiple categories assigned. DOH’s decision to list waterbodies into several categories stem from the lack of specific standards for some designated uses.

### C.2.3. Explanation of Major Changes and Delisting

For streams, all listing/delisting changes were based on the data collected by DOH Clean Water Branch, Hanalei Watershed Hui and/or Windward Community College.

Many changes were initiated to clarify geographical accuracy of the listing and representational data available for analysis. These changes were based on the initial visual assessments performed for the 1998 303(d) List of Impaired Waters. DOH revisited the reports to clarify geographical scope of the assessments and adjusted the Assessment Decision Units (ADUs) accordingly to segregate differing waterbody types and applicable Water Quality Standards (WQS). Please see the sections on decision units, Part C.2., and future direction, Part C.2.4., for more information on geographical scope changes.

Several streams are newly listed as the sampling data of conventional pollutants increases. Many new streams were listed on Kauai on the basis of newly gathered data. Other changes are based on modification/refinement of delineating geographic scope. Please refer to Table 3 for full details.

Of special note on each island:

#### Hawaii

- Kolekole was entirely delisted based on numerical data that showed attainment of WQS.

#### Maui

- Ukumehame was delisted for Turbidity (dry season), but was newly listed for Nitrite/Nitrate (dry season).
- Waikapu was newly listed for Turbidity (dry season).

#### Molokai

- Waialua was newly listed for Turbidity (dry season).

#### Oahu

- Many new listings for Turbidity and Nutrients (Total Nitrogen, Nitrite/Nitrate, and Total Phosphorus)

#### Kauai

- New listings for Limahuli, Manoa, Waipa, Hanalei, Kilauea, Moloaa, Papaa, Anahola, Wailua, Hanamaulu, Nawiliwili, Puali, Huleia, Waikomo, Lawai, Wahiwawa, Waimea

**TABLE 6. Detailed Summary of Changes**

Segment	Waterbody ID*	2004 303(d) Listing	2006 303(d) Listing	Decision Action	Summary Rationale
<b>Hawaii</b>					
Halelua	8-1-10		Turb - Wet	New Listing	New numerical Data
Wailoa/Waipio	8-1-44		Total N - Dry	New Listing	New numerical Data
Wailoa/Waipio	8-1-44		Total P - Dry	New Listing	New numerical Data
Wailoa/Waipio	8-1-44		Total N - Wet	New Listing	New numerical Data
Wailoa/Waipio	8-1-44		NO2-NO3 - Wet	New Listing	New numerical Data
Kolekole	8-2-33	Nutrients - Dry (visual)		Delisted	New numerical Data
Kapehu	8-2-37	Kapeha	Kapehu	Modified	Fixed spelling error
Kapehu	8-2-37		NO2-NO3 - Dry	New Listing	New numerical Data
Kaieie	8-2-49	Nutrients - (visual)	Nutrients -Wet (visual)	Modified	New numerical Data removes Dry season component
Kapue	8-2-53		Turb - Dry	New Listing	New numerical Data
Honolii	8-2-56	Nutrients - Dry (visual)		Delisted	New numerical Data
Honolii	8-2-56	Turb - Dry (visual)	Turb - Dry	Modified	New numerical Data replaces visual basis for listing
Mali	8-2-57		Turb - Dry	New Listing	New numerical Data
Wailuku	8-2-60	Nutrients - Dry (visual)	NO2-NO3 - Dry	Modified	New numerical Data replaces visual basis for listing
Wailoa River	8-2-61	Wailoa River	Waiakea 8-2-61 Wailoa River 8-2-61-E	Modified scope	Remove from Streams listings (brackish water)*
<b>Maui</b>					
Ukumehame	6-1-01		NO2-NO3 - Dry	New Listing	New numerical Data
Ukumehame	6-1-01	Turb - Dry		Delisted	New numerical Data
Waihee	6-2-07	Nutrients - (visual)	Nutrients -Wet (visual)	Modified	New numerical Data removes Dry season component
Waikapu	6-2-10		Turb - Dry	New Listing	New numerical Data
<b>Molokai</b>					
Waialua	4-2-04		Turb - Dry	New Listing	New numerical Data

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Segment	Waterbody ID*	2004 303(d) Listing	2006 303(d) Listing	Decision Action	Summary Rationale
<b>Oahu</b>					
Waialele	3-1-08		Turb - Wet	New Listing	New numerical Data
Kahana	3-1-18		NO2-NO3 - Dry	New Listing	New numerical Data
Kahana	3-1-18		Turb - Dry	New Listing	New numerical Data
Waikane	3-2-02		NO2-NO3 - Dry	New Listing	New numerical Data
Waikane	3-2-02		NO2-NO3 - Wet	New Listing	New numerical Data
Waiahole	3-2-04		NO2-NO3 - Dry	New Listing	New numerical Data
Waiahole	3-2-04		Total P - Dry	New Listing	New numerical Data
Kaalaea	3-2-05		Turb - Dry	New Listing	New numerical Data
Kahaluu	3-2-07	3-2-07s	Kahaluu 3-2-07.02 Kahaluu 3-2-07-E	Modified scope	Remove estuary segment from Streams listing*
Waihee	3-2-07.01	Nutrients - (visual)	Nutrients - Wet (visual)	Modified	New numerical Data removes Dry season component
Waihee	3-2-07.01	Nutrients - (visual)	NO2-NO3 – Dry Total N - Dry	Modified	New numerical Data replaces visual basis for listing
Waihee	3-2-07.01		Turb - Dry	New Listing	New numerical Data
Kahaluu	3-2-07.02		NO2-NO3 - Dry	New Listing	New numerical Data
Heeia	3-2-08		Turb - Wet	New Listing	New numerical Data
Heeia	3-2-08		NO2-NO3 - Dry	New Listing	New numerical Data
Heeia	3-2-08		Total N - Dry	New Listing	New numerical Data
Kaneohe	3-2-10		Turb - Dry	New Listing	New numerical Data
Kapaa/Kawainui	3-2-13*	3-2-13s	K. Stream 3-2-13 Kapaa Stream 3-2-13-Kapaa K. Marsh 3-2-13-W	Modified	Clarifies geog scope of prior listing
Maunawili	3-2-13.01	3-2-13	3-2-13.01	Modified	Clarifies geog scope of prior listing
Kapaa	3-2-13*		Lead	New Listing	New numerical Data
Palolo	3-3-07.01.1	3-3-07s	3-3-07.01.1	Modified	Clarifies geog scope of prior listing
Nuuanu	3-3-09		NO2-NO3 - Dry	New Listing	New numerical Data
Nuuanu	3-3-09		Total P - Dry	New Listing	New numerical Data
Nuuanu	3-3-09		TSS - Dry	New Listing	New numerical Data
Nuuanu	3-3-09	Turb (visual)	Turb - Dry	Modified	New numerical Data
Nuuanu	3-3-09	Turb (visual)	Turb - Wet	Modified	New numerical Data

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Segment	Waterbody ID*	2004 303(d) Listing	2006 303(d) Listing	Decision Action	Summary Rationale
<b>Oahu – cont.</b>					
Moanalua	3-3-12	3-3-12	3-3-12-01	Modified	Clarifies geog scope of prior listing
Moanalua	3-3-12	Nutrients - (visual)	Total N - Dry	Modified	New numerical Data
Moanalua	3-3-12	Nutrients - (visual)	Total N - Wet	Modified	New numerical Data
Moanalua	3-3-12	Turbidity - (visual)	Turb - Dry	Modified	New numerical Data replaces visual basis for listing
Aiea	3-4-03		Total N - Wet	New Listing	New numerical Data
Aiea	3-4-03		NO2-NO3 - Wet	New Listing	New numerical Data
Kalauao	3-4-04		Total N - Dry	New Listing	New numerical Data
Kalauao	3-4-04		NO2-NO3 - Dry	New Listing	New numerical Data
Kalauao	3-4-04		Turb - Dry		
Waiawa	3-4-06	Nutrients - (visual)	Nutrients - Dry (visual)	Modified	New numerical Data removes Wet season component
Waikele	3-4-10	Nutrients - (visual)	NO2-NO3 - Dry	Modified	New numerical Data
Waikele	3-4-10	Nutrients - (visual)	Total N - Dry	Modified	New numerical Data
Waikele	3-4-10	Nutrients - (visual)	NO2-NO3 - Wet	Modified	New numerical Data
Waikele	3-4-10	Nutrients - (visual)	Total N - Wet	Modified	New numerical Data
Kiikii	3-6-06	3-6-06s	Poamoho 3-6-06.01 Kaukonahua 3-6-06.02 Kiikii 3-6-06-E	Modified scope	Remove from Streams listings (brackish water)*
Poamoho	3-6-06.01	3-6-06s	Nutrients - (visual) Turb - (visual)	Modified	Clarifies geog scope of prior listing
Kaukonahua	3-6-06.02	Nutrients - (visual) 3-6-06s	NO2-NO3 - Dry Total N - Dry Turb - Dry	Modified	Clarifies geog scope of prior listing. New numerical data replaces visual basis for listing.
Kaukonahua	3-6-06.02	Nutrients - (visual) 3-6-06s	NO2-NO3 - Wet Total N - Wet Turb - Wet	Modified	Clarifies geog scope of prior listing. New numerical data replaces visual basis for listing.
Wahiawa Reservoir	3-6-06.02-R*	3-6-06s	3-6-06.02-R*	Modified scope	Clarifies geog scope of prior listing
S. Fork Kaukonahua	3-6-06.02.1*	3-6-06s	3-6-06.02.1*	Modified scope	Clarifies geog scope of prior listing
N. Fork Kaukonahua	3-6-06.02.2*	3-6-06s	3-6-06.02.2*	Modified scope	Clarifies geog scope of prior listing
Paukauila	3-6-07	3-6-07s	Helemano 3-6-07.01 Opaeuila 3-6-07.02 Paukauila 3-6-07-E	Modified scope	Remove from Streams listings (brackish water)*

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Segment	Waterbody ID*	2004 303(d) Listing	2006 303(d) Listing	Decision Action	Summary Rationale
<b>KAUAI</b>					
Anahulu	3-6-08	3-6-08s	Kawailoa 3-6-08.01 Anahulu 3-6-08-E	Modified scope	Remove from Streams listings (brackish water)*
Limahuli	2-1-12		NO2-NO3 - Dry	New Listing	New numerical Data
Manoa	2-1-13		Turb - Dry	New Listing	New numerical Data
Manoa	2-1-13		Turb - Wet	New Listing	New numerical Data
Waipa	2-1-17		Turb - Dry	New Listing	New numerical Data
Hanalei	2-1-19	Turb - Dry (visual)	Turb - Dry	Modified	New numerical Data replaces visual basis listing
Hanalei	2-1-19	Enterococci		New Listing	New numerical Data
Kilauea	2-1-28		Turb - Dry	New Listing	New numerical Data
Moloaa	2-1-34		Turb - Dry	New Listing	New numerical Data
Moloaa	2-1-34		Turb - Wet	New Listing	New numerical Data
Papaa	2-1-35		Total N - Dry	New Listing	New numerical Data
Papaa	2-1-35		NO2-NO3 - Dry	New Listing	New numerical Data
Papaa	2-1-35		Turb - Dry	New Listing	New numerical Data
Anahola	2-2-01		Turb - Dry	New Listing	New numerical Data
Anahola	2-2-01		Turb - Wet	New Listing	New numerical Data
Kapaa	2-2-04	Turb - Dry (visual)	Turb - Dry	Modified	New numerical Data replaces visual basis listing
Wailua	2-2-08		Turb - Dry	New Listing	New numerical Data
Hanamaulu	2-2-12		Turb - Dry	New Listing	New numerical Data
Nawiliwili	2-2-13		NO2-NO3 - Dry	New Listing	New numerical Data
Nawiliwili	2-2-13		Total N - Dry	New Listing	New numerical Data
Puali	2-2-14		NO2-NO3 - Dry	New Listing	New numerical Data
Puali	2-2-14		Total N - Dry	New Listing	New numerical Data
Puali	2-2-14		Turb - Dry	New Listing	New numerical Data
Puali	2-2-14		Total N - Wet	New Listing	New numerical Data
Puali	2-2-14		Turb - Wet	New Listing	New numerical Data
Huleia	2-2-15		NO2-NO3 - Dry	New Listing	New numerical Data
Huleia	2-2-15		Total N - Dry	New Listing	New numerical Data
Huleia	2-2-15	NO2-NO3 - Wet		Delisted	New numerical Data
Waikomo	2-3-02		Total N - Dry	New Listing	New numerical Data

2006 State of Hawaii Water Quality Monitoring and Assessment Report

Segment	Waterbody ID*	2004 303(d) Listing	2006 303(d) Listing	Decision Action	Summary Rationale
<b>KAUAI – cont.</b>					
Waikomo	2-3-02		NO2-NO3 - Dry	New Listing	New numerical Data
Waikomo	2-3-02		Turb - Dry	New Listing	New numerical Data
Waikomo	2-3-02		Total N - Wet	New Listing	New numerical Data
Waikomo	2-3-02		NO2-NO3 - Wet	New Listing	New numerical Data
Waikomo	2-3-02		Turb - Wet	New Listing	New numerical Data
Lawai	2-3-04		Total N - Dry	New Listing	New numerical Data
Lawai	2-3-04		Turb - Dry	New Listing	New numerical Data
Wahiawa	2-3-06		Total N - Dry	New Listing	New numerical Data
Wahiawa	2-3-06		NO2-NO3 - Dry	New Listing	New numerical Data
Wahiawa	2-3-06		Turb - Dry	New Listing	New numerical Data
Wahiawa	2-3-06		Total N - Wet	New Listing	New numerical Data
Wahiawa	2-3-06		NO2-NO3 - Wet	New Listing	New numerical Data
Wahiawa	2-3-06		Turb - Wet	New Listing	New numerical Data
Waimea	2-4-04s	2-4-04s	Waimea Stream 2-4-04 Waimea Est. 2-4-04-E*	Modified	Remove from Streams listings (brackish water)*
Waimea	2-4-04	Turb - (visual) (2-4-04s)	Turb - Dry	Modified	Clarifies geog scope of prior listing. New numerical data replaces visual basis for Dry season listing.
Waimea	2-4-04	Turb - (visual) (2-4-04s)	Turb - Wet (visual)	Modified	Clarifies geog scope of prior listing. Visual basis for Wet season listing remains.
Waimea	2-4-04		NO2-NO3 - Dry	New Listing	New numerical Data

\*\*Waterbody IDs follow the Hawaii Stream Assessment (HSA) Coding System (Hawaii Cooperative Park Service Unit, 1990).

In HSA Coding System, code suffix "s" identifies "stream system," which by DOH definition (HAR 11-54) includes estuaries.

Thus all "s" codings are removed from the freshwater codings in the 2006 Integrated Report.

Codings marked by an asterisk (\*) in this table require clarification and modification not available in the 1990 HAS publication.

Please see the Freshwater Decision Units Rationale for further discussion of waterbody delineation, naming, coding, and georeferencing conventions.

#### C.2.4. Future Direction

##### Decision Units

The evolving framework for defining and georeferencing attainment decision units, waterbody segments, and NHD reaches for fresh inland Hawaii waters must have a foundation of hydrologic and regulatory truth. How we build upon this foundation is determined by our information management technology and skills and our water quality monitoring capacity and strategy. To build upon this foundation during upcoming assessment cycles, we will continue (1) modifying our watershed and waterbody delineation and coding systems to better incorporate and reflect hydrologic and regulatory truth; (2) improving our information management technology and procedures to facilitate data integration and georeferencing; (3) expanding our monitoring capacity to generate more, higher-quality data; and (4) developing our comprehensive surface water quality monitoring strategy to guide our use of this monitoring capacity for making the best possible attainment decisions while also achieving our other monitoring objectives.

The following discussion of this framework marks the current status of these efforts. Priorities for the next assessment cycle (2008 Integrated Report) include (1) completing modifications to watershed delineations and the watershed coding system; (2) beginning a comprehensive inventory of all fresh inland waterbodies, including the modification of waterbody delineation and coding protocols to be used in the inventory process; (3) completing revisions to our Quality Assurance Program Plans for surface water monitoring and analysis; and (4) updating the Comprehensive Surface Water Quality Monitoring Strategy to focus the results of these efforts on our monitoring needs and monitoring plans for attainment decision-making.

**NHD reaches** for fresh inland Hawaii waterbodies are intended to represent a combination of hydrologic and regulatory truth and are defined from confluence to confluence within a single waterbody type (type as established by water quality standards). For the purpose of NHD reach indexing, confluences include (a) the intersection of two or more sections (e.g. tributaries, forks, branches, arms) of a waterbody (single type) and (b) the intersection of two or more waterbodies of different types (e.g. "intermittent stream" and "perennial stream," "ditch" and "perennial stream," "spring" and "wetland"). However, intersections of fresh inland waterbodies with various (i) outfalls, (ii) other discharge structures, and (iii) overland and subsurface flow paths, where these (i, ii, and iii) are principally designed or functioning to convey storm runoff and ephemeral subsurface flow into fresh inland waterbodies, are not considered confluences. A single NHD reach is regulated by one or more water quality standards (see **Waterbody segments** below).

**Waterbody segments** for fresh inland Hawaii waterbodies are intended to represent regulatory truth and are defined as the portion of a single NHD reach that is regulated by a single water quality standard (meaning that it is within a single waterbody type and class). Because waterbody class is defined solely by underlying State Land Use classification, a single NHD reach may span part or all of one or more waterbody segments (and thus may be regulated by one or more water quality standards). A single waterbody segment may form all or part of an attainment decision unit, and a single attainment decision unit may include one or more waterbody segments.

TABLE 7. Descriptive Information for Each Waterbody Segment

Waterbody type <sup>1</sup>	Segment				
	Identifier <sup>2</sup>	type	size and unit of measurement	name or location on NHD	designated uses
Flowing seep	TBD	same as waterbody type	TBD	TBD	defined by segment's waterbody class (1.a., 1.b., or 2.) for all waterbody types
Flowing spring	TBD		TBD	TBD	
Elevated wetland	TBD		ha	TBD	
Low wetland	TBD		ha	TBD	
Intermittent stream	HSA stream code		m	Name_Reach ID	
Perennial stream	HSA stream code		m	Name_Reach ID	
Natural freshwater lake	Name/class		ha	Name	
Freshwater impoundment	Name/class		ha	Name	
Reservoir	Name/class		ha	Name	
Ditch	TBD		m	TBD	
Flume	TBD		m	TBD	
Drainage ditch	TBD		m	TBD	
Canal	TBD		m	TBD	

<sup>1</sup>See Chapter IV for explanation of waterbody types.

<sup>2</sup>Other coding systems that may be used/adapted include State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources codes for streams and reservoirs.

TBD = To Be Determined

## Monitoring and Assessment

Many of the data sets analyzed in this report provided insufficient quantity for listing/delisting decisions. Although this information was inadequate for DOH purpose of decision-making, it should be publicly reported. The data within this report denoted as a question mark (?), reflect the fact that some data do exist, but not enough for the decision-making process. Waterbodies not listed in Chapter IV reflect that no data was available.

Future sampling should focus on eliminating the legacy visual listings (V) persistent within this report. The ultimate goal is that all parameters are classified as Priority 1, and assigned not attained (N) or attained (A) designation. This would also include clarifying the Priority 2a and 2b sample sets of combined season data and the data sets between 5 and 10 where the resulting geomean is twice the standard. Concurrently, the next targeted group should be the waterbodies that have question marks (?). These waterbodies are identified as needing more data and should be sampled in the future. Waterbodies not on this listing at all, denote no data have been collected for assessment purposes, and sampling should begin. (These waterbodies should be listed in Chapter IV and identified for future monitoring.) Waterbodies need to be rotationally included to ensure enough data is available within the floating 6-year window. Careful scheduling should allow for this targeted approach.

Additionally, in the future, Water Quality Standards need to be modified to ascertain designated use attainment with less time and financial resource input. Current standards identify general biological

criteria and a more encompassing assessment of biological assemblages should gather more relevant data to determine whether designated uses are being attained. These modifications are subject to public comment and review and will be a long-term goal to bring the WQS into alignment with federal expectations.

### C.3. Wetlands Program

Responsibilities for wetland protection are diffused among various federal, state, and county authorities. There is no formal wetlands program in the DOH.

### C.4. Trends Analysis for Surface Waters

There were no readily available trends analysis computations for surface waters in Hawaii, and none have been developed by DOH.

### C.5 Public Health Issues

#### Leptospirosis Threat

Leptospirosis is not included as a specific water quality standard parameter. However, all freshwaters within the state are considered potential sources of Leptospirosis infection by the epidemiology section of the Hawaii State Department of Health. No direct tests have been approved or utilized to ascertain the extent of the public health threat through water sampling. Epidemiologic evidence has linked several illness outbreaks to contact with freshwater, leading authorities to issue blanket advisories for all fresh waters of the state.

#### Fish Consumption Advisory

Several locations have been identified and posted as areas where fish and shellfish should not be consumed. These areas include: Pearl Harbor, Ala Wai Canal and urban streams of Honolulu. Contamination of fish and shellfish include organochlorine pesticides and/or PCBs and lead.

## **PART D. GROUND WATER MONITORING AND ASSESSMENT**

Ground water is reported in a Chapter III attached in this report.

## **PART E. PUBLIC PARTICIPATION**

Ongoing informal public contact is a persistent component of DOH's strategy. This report is a formal expression of the reporting requirements of the Clean Water Act. This report followed a regime of the standard public participation schedule. The first step consisted of the published formal call for data. This was accomplished on October 2, 2005 in 7 newspapers on all islands throughout the state. The final date for data submission was November 1, 2005. Additional public contact was made through e-mail and phone conversations to potential contributors of data and through e-mail broadcasts to e-lists of environmental professionals.

A public notice and draft report were published December 18, 2006, and a 30-day comment period ended January 19, 2007. Public comments were evaluated, related edits to the report were completed, and a Response to Comments document was published. The entire package was approved by the Deputy Director, Environmental Health Administration and submitted to the U.S. EPA for approval.

LIST OF REFERENCES

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**2006 STATE OF HAWAII WATER QUALITY MONITORING AND  
ASSESSMENT REPORT:**

Integrated Report To The U.S. Environmental Protection Agency and The U.S. Congress  
Pursuant To Sections §303(D) and §305(B), Clean Water Act (P.L. 97-117)

**Chapter III  
Groundwater**



Hawaii State Department of Health  
Safe Drinking Water Branch

January 14, 2008

## **Executive Summary**

The Clean Water Act (CWA) requires states to report on the status of their groundwater resources to Congress every two years in the biennial CWA 305(b) report. This 305 (b) Report presents aquifer specific assessments for groundwater resources in the State of Hawai`i for 2004 and 2005.

This Report shows that groundwater contamination continues to occur in Hawai`i. In most cases, once a groundwater source has been contaminated, it remains contaminated for many years. Groundwater can become contaminated through natural processes, but anthropogenic, or human-induced, contamination poses more serious problems. Contaminants may come from herbicides, pesticides, industrial solvents, and other sources that are applied, spilled, or leaked into the ground. Groundwater contamination is a significant concern because nearly all of Hawai`i's drinking water comes from groundwater sources.

The overall quality of Hawai`i's groundwater is generally considered excellent. The chemical contaminant concentrations that have been detected in public groundwater/drinking water sources are generally below state and federal drinking water standards. The percentage of Hawai`i's population served by drinking water in compliance with State and Federal microbial and chemical standards called maximum contaminant levels (MCLs) was 99.1% in 2005.

See attached Hawai`i State Department of Health Indicators of Environmental Quality for drinking water.

## Percentage of Hawai'i's Population Served Drinking Water in Compliance with State and Federal Microbiological and Chemical Maximum Contaminant Levels

Explanation: Drinking water microbiological or chemical standards are called Maximum Contaminant Levels (MCLs). Water that exceeds MCLs is believed to be harmful to human health. In 2005, 99.1% of Hawai'i's residents and visitors were served drinking water that met all of the MCLs all year long. Population figures are derived by summing the populations each public water system reports.

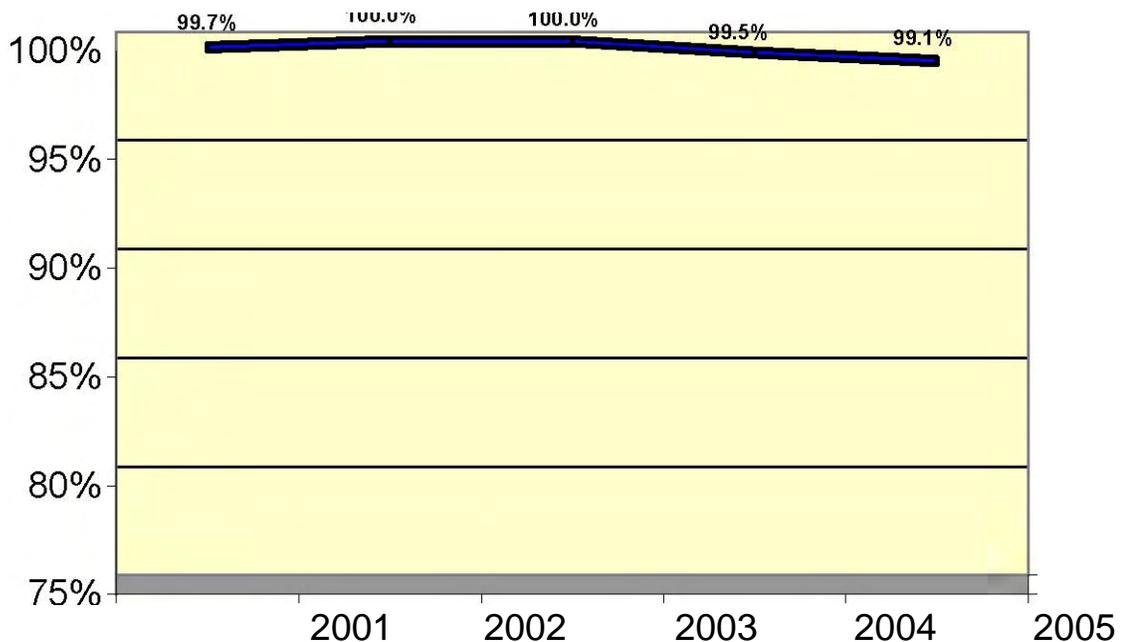
There were a small number of persons (12,217) in six water systems who were served water not in compliance with MCLs for part of the reporting year. This equals a non-compliance rate of 0.91% over Hawai'i's population of 1,341,727 people.

Implications: The compliance rate has consistently exceeded 99.0% over the last five years. Whenever a violation is found, the public is notified through electronic media, hand-delivered notices, or published notices.

Data Quality: High ( $\pm$  5-10% confidence). Source: Ann Zane (SDWB) Data are required by the EPA

FFY	Total Population Served Drinking Water	Population Served Water Below MCLs	Percentage Population Served Water in Compliance with MCLs
2001	1,289,360	1,285,821	99.7%
2002	1,300,251	1,300,251	100.0%
2003	1,300,715	1,300,682	100.0%
2004	1,341,572	1,334,645	99.5%
2005	1,341,727	1,329,510	99.1%

## Percentage of Hawai'i's Population Served Drinking Water in Compliance with Maximum Contaminant Levels



## Groundwater Assessment

Section 106(e) of the Clean Water Act (CWA) requires State reporting on the status of their groundwater resources to Congress every two years in the biennial CWA 305(b) report. For the 2000 report and subsequent editions, EPA has required aquifer specific assessments for groundwater resources.

Hawai`i's Aquifer assessments are based on John F. Mink and L. Stephen Lau's Aquifer Classification System that identifies and describes groundwater resources throughout the State of Hawai`i based on a hierarchy of descriptors that includes: **Island, Aquifer Sectors** (large regions with similar hydrogeologic characteristics), **Aquifer Systems** (areas with hydrogeologic continuity, i.e. hydraulic connections among units), and **Aquifer Types** (distinctive hydrologic and geologic features).

Hawai`i's Aquifer assessments are based on Aquifer Systems of the four major populated Hawaiian Islands: Hawai`i, Kaua`i, Maui, and O`ahu. The islands of Moloka`i and Lana`i were not included in this assessment because chemical contaminants have not been detected in the drinking water wells on these two islands. The island of Ni`ihau, privately owned, is also not included in this assessment. The island of Kaho`olawe is transiently visited for restoration purposes and was not considered in this report.

The Groundwater Protection Program (GWPP) in the Department of Health's Safe Drinking Water Branch (SDWB) is responsible for preparing the state's groundwater assessments in this section of the 2006 CWA 305(b) Report for 2004 and 2005.

Hawai`i's groundwater assessments are organized as follows:

### Part 1: Major Sources of Existing and Potential Groundwater Contamination

Methodology of Reporting

Table 3-1: Major Sources of Existing and Potential Groundwater Contamination

### Part 2: Summary of State Groundwater Protection Programs

Table 3-2: Hawai`i Groundwater Protection Programs

Summary of State Programs and Activities

Table: 3-2.1: Characteristics of Aquifers in Hawai`i

### Part 3: Groundwater Contamination Summary

Methodology of Reporting

Table 3-3: Groundwater Contamination Summary

Maps: NPL, CERCLIS, DOD, State Sites

Maps: 2004-2005 LUST Sites Maps: 2005 Underground Injection Control (UIC) Wells

### Part 4: Aquifer Monitoring Data

Methodology of Reporting

Table 3-4: Aquifer Monitoring Data

Maps: 2004 Groundwater Contamination Maps

Maps: 2004 Nitrates

Maps: 2005 Nitrates

## **Part 1: Major Sources of Existing and Potential Groundwater Contamination**

### **Methodology of Reporting**

The findings included in Table 3-1 are mostly representative of data obtained from the 2004 Department of Health, Safe Drinking Water Branch, Groundwater Contamination Maps.

The true origins of many of the contaminants were not known for reporting purposes. In some cases the reporting was based upon the best-educated-guess method. For example, it may have been shown from the reporting that VOC's were present in the water supply. Based upon the knowledge that was known about the surrounding geography, and from the types of contaminants detected, the contaminant source would be listed as a possible leaking underground storage tank, or a product spill. In other cases, the origin of the detected contaminant source was more evident. This was especially true with respect to land areas under pineapple and sugar cane cultivation, where pesticide and herbicide-related contaminants have been detected.

In cases where insufficient information inhibits determining the true origins of detected contaminants, ongoing and future source water assessments are expected to make future reporting more accurate and complete.

Table 3-1 lists the factors considered in selecting a contamination source. The letters in the table correspond to the following list:

- A. Human health and/or environmental risk (toxicity)
- B. Size of the population at risk
- C. Location of the sources relative to drinking water sources
- D. Number and/or size of contaminant sources
- E. Hydrologic sensitivity
- F. State findings, other findings
- G. Documented from mandatory reporting
- H. Geographic distribution/occurrence
- I. Other criteria

The letters corresponding to the contaminants were selected from the following list:

- a. Inorganic pesticides
- b. Organic pesticides
- c. Halogenated solvents
- d. Petroleum compounds
- e. Nitrate
- f. Fluoride
- g. Salinity
- h. Metals
- i. Radio nuclides
- j. Bacteria
- k. Protozoa
- l. Viruses
- m. Other

**Table 3-1. Major Sources of Existing and Potential Groundwater Contamination**

Contamination Source	Twelve Highest-Priority Sources	Factors Considered in Selecting a Contaminant Source	Contaminants
<i>Agricultural chemical facilities</i>			
Animal feed lots			
Drainage wells			
Fertilizer applications	T	A, D, G, H	e
Pesticide applications	T	A, D, G, H	a, b
On-farm agricultural mixing and loading procedures	T	D, G, H	a, b, d
<i>Storage and Treatment Activities</i>			
Land application (regulated or permitted)			
Material stockpiles			
Storage tanks (above ground)			
Storage tanks (underground)	T	A, D, G, H	c, d, h
Surface impoundments			
Waste piles	T	A, D, G, H	h
Waste tailings			
<i>Disposal Activities</i>			
Deep injection wells			
Landfills	T	A, D, G, H	b, c, d
Septic systems/ Cesspools	T	A, D, H	e, j, k, l, m
Shallow injection wells	T	A, D, H	c, d, h, m
<i>Other</i>			
Hazardous waste generators	T	A, G, H	c, e, h
Hazardous waste sites			
Large industrial facilities			
Material transfer operations			
Mining and mine drainage			
Pipelines and sewer lines	T	A, G	e, d, h, j
Salt storage and road icing			
Salt water intrusion			
Spills	T	A, G	b, c, d, h
Transportation of materials			
Urban runoff			
Small-scale manufacturing and repair shops	T	A, B, D, G, H	c, d, h

Note: Groundwater is the primary source of Hawai'i's drinking water. Consequently, human health is a major factor for each of the major contaminant sources.

**Part 2: Summary of State Groundwater Protection Programs Table 3-2.**

Programs or Activities	(T)	Implementation Status	Responsible State Agency
Active SARA Title III Program	T	fully established	DOH-HEER
Ambient groundwater monitoring system	T	under development	DOH-SDWB
Aquifer vulnerability assessment	T	fully established	DOH-SDWB/ DLNR-CWRM
Aquifer mapping	T	fully established	DOH-SDWB/ DLNR-CWRM
Aquifer characterization	T	fully established	DOH-SDWB/ DLNR-CWRM
Comprehensive data management system	T	under development	DOH-EPO
Comprehensive State Groundwater Protection Program	T	under review by EPA	DOH-SDWB
Ground water discharge permits		not applicable	
Groundwater Best Management Practices	T	under development	DOH-SDWB, CWB
Groundwater legislation	T	continuing efforts	DOH/DLNR
Groundwater classification	T	continuing efforts	DOH-SDWB/ DLNR-CWRM
Groundwater quality standards		not applicable	
Interagency coordination for groundwater protection initiatives	T	continuing efforts	DOH/DLNR/DO A
Nonpoint source controls	T	continuing efforts	DOH-CWB
Pesticide State Management Plan	T	continuing efforts	DOA-PB
Pollution Prevention Program	T	continuing efforts	DOH-OSWM, CWB, EPO
Resource Conservation and Recovery Act (RCRA)	T	continuing efforts	DOH-SHWB
Source Water Assessment Program	T	fully established	DOH-SDWB
State Superfund	T	fully established	DOH-HEER
State RCRA Program more stringent than RCRA Primacy	T	fully established	DOH-SHWB
State septic system regulations	T	fully established	DOH-WWB
Underground Storage Tank installation requirements	T	fully established	DOH-SHWB
Underground Storage Tank Remediation Fund	T	fully established	DOH-SHWB
Underground Storage Tank Permit Program	T	fully established	DOH-SHWB
Underground Injection Control Program	T	fully established	DOH-SDWB
Vulnerability assessment for drinking water/wellhead protection	T	incorporated into Source Water Assessment Program	DOH-SDWB
Well abandonment regulations	T	fully established	DOH-SDWB/ DLNR-CWRM
Wellhead Protection Program (EPA-approved)	T	continuing efforts	DOH-SDWB
Well installation regulations	T	fully established	DLNR-CWRM

**List of Acronyms**

DOH	Department of Health
CWB	Clean Water Branch
EPO	Environmental Planning Office
HEER	Hazard Evaluation and Emergency Response
SARA	Superfund Amendments and Reauthorization Act
OSWM	Office of Solid Waste Management
SDWB	Safe Drinking Water Branch
SHWB	Solid and Hazardous Waste Branch
WWB	Wastewater Branch
DLNR	Department of Land and Natural Resources
CWRM	Commission on Water Resource Management
DOA	Department of Agriculture
PB	Pesticides Branch

## Summary of State Programs and Activities

### **Active Superfund Amendments and Reauthorization Act (SARA) Title III Program:**

This program is administered by the State Department of Health Hazard Evaluation and Emergency Response (HEER) program. The Title III program is the Emergency Planning and Community Right to Know Act. The main provisions of the act include planning for chemical emergencies, emergency notification of chemical accidents and releases, reporting of hazardous chemical inventories, and reporting of toxic chemical release.

As part of planning for chemical emergencies the governor of the State appoints a State Emergency Response Commission (SERC), which in turn is divided into Local Emergency Planning Committees (LERC). The LERC formulate local emergency plans to respond to chemical emergencies in the local areas and provide guidelines for hazardous chemical occurrences such as spills and reporting.

**Ambient Ground Water Monitoring System:** The groundwater monitoring system is not an ongoing State program. Some activities such as the construction of golf courses, underground storage tanks and remediation of leaking underground storage tanks require groundwater monitoring. The State Water Commission requires some groundwater monitoring in the construction of wells to determine water levels and chloride concentration in the groundwater.

Some golf courses have installed lysimeters to monitor soil water conditions and chemical infiltration. A groundwater monitoring plan in conjunction with a best management practices plan for golf courses is recommended to golf courses; however, these commendations are voluntary. The intent of this initiative is to educate golf courses to efficiently manage water resources, and to prevent pesticide and herbicide infiltration into soils and groundwater.

### **Aquifer Vulnerability Assessment, Aquifer Mapping, and Aquifer Characterization:**

The assessments, mapping, and aquifer classifications for the islands of Hawai`i, Kaua`i, Lana`i Maui, Moloka`i, and O`ahu were completed from 1990 to 1993. These reports were the result of a contract between the Department of Health (DOH), and the Water Resources Research Center (WRRC) of the University of Hawai`i.

The WRRC identified general aquifer sectors and smaller aquifer systems for the islands. Each aquifer system was divided into aquifer types that were characterized with hydrologic factors such as basal, high level, unconfined, confined, and confined/unconfined conditions, and geologic factors such as flank, dike, perched, sedimentary, or combination aquifer types. WRRC also identified the status of the aquifer types through identification of their development stages, potability/salinity, utility, uniqueness, and vulnerability to contamination. The vulnerability determination applied in this study was based upon geographical limits of the resource, interconnection among groundwater sources, relatively rapid time of groundwater travel, and familiarity with environmental conditions. Vulnerability was ranked as high, moderate, or low. Refer to Table 3-2.1 for a summary of aquifer identification and classification.

The aquifer study described that aquifer types have varying levels of vulnerability to contamination. Aquifers contained or confined by caprock are less prone to contamination than unconfined aquifers which are typically highly vulnerable to contamination. Table 3-2.1 shows the amount of aquifer units and subunits and represents the unconfined aquifer and vulnerability.

The WRRC studies have provided a comprehensive profile of the location, composition, characteristics, and vulnerability of Hawai`i's aquifers.

**Table 3-2.1 Characteristics of Aquifers in Hawai'i**

Island	Number of Aquifer Sectors	Number of Aquifer Systems	Number of Aquifer Types	Number and % of Unconfined Aquifers	Number and % of Aquifers Highly Vulnerable to Contamination
Kaua'i	3	13	11	100 83%	120 65%
O`ahu	6	24	8	66 73%	90 73%
Molo ka`i	4	16	5	60 100%	60 98%
Lana`i	4	9	3	22 100%	22 100%
Maui	6	25	6	207 97%	213 81%
Hawai`i	9	24	6	82 100%	82 84%

**Comprehensive Data Management System:** The State Department of Health (DOH) has been working toward the development and implementation of a comprehensive data management program and is participating in EPA's One Stop Program. DOH's One Stop Program will establish a pilot project that will implement a permitting database for the Clean Air Branch (CAB) and the Clean Water Branch (CWB) initially and create a master facility ID that will be used and shared by all branches. DOH has hired an Environmental Information Manager to oversee the DOH's One Stop Program and is searching for consultant services to create or provide a web-based, user interface for DOH's environmental programs.

It will take some time for DOH and its yet-to-be-selected consultant to create, implement, test and make available a computerized data management system for all branches in DOH's Environmental Management Division. However, it is anticipated that a computerized data management system for DOH's Environmental Management Division will provide locational, technical, monitoring, remediation and other information on accidents, spills, releases and contaminants that can affect groundwater quality and assist the GWPP in monitoring, assessing and reporting groundwater quality.

**Comprehensive State Groundwater Protection Program (CSGWPP):** Hawai'i's Comprehensive State Groundwater Protection Program Plan is being finalized and will be submitted to the EPA for review and approval in 2006. The Program integrates Hawai'i's Groundwater Protection Strategy with EPA's Comprehensive State Groundwater Protection Program guidance and should guide all relevant State groundwater protection programs.

**Ground Water Best Management Practices:** The GWPP has developed Best Management Practices (BMPs) for golf courses and includes sections on:

- 1 Site Selection, Design and Construction
- 2 Water Usage
- 3 Operations and Maintenance
- 4 Integrated Pest Management (IPM)
- 5 Surface and Groundwater Protection
- 6 Monitoring Program

The golf course BMPs are intended to accompany the Department of Health's Guidelines to Golf Courses in Hawai'i, July 2002, and can educate golf course developers and operators and the general public about potential impacts that golf course planning, development, operations and maintenance can have on the environment and on groundwater quality.

Maui County has developed BMPs for all construction projects to control erosion and sedimentation. These BMPs were adopted by the Maui County Council and incorporated into the revised grading ordinance. Maui County has also developed BMPs for homes, apartments and condominiums, landscaping, private wells and septic tanks.

**Ground Water Discharge Permits:** See Underground Injection Control Program.

**Ground Water Classification:** See Aquifer Vulnerability Assessment.

**Ground Water Quality Standards:** Ground water quality standards for the State have not been developed at this time. Source Water Assessment and Wellhead Protection Programs may indicate that groundwater quality standards need to be developed in the future.

**Interagency Coordination for Ground Water Protection Initiatives:** Interagency coordination for groundwater protection continues to be an ongoing activity in relevant programs related to groundwater protection. Where appropriate, groundwater protection is advocated via controls, policies, or recommendations.

**Large Capacity Cesspool (LCC) Ban:** The EPA promulgated Underground Injection Control (UIC) regulations on December 7, 1999, which prohibit the construction of new large-capacity cesspools, effective April 2000. In addition, all existing large capacity cesspools must be closed or upgraded by April 5, 2005, to prevent contamination of current and potential underground sources of drinking water.

EPA staff has been working with the DOH Safe Drinking Water and Waste Water Branches and other government agencies to inform the public of the large capacity cesspool ban, identify the owners and location of large capacity cesspools, conduct outreach programs through various media, and assist owners with selecting alternative waste treatment systems.

**Nonpoint Source Pollution Program:** The Polluted Runoff Control Program, Nonpoint Source Program, is administered by the DOH Clean Water Branch and provides grants to parties to reduce and prevent polluted runoff. The program funded 12 multi-year projects totaling approximately \$1 million in 2004 and 9 multi-year projects totaling approximately \$1.7 million in 2005.

**Pesticide State Management Plan:** The State Department of Agriculture (DOA), Pesticides Branch, prepared and submitted a State Pesticide Management Plan restricting the use of Atrazine and its substitutes to the EPA for review and approval. DOA is waiting for EPA to promulgate final rules on pesticides.

In the past, groundwater contamination was been detected from the label use of pesticides as well as from accidental spills. The DOA Pesticides Branch has take measures to reduce/prevent groundwater contamination from label use pesticides by screening pesticides that will be used over large areas and identifying pesticides with high leaching potential on O`ahu. This is important when pesticides are used in areas directly located over potable aquifers with shallow water tables. If a chemical shows high leaching potential from preliminary screening evaluation, secondary reviews of the chemical are conducted using in-depth analysis of the soil and pesticide properties and a computer model of leaching using the attenuation factor (AF) approach of Rao et. al. (1985). The model employs a geographic information system (GIS) to incorporate soil hydrologic information such as depth to water, recharge rate, field capacity water content, bulk density, porosity, and soil organic carbon. A pesticide property database is used concurrently with the GIS-based soil properties database to predict the AF. DOA, Pesticides Branch uses this model as a tool to screen pesticides prior to its licensing in Hawai`i. The model also allows the mapping of pesticide use in relationship to

groundwater wells and surface water sources.

DOH completed its contract with the University of Hawai'i (UH) Water Resources Research Center (WRRC) to improve the soil hydrologic database and the pesticides properties database, and updated and compared DOA's pesticides model with the EPA's model for registering new pesticides. It was determined that neither of the EPA's screening models (SC.-GROW nor PETE) offered any distinct advantages over Hawai'i's screening model (CLEARs).

**Pollution Prevention Program:** The Pollution Prevention Program (P2) is administered by the Office of Solid Waste Management of the DOH. The P2 program has as its goal the prevention of waste generation by changing business processes which generate wastestreams to minimize or eliminate waste generation.

The program is not regularly involved in groundwater protection activities; however, through the minimization of waste, groundwater is less vulnerable to contaminants coming from waste generation and disposal practices.

**Resource Conservation and Recovery Act (RCRA) Primacy:** The main focus of the RCRA is to regulate solid and hazardous wastes and underground storage tanks (UST). The DOH Solid and Hazardous Waste Branch administers regulations related to solid waste disposal and engineering requirements for landfill construction to ensure that landfill leachates do not percolate into the soil and groundwater. UST regulations assure that UST's are constructed properly, are non-corrosive, and have leak detection capability. These measures help ensure that contaminants do not leach into the surrounding soils and groundwater.

**Source Water Assessment Program (SWAP):** The DOH Safe Drinking Water Branch contracted with the University of Hawai'i's Water Resources Research Center (WRRC) to conduct assessments of the state's 450-plus drinking water sources. The WRRC team used MODFLOW, a three-dimensional groundwater flow model, to examine the sources' capture area based on the hydrogeology and the rate and pattern of withdrawal at each source. The Source Water Assessment and Protection Areas (SWAPAs) include three zones: 1) a well site control zone with a 50-meter diameter around each well site where all types of contaminating activities are excluded; 2) a two-year travel time zone for microbiological contaminants; and 3) a ten-year travel time zone for chemical contaminants that are expected to remain in the environment.

Once SWAPAs were established, WRRC identified potentially contaminating activities (PCAs) within each zone. Each PCA was assigned a numeric score depending on the seriousness of the threat it posed, and each source was assigned a score based on the cumulative scores of the PCAs identified within that source's SWAPA. The DOH SDWB completed assessments of the state drinking water sources and distributed source water assessment reports to each water utility to assist them in their source water protection efforts.

**State Superfund:** Superfund is the Federal government's program to clean up the nation's hazardous waste sites. Under the Superfund program, hazardous waste that pose a current or future threat to human health or the environment are cleaned up. The EPA works closely with communities, Potentially Responsible Parties (PRPs), contractors, state, local and Federal authorities to identify hazardous waste sites, test the conditions of the sites, formulate cleanup plans, and cleanup the sites.

**State Resource Conservation and Recovery Act (RCRA) Program:** The State RCRA program and requirements are similar to the federal RCRA program requirements.

**State Septic System Regulations:** The State Septic System Regulations program is administered by the DOH Wastewater Branch (WWB). The program reviews and approves plans for the construction of septic systems. The program oversees final inspections by engineers, responds to complaints, and conducts enforcement actions.

In 2004, the WWB approved plans for 2,578 new individual wastewater treatment systems (IWS), which include septic systems, aerobic units and cesspools in the state and 3,969 IWS in 2005.

**Underground Injection Control Program:** This program is administered by the DOH Safe Drinking Water Branch, Underground Injection Control Program. The UIC Program regulates underground injection well activity throughout the state by using permitting, construction review, inspections and compliance measures.

The UIC Program issued 63 permits for injection wells in 2004 and 44 permits in 2005. The UIC program reported 16 injection well closures in 2004 and 31 injection well closures in 2005. Well closures include industrial and sewage injection wells, and surface drainage wells. The closure of injection wells reduces the number of wells that can contribute to groundwater contamination.

**Underground Storage Tank Permit Program:** The Underground Storage Tank Permit Program is administered by the DOH Solid and Hazardous Waste Branch. As of January 2000, all new tanks going into the ground must include information on the type of tank, location, diagrams of the tank system, and ownership. Three new underground storage tanks were installed in 2004 and three in 2005.

**Underground Storage Tank Remediation Fund:** The Underground Storage Tank Remediation Fund is a trust fund established to finance the cleanup of contaminated sites as a result of underground storage tank leakages.

**Voluntary Response Program (VRP) Site List:** The Voluntary Response Program (VRP) allows property owners and prospective purchasers to undertake a voluntary remedial action under the oversight of the Department of Health. At the completion of the response action, the DOH issues a Letter of Completion that exempts prospective purchasers and future owner/tenants from liability related to the contaminants addressed in the voluntary action. The applicant pays the DOH oversight fees as part of the review and approval of the voluntary actions. Five sites have completed contamination cleanups under the VRP. There are currently 14 projects conducting cleanups of contamination under the VRP.

**Vulnerability Assessment for Drinking Water/Wellhead Protection:** See Source Water Assessment.

**Well Abandonment Regulations:** Well abandonment regulations are set forth by the State Department of Land and Natural Resources (DLNR), Commission on Water Resources Management (CWRM). The regulations provide minimum standards in the technical aspects of the abandonment of wells, ensure safe and sanitary closures of wells, and give priority to environmental safety, groundwater contamination, and public safety considerations.

**Wellhead Protection Program (EPA-approved):** The Hawai'i Wellhead Protection Program's (WHPP) goal is to protect groundwater resources that supply drinking water to public water systems from contamination. The WHPP is a long term, on-going, protection program based on the SWAP and will protect wellhead areas from contamination by identifying management areas around wells or well fields; identifying potential sources of groundwater contamination within the area; and working with and educating public water systems and the general public about managing current and potential future contamination.

The WHPP complements existing regulatory programs and actions and encourages partnerships of stakeholders to develop practical and implementable source water protection measures. DOH has developed a financial assistance program for the WHPP and will make funding for Wellhead/Source Water Protection planning available to county and private water purveyors and county planning agencies as well as future funding to implement wellhead protection projects and plans.

**Well Installation Regulations:** Well installation regulations are set forth by the State Department of Land and Natural Resources (DLNR), Commission on Water Resources Management (CWRM). These standards are considered to be minimum standards for the construction of wells, pumps and pumping equipment, and to ensure safe and sanitary maintenance and operation of wells, the prevention of waste and the prevention of contamination of groundwater aquifers. The Hawai'i Well Construction and Pump Installation Standards

were revised in February 2004 and contain guidelines for optimizing and protecting groundwater resources.

**Other Programs or Activities:** The following list represents other agencies that are directly and indirectly involved in groundwater protection efforts. These agencies regulate the uses of land and promote safe and healthy environmental practices.

**National Resource Conservation Service (NRCS):** The National Resource Conservation Service (NRCS), United States Department of Agriculture (USDA), provides technical assistance in the areas of agricultural production and cultivation, and economic management. Conservation plans help conserve soil, water and other natural resources by advocating proper production methods and the use of best management practices (BMPs) to minimize adverse environmental impacts.

**State land use and zoning:** The State Land Use Commission (LUC), Department of Business, Economic Development, and Tourism (DBEDT), administers the statewide zoning system of Urban, Agricultural, Rural, and Conservation Land Use Districts. The

LUC regulates land use activities for all land use districts greater than 15 acres with the exception of Conservation Districts and decides upon any amendments to reclassify land use districts. Conservation Districts are administered by the State Board (Department) of Land and Natural Resources and governed by rules promulgated by the State Department of Land and Natural Resources. Counties are responsible for administering land use changes for Urban, Agricultural and Rural Districts under 15 acres.

**County planning and land utilization:** The County Planning and Land Utilization Departments regulate specific land uses and implement respective zoning and land use laws affecting Urban, Agricultural and Rural Land Use Districts under 15 acres for their respective county. The LUC decides upon land use changes for districts greater than 15 acres and for all Conservation Districts.

## Part 3: Groundwater Contamination Summary

### Methodology of Reporting

**National Priority List (NPL) Sites:** The NPL is the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation.

The State has three NPL sites, which were mapped in geographic information system (GIS).

- **Del Monte Corporation, O`ahu.** The Del Monte Corporation (formerly O`ahu Plantation) site covers 6,000 acres. Soil and shallow groundwater at the site have been contaminated with the fumigants EDB, DBCP and DCP, the solvents TCP and benzene, and the pesticide lindane. Deep groundwater is contaminated with EDB, DBCP and TCP. The site is being addressed in two stages: initial actions and long-term remedial phase focusing on cleanup of the entire site.
- **Naval Computer and Telecommunication Area Master Station (NCTAMS), Eastern Pacific (EASTPAC), O`ahu.** NCTAMS EASTPAC consists of operating facilities located throughout the island of O`ahu and include: Wahiawa, Lualualei, Kokele Pass and various satellite communication locations. The sites are primarily land disposal areas that are no longer in use and PCB transformer sites. Soil contamination depends on the site, but generally the chemicals of concern are PCBs, volatile organics, semi-volatile organics and metals. Removal actions to date are PCB transformer sites.
- **Pearl Harbor Naval Complex (PHNC), O`ahu.** The Pearl Harbor Naval Complex encompasses approximately 12,600 acres of land and water. Soil, groundwater and sediment are contaminated with metals, organic compounds, and petroleum hydrocarbons. The site is being addressed in two stages: early actions, and remedial process focusing on accelerated cleanup by presumptive remedies and removal actions.

**Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Sites:** CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL. The EPA reported that the State of Hawai`i had 91 CERCLIS sites in 2005, of which 27 were mapped in GIS. Groundwater contamination information was not available.

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	SITE NAME	CITY	COUNTY	STATE	NPL
1	ALOHA TOWER DEVELOPMENT	HONOLULU, O'AHU	HONOLULU	HI	N
2	ARMY AVIATION SUPPORT FACILITY #2	HILO	HAWAII	HI	N
3	BARBERS POINT NAVAL AIR STATION	BARBERS POINT	HONOLULU	HI	N
4	BELLOWS AIR FORCE STATION	WAIMANALO	HONOLULU	HI	N
	BIRD BUILDERS	KAHULUI	MAUI	HI	N
6	BREWER CHEM CORP	EWA BEACH	HONOLULU	HI	N
7	BREWER CHEM CORP	LIHUE	KAUAI	HI	N
8	CHEMWOOD TREATMENT CO, INC.	EWA BEACH	HONOLULU	HI	N
9	CYPRUS HAWAIIAN CEMENT CORP	EWA BEACH	HONOLULU	HI	N
	DEFENSE REUTILIZATION & MKTG REG-PAC	PEARL CITY	HONOLULU	HI	A
11	DEL MONTE CORP. (O'AHU PLANTATION)	KUNIA	HONOLULU	HI	F
12	EWA SUGAR MILL/O'AHU SUGAR CO.	EWA BEACH	HONOLULU	HI	N
13	EWA SUGAR MILL/O'AHU SUGAR CO. - CORAL WASTE PIT	EWA BEACH	HONOLULU	HI	N
14	EWA SUGAR/O'AHU SUGAR CO. - PESTICIDE MIXING AND LOADING SITE	EWA BEACH	HONOLULU	HI	N
15	EWA SUGAR/O'AHU SUGAR CO. - WAIPIO PENINSULA	WAIPAHU	HONOLULU	HI	N
16	F & M CONTRACTORS, INC.	KAHULUI	MAUI	HI	N
17	FARRINGTON HIGH SCHOOL	HONOLULU	HONOLULU	HI	N
18	FORT KAMEHAMEHA DSPL SITE	HICKAM AFB	HONOLULU	HI	N
19	FORT SHAFTER	FORT SHAFTER	HONOLULU	HI	N
	GOLDEN MELON FARMS	WAIMANALO	HONOLULU	HI	N
21	HAWAII MERCURY	HONOLULU	HONOLULU	HI	N
22	HAWAII METALS RECYCLING CO.	EWA BEACH, O'AHU	HONOLULU	HI	N
23	HAWAII PROJECT MANAGEMENT (HPM)	EWA BEACH, O'AHU	HONOLULU	HI	N
24	HAWAII STAGING AND LIGHTING	HONOLULU	HONOLULU	HI	N
25	HAWAIIAN WELLS (6 SITES)	UNAVAILABLE	[Blank County]	HI	N
26	HILO ARSENIC SPILL SITE	HILO	HAWAII	HI	N
27	HILO BURRITO	HILO	HAWAII	HI	N
28	HONOLULU HARBORS PROJECT	HONOLULU	HONOLULU	HI	N
29	HONOLULU INTL AIRPORT	HONOLULU	HONOLULU	HI	N
30	HONOLULU SKEET CLUB	KAILUA	HONOLULU	HI	N
31	JACKSON CONSTRUCTION LANDFILL	EWA BEACH	HONOLULU	HI	N
32	KAHOOLAWE ISLAND	KIHEI	MAUI	HI	N
33	KAILUA-KONA LANDFILL	KAILUA KONA	HAWAII	HI	N
34	KALAMAULA LANDFILL	KAUNAKAKAI	MAUI	HI	N
35	KANAHA POND WEST	KAHULUI	MAUI	HI	N
36	KAPAA LDFL	KAILUA	HONOLULU	HI	N
37	KAPALAMA INCINERATOR	HONOLULU	HONOLULU	HI	N
38	KAUAI AGRICULTURAL RESEARCH CENTER	WAILUA	KAUAI	HI	N
39	KEA'AU ARSENIC SITES	KEA'AU	HAWAII	HI	N
40	KEEHI LAGOON CANOE FACILITY	HONOLULU	HONOLULU	HI	N
41	KEKAHA SUGAR CO., LTD - FORMER WOOD TREATMENT AND HERBICIDE MIXING PLANT	KAUAI	KAUAI	HI	N
42	KEKAHA SUGAR CO., LTD.	KEKAHA	KAUAI	HI	N
43	KIPAPA FUEL STORAGE ANNEX	MILILANI	HONOLULU	HI	N
44	KURE ATOLL, U.S. COAST GUARD	HONOLULU	HONOLULU	HI	N
45	LEEWARD AUTO WRECKERS, INC.	EWA BEACH, O'AHU	HONOLULU	HI	N
46	LIHUE PLANTATION COMPANY, LTD.	LIHUE	KAUAI	HI	N
47	MAILI KAI EMERGENCY ACCESS ROAD SITE	WAIANA	HONOLULU	HI	N
48	MAIPALAOA ROAD	WAIANA	HONOLULU	HI	N
49	MAKUA MILITARY RESERVATION ORDN DISP	WAIANA	HONOLULU	HI	N

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	SITE NAME	CITY	COUNTY	STATE	NPL
50	MARINE CORPS BASE HAWAII	KANEOHE	HONOLULU	HI	N
51	MOUNT KAALA NATURAL AREA RESERVE	WAIALUA	HONOLULU	HI	N
52	NAVAL COMPUTER AND TELECOMMUNICATIONS AREA MASTER STATION EASTERN PACIFIC	WAIHAWA	HONOLULU	HI	F
53	NAVAL MAGAZINE LUALUALEI	EWA BEACH	HONOLULU	HI	N
54	NAVAL SUBMARINE BASE	PEARL HARBOR	HONOLULU	HI	A
55	NRTF LUALUALEI	WAIHAWA	HONOLULU	HI	N
56	OPANA	WAIHAWA	HONOLULU	HI	A
57	PAHE PLANTATION	WAIMANALO	HONOLULU	HI	N
58	PAIA SUGAR MILL	PAIA	MAUI	HI	N
59	PEARL CITY FUEL ANNEX	PEARL CITY	HONOLULU	HI	N
60	PEARL HARBOR NAVAL COMPLEX	PEARL HARBOR	HONOLULU	HI	F
61	PEARL HARBOR NAVAL SHIPYARD	PEARL HARBOR	HONOLULU	HI	A
62	PEARL HARBOR NAVAL STATION	PEARL HARBOR	HONOLULU	HI	A
63	PEARL HARBOR NAVAL SUPPLY CTR	PEARL HARBOR	HONOLULU	HI	A
64	PEARL HARBOR NAVY PUBLIC WORKS CTR	PEARL HARBOR	HONOLULU	HI	A
65	PEARL HARBOR PWC MAKALAPA PESTICIDE PIT	PEARL HARBOR	HONOLULU	HI	A
66	PIONEER MILL COMPANY	LAHAINA	MAUI	HI	N
67	POAMOHO RAG DISPOSAL AREA	SCHOFIELD	HONOLULU	HI	N
68	POHAKULOA TRAINING AREA	HILO	HAWAII	HI	N
69	PUKOLOA WOOD TREATING SITE	HONOLULU	HONOLULU	HI	N
70	PUNA GEOTHERMAL VENTURE	PAHOA	HAWAII	HI	N
71	SCHOFIELD BARRACKS (US ARMY)	SCHOFIELD	HONOLULU	HI	D
72	SCHOFIELD BARRACKS SAN LDFL	WAIHAWA	HONOLULU	HI	N
73	SCOTT'S PLATING	KANEOHE	HONOLULU	HI	N
74	SHORE INTERMEDIATE MAINTENANCE ACTIVITY	PEARL HARBOR	HONOLULU	HI	A
75	TAKAMIYA PROPERTY	HONOLULU	HONOLULU	HI	N
76	TRIPLER ARMY MEDICAL CENTER	TRIPLER AMC	HONOLULU	HI	N
77	U S NAVY EXCHANGE LAUNDRY FACILITY	PEARL HARBOR	HONOLULU	HI	A
78	U.S. COAST GUARD OMEGA STATION	KANEOHE	HONOLULU	HI	N
79	UNOCAL/IWILEI TANK FARM	HONOLULU	HONOLULU	HI	N
80	USAF WAIKAKALAU FUEL STORAGE ANNEX	WHEELER ARMY AIRFIELD	HONOLULU	HI	N
81	USN FLEET TRAINING GROUP	PEARL HARBOR	HONOLULU	HI	A
82	VERMICULITE OF HAWAII, INC.	HONOLULU	HONOLULU	HI	N
83	WAIAKEA POND/HAWAIIAN CANE PRDTS PLANT	HILO	HAWAII	HI	N
84	WAIALUA SUGAR MILL	WAIALUA	HONOLULU	HI	N
85	WAIAWA GULCH	PEARL CITY	HONOLULU	HI	N
86	WAIAWA GULCH-INDUSTRIAL PARK/STREAM	PEARL CITY	HONOLULU	HI	N
87	WAIAWA SHAFT	O'AHU	HONOLULU	HI	R
88	WAIMANALO GROUNDWATER INVESTIGATION	WAIMANALO	HONOLULU	HI	N
89	WAIPAHU ASH DUMP	WAIPAHU	HONOLULU	HI	N
90	WAIPAHU WELLS	O'AHU	HONOLULU	HI	R
91	WHEELER AIR FORCE BASE	WHEELER ARMY AIRFIELD	HONOLULU	HI	N

Key for NPL: A=Part of NPL site, F=Final NPL, R=Removed from NPL, D=Deleted from NPL, N=Not on NPL

**Department of Defense (DOD)/ Department of Energy (DOE) Sites:** The DOH Hazard Evaluation and Emergency Response (HEER) Office continues to provide oversight to all military site cleanups through the Department of Defense/State Memorandum of Agreement (DSMOA). The military installations listed below are covered by the agreement. The HEER Office database included 183 DOD/DOE sites of which 11 DOD/DOE sites were mapped in GIS. Groundwater contamination information was not included in the HEER database.

**Army Installations**

- 1 Camp Smith, O`ahu
- 2 Fort Shafter, O`ahu
- 3 Kunia Military Reservation, O`ahu
- 4 Lualualei Naval Magazine, Schofield Barracks, O`ahu
- 5 Tripler Army Medical Center, O`ahu
- 6 Wheeler Army Airfield, O`ahu
- 7 Schofield Barracks, O`ahu

**Navy Installations**

- 1 Barbers Point Naval Air Station, O`ahu
- 2 Naval Computer and Telecommunications Area Master Station (NCTAMS) Pacific, O`ahu
- 3 Pacific Missile Range Facility, Kaua`i
- 4 Pearl Harbor Fleet Industrial Supply Center, O`ahu
- 5 Pearl Harbor Naval Public Works, O`ahu
- 6 Pearl Harbor Naval Shipyard, O`ahu
- 7 Pearl Harbor Naval Station, O`ahu

**Air Force Installations**

- 1 Bellows Air force Station, O`ahu
- 2 Hickam AFB, O`ahu
- 3 Hickam POL Pipeline and Storage Area, O`ahu
- 4 Kaala Air Force Station, O`ahu
- 5 Kaena Point Satellite Tracking Station, O`ahu
- 6 Kokee Air force Station, Kaua`i

**Former Defense Department Sites**

- 1 Firing Range and Camp, Lalamilo, Hawai`i
- 2 Grove Farm Artillery Range, Kaua`i
- 3 Gunnery Site, Makawao, Maui
- 4 Heeia Combat Training Camp, Heeia, O`ahu
- 5 Lana`i Radar Station, Lana`i
- 6 Maui Airport, Puunene, Maui
- 7 Moloka`i Punakua Bombing and Papohaku Ranchland Target Areas, Moloka`i
- 8 Nansay Hawai`i, North Kohala, Hawai`i
- 9 Offshore Waianae Sewage Outfall, O`ahu
- 10 Opana Point, Maui
- 11 Pakini Bombing Range, Kau, Hawai`i
- 12 Pali Training Camp, O`ahu
- 13 Waikane Training Area, O`ahu
- 14 Waikoloa Maneuver Area, Waikoloa, Hawai`i

**Leaking Underground Storage Tank (LUST) Sites:** The State DOH Solid and Hazardous Waste Branch (SHWB) maintains databases of underground storage tanks (UST), and leaking underground storage tanks (LUST) but does not include groundwater contamination information in the databases. The Solid and Hazardous Waste Branch reported 193 LUST sites for 2004 and 2005, of which 149 LUST sites were geo-referenced and mapped in GIS. Groundwater contamination information was not included in the SHWB database.

	2004	2005
LUST confirmed release	18	24
LUST site cleanup completed*	51	70
LUST site cleanup initiated	13	10
LUST case transferred to HEER office	4	3

\*No further action required.

**Resource Conservation and Recovery Act (RCRA) Corrective Action Sites:** RCRA gave EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous wastes.

RCRA Corrective Action is just one of the many tools that EPA and States use to address the cleanup and revitalization of our nation's hazardous waste sites. RCRA sites were not mapped in GIS.

- 1 Chemwood Treatment Co. Inc., Honolulu, O`ahu
- 2 Chevron Products Company, Kapolei, O`ahu
- 3 Hawaiian Western Steel Limited, Kapolei, O`ahu
- 4 Tesoro Hawai`i, Ewa Beach, O`ahu.

**State Listed Sites:** The HEER Office Site Discovery, Assessment and Remediation (SDAR) Section has oversight responsibility for the discovery, assessment, remediation and closure for all sites identified through the spill/release notification system after an initial emergency response activity is completed. The HEER Office reported 750 State Sites for 2004 and 2005, of which 352 were mapped in GIS. Groundwater contamination information was not included in the HEER database.

**Underground Injection Control (UIC) Sites:** The State DOH Safe Drinking Water Branch, Underground Injection Control (UIC) Program maintains files and a database of UIC facilities, wells and well information. The UIC Program issued 63 new permits in 2004 and 44 new permits in 2005. Sixteen injection wells were closed in 2004, and 31 injection wells were closed in 2005.

237 UIC facilities\* were mapped in GIS for 2005 and included the following categories.

- Sewage wells 124
- Drainage wells 67
- Industrial wells 37
- Aquaculture wells 4
- Construction de-watering wells 2
- Other wells 2
- Geothermal wells 1

\*Inventory updates are continuing, and each facility typically has more than one injection well. It is not uncommon for a facility to have multiple injection wells.

## 2006 State of Hawaii Water Quality Monitoring and Assessment Report

### Table 3-3 Ground Water Contamination Summary

Hydrogeologic Setting <sup>(1)</sup>	See attached maps.
Spatial Description (optional) <sup>(2)</sup>	
Map Available (optional) <sup>(3)</sup>	See attached maps.
Data Reporting Period <sup>(4)</sup>	January 1, 2004 -December 31, 2005

Source Type <sup>(5)</sup>	Number of sites <sup>(6)</sup>	Number of sites with confirmed ground water contamination <sup>(6)</sup>	Number of sites that are listed and/or have confirmed releases <sup>(6)</sup>	Contaminants <sup>(7)</sup>	Number of site investigations (optional)	Number of sites that have been stabilized or have had the source removed (optional)	Number of sites with corrective action plans (optional)	Number of sites with active remediation (optional)	Number of sites with cleanup completed (optional)
NPL	3	3	2	See list.					
CERCLIS (non-NPL)	91	NA	NA	NA					
DOD/DOE	183	NA	NA	NA					
LUST	42	NA	NA	See list.				23	121
RCRA Corrective Action	4	4	4	See list.			4	4	
Underground Injection	237	0	0	NA					
State Sites	750	NA	NA	NA					
Non-point source									
Other (specify)									

NA - Not available

- NPL - National Priority List
- CERCLIS (non-NPL) - Comprehensive Environmental Response, Compensation, and Liability Information System
- DOE - Department of Energy
- DOD - Department of Defense
- LUST - Leaking Underground Storage Tanks
- RCRA - Resource Conservation and Recovery Act

**NATIONAL PRIORITY LIST (NPL) SITES**

Site Pearl Harbor Naval Complex, O`ahu  
 Del Monte Kunia, O`ahu  
 Naval Computer and Telecommunications Area Master Station (NCTAMS), Eastern Pacific (EASTPAC), O`ahu

Contaminants

Mercury, chromium, PCBs, pesticides, trichloroethene, trans-1,2-dichloroethene, and other volatile organic compounds in soil. Tetrachloroethane in soil and groundwater. Bis (2-ethylhexyl) phthalate in sediment. EDB, DBCP, DCP, TCP, benzene, lindane in soil and shallow groundwater. EDB, DBCP and TCP in deep groundwater. PCBs, volatile organics, semi-volatile organics, and metals.

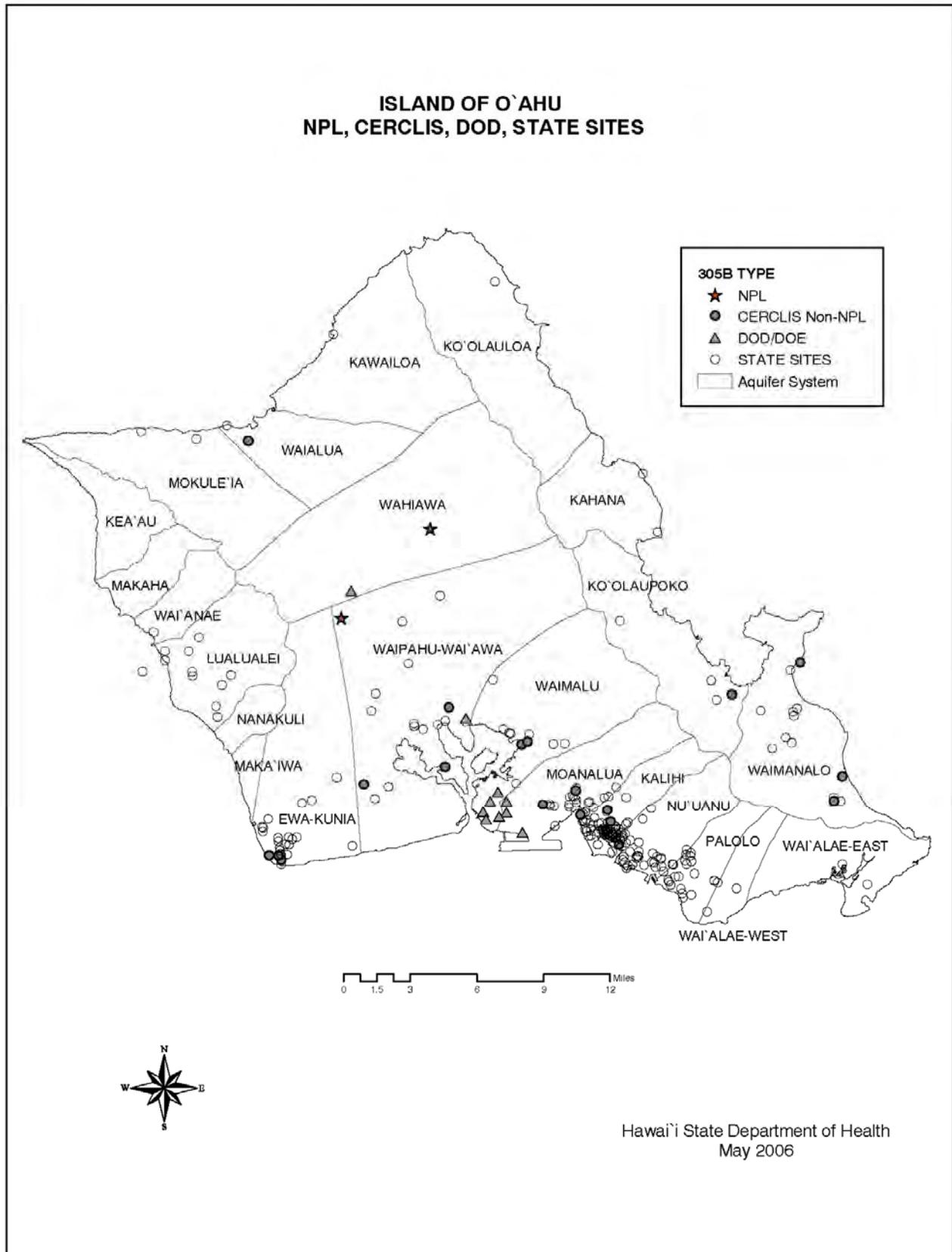
The Environmental Protection Agency will delete a site from the National Priorities List (NPL) when the EPA and the State of Hawai`i Department of Health have determined that the site poses no significant threat to public health or the environment and, therefore, no further remedial measures pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) are appropriate.

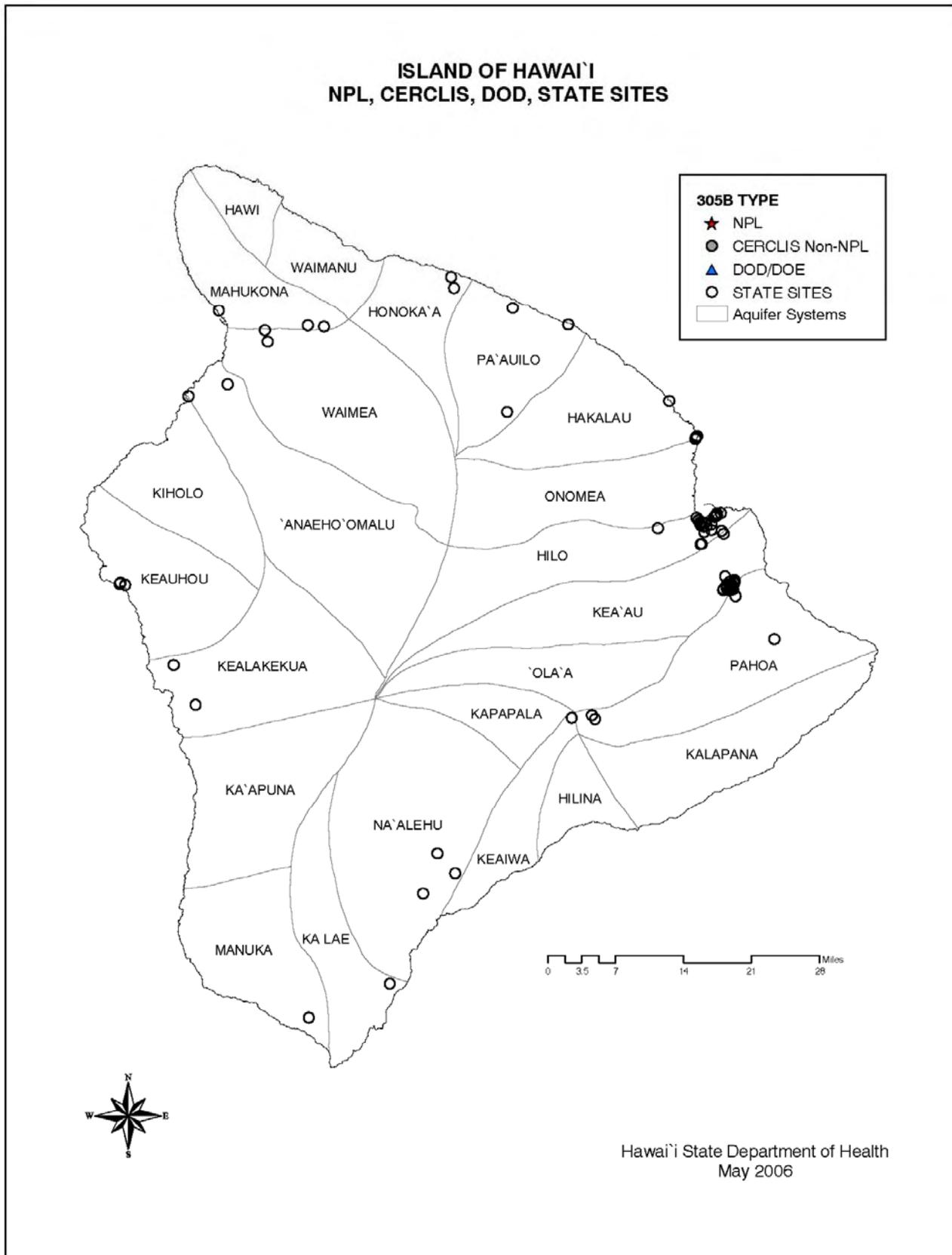
**RCRA CORRECTIVE ACTION SITES**

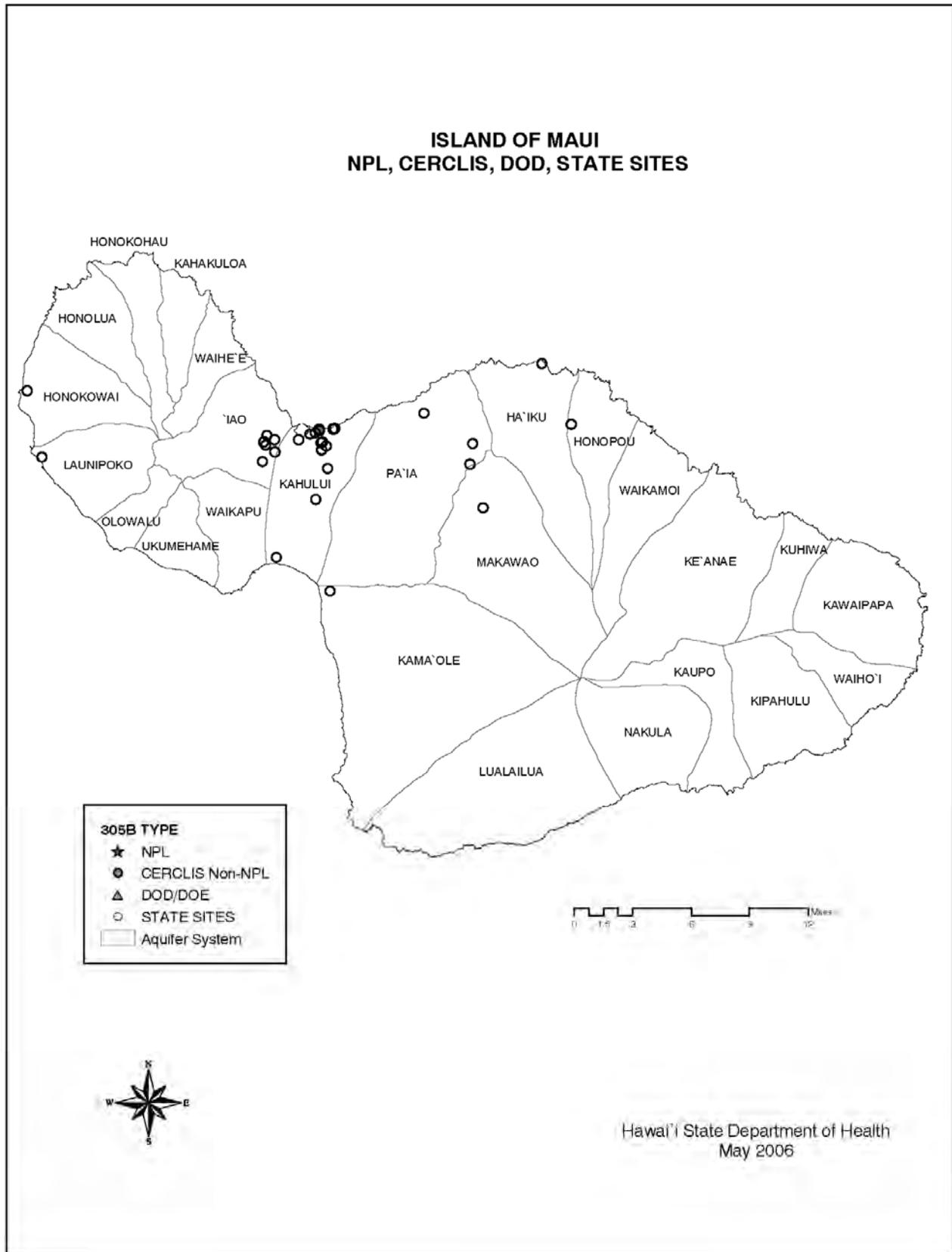
<u>Name</u>	<u>Address</u>	<u>Contaminants</u>
Chemwood	91-466 Komohana St., O`ahu	Pentachlorophenols, heavy metals
Chevron	91-480 Malakole St., O`ahu	Petroleum products
Hawaiian Western Steel	91-227 Hanua St., O`ahu	Heavy metals
Tesoro	91-325 Komohana St., O`ahu	Petroleum products

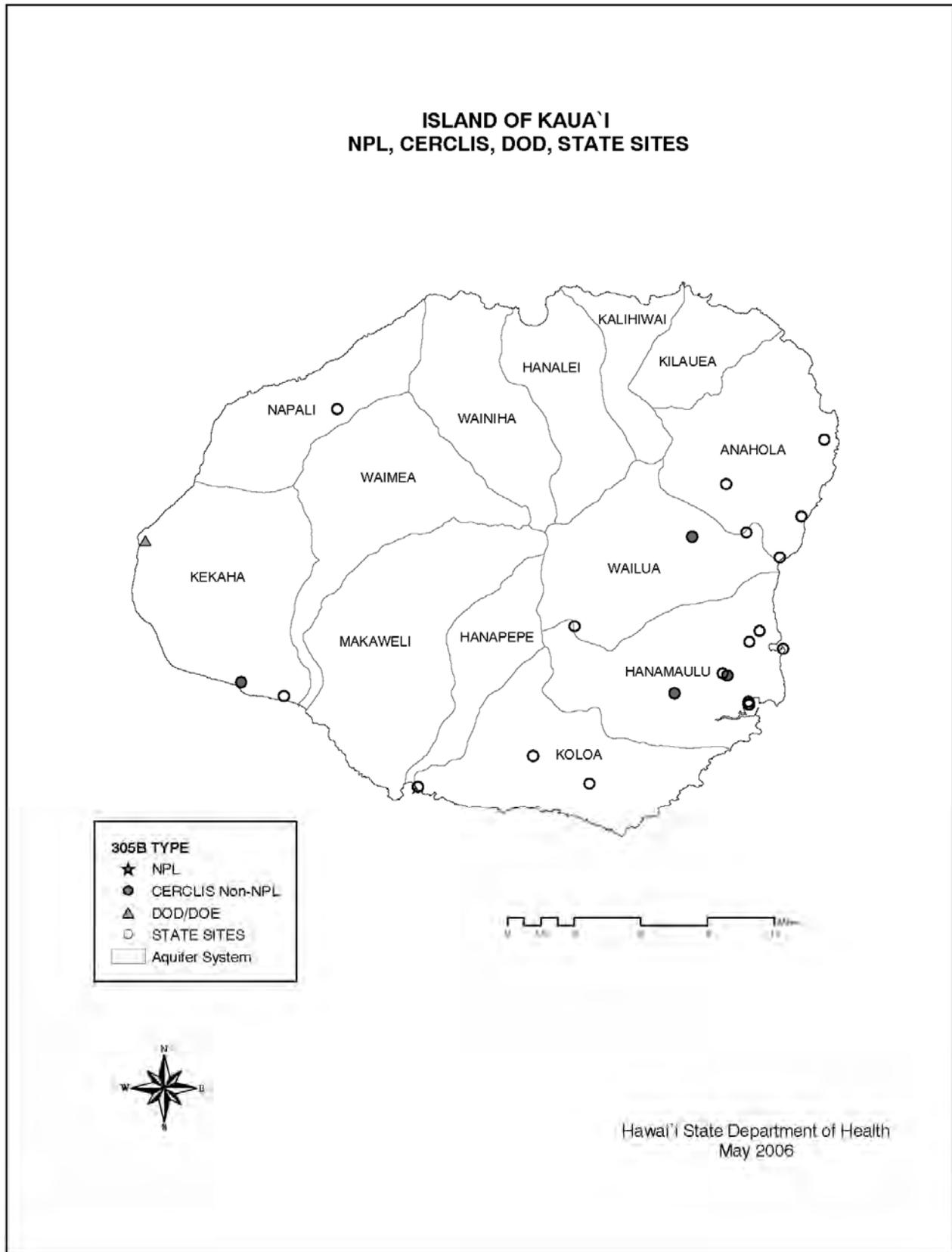
**LUST SITE CONTAMINANTS**

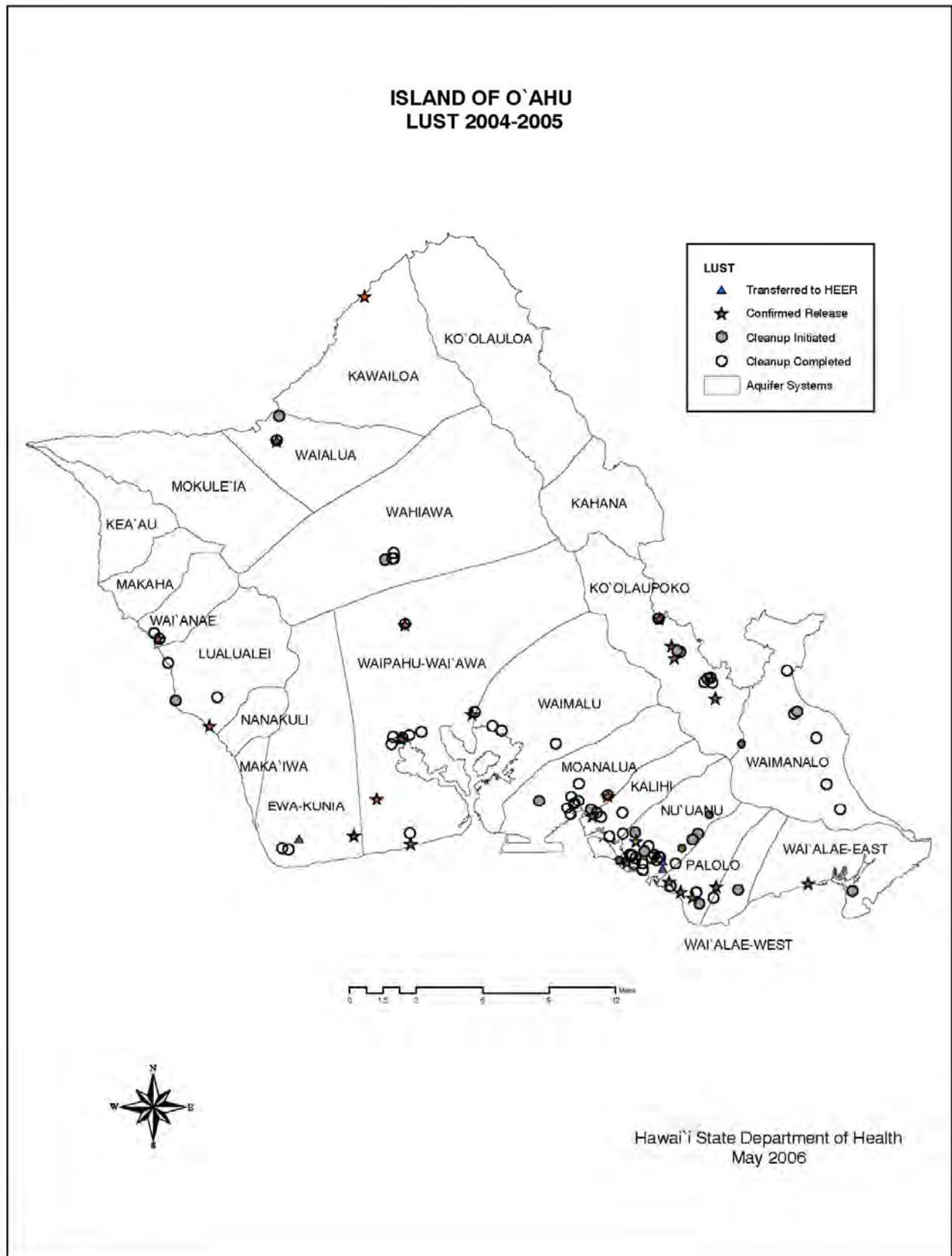
- Acenaphthene
- Benzene
- Benzo(a) pyrene
- Ethylbenzene
- Fluorothene
- Methyl tertiary butyl ether (MTBE)
- Methylene chloride
- Naphthalene
- Toluene
- Total petroleum, gasoline and diesel
- Vinyl chloride
- Xylene

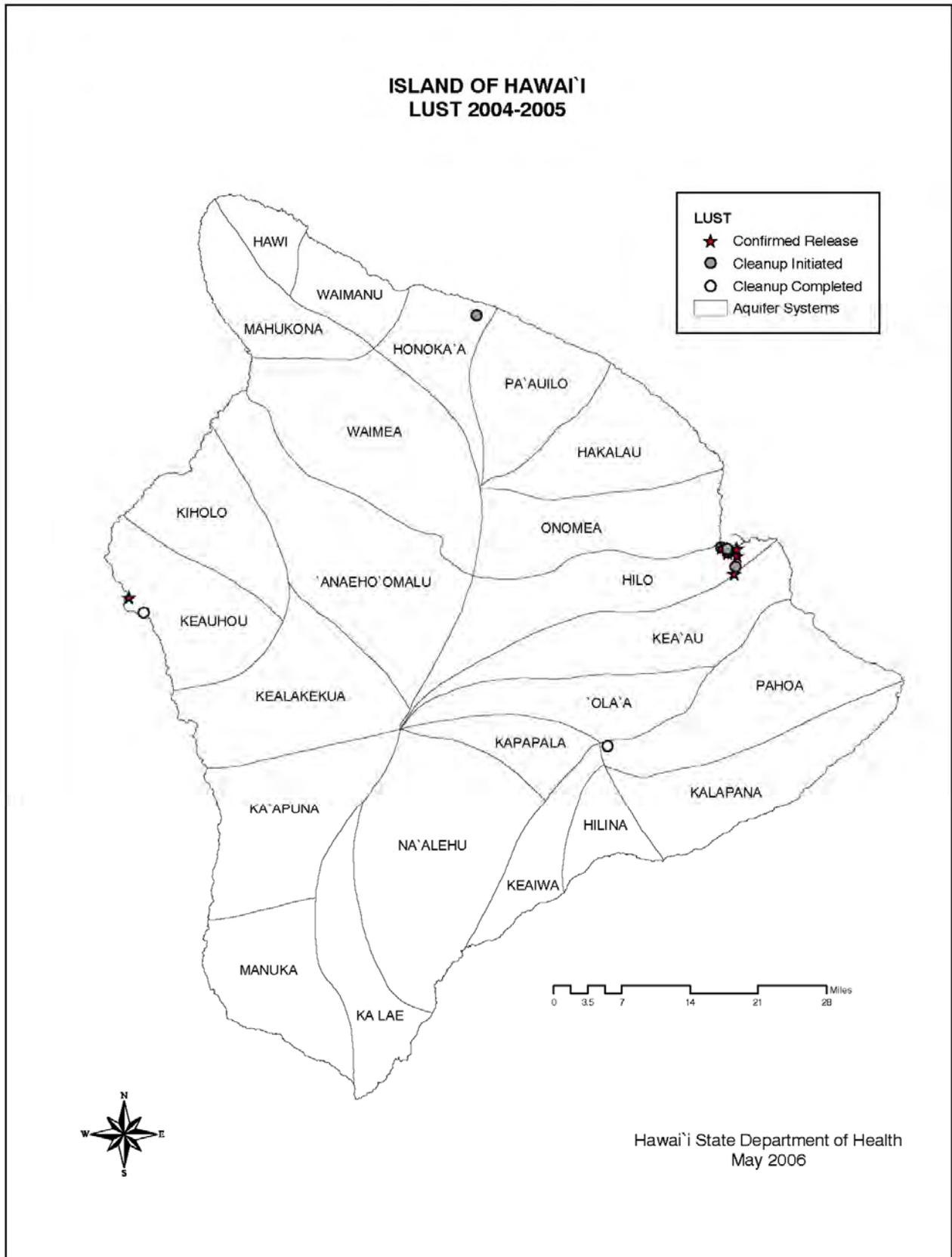


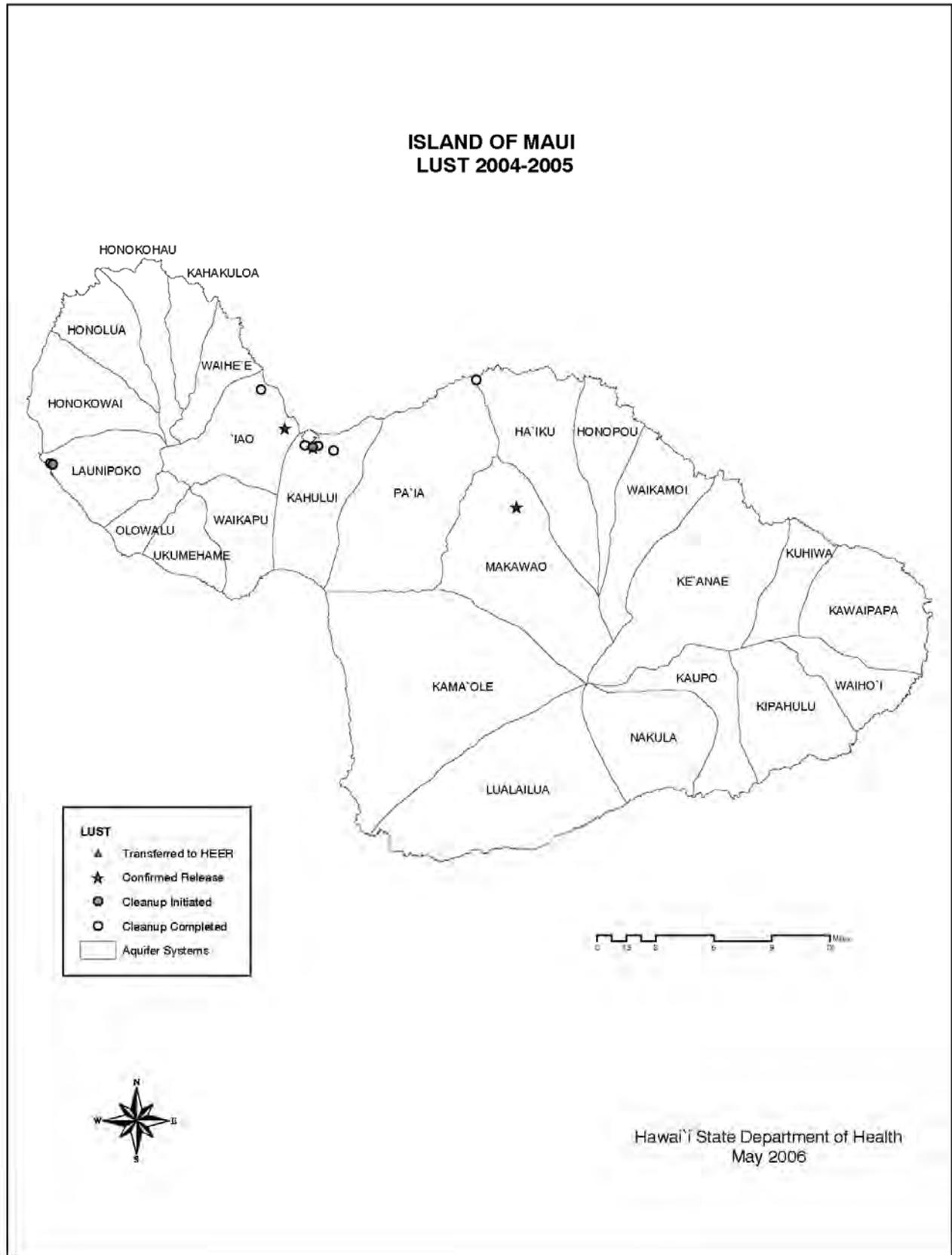


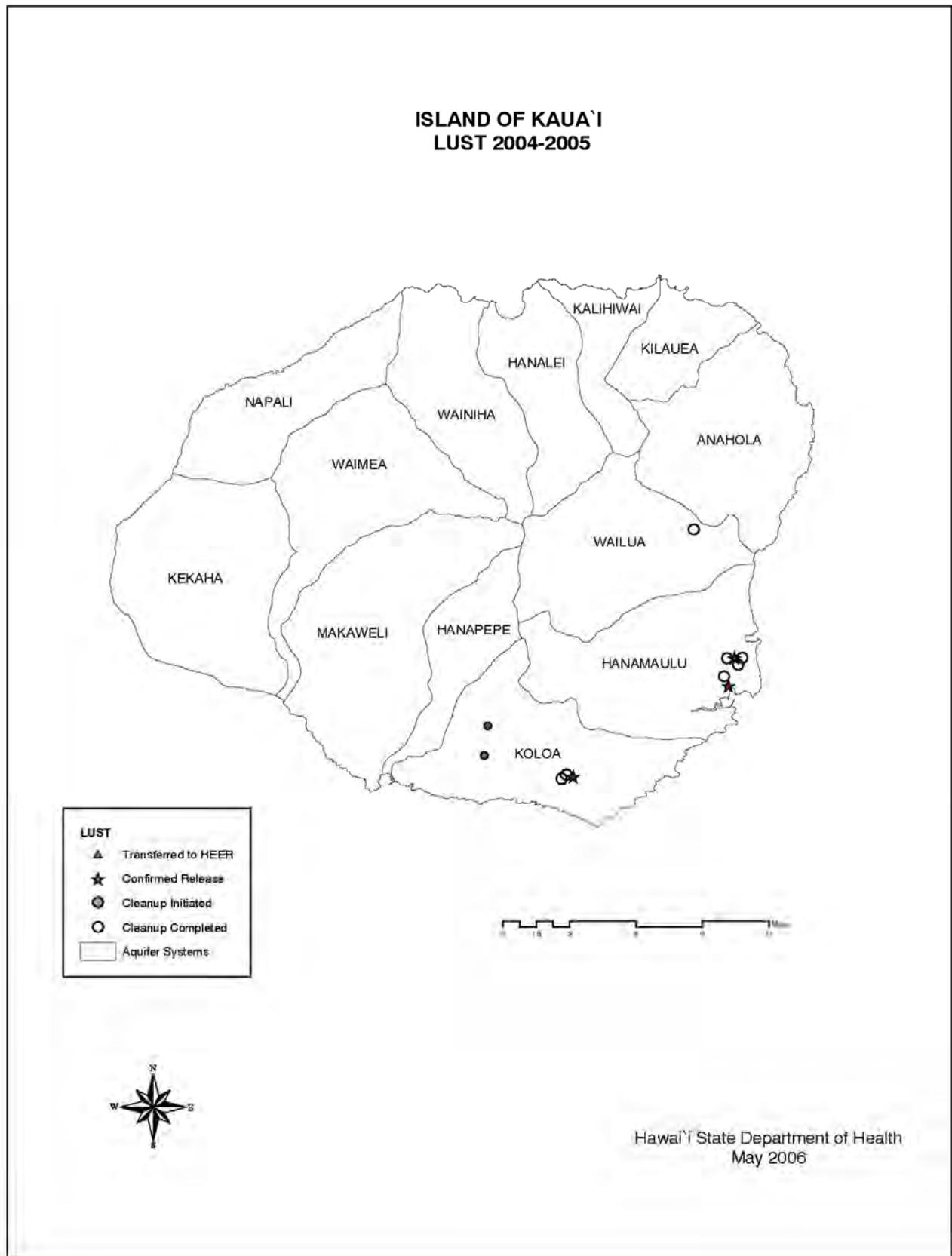


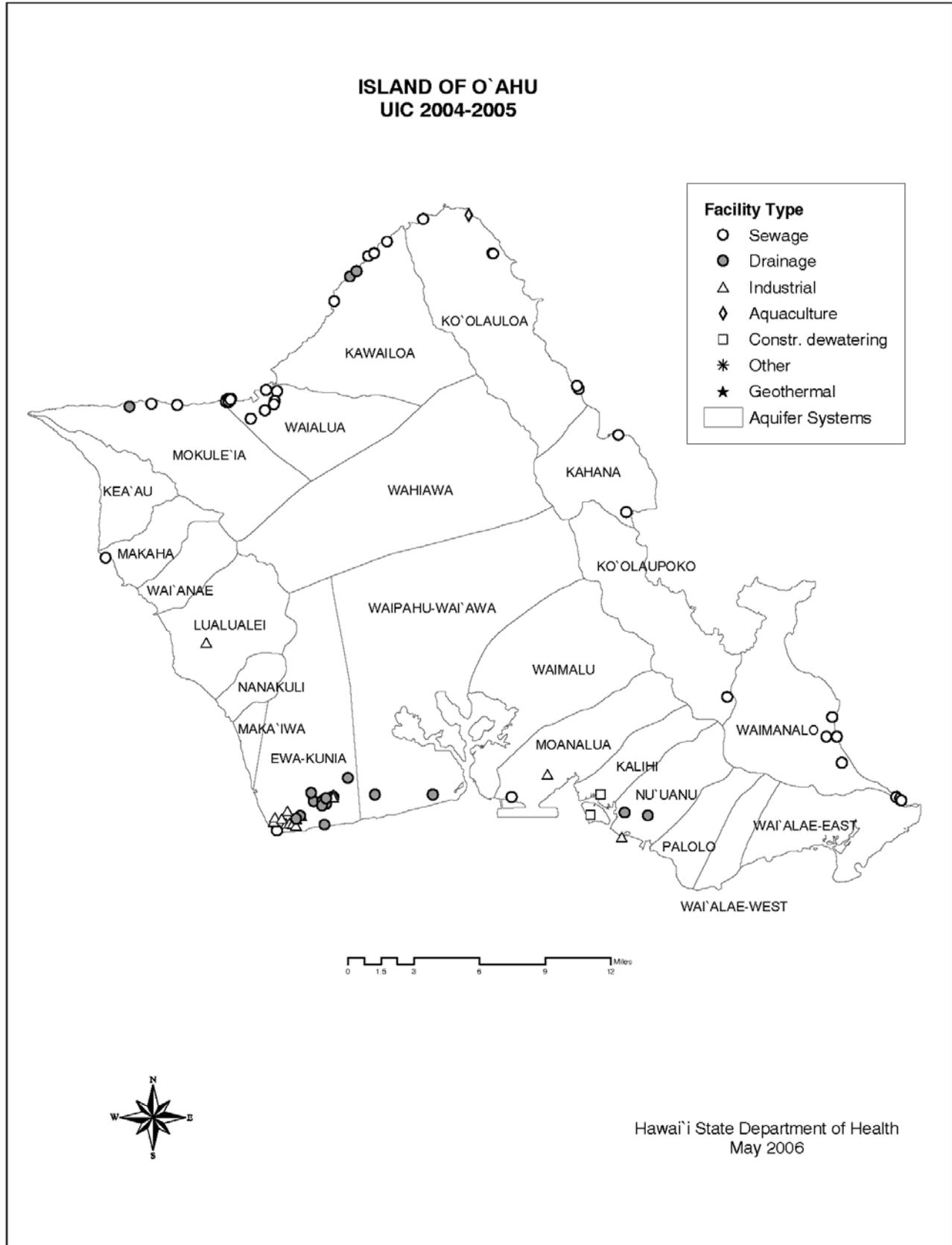


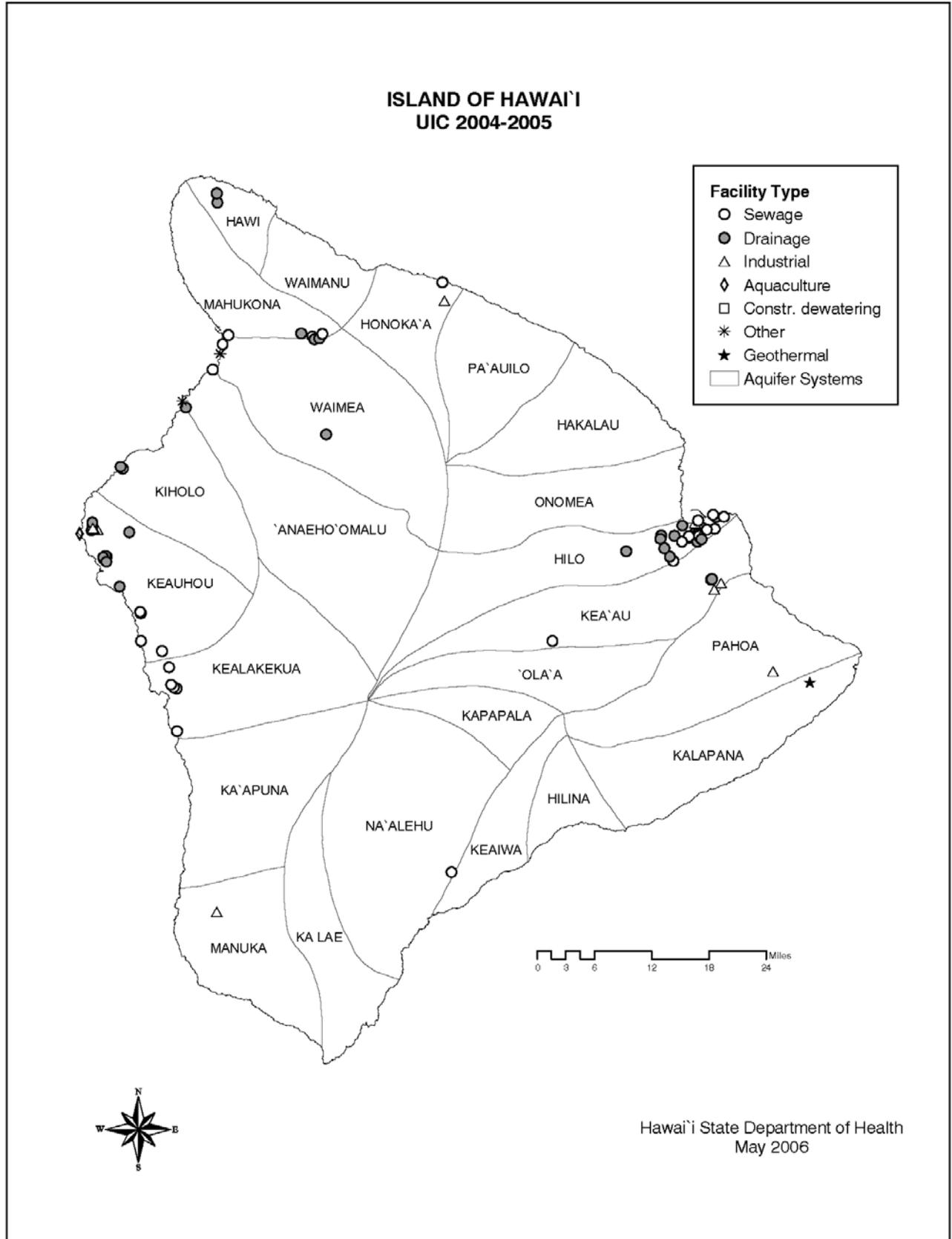


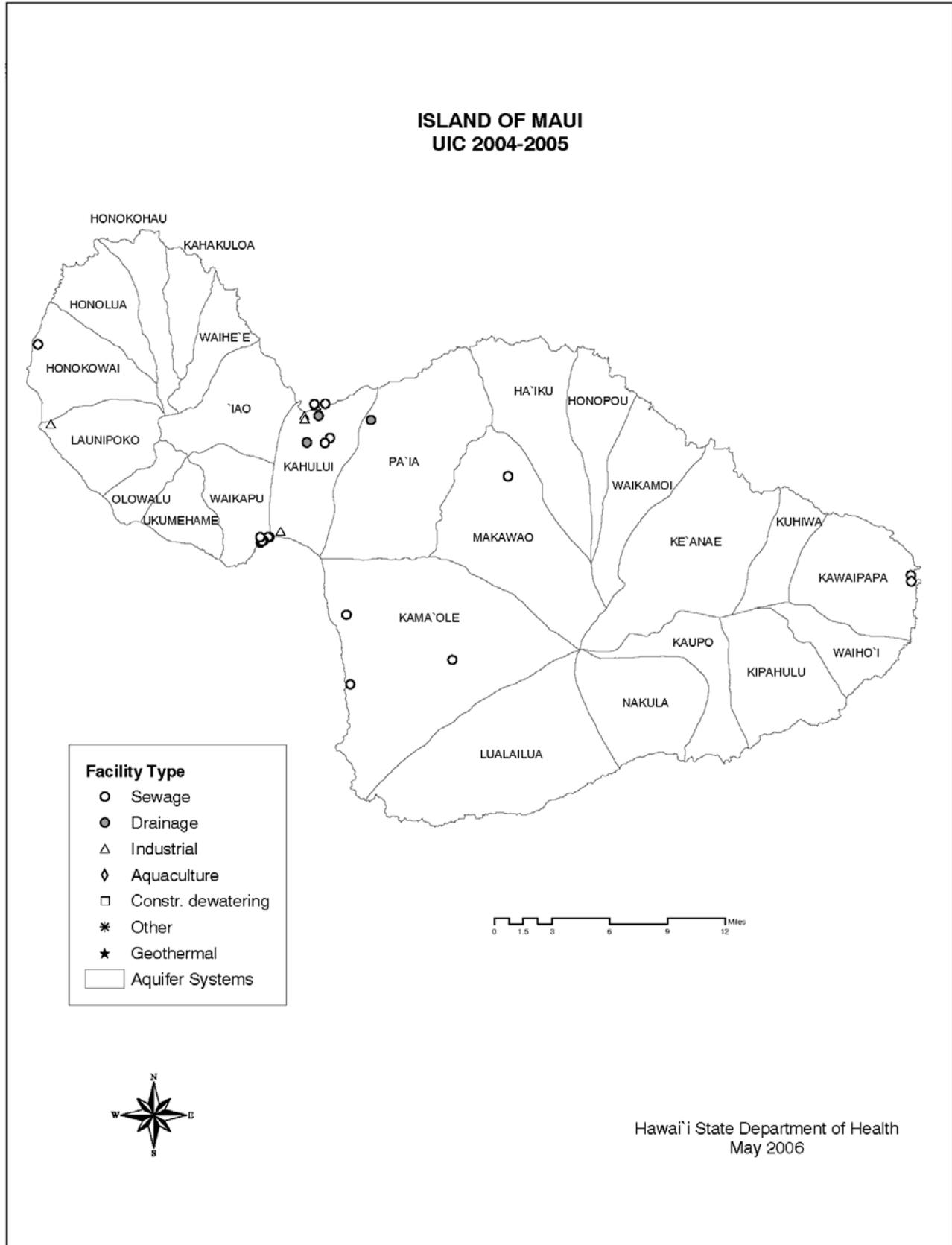


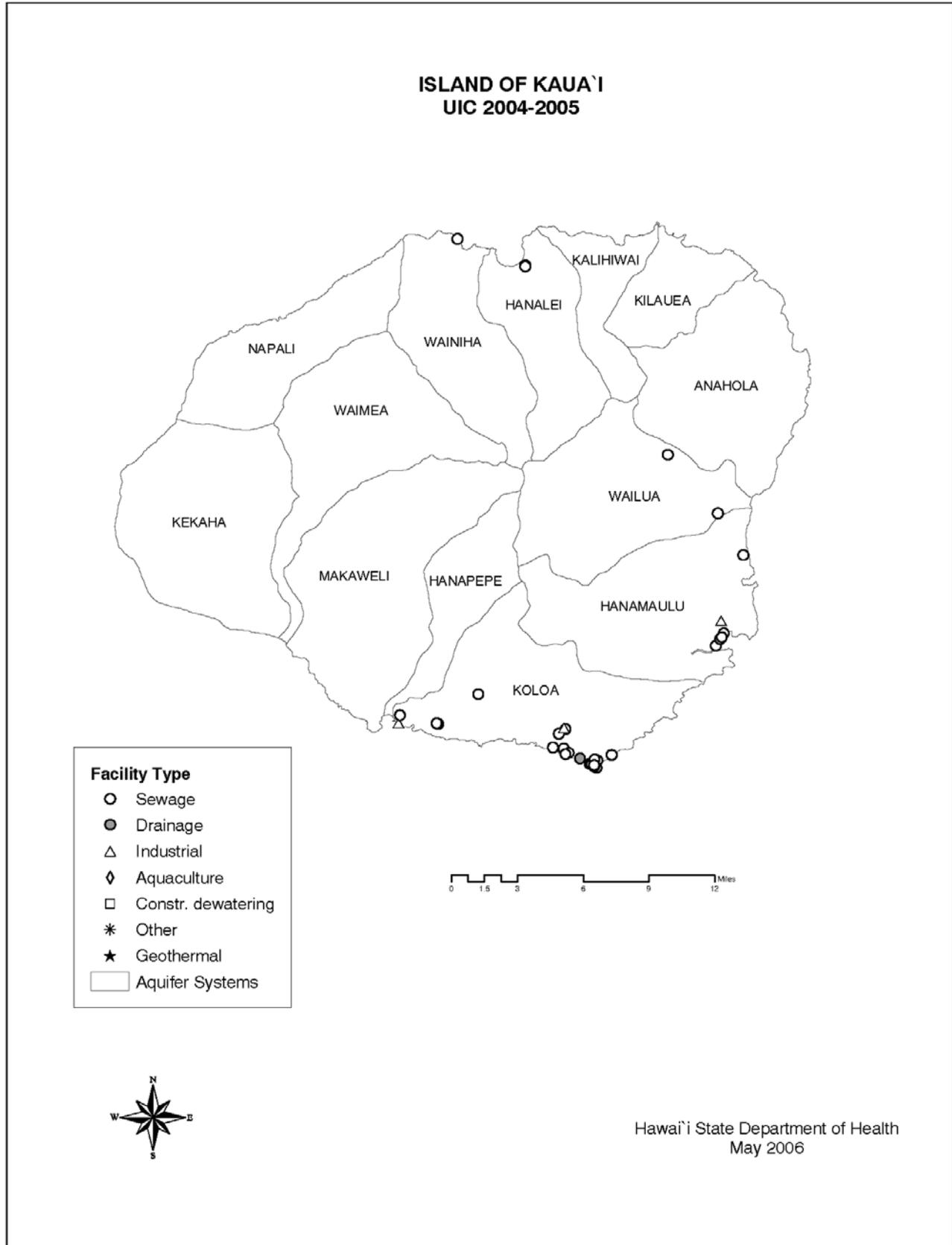












## Part 4: Aquifer Monitoring Data

### Methodology of Reporting

The 2004 Groundwater Contamination Maps for the State of Hawai'i were prepared by the Groundwater Protection Program, Safe Drinking Water Branch of the Hawai'i Department of Health (DOH). The Maps represent the most current information available to the DOH up through December 31, 2004, and are based on monitoring data for public drinking water wells and other testing data available to the DOH.

The 2004 Maps identify **organic chemical contaminants that have been detected and confirmed in wells used for drinking water** throughout the state. Groundwater can become contaminated through natural processes, but anthropogenic, or human-induced, contamination poses more serious problems. Contaminants may come from herbicides, pesticides, industrial solvents, and other sources which are applied, spilled, or leaked into the ground. Groundwater contamination is a significant concern because nearly all of Hawai'i's drinking water comes from groundwater sources.

The intent of the Maps is to identify only those wells with detectable levels of groundwater contamination. Some contaminated wells may not be reported because of lack of confirmed data, or the wells have not been tested. The contamination levels in this document refer to reported levels of contamination on a specific sampling date. Levels of groundwater contamination may fluctuate for a number of reasons, including actual diminishing or increasing levels of contamination, chemical breakdown of contaminants, variability in sampling and analytical methods, the effects of pumping rates, and other factors.

Organic chemical contaminant levels that have been detected are generally below the Maximum Contaminant Levels (MCLs) established by the Federal Environmental Protection Agency (EPA) as part of the Federal Drinking Water Standards. This means that as long as concentrations are below these standards and advisory levels, the water is considered safe and does not pose a serious health risk. If contamination levels approach state and federal drinking water standards, the well's owner is required to take steps to reduce the contaminant concentration to a safe level. This could involve the installation of a treatment system, blending of the water with higher quality water, or removing the well from service.

The 2004 Maps show that groundwater contamination continues to occur in Hawai'i. In most cases, once a groundwater source has been contaminated, it remains contaminated for many years. The Maps show that a few wells that were previously not contaminated by a particular chemical have now shown positive detections of chemicals known to be present in nearby wells.

New contaminant(s) were found in the following wells on O`ahu in 2004.

Map #18	Navy Halawa Plant (Well #2255-32)	Chlordane
Map #20	Ho`ae`ae, Pump 3 (Well #2301-37)	Atrazine, Dieldrin
Map #21	Kunia I, Pump 2 (Well #2302-02)	TCE
Map #27	Kunia II, Pump 4 (Well #2402-04)	DBCP, DCP, TCE, TCP
Map #42	Wahiawa II, Pump 2 (Well #2902-02)	CTC, MTBE, PCE, TCP

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New contaminants were found in the following wells on Maui in 2004.

Map #8	Maunaolu-Smith Well (Well #5320-02)	DBCP, EDB, TCE, TCP
Map #10	Ha`iku Well (Well #5419-01)	TCP
Map #20	Honokohau A (Well #5838-03)	EDB

No chemical contaminants have been detected in the drinking water wells on Moloka`i and Lana`i since the Maps were first prepared in 1989.

This report contains maps and tables for the islands of O`ahu, Hawai`i, Maui and Kaua`i. The Maps identify the locations of current and historic contaminated wells and well fields (an area where many wells in proximity share the same groundwater source). The tables provide information about the contaminated well, such as the use of the well (e.g. drinking water, irrigation, industrial or inactive), the contaminant(s) detected, the concentration of the contaminant (e.g. detected level), and the sampling date when the contaminant was detected.

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Table 3-4. Aquifer Monitoring Data

Hydrogeologic Setting	See attached maps.
Spatial Description (optional)	
Map Available (optional)	See attached maps.
Data Reporting Period	January 1, 2004 - December 31, 2004

Monitoring Data Type	Total No. of Wells Used in the Assessment	Parameter Groups	Number of Wells								
			No detections of parameters above MDLs or background levels		Nitrate concentrations range from background levels to less than or equal to 5 mg/l		Nitrate ranges from greater than 5 to less than or equal to 10 mg/l	Parameters are detected at concentrations exceeding the MCLs	Number of Wells Removed from service	Number of Wells Requiring Special Treatment	Background parameters exceed MCLs
			ND	Number of wells in sensitive or vulnerable areas (optional)	Nitrate 5 mg/l	Number of wells in sensitive or vulnerable areas (optional)					
Ambient Monitoring Network (optional)	NA	VOC									
		SOC									
		NO <sub>2</sub>									
		Other									
Untreated Water Quality Data from Public Water Supply Wells	NA	VOC									
	NA	SOC									
	NA	NO <sub>2</sub>									
	NA	Other									
Finished Water Quality Data from Public Water Supply Wells	484	VOC	436				43	5	NA	36	NA
	484	SOC	402				82	0	NA	0	NA
	342	NO <sub>2</sub>	84	NA	257	NA	1				NA
		Other									

NA - Not available

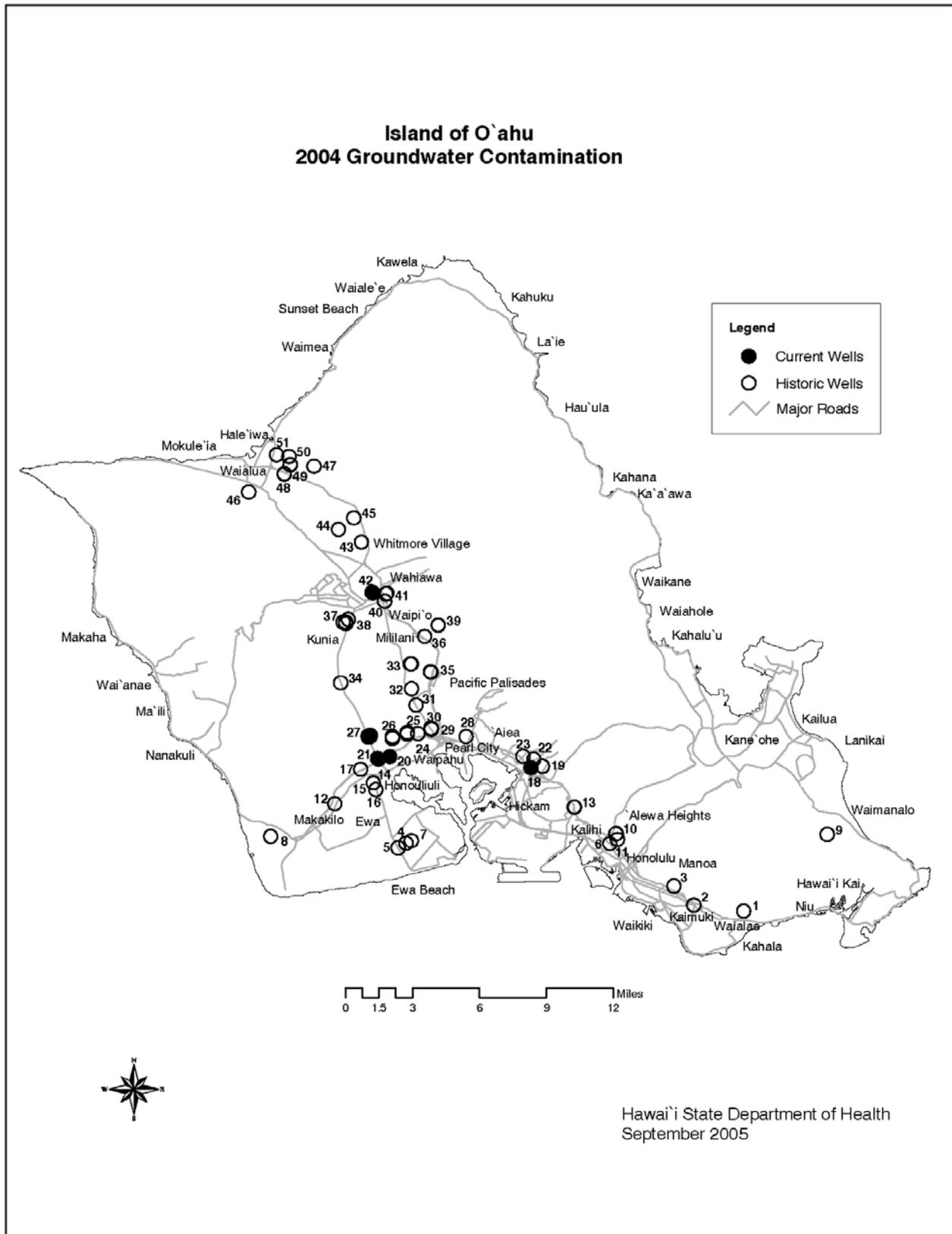
2006 State of Hawaii Water Quality Monitoring and Assessment Report

Table 3-4. Aquifer Monitoring Data

Hydrogeologic Setting	See attached maps.
Spatial Description (optional)	
Map Available (optional)	See attached maps.
Data Reporting Period	January 1, 2005 - December 31, 2005

Monitoring Data Type	Total No. of Wells Used in the Assessment	Parameter Groups	Number of Wells									
			No detections of parameters above MDLs or background levels		Nitrate concentrations range from background levels to less than or equal to 5 mg/l		Nitrate ranges from greater than 5 to less than or equal to 10 mg/l		Parameters are detected at concentrations exceeding the MCLs	Number of Wells Removed from service	Number of Wells Requiring Special Treatment	Background parameters exceed MCLs
			ND	Number of wells in sensitive or vulnerable areas (optional)	Nitrate 5 mg/l	Number of wells in sensitive or vulnerable areas (optional)	Other parameters are detected at concentrations exceeding the MDL but are less than or equal to the MCLs					
Ambient Monitoring Network (optional)	NA	VOC										
		SOC										
		NO <sub>2</sub>										
		Other										
Untreated Water Quality Data from Public Water Supply Wells	NA	VOC										
	NA	SOC										
	NA	NO <sub>2</sub>										
	NA	Other										
Finished Water Quality Data from Public Water Supply Wells	NA	VOC										
	NA	SOC										
	299	NO <sub>2</sub>	63	NA	235	NA	1					
	NA	Other										

NA - Not available



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O'AHU 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
1	1746-01	Ainakoa Well	DW	Dieldrin	0.03	07/28/03
2	1748-HS	Kaimuki Station Wells	DW	Dieldrin	0.03	10/06/04
2	1748-LS	Kaimuki Station Wells	DW	Dieldrin	0.02	10/06/04
2	1748-03-10	Kaimuki Station Wells	DW	PCE	0.03	4/23/85*
*ND after this date. PCE detection levels raised from 0.01 ppb to 0.2 ppb.						
3	1849-14	Wilder Well 1	DW	Dieldrin	0.01	10/06/04
4	1900-01	OSCO Ewa Pump 20	Inactive	Ametryn	NQ <0.05	11/10/92
4	1900-01	OSCO Ewa Pump 20	Inactive	Atrazine	0.71	11/16/93
4	1900-01	OSCO Ewa Pump 20	Inactive	Diamino Atrazine	0.22	11/10/93
4	1900-01	OSCO Ewa Pump 20	Inactive	Desethyl Atrazine	1.20	11/16/93
4	1900-01	OSCO Ewa Pump 20	Inactive	Deisopropyl Atrazine	0.13	11/16/93
5	1901-01	OSCO Ewa Pump 24	Inactive	Ametryn	0.11	11/10/92
5	1901-01	OSCO Ewa Pump 24	Inactive	Atrazine	1.10	11/10/92
5	1901-01	OSCO Ewa Pump 24	Inactive	Diamino Atrazine	0.50	11/10/92
5	1901-01	OSCO Ewa Pump 24	Inactive	Desethyl Atrazine	1.59	11/10/92
5	1901-01	OSCO Ewa Pump 24	Inactive	Deisopropyl Atrazine	0.21	11/10/92
6	1952-HS	Kalihi Station Wells	DW	Dieldrin	0.02	10/06/04
7	2000-01	OSCO Ewa Pump 21	Inactive	Atrazine	0.77	11/16/93
7	2000-01	OSCO Ewa Pump 21	Inactive	Diamino Atrazine	0.25	11/16/93
7	2000-01	OSCO Ewa Pump 21	Inactive	Desethyl Atrazine	1.00	11/16/93
7	2000-01	OSCO Ewa Pump 21	Inactive	Deisopropyl Atrazine	0.13	11/16/93
8	2006-01-11	OSCO Ewa Pump 10	Inactive	Atrazine	NQ <0.10	11/17/92
8	2006-01-11	OSCO Ewa Pump 10	Inactive	Desethyl Atrazine	0.15	11/17/92
9	2043-02	Waimanalo Well 1	Inactive	Alachlor	0.53	01/27/98
10	2052-07	Kamehameha School Well 1	Inactive	Chlordane	NQ <0.30	04/01/98
10	2052-07	Kamehameha School Well 1	Inactive	Dieldrin	0.05	11/16/98
10	2052-11	Kamehameha School Well 2	Inactive	Chlordane	0.40	01/30/97
10	2052-11	Kamehameha School Well 2	Inactive	Dieldrin	0.02	10/23/96
11	2052-12	Jonathan Springs Well	Inactive	Chlordane	0.30	11/08/95
11	2052-12	Jonathan Springs Well	Inactive	Dieldrin	0.06	11/08/95
12	2103-03	Barbers Point Shaft	DW	Atrazine	0.06	10/26/04
12	2103-03	Barbers Point Shaft	DW	Desethyl Atrazine	0.12	11/10/03
13	2153-10	Moanalua Wells P1	DW	Dieldrin	0.01	11/03/04
13	2153-11	Moanalua Wells P2	DW	Dieldrin	0.01	11/03/04
14	2202-03	OSCO Ewa Pump 3	IRR	Atrazine	NQ <0.05	11/10/03
14	2202-03	OSCO Ewa Pump 3	IRR	Desethyl Atrazine	0.12	11/10/03

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O'AHU 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
15	2202-05	OSCO Pump 5	IRR	Atrazine	0.07	11/10/03
15	2202-05	OSCO Pump 5	IRR	Desethyl Atrazine	0.08	11/10/03
16	2202-15	OSCO Pump 7A	Inactive	Atrazine	NQ <0.05	11/12/03
16	2202-15	OSCO Pump 7A	Inactive	Desethyl Atrazine	0.01	11/12/03
17	2202-21	OSCO Ewa Pump 15	Inactive	Atrazine	0.15	11/17/92
17	2202-21	OSCO Ewa Pump 15	Inactive	Desethyl Atrazine	0.12	11/17/92
18	2255-32	Halawa Plant (Navy)	DW	Chlordane	NQ <0.30	10/27/04
18	2255-32	Halawa Plant (Navy)	DW	Dieldrin	0.02	10/27/04
19	2255-37	BWS Halawa Well 2	DW	Chlordane	NQ <0.3	10/31/03
19	2255-37	BWS Halawa Well 2	DW	Dieldrin	0.04	04/07/04
19	2255-39	BWS Halawa Well 1	DW	Dieldrin	0.01	07/22/04
20	2301-34	Hoaeae, P1	DW	TCP	0.58	10/29/04
20	2301-35	Hoaeae, P2	DW	TCP	0.40	11/29/04
20	2301-36	Hoaeae, P4	DW	Atrazine	0.06	10/12/04
20	2301-36	Hoaeae, P4	DW	Desethyl Atrazine	NQ <0.05	11/03/03
20	2301-36	Hoaeae, P4	DW	Dieldrin	0.01	10/12/04
20	2301-36	Hoaeae, P4	DW	TCP	0.40	10/29/04
20	2301-37	Hoaeae, P3	DW	Atrazine	0.06	10/12/04
20	2301-37	Hoaeae, P3	DW	Dieldrin	0.012	10/12/04
20	2301-37	Hoaeae, P3	DW	TCP	0.39	10/29/04
20	2301-38	Hoaeae, P5	DW	TCP	0.43	10/29/04
20	2301-39	Hoaeae, P6	DW	TCP	0.35	10/29/04
21	2302-01	Kunia Wells I, P1 (before)	DW	TCE	NQ <0.50	10/06/03
21	2302-01	Kunia Wells I, P1 (before)	DW	TCP	0.69	10/06/03
21	2302-02	Kunia Wells I, P2 (before)	DW	Atrazine	0.06	11/10/03
21	2302-02	Kunia Wells I, P2 (before)	DW	Desethyl Atrazine	0.09	11/10/03
21	2302-02	Kunia Wells I, P2 (before)	DW	TCE	NQ <0.50	07/27/04
21	2302-02	Kunia Wells I, P2 (before)	DW	TCP	1.04	11/10/04
21	2302-03	Kunia Wells I, P3 (before)	DW	TCP	0.87	11/10/04
21	2302-04	Kunia Wells I, P4 (before)	DW	TCE	NQ <0.50	07/27/04
21	2302-04	Kunia Wells I, P4 (before)	DW	TCP	0.58	07/27/04
22	2355-06	Aiea Well Pump 1	DW	Dieldrin	0.02	10/06/04
22	2355-07	Aiea Well Pump 2	DW	Dieldrin	0.01	10/08/04
23	2356-59	Kaamilo Wells	DW	Dieldrin	0.01	04/01/98
23	2356-58 & 59	Kaamilo Wells	DW	PCE	0.03	04/20/85
24	2400-01	Waipahu I, P2 (before)	DW	EDB	NQ <0.04	10/15/04
24	2400-01	Waipahu I, P2 (before)	DW	TCP	0.40	10/15/04
24	2400-02	Waipahu I, P1 (before)	DW	EDB	NQ <0.04	10/15/04
24	2400-02	Waipahu I, P1 (before)	DW	TCP	0.47	10/15/04

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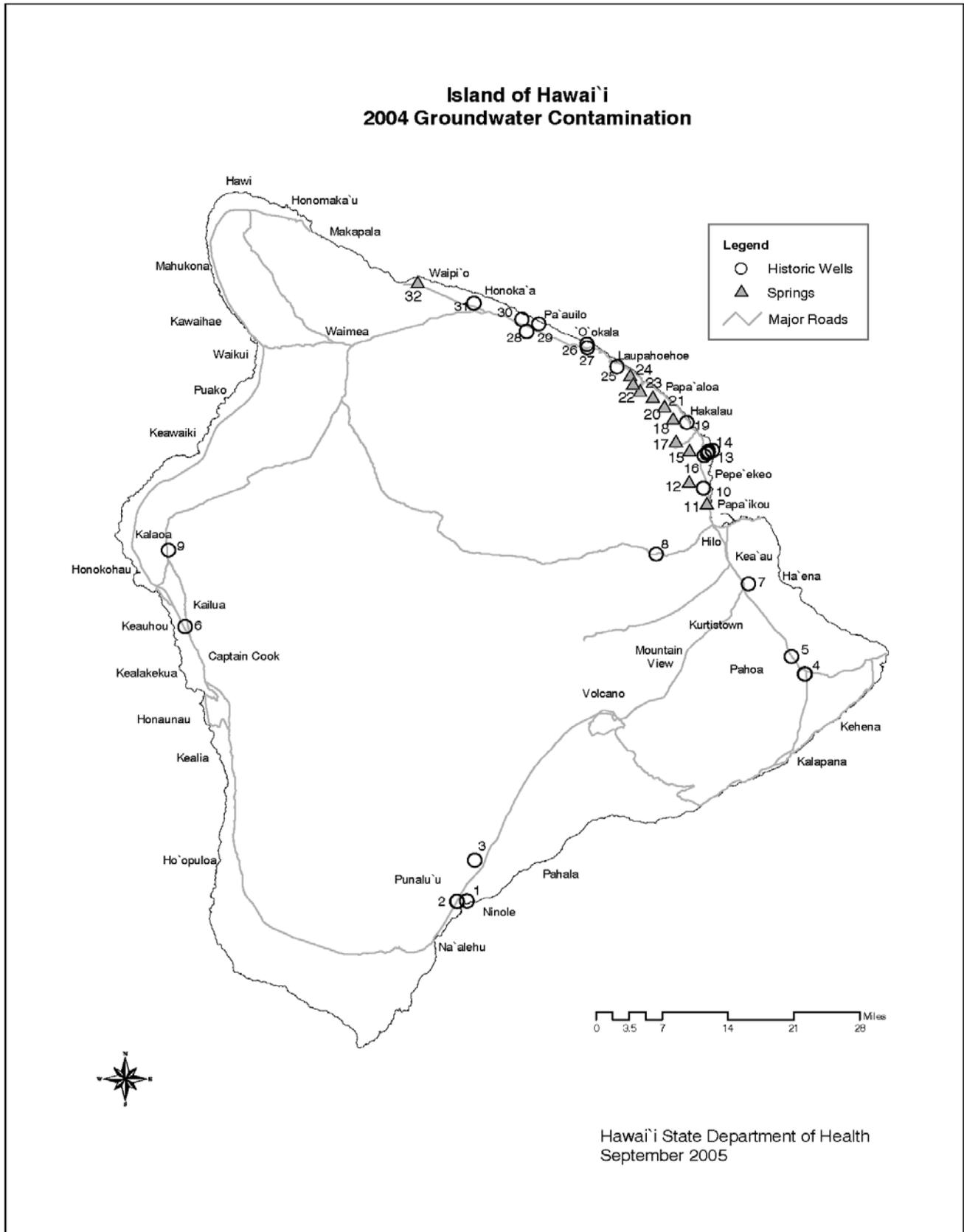
O'AHU 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
24	2400-03	Waipahu I, P4 (before)	DW	EDB	NQ<0.04	04/14/99
24	2400-03	Waipahu I, P4 (before)	DW	TCP	NQ<0.50	04/14/99
24	2400-04	Waipahu I, P3 (before)	DW	EDB	NQ<0.04	10/15/04
24	2400-04	Waipahu I, P3 (before)	DW	TCE	NQ<0.50	12/03/04
24	2400-04	Waipahu I, P3 (before)	DW	TCP	0.48	10/15/04
25	2400-05	Waipahu II P1 (before)	DW	TCP	0.76	10/15/04
25	2400-06	Waipahu II P2 (before)	DW	TCP	0.63	10/15/04
25	2400-08	Waipahu II P3 (before)	DW	TCP	0.74	10/29/04
26	2401-04	Kunia III, P1 (before)	DW	TCP	0.19	12/16/04
26	2401-05	Kunia III, P2 (before)	DW	TCP	0.21	11/29/04
26	2401-06	Kunia III, P3 (before)	DW	TCP	0.18	11/29/04
27	2402-01	Kunia Wells II, P1 (before)	DW	DBCP	NQ<0.04	07/20/01
27	2402-01	Kunia Wells II, P1 (before)	DW	TCE	NQ<0.05	07/20/01
27	2402-01	Kunia Wells II, P1 (before)	DW	TCP	1.20	11/09/98
27	2402-02	Kunia Wells II, P2 (before)	DW	DBCP	NQ<0.04	02/06/04
27	2402-02	Kunia Wells II, P2 (before)	DW	DCP	NQ<1.00	03/02/04
27	2402-02	Kunia Wells II, P2 (before)	DW	TCE	NQ<0.50	03/02/04
27	2402-02	Kunia Wells II, P2 (before)	DW	TCP	1.04	02/06/04
27	2402-03	Kunia Wells II, P3 (before)	DW	DBCP	NQ<0.04	07/18/02
27	2402-03	Kunia Wells II, P3 (before)	DW	TCE	NQ<0.50	05/16/03
27	2402-03	Kunia Wells II, P3 (before)	DW	TCP	1.22	05/16/03
27	2402-04	Kunia Wells II, P4 (before)	DW	DBCP	NQ<0.40	07/01/04
27	2402-04	Kunia Wells II, P4 (before)	DW	DCP	NQ<1.00	11/10/04
27	2402-04	Kunia Wells II, P4 (before)	DW	TCE	NQ<0.50	11/10/04
27	2402-04	Kunia Wells II, P4 (before)	DW	TCP	1.22	11/10/04
28	2458-01	Pearl City Shaft (Manana)	DW	PCE	0.03	4/18/85*
28	2458-01	Pearl City Shaft (Manana)	DW	TCP	0.05	10/29/04
*ND after this date. PCE detection levels raised from 0.01 ppb to 0.2 ppb.						
29	2459-19	Waipio Hts P2	DW	TCP	0.31	10/14/04
29	2459-20	Waipio Hts P1	DW	TCP	0.38	10/15/04
30	2459-23	Waipio Hts I, P1	DW	TCP	0.23	10/14/04
30	2459-24	Waipio Hts I, P2	DW	TCP	0.19	01/16/03
31	2500-01	Waipio Hts. II, P1	DW	TCE	0.60	12/16/04
31	2500-01	Waipio Hts. II, P1	DW	TCP	0.50	12/07/04
31	2500-02	Waipio Hts. II, P2	DW	TCE	0.60	12/16/04
31	2500-02	Waipio Hts. II, P2	DW	TCP	0.83	10/18/04
32	2600-02	Dairy Co. (Kipapa Acres)	DW	TCE	0.50	12/02/04
32	2600-02	Dairy Co. (Kipapa Acres)	DW	TCP	0.65	12/02/04
33	2600-03	Mililani III, P7 (before)	DW	DBCP	0.08	12/02/04
33	2600-03	Mililani III, P7 (before)	DW	DCP	NQ<1.00	12/02/04

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O'AHU 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
33	2600-03	Mililani III, P7 (before)	DW	TCP	1.52	12/02/04
33	2600-04	Mililani III, P8 (before)	DW	DBCP	0.09	07/18/02
33	2600-04	Mililani III, P8 (before)	DW	DCP	NQ<1.00	12/13/02
33	2600-04	Mililani III, P8 (before)	DW	TCP	2.29	07/18/02
34	2603-01	Hawaii Country Club (before)	DW	DBCP	0.09	10/14/04
34	2603-01	Hawaii Country Club (before)	DW	EDB	NQ<0.04	10/14/04
34	2603-01	Hawaii Country Club (before)	DW	TCP	0.36	10/14/04
35	2659-02	Waipio Hts III, P2	DW	EDB	NQ<0.04	10/14/04
35	2659-02	Waipio Hts III, P2	DW	TCP	0.47	10/14/04
35	2659-03	Waipio Hts III, P1	DW	TCP	0.45	11/22/04
36	2800-01	Mililani I, P1 (before)	DW	DBCP	0.19	11/12/04
36	2800-01	Mililani I, P1 (before)	DW	DCP	NQ<1.00	11/12/04
36	2800-01	Mililani I, P1 (before)	DW	TCP	2.23	11/12/04
36	2800-02	Mililani I, P2 (before)	DW	DBCP	2.19	11/12/04
36	2800-02	Mililani I, P2 (before)	DW	DCP	NQ<1.00	11/12/04
36	2800-02	Mililani I, P2 (before)	DW	TCP	2.19	11/12/04
36	2800-03	Mililani I, P3 (before)	DW	DBCP	0.15	11/12/04
36	2800-03	Mililani I, P3 (before)	DW	DCP	NQ<1.00	11/12/04
36	2800-03	Mililani I, P3 (before)	DW	TCP	2.89	11/12/04
36	2800-04	Mililani I, P4 (before)	DW	DBCP	0.18	05/12/00
36	2800-04	Mililani I, P4 (before)	DW	DCP	NQ<1.00	06/15/00
36	2800-04	Mililani I, P4 (before)	DW	TCP	2.50	05/12/00
37	2803-03-04	Kunia Battery	IND	Atrazine	NQ<0.05	09/28/93
37	2803-03-04	Kunia Battery	IND	Desethyl Atrazine	NQ<0.05	09/30/92
37	2803-03-04	Kunia Battery	IND	PCE	1.65	04/23/85
37	2803-03-04	Kunia Battery	IND	TCE	3.70	07/24/85
38	2803-05	Del Monte Kunia 3 (before)	DW	CTC	0.80	12/16/04
38	2803-05	Del Monte Kunia 3 (before)	DW	DCP	NQ<1.00	12/16/04
38	2803-05	Del Monte Kunia 3 (before)	DW	PCE	NQ<0.50	12/16/04
38	2803-05	Del Monte Kunia 3 (before)	DW	TCE	4.10	12/16/04
38	2803-05	Del Monte Kunia 3 (before)	DW	TCP	0.15	12/16/04
38	2803-07	Del Monte Kunia 4 (before)	DW	CTC	0.80	12/12/04
38	2803-07	Del Monte Kunia 4 (before)	DW	TCE	4.10	12/16/04
39	2859-01	Mililani II, P5 (before)	DW	DBCP	0.12	02/03/03
39	2859-01	Mililani II, P5 (before)	DW	TCP	2.14	08/19/03
39	2859-02	Mililani II, P6 (before)	DW	DBCP	0.15	11/12/04
39	2859-02	Mililani II, P6 (before)	DW	TCP	2.14	11/12/04
40	2901-02	Schofield Battery (before)	DW	PCE	NQ<0.50	12/14/04
40	2901-02	Schofield Battery (before)	DW	TCE	17.70	12/14/04

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O'AHU 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
41	2901-08	Wahiawa Wells 1, P3	DW	CTC	0.60	02/20/04
41	2901-08	Wahiawa Wells 1, P3	DW	PCE	1.60	02/20/04
41	2901-11	Wahiawa Wells 1, P1	DW	CTC	NQ<0.50	12/06/04
41	2901-11	Wahiawa Wells 1, P1	DW	PCE	0.70	12/06/04
41	2901-11	Wahiawa Wells 1, P1	DW	TCE	NQ<0.50	12/06/04
41	2901-12	Wahiawa Wells 1, P2	DW	CTC	0.60	11/04/04
41	2901-12	Wahiawa Wells 1, P2	DW	PCE	1.00	11/04/04
42	2902-01	Wahiawa Wells II, P1	DW	CTC	NQ<0.50	11/04/04
42	2902-01	Wahiawa Wells II, P1	DW	PCE	0.70	11/04/04
42	2902-01	Wahiawa Wells II, P1	DW	TCP	0.12	11/04/04
42	2902-02	Wahiawa Wells II, P2	DW	CTC	0.70	11/04/04
42	2902-02	Wahiawa Wells II, P2	DW	MTBE	1.20	10/04/04
42	2902-02	Wahiawa Wells II, P2	DW	PCE	2.00	11/04/04
42	2902-02	Wahiawa Wells II, P2	DW	TCP	0.21	11/04/04
43	3102-02	Waialua Sugar P24	IRR	DBCP	0.02	08/20/84
43	3102-02	Waialua Sugar P24	IRR	TCP	0.50	06/03/85
44	3203-01	Waialua Sugar P25	IRR	DBCP	0.12	06/07/83
45	3203-02	Waialua Sugar P26	IRR	DBCP	0.01	06/03/85
45	3203-02	Waialua Sugar P26	IRR	TCP	0.80	06/03/85
46	3307-01	Waialua Battery P2	DW	Atrazine	0.12	11/04/92
46	3307-01	Waialua Battery P2	DW	Desethyl Atrazine	0.15	11/14/92
47	3404-02	Waialua Sugar P17	IRR	DBCP	0.06	11/09/93
47	3404-02	Waialua Sugar P17	IRR	TCP	1.10	11/09/93
48	3405-01	Waialua Wells P1	DW	CTC	NQ<0.50	11/04/04
48	3405-01	Waialua Wells P1	DW	TCE	NQ<0.50	11/04/04
48	3405-01	Waialua Wells P1	DW	TCP	0.58	11/04/04
48	3405-02	Waialua Wells P2	DW	CTC	NQ<0.50	11/04/04
48	3405-02	Waialua Wells P2	DW	TCE	NQ<0.50	11/04/04
48	3405-02	Waialua Wells P2	DW	TCP	0.61	11/04/04
49	3405-03	Haleiwa Well P1	DW	DBCP	NQ<0.04	12/15/04
49	3405-03	Haleiwa Well P1	DW	TCE	0.50	12/15/04
49	3405-03	Haleiwa Well P1	DW	TCP	0.62	12/15/04
49	3405-04	Haleiwa Well P2	DW	DBCP	NQ<0.04	12/15/04
49	3405-04	Haleiwa Well P2	DW	TCE	0.50	12/15/04
49	3405-04	Haleiwa Well P2	DW	TCP	NQ<0.04	12/15/04
50	3505-01-20	Waialua Sugar P3	Inactive	DBCP	NQ<0.04	07/24/97
50	3505-01-20	Waialua Sugar P3	Inactive	TCP	NQ<0.50	07/24/97
51	3506-03	Haleiwa Battery	IRR	Atrazine	0.13	11/04/92
51	3506-03	Haleiwa Battery	IRR	Lindane	0.01	11/12/87



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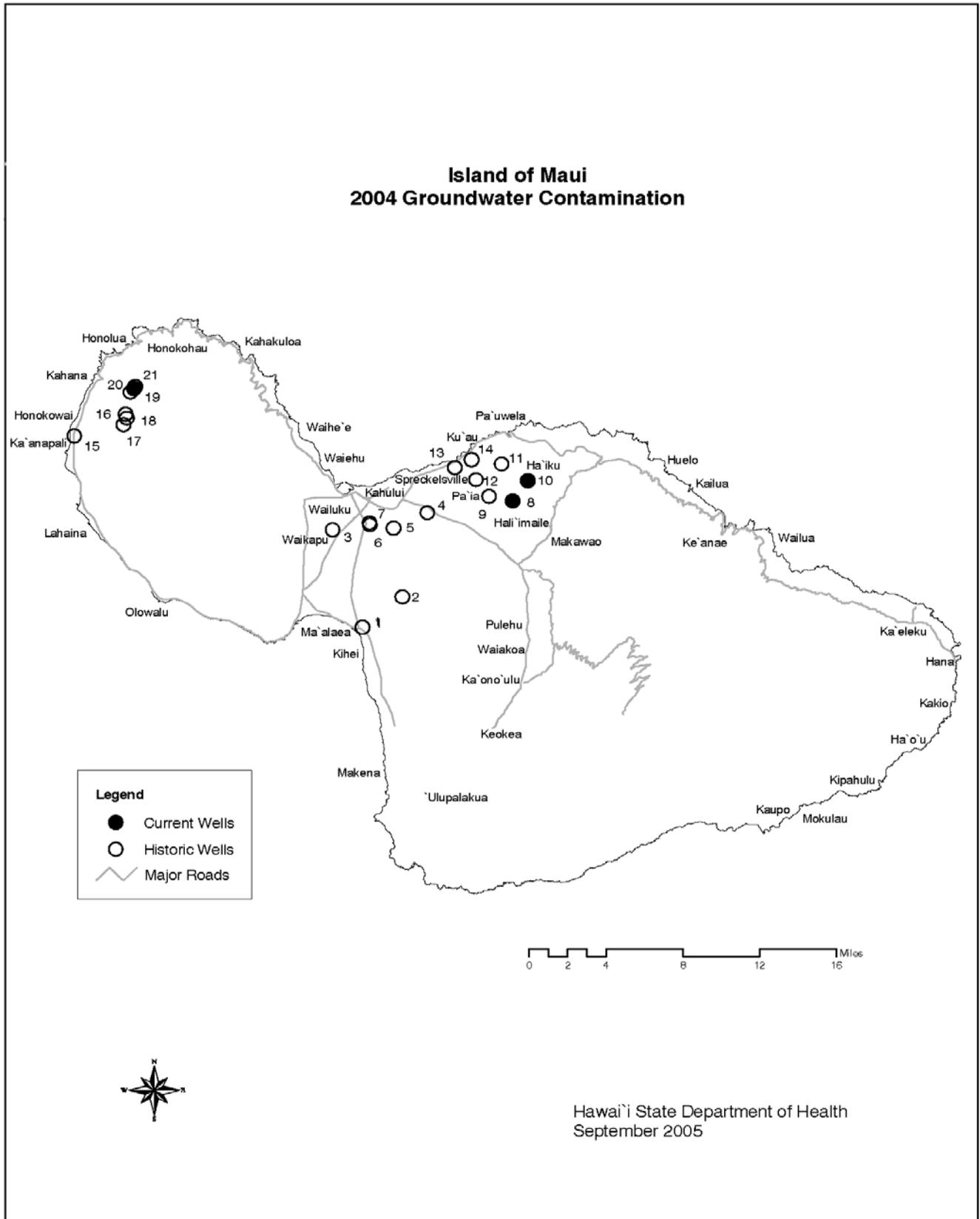
HAWAII 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
1	0830-02	Punaluu Th-2	IRR	Atrazine	0.12	12/21/93
1	0830-02	Punaluu Th-2	IRR	Desethyl Atrazine	0.16	12/21/93
2	0831-02	Ninole A	DW	Atrazine	0.08	05/26/04
2	0831-02	Ninole A	DW	Desethyl Atrazine	0.13	01/13/04
2	0831-03	Ninole B	DW	Atrazine	0.08	05/26/04
2	0831-03	Ninole B	DW	Desethyl Atrazine	0.11	01/13/04
3	1229-01	Pahala Well	DW	Atrazine	0.16	04/19/04
3	1229-01	Pahala Well	DW	Desethyl Atrazine	0.14	01/13/04
4	2986-01	Pahoa Well 1	DW	Diuron	0.80	08/05/91
4	2986-02	Pahoa Well 2	DW	Diuron	0.80	08/05/91
5	3188-02	Keonepoko Nui 2	DW	Isophorone	0.50	04/24/01
6	3557-02	Kahaluu Well B	Inactive	Isophorone	0.80	08/04/98
7	3802-03-04	Keaau	IND	Ametryne	0.88	02/27/84
7	3802-03-04	Keaau	IND	Atrazine	0.26	02/27/84
8	4110-01	Saddle Road Well A	DW	Isophorone	0.58	11/04/03
9	4258-03	Hualalai Well	DW	Isophorone	0.60	08/07/00
10	4706-01	Papaikou Deep Well	DW	Atrazine	0.20	9/5/03"
10	4706-01	Papaikou Deep Well	DW	Simazine	0.05	9/5/03"
11	4708-99	Papaikou Spring	DW	Atrazine	0.20	9/5/03"
11	4708-99	Papaikou Spring	DW	Simazine	0.05	9/5/03"
12	4708-99	Kaieie Spring	DW	Atrazine	0.25	04/19/04
12	4708-99	Kaieie Spring	DW	Desethyl Atrazine	0.52	12/09/03
12	4708-99	Kaieie Spring	DW	Simazine	0.05	9/5/03"
						"Composite
13	5005-01	Pepeekeo Sugar Makai	Inactive	Atrazine	NQ<0.50	01/22/96
13	5005-01	Pepeekeo Sugar Makai	Inactive	Desethyl Atrazine	0.80	12/14/93
13	5005-01	Pepeekeo Sugar Makai	Inactive	Diuron	0.50	08/05/91
13	5005-01	Pepeekeo Sugar Makai	Inactive	Hexazinone	0.30	08/05/91
13	5005-02	Pepeekeo Sugar	Inactive	Atrazine	0.26	12/08/03
13	5005-02	Pepeekeo Sugar	Inactive	Desethyl Atrazine	0.26	12/08/03
13	5005-02	Pepeekeo Sugar	Inactive	Diuron	0.80	08/05/91

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HAWAII 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
14	5005-03	HCPC Makai Well 2	Inactive	Atrazine	0.30	12/08/03
14	5005-03	HCPC Makai Well 2	Inactive	Desethyl Atrazine	0.29	12/08/03
14	5005-04	HCPC Makai Well	Inactive	Atrazine	0.30	12/08/03
14	5005-04	HCPC Makai Well	Inactive	Desethyl Atrazine	0.29	12/08/03
15	5006-99	Maukaloa Spring	DW	Atrazine	0.11	04/19/04
15	5006-99	Maukaloa Spring	DW	Desethyl Atrazine	0.09	12/09/03
15	5006-99	Maukaloa Spring	DW	Deisopropyl Atrazine	0.08	12/09/03
15	5006-99	Maukaloa Spring	DW	Simazine	0.05	12/09/03
16	5006-01	Kulaimano Deep Well	DW	Atrazine	0.28	04/19/04
16	5006-01	Kulaimano Deep Well	DW	Desethyl Atrazine	0.13	11/28/03
16	5006-01	Kulaimano Deep Well	DW	Diuron	0.60	08/05/91
16	5006-01	Kulaimano Deep Well	DW	Simazine	0.05	9/5/03"
17	5109-99	Akaka Falls Spring	DW	Atrazine	0.10	9/5/03"
18	5210-99	Hakalau Iki Spring	DW	Atrazine	0.10	9/5/03"
						"Composite
19	5307-01	Hakalau Well	DW	Atrazine	0.18	10/26/04
19	5307-01	Hakalau Well	DW	Desethyl Atrazine	0.46	12/15/03
19	5307-01	Hakalau Well	DW	PCE	0.13	5/6/1985*
				*Detection level changed from 0.01 ppb to 0.2 ppb.		
20	5610-99	Chaves Spring	DW	Atrazine	0.18	04/21/04
20	5610-99	Chaves Spring	DW	Desethyl Atrazine	0.14	12/09/03
21	5611-99	Kaiaakea Spring	Inactive	Atrazine	0.14	12/09/03
21	5611-99	Kaiaakea Spring	Inactive	Desethyl Atrazine	0.10	12/09/03
22	5613-99	Kihalani Spring	Inactive	Hexazinone	0.57	09/09/86
23	5713-99	Papaaloa Spring	Inactive	Atrazine	0.56	02/28/95
24	5814-99	Manowaiopae Spring	Inactive	Atrazine	0.13	6/6/2002**
					** Composite with Laupahoehoe	
25	5814-01	Laupahoehoe Well 1	DW	Atrazine	0.08	4/21/2004**
25	5814-01	Laupahoehoe Well 1	DW	Desethyl Atrazine	0.13	12/16/03
25	5814-02	Laupahoehoe Well 2	DW	Atrazine	0.10	04/21/04
25	5814-02	Laupahoehoe Well 2	DW	Desethyl Atrazine	0.17	12/16/03
				**Composite w/Manowaiopae replaced by newer results.		
26	6017-05	Ookala Well	DW	Atrazine	0.42	04/21/04
26	6017-05	Ookala Well	DW	Desethyl Atrazine	0.93	12/16/03
26	6017-05	Ookala Well	DW	Hexazinone	0.24	12/16/03
26	6017-05	Ookala Well	DW	Isophorone	0.70	7/26/00***
					***Composite with Paaullio	

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HAWAII 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
27	6117-01	Ookala Shaft	Inactive	Atrazine	0.60	09/11/96
27	6117-01	Ookala Shaft	Inactive	Desethyl Atrazine	1.00	01/12/93
27	6117-01	Ookala Shaft	Inactive	Deisopropyl Atrazine	0.16	01/12/93
27	6117-01	Ookala Shaft	Inactive	Diamino Atrazine	0.15	01/12/93
28	6223-01	Paauilo Well	DW	Atrazine	0.56	10/26/04
28	6223-01	Paauilo Well	DW	Desethyl Atrazine	1.14	12/16/03
28	6223-01	Paauilo Well	DW	Deisopropyl Atrazine	0.05	12/16/03
28	6223-01	Paauilo Well	DW	Diamino Atrazine	0.05	12/16/03
28	6223-01	Paauilo Well	DW	Hexazinone	0.24	12/16/03
28	6223-01	Paauilo Well	DW	Isophorone	0.70	7/26/00***
					***Composite with Ookala	
29	6321-02	Paauilo Shaft	Inactive	Atrazine	0.59	02/28/95
29	6321-02	Paauilo Shaft	Inactive	Hexazinone	1.10	09/09/86
30	6323-01	Big Island Meat	Inactive	Atrazine	0.27	12/15/03
30	6323-01	Big Island Meat	Inactive	Desethyl Atrazine	0.39	12/15/03
30	6323-01	Big Island Meat	Inactive	Hexazinone	0.31	12/15/03
31	6528-01	Haina Well	DW	Atrazine	0.37	10/26/04
31	6528-01	Haina Well	DW	Desethyl Atrazine	0.60	12/08/03
31	6528-01	Haina Well	DW	Hexazinone	0.15	12/08/03
32	6734-99	Waiuliuli Spring	DW	Atrazine	0.14	04/20/04
32	6734-99	Waiuliuli Spring	DW	Desethyl Atrazine	0.17	12/15/03

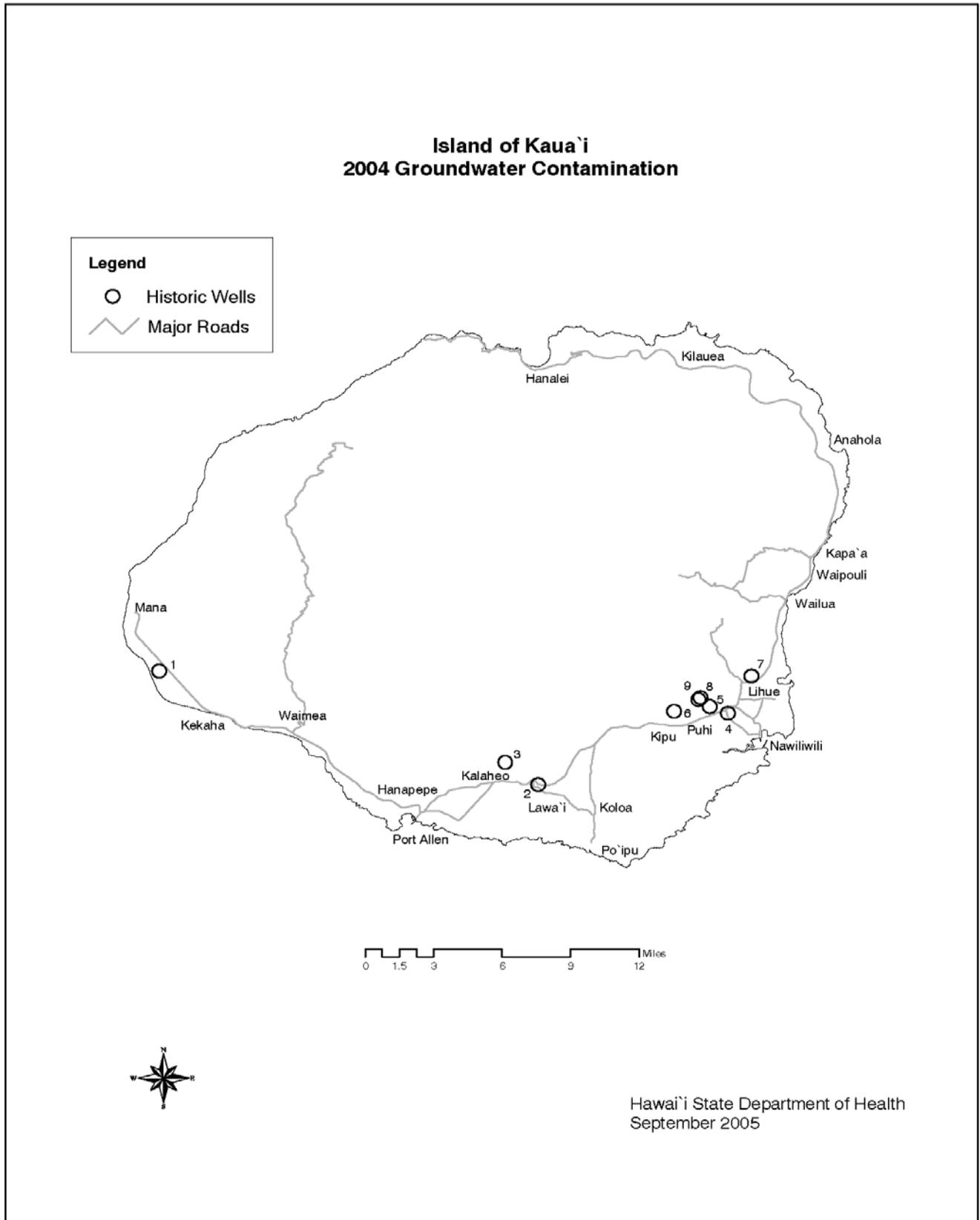


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MAUI 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
1	4727-01	Kihei Well 1	IRR	Atrazine	0.12	11/24/03
1	4727-01	Kihei Well 1	IRR	Desethyl Atrazine	0.24	11/24/03
1	4727-01	Kihei Well 1	IRR	Diamino Atrazine	0.07	11/24/03
2	4825-01	Kihei Well 3	IRR	Atrazine	0.05	11/24/03
2	4825-01	Kihei Well 3	IRR	Desethyl Atrazine	0.14	11/24/03
3	5129-01	Reynolds Well #1	Inactive	DBCP	NQ<0.04	02/16/93
4	5224-02	Puunene Pump 9	IRR	Desethyl Atrazine	0.06	11/24/03
5	5226-02	Puunene Pump 6	IRR	Atrazine	0.08	11/24/03
5	5226-02	Puunene Pump 6	IRR	Desethyl Atrazine	0.10	11/24/03
6	5227-04	Puunene Pump 7A	IND	Desethyl Atrazine	0.09	11/25/03
6	5227-04	Puunene Pump 7A	IND	EDB	0.04	03/12/85
7	5227-05	Puunene Mill Pump 19	IRR	Atrazine	0.08	11/24/03
7	5227-05	Puunene Mill Pump 19	IRR	Desethyl Atrazine	0.13	11/24/03
8	5320-02	Maunaolu-Smith Well		DBCP	NQ<0.04	11/03/04
8	5320-02	Maunaolu-Smith Well		EDB	0.19	11/03/04
8	5320-02	Maunaolu-Smith Well		TCE	NQ<0.50	11/15/04
8	5320-02	Maunaolu-Smith Well		TCP	0.73	11/03/04
9	5321-01	Kaheka #18	IRR	DBCP	0.02	08/16/89
9	5321-01	Kaheka #18	IRR	EDB	0.05	08/16/89
9	5321-01	Kaheka #18	IRR	TCP	0.13	08/16/89
10	5419-01	Haiku	DW	TCP	0.15	11/08/04
11	5420-01	Maui High School	IRR	DBCP	0.09	03/04/85
11	5420-01	Maui High School	IRR	EDB	0.07	03/04/85
11	5420-01	Maui High School	IRR	TCP	0.43	03/04/85
12	5422-02	Paia #7	IRR	Atrazine	0.23*	03/11/97
12	5422-02	Paia #7	IRR	EDB	0.03	03/04/85
13	5423-02	Paia #16	IRR	Atrazine	0.10*	3/17/98
13	5423-02	Paia #16	IRR	Atrazine	NQ<0.50	11/25/03
13	5423-02	Paia #16	IRR	Bromacil	0.42	11/25/03
13	5423-02	Paia #16	IRR	Desethyl Atrazine	0.09	11/25/03
14	5522-01	Kuau Pump 12	IRR	TCP	0.43	03/04/85
15	5641-01	Kaanapali Pump D	IRR	Ametryn	0.21	12/02/03
16	5738-01	Kaanapali P5 (before)	DW	DBCP	0.08	10/11/04
16	5738-01	Kaanapali P5 (before)	DW	TCP	0.82	10/11/04

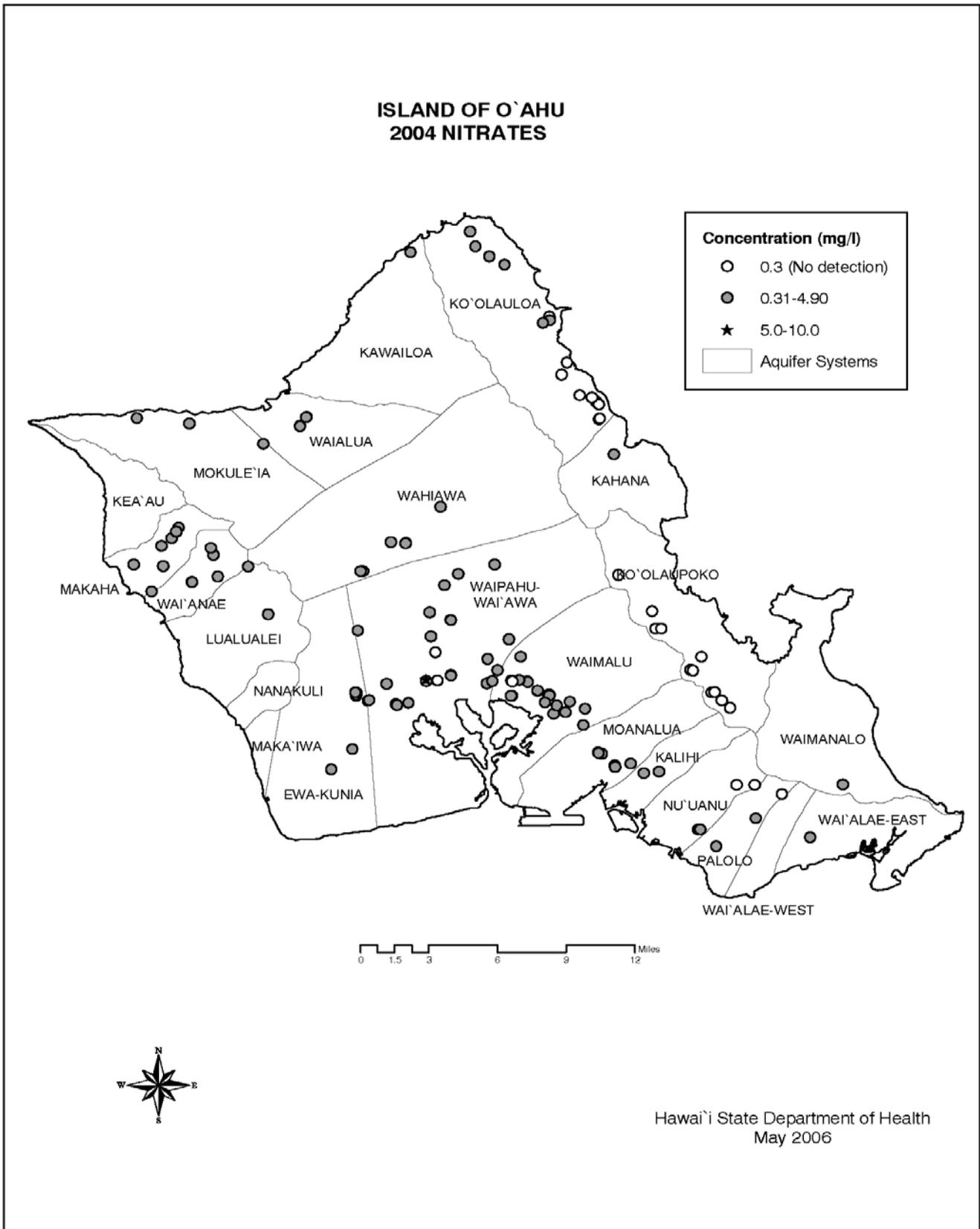
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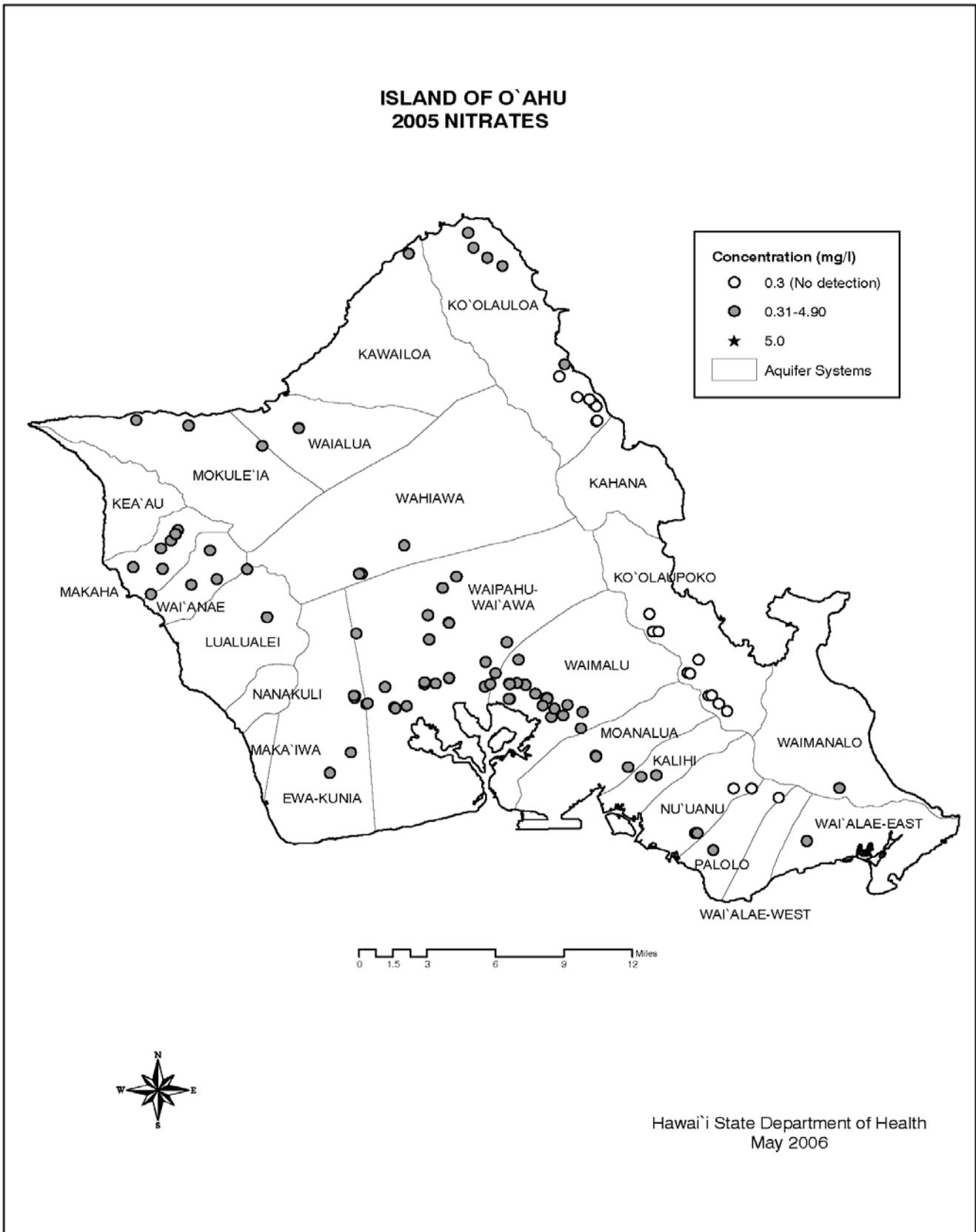
MAUI 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
17	5739-01	Kaanapali P4 (before)	DW	DBCP	NQ<0.04	10/11/04
17	5739-01	Kaanapali P4 (before)	DW	TCP	0.42	10/11/04
18	5739-02	Kaanapali P6 (before)	DW	DBCP	0.27	10/11/04
18	5739-02	Kaanapali P6 (before)	DW	TCP	0.67	10/11/04
19	5838-01	Napili A	Inactive	DBCP	0.36	6/4/93
20	5838-03	Honokohau A (Napili D)	DW	DBCP	0.04	11/22/04
20	5838-03	Honokohau A (Napili D)	DW	EDB	0.01	11/22/04
20	5838-03	Honokohau A (Napili D)	DW	TCP	0.06	11/22/04
21	5838-04	Napili C	DW	DBCP	NQ<0.04	11/23/04
21	5838-04	Napili C	DW	TCP	0.07	11/23/04

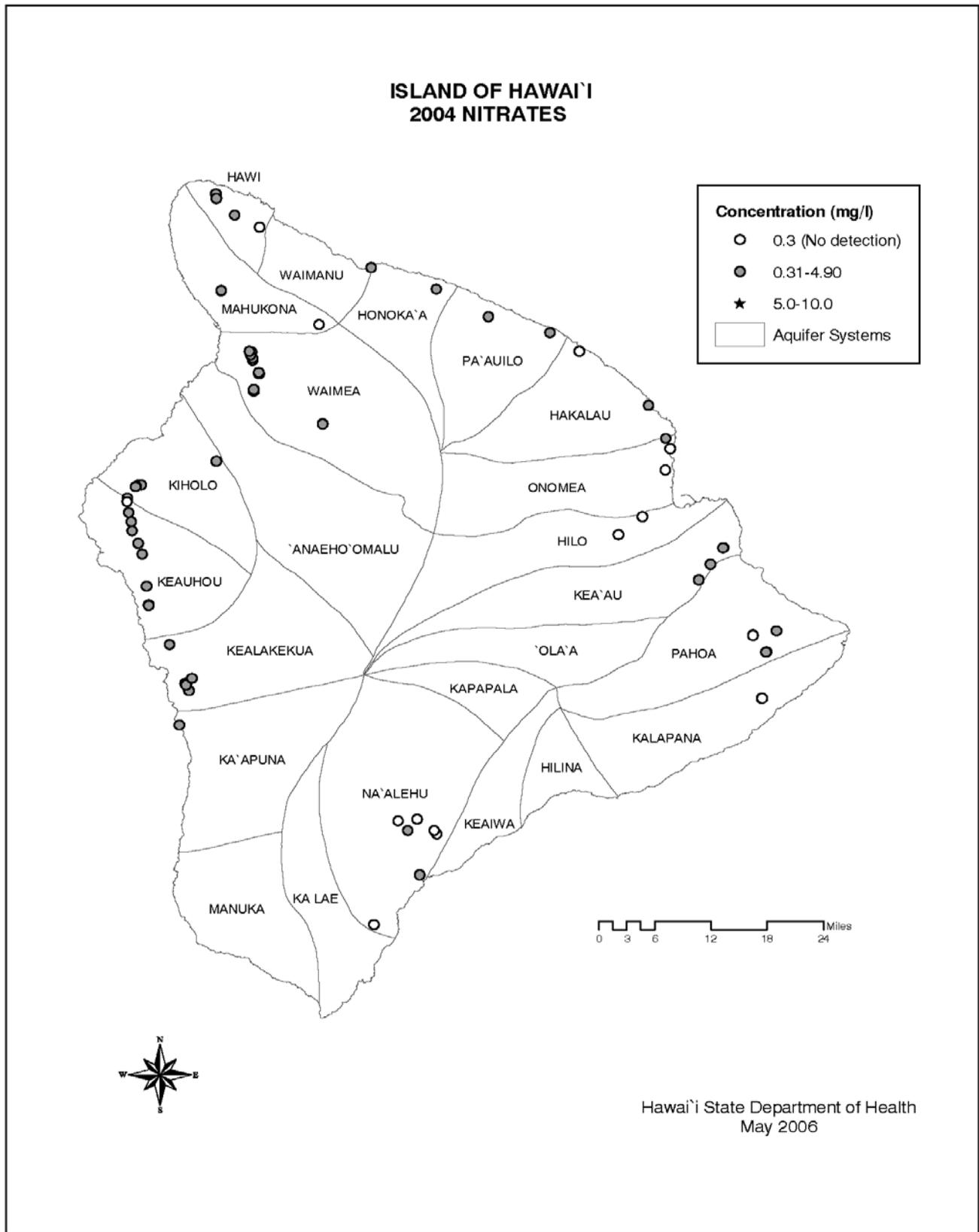


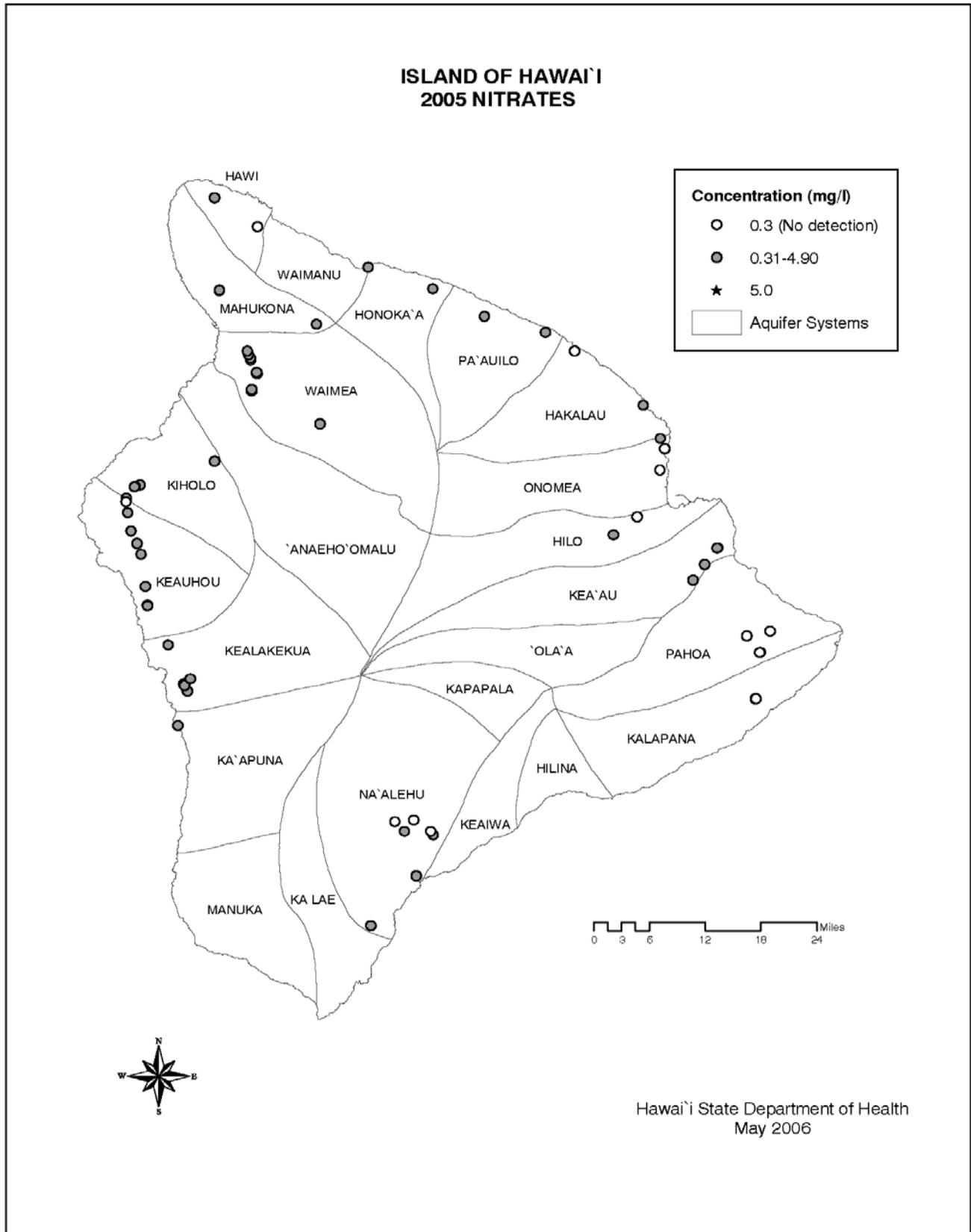
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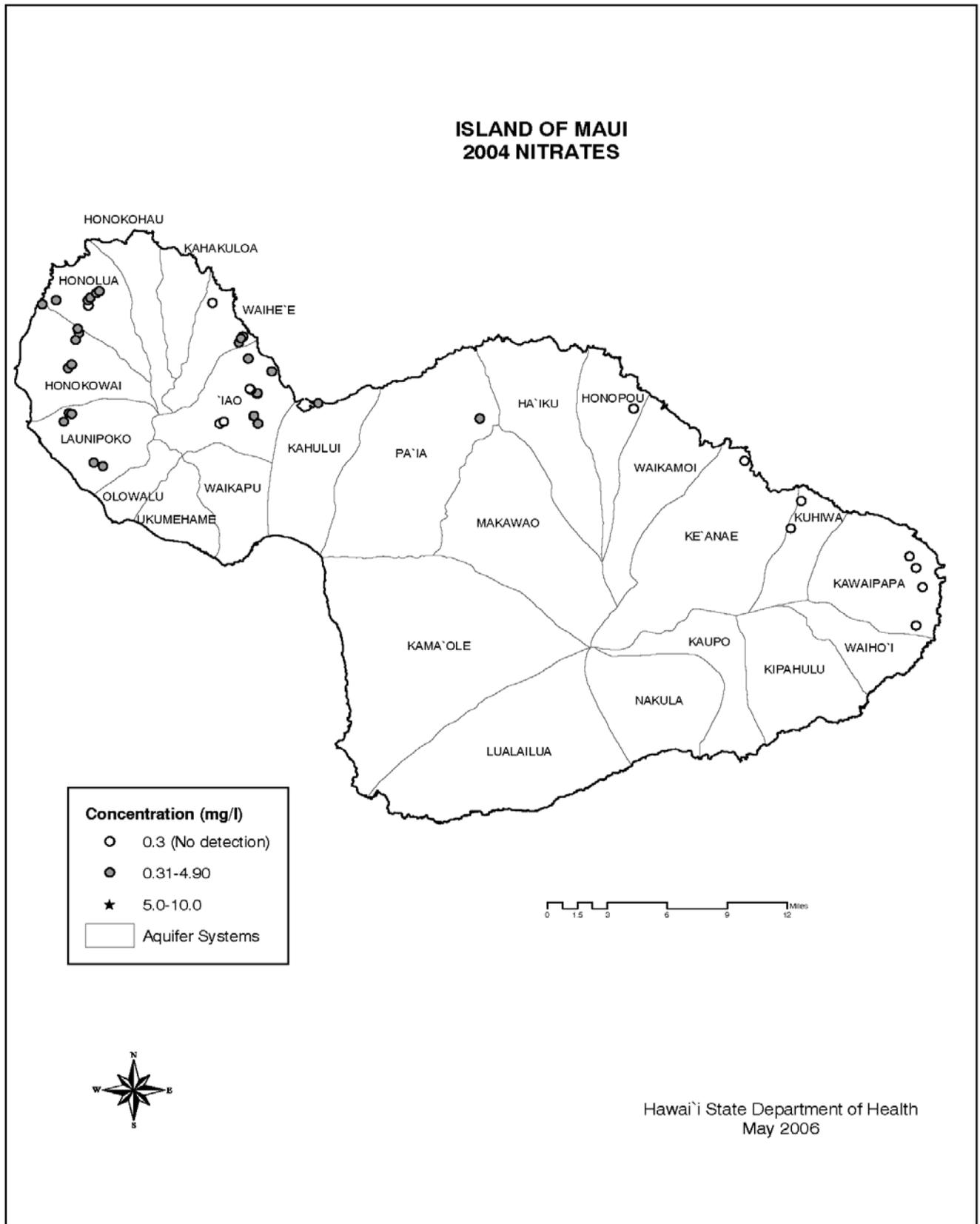
KAUA'I 2004 Contamination Map						
Map #	Well #	Well Name	Use	Contaminant	Detected Level (ppb)	Date
1	0045-04	Barking Sands	IRR	Ametryn	0.80	07/12/88
1	0045-04	Barking Sands	IRR	Atrazine	3.50	07/12/88
1	0045-04	Barking Sands	IRR	Simazine	0.20	07/12/88
2	5530-03	Lawai Well 1	DW	TCP	0.04	01/29/04
3	5631-01	Kalaheo Deep Well 1	DW	Isophorone	0.70	9/17/01*
4	5822-02	Grammar School Well	DW	Isophorone	0.60	07/08/98
5	5823-01	Garlinghouse Tunnel	DW	Atrazine	0.06	05/25/04
5	5823-01	Garlinghouse Tunnel	DW	Desethyl Atrazine	NQ<0.05	11/17/03
6	5824-06	Puhi Well 4	DW	DBCP	NQ<0.04	11/24/03
6	5824-06	Puhi Well 4	DW	EDB	NQ<0.04	11/24/03
6	5824-06	Puhi Well 4	DW	TCE	NQ<0.5	10/31/02
6	5824-06	Puhi Well 4	DW	TCP	0.08	11/03/04
7	5921-01	Kalepa	DW	Isophorone	0.50	9/17/01*
8	5923-02	Kilohana B	DW	Isophorone	1.60	9/4/01*
9	5923-03	Kilohana C	DW	Atrazine	0.08	11/24/03
9	5923-03	Kilohana C	DW	Bromacil	0.20	11/17/03
						*Montgomery Lab

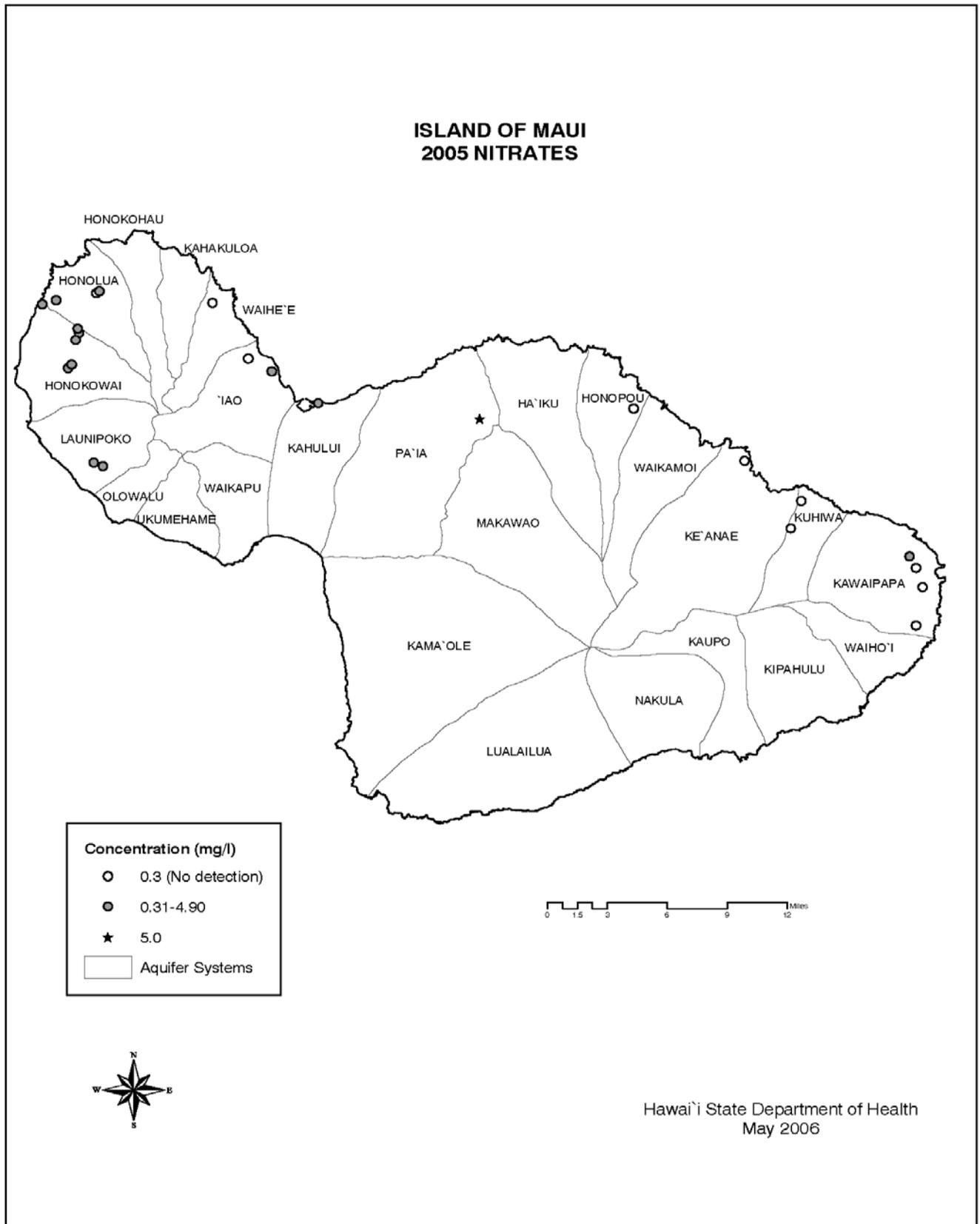


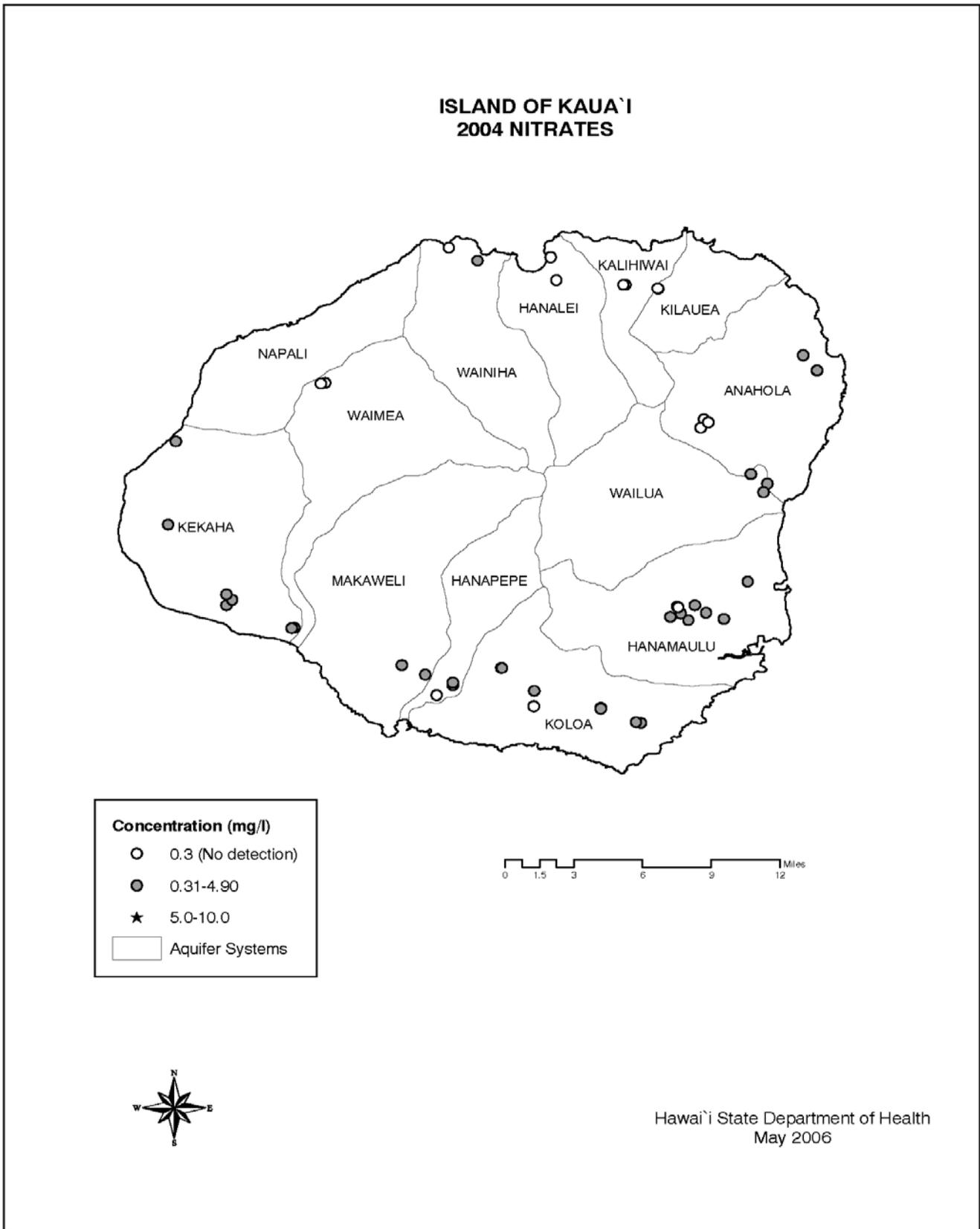


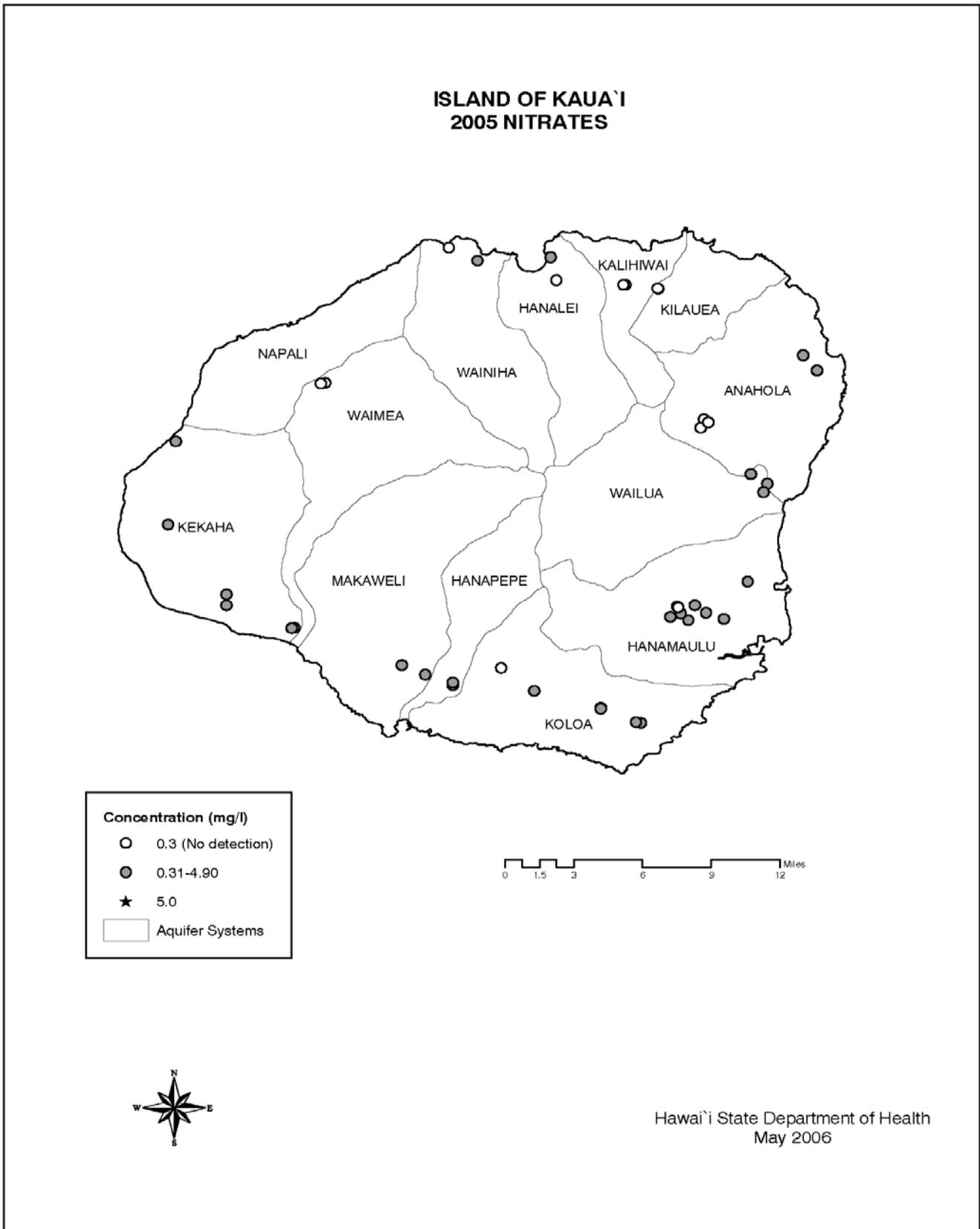












**2006 STATE OF HAWAII WATER QUALITY MONITORING AND  
ASSESSMENT REPORT:**

Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress Pursuant  
to Sections §303(D) and §305(B), Clean Water Act (P.L. 97-117)

**CHAPTER IV  
ASSESSMENT OF WATERS**



January 11, 2008

## 2006 Waterbody Assessment Decisions [Integrated 303(d) List/305(b) Report for Hawaii]

- New 303(d) listing are shaded, **bold** and *italicized* in the table, as are any changes for previously listed waters. 2004 303(d) listings are **blue and bold**.
- **Stream codes:** EN = Entire Network, EE = Entire Estuary, ER = Entire Reservoir, EW = Entire Wetland, EL = Entire Lake.
- **Marine Codes:** B = Bay (as specified within HAR 11-54-6), C = Open Coastal (fronting areas within 1000' and 100 fathoms of specified area), E = Estuary, K = Kona (All marine waters of Hawaii Island from Loa Point, South Kona District, clockwise to Malae Point, North Kona District, excluding Kawaihae Harbor and Honokohau Harbor, and for all areas from the shoreline at mean lower low water to a distance 1000m seaward (see HAR 11-54-6), P = Pearl Harbor; \* = Listings from previous reporting cycles which, at that time, were then listed as separate entities from similar named sampling stations, convention continued for this cycle.
- **Decision Codes:** ? = unknown, N = not attained, A = Attained, Ac = Attained (with combined season data), Nc = Not attained (with combined season data), N1 = not attained (by 2 times the standard), N1c = not attained (by combined data, 2 times the standard), V = visual listing from 2001-2004, L = previous listing from 1998 or earlier.
- **Parameter Codes:** Total N = total nitrogen; NO<sub>3</sub>+NO<sub>2</sub> = nitrite+nitrate nitrogen; Total P = total phosphorus; TURB = turbidity; TSS = total suspended solids; chl-a = chlorophyll a; NH<sub>4</sub> = ammonium nitrogen.
- **TMDL Priority Codes:** High (H), Medium (M), and Low (L) priority for initiating TMDL development within the current monitoring and assessment cycle (through April 15, 2008), based on the prioritization criteria described in the Integrated Report and on current and projected resource availability for completing the TMDL development process. IP = TMDL development in progress.
- **Notes:** Assessment results for enterococci microbiological sampling in embayments and open coastal waters are only applicable within the 300 meter (one thousand feet) boundary from the shoreline (HRS 11-54-8(b)).
- For this report, assessed water bodies were sorted by island (north to south), then into the streams category (salinity below 0.5 ppt) or the coastal category (salinity above 0.5 ppt).

2006 State of Hawaii Water Quality Monitoring and Assessment Report

KAUAI Stream Waters

Assessed Waterbody	Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
Hanakapiai	Stream	EN	2-1-10		?	?	?	?	?	TSS (?)	2, 3	
<b>Limahuli</b>	<b>Stream</b>	<b>EN</b>	<b>2-1-12</b>	<b>Dry</b>	?	A	<b>N</b>	A	?	TSS (A)	2, 3, 5	<b>L</b>
Limahuli	Stream	EN	2-1-12	Wet	?	?	?	?	Ac	TSS (?)	2, 3	
<b>Manoa</b>	<b>Stream</b>	<b>EN</b>	<b>2-1-13</b>	<b>Dry</b>	?	Ac	Ac	Ac	<b>N1</b>	TSS (Ac)	3, 5	<b>L</b>
<b>Manoa</b>	<b>Stream</b>	<b>EN</b>	<b>2-1-13</b>	<b>Wet</b>	?	Ac	Ac	Ac	<b>Nc</b>	TSS (Ac)	3, 5	<b>L</b>
Wainiha	Stream	EN	2-1-14	Dry	?	Ac	Ac	Ac	Ac	TSS (Ac)	2, 3	
Wainiha	Stream	EN	2-1-14	Wet		Ac	Ac	Ac	Ac	TSS (Ac)	2, 3	
Lumahai	Stream	EN	2-1-15		?	?	?	?	?	TSS (?)	3	
<b>Waipa</b>	<b>Stream</b>	<b>EN</b>	<b>2-1-17</b>	<b>Dry</b>	?	A	A	A	<b>N</b>	TSS (A)	3, 5	<b>H</b>
Waipa	Stream	EN	2-1-17	Wet	?	?	?	?	?	TSS (?)	3	
Waioli	Stream	EN	2-1-18	Dry	?	A	A	A	A	TSS (A)	2, 3	
Waioli	Stream	EN	2-1-18	Wet	?	?	?	?	?	TSS (?)	3	
<b>Hanalei</b>	<b>RiverStream</b>	<b>EN</b>	<b>2-1-19</b>	<b>Dry</b>	<b>N</b>	A	A	A	<b>√N</b>	TSS (A)	3, 5	<b>H (IP)</b>
<b>Hanalei</b>	<b>Stream</b>	<b>EN</b>	<b>2-1-19</b>	<b>Wet</b>	<b>N</b>	A	A	A	A	TSS (A)	3, 5	<b>H (IP)</b>
Kalihiwai	Stream	EN	2-1-25		?	?	?	?	?	TSS (?)	3	
<b>Kilauea</b>	<b>Stream</b>	<b>EN</b>	<b>2-1-28</b>	<b>Dry</b>	?	A	A	A	<b>N</b>	TSS (A)	3, 5	<b>L</b>
<b>Kilauea</b>	<b>Stream</b>	<b>EN</b>	<b>2-1-28</b>	<b>Wet</b>	?	Ac	Ac	Ac	<b>N</b>	TSS (Ac)	3, 5	<b>L</b>
<b>Moloaa</b>	<b>Stream</b>	<b>EN</b>	<b>2-1-34</b>	<b>Dry</b>	?	A	A	A	<b>N</b>	TSS (A)	3, 5	<b>L</b>
<b>Moloaa</b>	<b>Stream</b>	<b>EN</b>	<b>2-1-34</b>	<b>Wet</b>	?	?	?	?	<b>N</b>	TSS (?)	3, 5	<b>L</b>
<b>Papaa</b>	<b>Stream</b>	<b>EN</b>	<b>2-1-35</b>	<b>Dry</b>	?	<b>N1</b>	<b>N1</b>	Ac	<b>N1</b>	TSS (Ac)	3, 5	<b>L</b>
Papaa	Stream	EN	2-1-35	Wet	?	?	?	?	?	TSS (?)	3	
Aliomanu	Stream	EN	2-1-36		?	?	?	?	?	TSS (?)	3	
<b>Anahola</b>	<b>Stream</b>	<b>EN</b>	<b>2-2-01</b>	<b>Dry</b>	?	Ac	A	A	<b>N</b>	TSS (A)	3, 5	<b>L</b>
<b>Anahola</b>	<b>Stream</b>	<b>EN</b>	<b>2-2-01</b>	<b>Wet</b>	?	Ac	Ac	Ac	<b>N</b>	TSS (Ac)	3, 5	<b>L</b>
<b>Kapaa</b>	<b>Stream</b>	<b>EN</b>	<b>2-2-04</b>	<b>Dry</b>	?	A	A	A	<b>√N</b>	TSS (A)	3, 5	<b>M L</b>
<b>Kapaa</b>	<b>Stream</b>	<b>EN</b>	<b>2-2-04</b>	<b>Wet</b>	?	A	A	A	<b>N</b>	TSS (A)	3, 5	<b>M L</b>
<b>Wailua</b>	<b>Stream</b>	<b>EN</b>	<b>2-2-08</b>	<b>Dry</b>	?	Ac	Ac	Ac	<b>N</b>	TSS (Ac)	3, 5	<b>L</b>
Wailua	Stream	EN	2-2-08	Wet	?	A	A	A	A	TSS (A)	3	
<b>Hanamaulu</b>	<b>Stream</b>	<b>EN</b>	<b>2-2-12</b>	<b>Dry</b>	?	?	?	?	<b>N</b>	TSS (?)	3, 5	<b>L</b>
<b>Hanamaulu</b>	<b>Stream</b>	<b>EN</b>	<b>2-2-12</b>	<b>Wet</b>	?	?	?	?	<b>N</b>	TSS (?)	3, 5	<b>M L</b>

2006 State of Hawaii Water Quality Monitoring and Assessment Report

KAUAI Stream Waters												
Assessed Waterbody	Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
Nawiliwili	Stream	EN	2-2-13	Dry	?	N	N	A	V	TSS (A)	3, 5	H (IP)
Nawiliwili	Stream	EN	2-2-13	Wet	?	N	N	A	N A	TSS (A)	3, 5	H (IP)
Puali	Stream	EN	2-2-14	Dry	?	N	N	A	N1	TSS (A)	3, 5	H (IP)
Puali	Stream	EN	2-2-14	Wet	?	Nc	N1	Ac	Nc	TSS (Ac)	3, 5	H (IP)
Huleia	Stream	EN	2-2-15	Dry	?	N	N	A	V	TSS (A)	3, 5	H (IP)
Huleia	Stream	EN	2-2-15	Wet	?	A	N A	A	A	TSS (A)	3, 5	H (IP)
Uhelekawawa	Stream	EN	2-2-Uhelekawawa		?	?	?	?	V	TSS (?)	3, 5	M L
Kipu	Stream	EN	2-3-01		?	?	?	?	?	TSS (?)	3	
Waikomo	Stream	EN	2-3-02	Dry	?	Nc	N1	Ac	N1	TSS (Ac)	3, 5	L
Waikomo	Stream	EN	2-3-02	Wet	?	Nc	Nc	Ac	Nc	TSS (Ac)	3, 5	L
Lawai	Stream	EN	2-3-04	Dry	?	N	N	A	N	TSS (A)	3, 5	M L
Lawai	Stream	EN	2-3-04	Wet	?	Ac	Ac	Ac	N	TSS (Ac)	3, 5	M L
Wahiawa	Stream	EN	2-3-06	Dry	?	N1	N1	A	N1	TSS (A)	3, 5	L
Wahiawa	Stream	EN	2-3-06	Wet	?	Nc	Nc	Ac	Nc	TSS (Ac)	3, 5	L
Hanapepe	River-Stream	EN	2-3-07	Dry	?	A	A	A	N	TSS (A)	3, 5	M L
Hanapepe	River-Stream	EN	2-3-07	Wet	?	Ac	Ac	Ac	V	TSS (Ac)	3, 5	M L
Mahinauli	Stream	EN	2-4-01		?	?	?	?	?	TSS (?)	3	
Aakukui	Stream	EN	2-4-02		?	?	?	?	?	TSS (?)	3	
Waimea	Stream	EN	2-4-04	Dry	?	A	A	N	V N	TSS (A)	3, 5	M L
Waimea	Stream	EN	2-4-04	Wet	?	Ac	Ac	Ac	V	TSS (Ac)	3, 5	M L
Waimea	River Estuary	EN-EE	2-4-04-E		?	?	?	?	V	TSS (?)	3, 5	M L

2006 State of Hawaii Water Quality Monitoring and Assessment Report

KAUAI Marine Waters											
Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
C	Aliomanu Beach	HI710019	wet	?	?	?	?	?		3	
C	Anahola Beach	HI823433	wet	A	?	?	?	?		2,3	
C	Anahola Beach	HI270737	wet	?	?	?	?	?		3	
C	Anini Beach	HI338804	wet	?	?	?	?	?		3	
<b>C</b>	<b>Anini Beach Park</b>	HI418744	<b>wet</b>	A	?	?	?	<b>N</b>		<b>2,3,5</b>	<b>L</b>
C	Beach House Beach	HI156238	dry	A	?	?	?	?		2,3	
C	Brennecke Beach	HI166521	dry	A	?	?	?	?		2,3	
C	Donkey Park	HI853903	wet	?	?	?	?	?		3	
C	Gillin's Beach	HI976083	dry	?	?	?	?	?		3	
C	Glass Beach	HI949505	wet	?	?	?	?	?		3	
<b>C</b>	<b>Haena Beach Park</b>	<b>HI554189</b>	<b>wet</b>	<b>A</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>N</b>		<b>2,3,5</b>	<b>L</b>
C	Hanakapi'ai Beach	HI797414	wet	?	?	?	?	?		3	
<b>B</b>	<b>Hanalei Bay (Landing)</b>	<b>HIW00093</b>	wet	<b>N</b>	?	?	?	<b>N</b>		<b>3,5</b>	<b>H (IP)</b>
<b>B</b>	<b>Hanalei Bay (Pavilion)</b>	<b>HIW00092</b>	wet	<b>N</b>	?	?	?	<b>N</b>		<b>3,5</b>	<b>H</b>
<b>B</b>	<b>Hanalei Bay Mooring station*</b>	<b>HIW00157</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>H</b>
<b>E</b>	<b>Hanalei Bay upstream of Dolphin*</b>	<b>HIW00160</b>	wet	?	?	?	?	<b>N</b>		<b>3,5</b>	<b>H (IP)</b>
<b>B</b>	<b>Hanalei Bay (Waioli Beach)</b>	<b>HIW00091</b>	<b>wet</b>	<b>N A</b>	?	?	?	<b>N</b>		<b>2,3,5</b>	<b>H</b>
<b>E</b>	<b>Hanalei River</b>	<b>HI385259</b>	wet	<b>N</b>	?	?	?	<b>N</b>		<b>3,5</b>	<b>H (IP)</b>
<b>B</b>	<b>Hanama'ulu Bay (Beach)</b>	<b>HIW00094</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	
<b>B</b>	<b>Hanama'ulu Bay</b>	<b>HIW00063</b>	wet	?	?	?	?	<b>N</b>		<b>3,5</b>	<b>L</b>
B	Hanapepe Bay	HIW00095	wet	?	?	?	?	?		3	
<b>B</b>	<b>Hanapepe Bay- from breakwater to shore and nearshore waters to 30' from Puolo Point to Paakehi Point</b>	HIW00048	wet	?	<b>L</b>	<b>L</b>	<b>L</b>	?	<b>nutrients</b>	<b>3,5</b>	<b>L</b>
C	Haula Beach	HI277808	dry	?	?	?	?	?		3	
C	Kahili Beach	HI533519	wet	?	?	?	?	?		3	
C	Kalalau Beach	HI908803	wet	?	?	?	?	?		3	

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KAUAI Marine Waters

Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO3+NO2	Total P	TURB	Other Pollutants	Category	TMDL Priority
<b>C</b>	<b>Kalihiwai Bay</b>	<b>HI264001</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
<b>C</b>	<b>Kapa'a Beach Co. Park</b>	<b>HI972832</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
C	Kauapea Beach (Secret Beach)	HI669328	wet	?	?	?	?	?		3	
C	Kawailoa Beach	HI698776	dry	?	?	?	?	?		3	
C	Kealia	HI402035	wet	?	?	?	?	?		3	
C	Kee Beach	HI124511	wet	A	?	?	?	A		2,3	
C	Kekaha Beach Co. Pk.	HI530569	dry	A	?	?	?	?		2,3	
C	Kepuhi Beach	HI344813	wet	?	?	?	?	?		3	
B	Kikiaola Boat Harbor	HIW00112	dry	?	?	?	?	?		3	
C	Kilauea Pt. Nat. Wildlife Ref.	HI471488	wet	?	?	?	?	?		3	
C	Kipu Kai	HI266627	wet	?	?	?	?	?		3	
<b>C</b>	<b>Koloa Landing</b>	<b>HI955435</b>	dry	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
B	Kukuiula Bay	HIW00113	dry	?	?	?	?	?		3	
C	Larsens Beach	HI860960	wet	?	?	?	?	?		3	
C	Lawa'i Kai	HI434882	wet	?	?	?	?	?		3	
<b>C</b>	<b>Waimea Bay Beach (Near River station)</b>	<b>HI862821</b>	na	<b>N</b>	?	?	?	?		<b>3,5</b>	
C	Lumaha'i Beach	HI889639	wet	?	?	?	?	?		3	
<b>C</b>	<b>Lydgate Park</b>	<b>HI798758</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
C	Maha'ulepu Beach	HI533799	dry	?	?	?	?	?		3	
C	Miloli'i	HI333210	dry	?	?	?	?	?		3	
C	Moloa'a Bay	HI547745	wet	?	?	?	?	?		3	
C	Na Pali Coast State Park	HI709808	dry	?	?	?	?	?		3	
<b>B</b>	<b>Nawiliwili Bay (Kalapaki Beach)</b>	<b>HIW00114</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>H M</b>
<b>B</b>	<b>Nawiliwili Bay (Offshore)</b>	<b>HIW00116</b>	wet	?	?	<b>N</b>	?	<b>N</b>	<b>chl-a(N), NH4(N)</b>	<b>3,5</b>	<b>H M</b>
<b>B</b>	<b>Nawiliwili Bay (Nawiliwili Harbor)</b>	<b>HIW00115</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>H M</b>
<b>B</b>	<b>Nawiliwili Bay- from breakwater to shore</b>	<b>HIW00059</b>	wet	?	<b>L</b>	<b>L</b>	<b>L</b>	<b>L</b>	<b>nutrients</b>	<b>3,5</b>	<b>H M</b>
C	Nu'alolo	HI945520	dry	?	?	?	?	?		3	

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KAUAI Marine Waters											
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C	Nukolii Beach Park	HI502794	wet	A	?	?	?	?		2,3	
C	Pacific Missile Range Facility	HI176480	dry	?	?	?	?	?		3	
C	Pakala (Makaweli)	HI468251	wet	?	?	?	?	?		3	
C	Palama Beach (Nomilu)	HI665178	wet	?	?	?	?	?		3	
C	Papa'a Bay	HI130639	wet	?	?	?	?	?		3	
C	Pila'a Beach	HI363048	wet	?	?	?	?	?		3	
<b>C</b>	<b>Po'ipu Beach Co. Park</b>	<b>HI396850</b>	<b>dry</b>	<b>N</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>?</b>		<b>3,5</b>	<b>L</b>
C	Polihale State Park	HI247403	dry	A	?	?	?	?		2,3	
<b>B</b>	<b>Port Allen Boat Harbor (Port Allen Pier)</b>	<b>HIW00026</b>	wet	?	<b>N</b>	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
B	Port Allen Boat Harbor	HIW00120	wet	?	?	?	?	?		3	
C	Prince Kuhio Park	HI742228	dry	?	?	?	?	?		3	
C	Princeville	HI520271	wet	?	?	?	?	?		3	
<b>C</b>	<b>Salt Pond Beach Co. Park</b>	<b>HI701008</b>	<b>wet</b>	<b>N</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>?</b>		<b>3,5</b>	<b>L</b>
C	Sheraton Beach	HI542569	dry	?	?	?	?	?		3	
C	Shipwreck Beach	HI358435	dry	?	?	?	?	?		3	
C	Spouting Horn Beach Co. Park	HI951651	dry	?	?	?	?	?		3	
C	Tunnels Beach	HI936087	wet	?	?	?	?	?		3	
C	Wahiawa Bay	HIW00121	wet	?	?	?	?	?		3	
C	Waiakalua Iki Beach	HI505816	wet	?	?	?	?	?		3	
C	Waiakalua Nui Beach	HI371632	wet	?	?	?	?	?		3	
<b>E</b>	<b>Waikoko Estuary</b>	<b>HIW00162</b>	wet	?	?	?	?	<b>N</b>		<b>3,5</b>	<b>H (IP)</b>
<b>E</b>	<b>Wailua (Wailua River Station)</b>	<b>HI606168</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>M L</b>
<b>C</b>	<b>Waimea Bay Beach- nearshore waters to 18' from Kekaha Oomano Pt. - 1.5 miles SE of Mahinaui Stream</b>	<b>HIW00057</b>	wet	?	?	?	?	<b>L</b>	<b>susp. solids</b>	<b>3,5</b>	<b>M L</b>
C	Waimea Rec. Pier St. Pk.	HI245235	dry	?	?	?	?	?		3	
C	Wainiha Bay	HI417823	wet	?	?	?	?	?		3	
C	Wai'ohai Beach	HI392082	dry	?	?	?	?	?		3	
<b>E</b>	<b>Waioli Stream Estuary</b>	<b>HIW00163</b>	wet	?	?	?	?	<b>N</b>		<b>3,5</b>	<b>M-H (IP)</b>
<b>E</b>	<b>Waipa Stream Estuary</b>	<b>HIW00164</b>	wet	?	?	?	?	<b>N</b>		<b>3,5</b>	<b>H (IP)</b>
C	Waipouli Beach	HI682678	wet	A	?	?	?	?		2,3	

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Assessed Waterbody	Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
Kawela	Stream	EN	3-1-04			?	?	?	?	TSS (?)	3	
<b>Kahawainui</b>	<b>Stream</b>	<b>EN</b>	<b>3-1-07</b>			<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>		<b>3, 5</b>	<b>M L</b>
<b>Waialele</b>	<b>Stream</b>	<b>EN</b>	<b>3-1-08</b>	<b>Wet</b>	?	?	?	?	<b>N1</b>	TSS (?)	<b>3, 5</b>	<b>L</b>
Koloa	Stream	EN	3-1-09	Both	?	?	?	?	?	TSS (?)	3	
Kaipapau	Stream	EN	3-1-10		?	?	?	?	?	TSS (?)	3	
Kaluanui	Stream	EN	3-1-13		?	?	?	?		TSS (?)		
Punaluu	Stream	EN	3-1-16	Dry	?	A	A	A	A	TSS (A)	2, 3	
Punaluu	Stream	EN	3-1-16	Wet	?	A	Ac	A	A	TSS (A)	2, 3	
<b>Kahana</b>	<b>Stream</b>	<b>EN</b>	<b>3-1-18</b>	<b>Dry</b>	?	A	<b>N</b>	A	<b>N</b>	TSS (A)	<b>3, 5</b>	<b>M</b>
Kahana	Stream	EN	3-1-18	Wet	?	Ac	Ac	Ac	Ac	TSS (Ac)	3	
<b>Kaaawa</b>	<b>Stream</b>	<b>EN</b>	<b>3-1-19</b>			<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>		<b>3, 5</b>	<b>M L</b>
<b>Waikane</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-02</b>	<b>Dry</b>	?	A	<b>N</b>	A	A	TSS (A)	<b>3, 5</b>	<b>L</b>
<b>Waikane</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-02</b>	<b>Wet</b>	?	Ac	<b>Nc</b>	Ac	Ac	TSS (Ac)	<b>3, 5</b>	<b>L</b>
<b>Waiahole</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-04</b>	<b>Dry</b>	?	A	<b>N</b>	<b>N</b>	A	TSS (A)	<b>3, 5</b>	<b>L</b>
<b>Waiahole</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-04</b>	<b>Wet</b>	?	Ac	<b>Nc</b>	Ac	Ac	TSS (Ac)	<b>3, 5</b>	<b>M L</b>
<b>Kaalaea</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-05</b>	<b>Dry</b>	?	<b>N</b>	<b>N</b>	A	<b>N</b>	TSS (A)	<b>3, 5</b>	<b>M L</b>
<b>Kaalaea</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-05</b>	<b>Wet</b>	?	<b>N</b>	<b>N</b>	A	A	TSS (A)	<b>3, 5</b>	<b>M L</b>
<b>Kahaluu</b>	<b>Stream</b> <b>Estuary</b>	<b>EE</b>	<b>3-2-07-E</b>	<b>Wet</b>	?	?	?	?	<b>V</b>		<b>3, 5</b>	<b>M L</b>
<b>Waihee</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-07.01</b>	<b>Wet</b>	?	<b>V</b>	<b>V</b>	<b>V</b>	?	TSS (?)	<b>3, 5</b>	<b>M L</b>
<b>Waihee</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-07.01</b>	<b>Dry</b>	?	<b>VN</b>	<b>VN</b>	<b>VA</b>	<b>N</b>	TSS (A)	<b>3, 5</b>	<b>M L</b>
<b>Kahaluu</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-07.02</b>	<b>Dry</b>	?	A	<b>N</b>	A	<b>N</b>	TSS (A)	<b>3, 5</b>	<b>M L</b>
<b>Kahaluu</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-07.02</b>	<b>Wet</b>	?	?	?	?	<b>V</b>	TSS (?)	<b>3, 5</b>	<b>M L</b>
<b>Ahuimanu</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-07.03</b>	<b>Wet</b>	?	?	?	?	<b>V</b>	TSS (?)	<b>3, 5</b>	<b>L</b>
<b>Ahuimanu</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-07.03</b>	<b>Dry</b>	?	?	?	?	<b>V</b>	TSS (?)	<b>3, 5</b>	<b>L</b>
<b>Waiola</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-07.04</b>	<b>Wet</b>	?	?	?	?	<b>V</b>	TSS (?)	<b>3, 5</b>	<b>L</b>
<b>Waiola</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-07.04</b>	<b>Dry</b>	?	?	?	?	<b>V</b>	TSS (?)	<b>3, 5</b>	<b>L</b>
<b>Heeia</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-08</b>	<b>Dry</b>	?	<b>N</b>	<b>N</b>	A	A	TSS (A)	<b>3, 5</b>	<b>L</b>
<b>Heeia</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-08</b>	<b>Wet</b>	?	A	<b>N</b>	A	<b>N</b>	TSS (A)	<b>3, 5</b>	<b>M L</b>
<b>Keaahala</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-09</b>	<b>Dry</b>	?	<b>N</b>	<b>N</b>	<b>N</b>	<b>N</b>	TSS (A), <b>Trash</b>	<b>3, 5</b>	<b>M L</b>
<b>Keaahala</b>	<b>Stream</b>	<b>EN</b>	<b>3-2-09</b>	<b>Wet</b>	?	<b>N</b>	<b>N</b>	A	A	TSS (A), <b>Trash</b>	<b>3, 5</b>	<b>M L</b>

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Assessed Waterbody	Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
Kaneohe	Stream	EN	3-2-10	Dry	?	V	V	V	N	TSS (?), Dieldrin	3, 5	H (IP)
Kaneohe	Stream	EN	3-2-10	Wet	?	V	V	V	N	TSS (?), Dieldrin	3, 5	H (IP)
Kamooalii (Trib to Kaneohe Stream)	Stream	Kamooalii Trib	3-2-10.01	Dry	?	V	V	V	N	TSS (?)	3, 5	H (IP)
Kamooalii (Trib to Kaneohe Stream)	Stream	Kamooalii Trib	3-2-10.01	Wet	?	V	V	V	?	TSS (?)	3, 5	H (IP)
Kawa	Stream	EN	3-2-11		?	L	L	L	L	TSS (L)	3, 4a	TMDLs approved 2002, 2005
Kapaa	Stream	EN	3-2-13-Kapaa		?	L	L	L	L	TSS, Metals (L); Lead	3, 4a, 5	H M (nutrient & sediment TMDLs approved 2007)
Kawainui Marsh	Wetland	EW	3-2-13-W		?	?	?	?	?	TSS (?)	3, 5	H M
Kawainui	Stream	EN	3-2-13		?	?	?	?	?	TSS (?)	3, 5	H M
Maunawili	Stream	EN	3-2-13.01		?	V	V	V	V	TSS (?), Trash	3, 5	M
Kaelepulu	Stream	EN	3-2-14		?	V	V	V	V	TSS (?)	3, 5	H (IP)
Waimanalo	Stream	EN	3-2-15		?	L	L	L	L	TSS (?)	3, 4a	TMDLs approved 2001
Palolo	Stream	EN	3-3-07.01.1		?	?	?	?	?	TSS (?), Trash	3, 5	M L
Manoa	Stream	EN	3-3-07.01		?	V	V	V	V	TSS (?), Dieldrin, Chlordane	3, 5	M L
Makiki	Stream	EN	ALWS06	Dry	?	N	?	N	?	TSS (?)	3, 5	M L
Nuuanu	Stream	EN	3-3-09	Dry	?	N	N	N	V N	TSS (N), Trash, Dieldrin, Chlordane	3, 5	H M
Nuuanu	Stream	EN	3-3-09	Wet	?	N	N	A	V N	TSS (A), Trash, Dieldrin, Chlordane	3, 5	H M
Kapalama	Stream	EN	3-3-10		?	V	V	V	V	Trash	3, 5	M L
Kalihi	Stream	EN	3-3-11	Dry	?	?	N	A	N	TSS (A), Trash	3, 5	H
Kalihi	Stream	EN	3-3-11	Wet	?	N	N	A	A	TSS (A), Trash	3, 5	H
Moanalua	Stream	EN	3-3-12.01	Dry	?	Nc	Ac	Ac	N1	TSS (Ac), Trash	3, 5	M L
Moanalua	Stream	EN	3-3-12.01	Wet	?	Nc	Ac	Ac	Ac	TSS (Ac), Trash	3, 5	M L
Salt Lake	Lake	EL	3-3-12-SaltLake		?	?	?	?	N	Trash	3, 5	M L
Halawa	Stream	EN	3-4-02		?	V	V	V	V	TSS (?)	3, 5	H (IP)

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Aiea	Stream	EN	3-4-03	Wet	?	N1c	N1c	?	V	Trash	3, 5	H (IP)
Aiea	Stream	EN	3-4-03	Dry	?	N1c	N1c	?	V	Trash	3, 5	H (IP)
Kalauao	Stream	EN	3-4-04-01	Dry	?	N1	N1	?	N	TSS (?)	3, 5	H (IP)
Kalauao	Stream	EN	3-4-04-01	Wet	?	N	N	?	Ac	TSS (?)	3, 5	H (IP)
Waimalu	Stream	EN	3-4-05	Wet	?	?	?	?	N1	TSS (?)	3, 5	H (IP)
Waiawa	Stream	EN	3-4-06	Wet	?	VA	VA	VA	V	TSS (A), Trash	3, 5	H (IP)
Waiawa	Stream	EN	3-4-06	Dry	?	V	V	V	V	TSS (?), Trash	3, 5	H (IP)
Waimano	Stream	EN	3-4-06.01		?	?	?	?	V	TSS (?)	3, 5	H (IP)
Waikele	Stream	EN	3-4-10	Dry	?	N1	N1	?	?	TSS (?)	3, 5	H (IP)
Waikele	Stream	EN	3-4-10	Wet	?	N1	N1	?	N	TSS (?)	3, 5	H (IP)
Honouliuli	Stream	EN	3-4-11		?	?	?	?	?	TSS (?)	3	
Kapakahi	Stream	EN	3-4-Kapakahi	Wet	?	N	N	N	?	TSS (?), Trash	3, 5	H (IP)
Kapakahi	Stream	EN	3-4-Kapakahi	Dry	?	?	?	?	V	TSS (?), Trash	3, 5	H (IP)
Kaupuni	Stream	EN	3-5-05		?	V	V	V	V	TSS (?), Trash	3, 5	
Kiikii	Stream Estuary	ENEE	3-6-06-E		?	?	?	?	?	TSS (?)	3, 5	M L
Poamoho	Stream	EN	3-6-06.01		?	V	V	V	V	TSS (?)	3, 5	H M
Kaukonahua	Stream	EN	3-6-06.02	Dry	?	VA N	VA N	VA A	VA N1	TSS (A)	3, 5	H M
Kaukonahua	Stream	EN	3-6-06.02	Wet	?	VA N	VA N	VA A	VA N1	TSS (A)	3, 5	H M
Wahiawa Reservoir	Reservoir	ER	3-6-06.02-R		?	V	V	V	V	TSS (?)	3, 5	H (IP)
N. Fork Kaukonahua	Stream	EN	3-6-06.02.2		?	V	V	V	V	TSS (?)	3, 5	H (IP)
S. Fork Kaukonahua	Stream	EN	3-6-06.02.1		?	V	V	V	V	TSS (?)	3, 5	H (IP)
Paukaula	Stream Estuary	ENEE	3-6-07-E		?	V	V	V	V	TSS (?)	3, 5	M L
Opaepaepa	Stream	EN	3-6-07.01		?	V	V	V	V	TSS (?)	3, 5	L
Helemano	Stream	EN	3-6-07.02		?	V	V	V	V	TSS (?)	3, 5	L
Anahulu	Stream Estuary	ENEE	3-6-08-E		?	V	V	V	V	TSS (?)	3, 5	M L
Kawailoa	Stream	EN	3-6-08.01		?	V	V	V	V	TSS (?)	3, 5	

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Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority	
C	Ala Moana Beach (Center)	HIW00001	wet	<del>N</del> A	N	?	?	N	chl-a(N)	2,3,5	L	
C	Ala Moana Beach (Diamond Hd)	HIW00002	wet	<del>N</del> A	?	?	?	?		2,3,5		
C	Ala Moana Beach (Ewa)	HI473893	wet	A	?	?	?	?		2,3		
B	Ala Wai Boat Harbor (Ala Moana Bridge stn)	HIW00125	wet	N	N	?	N	N	chl-a(N)	3,5	L	
E	Ala Wai Canal and Boat Harbor	HIW00050	na	L	L	L	L	L	Nutrients, pathogens, metals, suspd solids (L); organochlorine pesticides, lead	3,4a,5	TMDLs completed for canal nutrients <del>M</del> L – others	
E	Ala Wai Canal and Harbor (Manoa-Palolo strm mouth stn)	HIW00087	na	?	N	?	N	N	chl-a(N)	3,5	<del>M</del> L	
E	Ala Wai Canal and Harbor (Canal-Dmd Hd stn)	HIW00085	na	N	N	?	N	N	chl-a(N)	3,5	L	
E	Ala Wai Canal and Harbor (Manoa & Palolo KHS stn)	HIW00036	na	?	N	?	N	N	chl-a(N)	3,5	<del>M</del> L	
E	Ala Wai Canal and Harbor (Manoa strm fork stn)	HIW00035	na	?	N	?	?	N	fecal	3,5	<del>M</del> L	
E	Ala Wai Canal and Harbor (Palolo strm fork)	HIW00034	na	?	N	?	?	N	fecal	3,5	<del>M</del> L	
E	Ala Wai Canal and Harbor (McCully Bridge stn)	HIW00086	na	N	?	?	?	?		3,5	L	
C	Aukai Beach Co. Park	HI145110	dry	?	?	?	?	?		3		
C	Banzai Beach	HI908378	dry	?	?	?	?	?		3		
C	Barbers Point Beach Co. Pk.	HI593573	wet	?	?	?	?	?		3		
B	Barbers Point Harbor	HIW00088	dry	?	?	?	?	?		3		
C	Bellows Field Beach Co. Pk. (Waimanalo strm mouth)	HIW00081	wet	N	?	?	?	?		3,5	<del>L</del> M	
C	Bellows Field Beach Co. Pk. (N. runway)	HI798011	wet	N	?	?	?	?		3,5	<del>L</del> M	
C	Camp Harold Erdman	HI309544	dry	?	?	?	?	?		3		
C	Chun's Reef	HI950962	wet	A	?	?	?	?		2,3		
C	Diamond Head	HI431723	dry	A	?	?	?	?		2,3		
C	Ehukai Beach Co. Pk.	HI531535	dry	?	?	?	?	?		3		
C	Ewa Beach	HI767464	wet	?	?	?	?	?		3		
C	Ewa Beach Park	HI319095	wet	A	N	?	N	N	chl-a(N)	2,3,5	L	
C	Fort DeRussy Beach	HI045715	wet	A	?	?	?	?		2,3		
C	Fort Hase Beach	HI410735	dry	?	?	?	?	?		3		
C	Gray's Beach	HI941499	wet	A	N	?	?	N	chl-a(N)	2,3,5	L	

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C	Hauula Beach Park	HI854492	dry	A	?	?	?	?		2,3	
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OAHU Marine Waters											
Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
B	Hale'iwa Boat Harbor	HIW00127	wet	?	?	?	?	?		3	
C	Halona Cove	HI132946	dry	?	?	?	?	?		3	
C	Hanaka'ilio Beach	HI646411	dry	?	?	?	?	?		3	
B	<b>Hanauma Bay (oceanic)</b>	<b>HIW00017</b>	dry	?	?	<b>N</b>	?	?	<b>chl-a(N), NH4(N)</b>	<b>3,5</b>	<b>L M</b>
B	<b>Hanauma Bay (Beach)</b>	<b>HIW00096</b>	dry	<b>N</b>	<b>N</b>	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>L M</b>
B	<b>Hanauma Bay</b>	<b>HIW00058</b>	dry	?	?	?	?	?	<b>trash</b>	<b>3,5</b>	<b>L M</b>
C	<b>Hawaiian Electric Beach Park</b>	<b>HI628972</b>	<b>dry</b>	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
B	<b>Heeia Kea Small Boat Harbor</b>	<b>HIW00097</b>	wet	<b>N</b>	<b>N</b>	?	?	?	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
B	Honolulu Harbor	HIW00100	wet	?	?	?	?	?		3	
B	<b>Honolulu Harbor &amp; Shore area-Honolulu Waterfront-Aloha Tower</b>	<b>HIW00061</b>	wet	?	?	?	?	<b>N</b>	<b>trash</b>	<b>3,5</b>	<b>L</b>
B	<b>Honolulu Harbor &amp; Shore area-Kewalo Basin</b>	<b>HIW00051</b>	wet	?	<b>L</b>	<b>L</b>	<b>L</b>	<b>N</b>	<b>nutrients, suspd. Solids (L); trash</b>	<b>3,5</b>	<b>L</b>
B	<b>Honolulu Harbor-nearshore waters to 30' from 1 mile NW of Honolulu Harbor/Sand Island channel to Waikiki Beach</b>	<b>HIW00049</b>	wet	<b>L</b>	<b>L</b>	<b>L</b>	<b>L</b>	<b>N</b>	<b>nutrients, pathogens, metals, suspd solids (L)</b>	<b>3,5</b>	<b>L</b>
C	Ihilani Honu Lagoon	HI815093	dry	?	?	?	?	?		3	
C	Ihilani Kohola Lagoon	HI515191	dry	?	?	?	?	?		3	
C	Ihilani Naia Lagoon	HI685981	dry	?	?	?	?	?		3	
C	Ihilani Ulua Lagoon	HI550240	dry	?	?	?	?	?		3	
C	Iroquois Pt.	HI412839	wet	?	?	?	?	?		3	
C	<b>Kaaawa Beach Park</b>	<b>HI580360</b>	<b>wet</b>	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
C	Ka'alawai Beach	HI253930	dry	?	?	?	?	?		3	
E	<b>Kaelepulu Stream-Kailua Bch</b>	<b>HIW00182</b>	na	<b>N</b>	<b>N</b>	?	<b>N</b>	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M H (IP)</b>
C	Ka'ena Pt.	HI645485	dry	?	?	?	?	?		3	
C	Kahala Beach Shoreline	HI514582	dry	?	?	?	?	?		3	
C	Kahala Hilton Beach	HI173325	dry	?	?	?	?	?		3	
B	<b>Kahana Park</b>	<b>HIW00103</b>	<b>wet</b>	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>M</b>
B	<b>Kahana Bay Park</b>	<b>HIW00102</b>	wet	<b>N</b>	<b>N</b>	?	<b>N</b>	<b>N</b>		<b>3,5</b>	<b>L M</b>

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<b>B</b>	<b>Kahana Bay-nearshore waters to 30' from Mahie Point to a point one mile north of Kahana Bay station</b>	<i>HIW00062</i>	wet	?	?	?	?	<b>N</b>	<b>suspd. Solids (L)</b>	<b>3,5</b>	<b><u>L</u> M</b>
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OAHU Marine Waters											
Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
C	<b>Kahanamoku Beach</b>	HI366432	wet	N	?	?	?	?		3,5	L
C	<b>Kahanamoku Lagoon</b>	HIW00003	wet	N	?	?	?	?		3,5	L
C	Kahe Pt. Beach Co. Pk.	HI548986	dry	?	?	?	?	?		3	
E	Kahuku Golf Course	HI989341	na	?	?	?	?	?		3	
B	<b>Waialua/Kaiaka Bays Nearshore waters to 60' from Puaena Point to a point 1.5 miles W of Kaiaka Pt.</b>	HIW00083		?	L	L	L	N	nutrients, susp. Solids (L)	3,5	L
B	<b>Kaiaka Bay</b>	HIW00106	wet	N A	N	N	?	N	chl-a(N), NH <sub>4</sub> (N)	2,3,5	L
C	Kaihalulu Beach	HI668562	dry	?	?	?	?	?		3	
C	<b>Kailua Beach Park</b>	HI482719	wet	N A	N	?	N	N	chl-a(N)	2,3,5	L
C	<b>Kaiona Beach</b>	HI234342	dry	N	?	?	?	?		3,5	L
C	Kaipapa'u Beach	HI787959	dry	?	?	?	?	?		3	
C	Kakaako Waterfront	HI302297	wet	?	?	?	?	?		3	
C	Kalae oio Beach Park	HI860454	wet	?	?	?	?	?		3	
C	Kalama Beach	HI071892	dry	A	?	?	?	?		2,3	
C	Kaloko (Queens) Beach	HI353985	dry	?	?	?	?	?		3	
C	Kaluanui Beach	HI410842	dry	?	?	?	?	?		3	
C	Kananelu Beach	HI196120	wet	?	?	?	?	?		3	
B	<b>Kaneohe Bay-nearshore waters at mouths of Kaneohe and Kawa streams</b>	HIW00054	wet	?	L	L	L	N	nutrients, susp. Solids (L)	3,5	H L
B	<b>Kaneohe Bay (Central Region)</b>	HIW00013	dry	?	N	N	?	N	NH <sub>4</sub> (N)	3,5	L
B	<b>Kaneohe Bay (Northern Region)</b>	HIW00012	dry	?	N	N	?	N	NH <sub>4</sub> (N)	3,5	L
B	<b>Kaneohe Bay (Southern Region)</b>	HIW00011	dry	N	N	N	?	N	NH <sub>4</sub> (N)	3,5	L
B	<b>Kaneohe Bay (Beach Park)</b>	HIW00004	wet	?	N	?	N	N	chl-a(N)	3,5	L
B	<b>Kaneohe Bay (Kokokahi Pier)</b>	HIW00005	wet	N	N	?	N	N	chl-a(N)	3,5	L
C	Kapaeloa Beach	HI904851	wet	?	?	?	?	?		3	
C	Kapi'olani Park	HI733929	wet	?	?	?	?	?		3	
C	Kaunala Beach	HI622160	dry	?	?	?	?	?		3	
C	Kaupo Beach Co. Park	HI791127	dry	?	?	?	?	?		3	
C	<b>Kawaiku'i Beach Park</b>	HI304424	dry	N	?	?	?	?		3,5	L
C	Kawailoa Beach	HI312049	wet	?	?	?	?	?		3	
C	<b>Kawela Bay</b>	HI698581	dry	N	N	?	N	N	chl-a(N)	3,5	L
C	Kea'au Beach Co. Park	HI730738	dry	?	?	?	?	?		3	

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Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
C	Kealia Beach	HI612698	dry	?	?	?	?	?		3	
B	Keehi Lagoon	HIW00009	wet	A	?	?	?	?		2,3	
<b>B</b>	<b>Keehi Lagoon (Point X)</b>	<b>HIW00010</b>	wet	<b>N</b>	<b>N</b>	?	<b>N</b>	?	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
<b>B</b>	<b>Keehi Lagoon waters and nearshore waters to30' from lagoon mouth to Pearl Harbor</b>	<b>HIW00055</b>	wet	?	<b>L</b>	<b>L</b>	<b>L</b>	<b>N</b>	<b>nutrients, susp. Solids (L)</b>	<b>3,5</b>	<b>L</b>
<b>C</b>	<b>Kewalo Basin</b>	<b>HIW00126</b>	wet	?	<b>N</b>	?	<b>N</b>	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
B	Ko Olina	HIW00089	dry	?	?	?	?	?		3	
C	Kokololio Beach	HI467112	dry	?	?	?	?	?		3	
<b>C</b>	<b>Kualoa Co. Regional Park</b>	<b>HI848207</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
C	Kualoa Sugar Mill Beach	HI484535	wet	?	?	?	?	?		3	
<b>C</b>	<b>Kuhio Beach</b>	<b>HI681782</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
<b>C</b>	<b>Kuhio Beach (Public Bath)</b>	<b>HI851298</b>	wet	A	<b>N</b>	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>2,3,5</b>	<b>L</b>
C	Kuilei Cliffs Beach Park	HIW00064	dry	?	?	?	?	?		3	
C	Kuilima Cove	HI412224	dry	?	?	?	?	?		3	
<b>C</b>	<b>Laie Bay</b>	<b>HI472847</b>	dry	A	<b>N</b>	?	<b>N</b>	<b>N</b>	<b>chl-a(N)</b>	<b>2,3,5</b>	<b>L</b>
C	Laniakea Beach	HI183312	wet	?	?	?	?	?		3	
<b>C</b>	<b>Lanikai Beach</b>	<b>HI596989</b>	wet	<b>N A</b>	?	?	?	?		<b>2,3,5</b>	
C	Laniloa Peninsula (Beach)	HI201901	dry	?	?	?	?	?		3	
C	Laukinui Beach	HI739818	dry	?	?	?	?	?		3	
C	Lualualei Beach Co. Park	HI800877	dry	?	?	?	?	?		3	
C	Magic Island	HI529142	wet	A	?	?	?	?		2,3	
C	Ma'ili Beach Park	HI627464	dry	A	?	?	?	?		2,3	
C	Maipalaoa Beach	HI280966	dry	?	?	?	?	?		3	
<b>C</b>	<b>Makaha Beach</b>	<b>HI632106</b>	dry	A	<b>N</b>	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>2,3,5</b>	<b>L</b>
C	Makao Beach	HI542752	dry	?	?	?	?	?		3	
C	Makapuu Beach	HI723399	dry	A	?	?	?	?		2,3	
C	Makaua Beach Co. Park	HIW00066	wet	?	?	?	?	?		3	
C	Makua Beach	HI915061	dry	A	?	?	?	?		2,3	
C	Malaekahana State Park	HI137325	dry	A	?	?	?	?		2,3	
<b>C</b>	<b>Mamala Bay (Oceanic)</b>	<b>HIW00015</b>	wet	?	<b>N</b>	?	?	?	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
<b>C</b>	<b>Mamala Bay (Sand Isl. Offshore)</b>	<b>HIW00014</b>	wet	<b>N</b>	<b>N</b>	?	?	?	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
C	Manner's Beach	HI717740	dry	?	?	?	?	?		3	

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C	Mauna Lahilahi Beach	HI639551	dry	?	?	?	?	?		3	
<b>B</b>	<b>Maunalua Bay</b>	<b>HIW00016</b>	wet	?	<b>N</b>	<b>N</b>	?	?	<b>chl-a(N), NH4(N)</b>	<b>3,5</b>	<b>L</b>
C	Mokule'ia Beach	HI908786	dry	?	?	?	?	?		3	
C	Mokule'ia Beach Co. Park	HI220308	dry	?	?	?	?	?		3	
C	Nanaikapono Beach	HI504242	dry	A	?	?	?	?		2,3	
C	Nanakuli Beach Park	HI467413	dry	A	?	?	?	?		2,3	
C	Nimitz Beach	HI682233	wet	A	?	?	?	?		2,3	
C	Niu	HI157026	dry	?	?	?	?	?		3	
C	North Beach	HI426406	dry	?	?	?	?	?		3	
<b>C</b>	<b>Ocean Pointe Control</b>	<b>HIW00129</b>	<b>wet</b>	<b>?</b>	<b>N</b>	<b>N</b>	<b>A</b>	<b>N</b>	<b>chl-a(N), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>
<b>C</b>	<b>Ocean Pointe E</b>	<b>HIW00130</b>	<b>wet</b>	<b>?</b>	<b>N</b>	<b>N</b>	<b>A</b>	<b>N</b>	<b>chl-a(N), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>
<b>C</b>	<b>Ocean Pointe W</b>	<b>HIW00131</b>	<b>wet</b>	<b>?</b>	<b>N</b>	<b>N</b>	<b>A</b>	<b>N</b>	<b>chl-a(N), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>
<b>C</b>	<b>Ocean Pointe C</b>	<b>HIW00132</b>	<b>wet</b>	<b>?</b>	<b>N</b>	<b>N</b>	<b>A</b>	<b>N</b>	<b>chl-a(N), NH4(N)</b>	<b>2,3,5</b>	<b>L</b>
C	Ohikilolo Beach(Barking Sands)	HI731423	dry	?	?	?	?	?		3	
<b>C</b>	<b>Oneawa Beach</b>	<b>HI952205</b>	dry	?	<b>N</b>	?	<b>N</b>	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
C	Oneula Beach Park	HI825419	wet	A	?	?	?	?		2,3	
C	Outrigger Canoe Club Beach	HI943325	wet	?	?	?	?	?		3	
C	Pahipahi'alua Beach	HI575467	dry	?	?	?	?	?		3	
C	Paiko Lagoon	HI598745	dry	?	?	?	?	?		3	
<b>B</b>	<b>Hawaii Kai station</b>	<b>HIW00117</b>	dry	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
B	Paiko Peninsula to Koko Hd	HIW00118	dry	?	?	?	?	?		3	
C	Papa'iloa Beach	HI478834	wet	?	?	?	?	?		3	
C	Papaoneone Beach	HI990625	dry	?	?	?	?	?		3	
<b>P</b>	<b>Pearl Harbor</b>	<b>HIW00006</b>	na	?	<b>N</b>	?	<b>N</b>	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>H</b>
<b>P</b>	<b>Pearl Harbor-Harbor waters and nearshore waters to 30' from Keehi Lagoon to Oneula Beach</b>	<b>HIW00119</b>	na	?	<b>L</b>	<b>L</b>	<b>L</b>	<b>N</b>	<b>nutrients, susp. Solids (L); PCBs, fish consumption advisory</b>	<b>3,5</b>	<b>H</b>
C	Pipeline, The	HI188157	dry	?	?	?	?	?		3	
C	Point Panic	HI197311	wet	?	?	?	?	?		3	
B	Pokai Bay	HIW00007	dry	A	?	?	?	?		2,3	

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<b>B</b>	<b>Pokai Bay (oceanic)</b>	<b>HIW00019</b>		?	<b>N</b>	?	?	?	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
<b>B</b>	<b>Pokai Bay (open coastal)</b>	<b>HIW00018</b>		?	<b>N</b>	?	?	?	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
C	Pounders Beach	HI587568	dry	?	?	?	?	?		3	
C	Punaluu Beach Park	HI148836	wet	A	?	?	?	?		2,3	
C	Pupukea Beach Co. Pk.	HI193495	wet	?	?	?	?	?		3	
C	Pu'uiki	HI437024	dry	?	?	?	?	?		3	
C	Pu'uohulu Beach	HI960731	dry	?	?	?	?	?		3	
C	Queen's Surf Beach Park	HIW00069	wet	?	?	?	?	?		3	
C	Royal-Moana Beach	HI898947	wet	A	?	?	?	?		2,3	
<b>C</b>	<b>Sand Island Pt.#2</b>	<b>HI714359</b>	wet	A	<b>N</b>	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>2,3,5</b>	<b>L</b>
<b>C</b>	<b>Sand Island Pt.#3</b>	<b>HIW00181</b>	wet	?	<b>N</b>	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
<b>C</b>	<b>Sandy Beach</b>	<b>HI776760</b>	dry	A	<b>N</b>	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>2,3,5</b>	<b>L</b>
C	Sans Souci	HI617815	wet	A	?	?	?	?		2,3	
C	Sunset Beach	HI860544	dry	A	?	?	?	?		2,3	
C	Swanzy Beach Co. Park	HI151343	wet	?	?	?	?	?		3	
C	Tongg's	HI248913	wet	?	?	?	?	?		3	
C	Turtle Bay	HI776670	dry	?	?	?	?	?		3	
C	Ulehawa Beach	HI784010	dry	?	?	?	?	?		3	
<b>C</b>	<b>Wai'ala'e Beach Co. Park</b>	HI997368	dry	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
B	Haleiwa Ali'i	HI451176	wet	?	?	?	?	?		3	
<b>B</b>	<b>Haleiwa Beach Park</b>	<b>HI994019</b>	wet	<b>N</b>	<b>N</b>	?	<b>N</b>	?	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>
B	Waianae Boat Harbor	HIW00124	dry	?	?	?	?	?		3	
C	Wai'anae Regional Park	HI668527	dry	?	?	?	?	?		3	
C	Waikiki Beach Center	HI244505	wet	A	?	?	?	?		2,3	
C	Waiale'e	HI109657	dry	?	?	?	?	?		3	
C	Wailupe Beach Park	HI432476	dry	?	?	?	?	?		3	
<b>C</b>	<b>Waimanalo Beach Co. Park (South)</b>	<b>HIW00174</b>	<b>dry</b>	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>M</b>
C	Waimanalo Bay St. Rec. Area (Park)	HIW00008	dry	A	?	?	?	?		2,3	
<b>C</b>	<b>Waimanalo Bay station (Waimanalo Beach Co. Park North)</b>	HIW00175	dry	<b>N A</b>	?	?	?	?		<b>2,3,5</b>	<b>L</b>

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<b>C</b>	<b>Waimea Bay</b>	<b>HIW00128</b>	<b>wet</b>	<b>N</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>?</b>		<b>3,5</b>	<b>L</b>
C	War Memorial Natatorium	HI624259	wet	?	?	?	?	?		3	
C	Wawamalu Beach Park	HI329454	dry	?	?	?	?	?		3	
C	White Plains Beach	HI267023	wet	A	?	?	?	?		2,3	
C	Yokohama Bay	HI269028	dry	A	?	?	?	?		2,3	

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MOLOKAI Stream Waters												
Assessed Waterbody	Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
Pelekunu	Stream	EN	4-1-09	Dry		?	?	?	A	TSS (?)	2, 3	
Wailau	Stream	EN	4-1-15			?	?	?	?	TSS (?)	2, 3	
Honoulimaloo	Stream	EN	4-2-02			?	?	?	?	TSS (?)	3	
Honouliwai	Stream	EN	4-2-03	Wet		?	?	?	Ac	TSS (?)	2, 3	
Waialua	Stream	EN	4-2-04	Wet		A	A	A	A	TSS (A)	3	
<b>Waialua</b>	<b>Stream</b>	<b>EN</b>	<b>4-2-04</b>	<b>Dry</b>		Ac	Ac	Ac	<b>N1</b>	<b>TSS (Ac)</b>	<b>3, 5</b>	<b>L</b>
Kamalo	Stream	EN	4-2-14			?	?	?	?	TSS (?)	3	

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MOLOKAI Marine Waters

Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
C	Awahua Beach	HI702920	dry	?	?	?	?	?		3	
C	Fagans Beach	HI571680	dry	?	?	?	?	?		3	
C	Halawa Beach Park	HI928793	wet	?	?	?	?	?		3	
B	Hale O Lono Harbor	HIW00090	dry	?	?	?	?	?		3	
C	Halena Beach	HI417163	dry	?	?	?	?	?		3	
C	Honouli Malo'o	HI783671	dry	?	?	?	?	?		3	
C	Honouli Wai	HI376731	dry	?	?	?	?	?		3	
C	Iliopi'i Beach	HI618345	dry	?	?	?	?	?		3	
C	Kahalepohaku Beach	HI191374	dry	?	?	?	?	?		3	
C	Kakahai'a Beach Park	HI939514	dry	?	?	?	?	?		3	
C	Kamaka'ipo Beach	HI923737	dry	?	?	?	?	?		3	
C	Kanalukaha Beach	HI559049	dry	?	?	?	?	?		3	
C	Kapukahehu Beach	HI941577	dry	?	?	?	?	?		3	
C	Kapukuwahine Beach	HI565164	dry	?	?	?	?	?		3	
B	Kaunakakai Boat Harbor	HIW00109	dry	?	?	?	?	?		3	
B	Kaunakakai Harbor	HIW00110	dry	?	?	?	?	?		3	
C	Kaunala Beach	HI726225	dry	?	?	?	?	?		3	
C	Kaupoa Beach	HI481092	dry	?	?	?	?	?		3	
<b>C</b>	<b>Kawa'aloa Bay</b>	<b>HI384043</b>	dry	?	?	?	?	<b>V</b>		<b>3,5</b>	<b>L</b>
C	Kawakiunui	HI114962	dry	?	?	?	?	?		3	
C	Kepuhi Beach	HI287930	dry	?	?	?	?	?		3	
C	Kiowea Park (Kamehameha Coconut Grove)	HI206014	dry	?	?	?	?	?		3	
C	Kolo Wharf	HI928768	dry	?	?	?	?	?		3	
C	Lighthouse Beach	HI934213	dry	?	?	?	?	?		3	
<b>C</b>	<b>Mo'omomi Beach</b>	<b>HI204811</b>	dry	?	?	?	?	<b>V</b>		<b>3,5</b>	<b>L</b>
C	Murphy Beach Park	HI138494	dry	?	?	?	?	?		3	
C	Oneali'i Beach Park	HI904462	dry	?	?	?	?	?		3	
C	Papalua	HI462219	wet	?	?	?	?	?		3	
C	Papaloa Beach	HI301825	dry	?	?	?	?	?		3	

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**MOLOKAI Marine Waters**

Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
C	Papohaku Beach	HI556777	dry	?	?	?	?	?		3	
C	Pelekunu	HI443237	wet	?	?	?	?	?		3	
C	Pohaku Mauiuli Beach	HI268134	dry	?	?	?	?	?		3	
C	Po'olau Beach	HI454004	dry	?	?	?	?	?		3	
C	Puko'o	HI665969	dry	?	?	?	?	?		3	
C	Sandy Beach	HI329518	dry	?	?	?	?	?		3	
C	South Molokai Coast-nearshore waters to 18' from SW point-Waialua	HIW00052		?	L	L	L	L	nutrients, suspd. Solids (L)	3,5	M L
C	Wailau	HI603285	wet	?	?	?	?	?		3	

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LANAI Marine Waters											
Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
<b>C</b>	<b><i>Awehi</i></b>	<b><i>HIW00134</i></b>	<b><i>dry</i></b>	<b><i>?</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>N</i></b>	<b><i>chl-a(A), NH4(N)</i></b>	<b><i>2,3,5</i></b>	<b><i>L</i></b>
C	Halepalaoa Beach	HI297944	dry	?	?	?	?	?		3	
<b>B</b>	<b><i>Hulupoe Bay</i></b>	<b><i>HIW00177</i></b>	<b><i>dry</i></b>	<b><i>?</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>chl-a(A), NH4(A)</i></b>	<b><i>2,3</i></b>	
<b>B</b>	<b><i>Manele Bay Beach</i></b>	<b><i>HIW00178</i></b>	<b><i>dry</i></b>	<b><i>?</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>chl-a(A), NH4(A)</i></b>	<b><i>2,3</i></b>	
<b>B</b>	<b><i>Manele Boat Harbor</i></b>	<b><i>HIW00179</i></b>	<b><i>dry</i></b>	<b><i>?</i></b>	<b><i>A</i></b>	<b><i>N</i></b>	<b><i>A</i></b>	<b><i>N</i></b>	<b><i>chl-a(N), NH4(N)</i></b>	<b><i>2,3,5</i></b>	<b><i>L</i></b>
B	Puu Pehe Beach	HIW00180	dry	?	?	?	?	?		3	
<b>C</b>	<b><i>Kahemano Beach</i></b>	<b><i>HI801428</i></b>	<b><i>dry</i></b>	<b><i>?</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>N</i></b>	<b><i>chl-a(A), NH4(N)</i></b>	<b><i>2,3,5</i></b>	<b><i>L</i></b>
<b>C</b>	<b><i>Kaluakoi Point to Huawai Bay</i></b>	<b><i>HIW00135</i></b>	<b><i>dry</i></b>	<b><i>?</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>chl-a(A), NH4(N)</i></b>	<b><i>2,3,5</i></b>	<b><i>L</i></b>
B	Kaumalapau Harbor	HIW00108	dry	?	?	?	?	?		3	
C	Kaunolu Bay	HI923988	dry	?	?	?	?	?		3	
<b>C</b>	<b><i>Kawaii Gulch-Makole Pt.</i></b>	<b><i>HIW00133</i></b>	<b><i>dry</i></b>	<b><i>?</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>chl-a(A), NH4(N)</i></b>	<b><i>2,3,5</i></b>	<b><i>L</i></b>
C	Keomuku Beach	HI854690	dry	?	?	?	?	?		3	
C	Lopa Beach	HI735036	dry	?	?	?	?	?		3	
<b>C</b>	<b><i>Mahanalua</i></b>	<b><i>HIW00136</i></b>	<b><i>dry</i></b>	<b><i>?</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>A</i></b>	<b><i>N</i></b>	<b><i>chl-a(A), NH4(N)</i></b>	<b><i>2,3,5</i></b>	<b><i>L</i></b>
C	Naha Beach	HI225961	dry	?	?	?	?	?		3	
C	Polihua Beach	HI845453	dry	?	?	?	?	?		3	
C	Shipwreck Beach	HI362906	dry	?	?	?	?	?		3	

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MAUI Stream Waters

Assessed Waterbody	Water body Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
<b>Ukumehame</b>	<b>Stream</b>	<b>EN</b>	<b>6-1-01</b>	<b>Dry</b>	?	A	<b>N</b>	A	<b>N A</b>	TSS (A)	3, <b>5</b>	<b>L</b>
Ukumehame	Stream	EN	6-1-01	Wet	?	Ac	Ac	Ac	A	TSS (Ac)	3	
Olowalu	Stream	EN	6-1-02		?	?	?	?	?	TSS (?)	3	
Launiupoko	Stream	EN	6-1-03		?	?	?	?	?	TSS (?)	3	
Kauaula	Stream	EN	6-1-04		?	?	?	?	?	TSS (?)	3	
<b>Kahoma</b>	<b>Stream</b>	<b>EN</b>	<b>6-1-05</b>		?	?	?	?	<b>V</b>	TSS (?)	3, <b>5</b>	<b>M</b>
Waihikuli	Stream	EN	6-1-06		?	?	?	?	?	TSS (?)	3	
<b>Honokowai</b>	<b>Stream</b>	<b>EN</b>	<b>6-1-07</b>		?	?	?	?	<b>V</b>	TSS (?)	3, <b>5</b>	<b>M</b>
<b>Kahana</b>	<b>Stream</b>	<b>EN</b>	<b>6-1-08</b>		?	?	?	?	<b>V</b>	TSS (?)	3, <b>5</b>	<b>M</b>
Honolua	Stream	EN	6-1-10		?	?	?	?	?	TSS (?)	3	
Honokohau	Stream	EN	6-1-11	Dry	?	A	A	A	A	TSS (A)	2, 3	
Honokohau	Stream	EN	6-1-11	Wet	?	Ac	Ac	Ac	A	TSS (Ac)	2, 3	
Kahakuloa	Stream	EN	6-2-03	Dry	?	A	A	A	A	TSS (A)	2, 3	
Kahakuloa	Stream	EN	6-2-03	Wet	?	?	?	?	A	TSS (?)	2, 3	
Waiolai	Stream	EN	6-2-05		?	?	?	?	?	TSS (?)	3	
<b>Makamakaole</b>	<b>Stream</b>	<b>EN</b>	<b>6-2-06</b>	<b>Dry</b>	?	A	A	A	<b>N</b>	TSS (A)	3, <b>5</b>	<b>L</b>
Makamakaole	Stream	EN	6-2-06	Wet	?	A	A	A	A	TSS (A)	3	
<b>Waihee</b>	<b>Stream</b>	<b>EN</b>	<b>6-2-07</b>	<b>Dry</b>	?	<b>V A</b>	<b>V A</b>	<b>V A</b>	A	TSS (A)	3, <b>5</b>	<b>M</b>
<b>Waihee</b>	<b>Stream</b>	<b>EN</b>	<b>6-2-07</b>	<b>Wet</b>	?	<b>V</b>	<b>V</b>	<b>V</b>	A	TSS (Ac)	3, <b>5</b>	<b>M L</b>
Waiehu	Stream	EN	6-2-08		?	?	?	?	?	TSS (?)	3	
<b>lao</b>	<b>Stream</b>	<b>EN</b>	<b>6-2-09</b>		?	?	?	?	<b>V</b>	<b>Trash</b>	3	<b>H M</b>
<b>Waikapu</b>	<b>Stream</b>	<b>EN</b>	<b>6-2-10</b>	<b>Dry</b>	?	Ac	?	Ac	<b>Nc</b>	TSS (Ac)	3, <b>5</b>	<b>L</b>
Waikapu	Stream	EN	6-2-10	Wet	?	Ac	Ac	Ac	Ac	TSS (Ac)	3	
<b>Maliko</b>	<b>Stream</b>	<b>EN</b>	<b>6-3-01</b>	<b>Wet</b>	?	?	?	?	<b>N1</b>	TSS (?)	3, <b>5</b>	<b>L</b>
Kuaiaha	Stream	EN	6-3-02		?	?	?	?	?	TSS (?)	3	
Kaupakulua	Stream	EN	6-3-03		?	?	?	?	?	TSS (?)	3	
Manawaiiao	Stream	EN	6-3-04		?	?	?	?	?	TSS (?)	3	
Uaoa	Stream	EN	6-3-05		?	?	?	?	?	TSS (?)	3	
Kakipi	Stream	EN	6-3-07		?	?	?	?	?	TSS (?)	3	
Honopou	Stream	EN	6-3-08	Wet	?	?	?	?	A	TSS (?)	3	
Hoolawa	Stream	EN	6-3-09		?	?	?	?	?	TSS (?)	3	
<b>Waipio</b>	<b>Stream</b>	<b>EN</b>	<b>6-3-10</b>	<b>Wet</b>	?	?	?	?	<b>N1</b>	TSS (?)	3, <b>5</b>	<b>L</b>

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Assessed Waterbody	Water body Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
Hanehoi	Stream	EN	6-3-11		?	?	?	?	?	TSS (?)	3	
Hoalua	Stream	EN	6-3-12		?	?	?	?	?	TSS (?)	3	
Hawawana	Stream	EN	6-3-13		?	?	?	?	?	TSS (?)	3	
Kailua	Stream	EN	6-3-14		?	?	?	?	?	TSS (?)	3	
Opuola	Stream	EN	6-4-01		?	?	?	?	?	TSS (?)	3	
Kaaiea	Stream	EN	6-4-02		?	?	?	?	?	TSS (?)	3	
Kolea	Stream	EN	6-4-03		?	?	?	?	?	TSS (?)	3	
Waikamoi	Stream	EN	6-4-04		?	?	?	?	?	TSS (?)	3	
Puohokamoa	Stream	EN	6-4-06		?	?	?	?	?	TSS (?)	3	
Haipuaena	Stream	EN	6-4-07		?	?	?	?	?	TSS (?)	3	
Punalau	Stream	EN	6-4-08		?	?	?	?	?	TSS (?)	3	
Honomanu	Stream	EN	6-4-09		?	?	?	?	?	TSS (?)	3	
Nuaailua	Stream	EN	6-4-10		?	?	?	?	?	TSS (?)	3	
Piinaau	Stream	EN	6-4-11		?	?	?	?	?	TSS (?)	3	
<b>Ohia</b>	<b>Stream</b>	<b>EN</b>	<b>6-4-12</b>		?	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	TSS (?), <b>Trash</b>	<b>3, 5</b>	<b>M L</b>
Waiakamilo	Stream	EN	6-4-13		?	?	?	?	?	TSS (?)	3	
W.Wailuaiki	Stream	EN	6-4-15		?	?	?	?	?	TSS (?)	3	
E.Wailuaiki	Stream	EN	6-4-16		?	?	?	?	?	TSS (?)	3	
Kopiliula	Stream	EN	6-4-17		?	?	?	?	?	TSS (?)	3	
Hanawi	Stream	EN	6-4-22		?	?	?	?	?	TSS (?)	2, 3	
Oheo	Stream	EN	6-5-13	Dry	?	A	A	A	Ac	TSS (A)	2, 3	
Oheo	Stream	EN	6-5-13	Wet	?	Ac	Ac	Ac	Ac	TSS (Ac)	2, 3	
Alelele	Stream	EN	6-5-20		?	?	?	?	?	TSS (?)	2, 3	

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MAUI Marine Waters

Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO3+NO2	Total P	TURB	Other Pollutants	Category	TMDL Priority
B	Ahihi-Kina'u Natural Area Reserve	HIW00084	dry	?	?	?	?	?		3	
C	Alaeloa Beach	HI616569	dry	?	?	?	?	?		3	
C	Awalua Beach	HI839739	dry	?	?	?	?	?		3	
C	Father Jules Papa	HI525524	dry	?	?	?	?	?		3	
C	<b>Fleming Beach North</b>	<b>HI253548</b>	dry	<b>A</b>	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>2,3,5</b>	<b>M</b>
C	<b>H.A. Baldwin Beach Co. Pk.</b>	<b>HI846900</b>	dry	?	?	?	?	<b>N</b>		<b>3,5</b>	<b>L</b>
C	Hamoia	HI287670	dry	?	?	?	?	?		3	
C	Hana Bay	HI996835	dry	?	?	?	?	?		3	
C	<b>Hanaka'o'o Beach Co. Pk.</b>	<b>HI797917</b>	dry	<b>N</b>	?	<b>N</b>	?	<b>N</b>		<b>3,5</b>	<b>L M</b>
C	<b>Hanaka'o'o station*</b>	<b>HIW00165</b>	dry	?	?	<b>N</b>	?	<b>N</b>		<b>3,5</b>	<b>L M</b>
C	Honokeana Bay	HI229021	dry	?	?	?	?	?		3	
C	Honokohau Bay	HI432902	dry	?	?	?	?	?		3	
C	<b>Honokowai Beach Co. Pk. (Hale Onoloa Condo)</b>	HI412391	dry	?	?	?	<b>N</b>	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
C	<b>Honokowai Pt. to Kaanapali</b>	<b>HIW00139</b>	dry	?	<b>N</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>chl-a(A), NH4(N)</b>	<b>2,3,5</b>	<b>M</b>
C	Honolua Bay	HI280286	dry	?	?	?	?	?		3	
C	<b>Honomanu Bay</b>	<b>HI985873</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
C	<b>Ho'okipa Beach Co. Pk.</b>	<b>HIW00024</b>	dry	<b>A</b>	?	?	?	<b>N</b>		<b>2,3,5</b>	<b>L</b>
C	H-Poko Papa	HI901232	dry	?	?	?	?	?		3	
C	Huakini Bay	HI385800	dry	?	?	?	?	?		3	
C	<b>Ka'anapali (Kahekili Beach)</b>	<b>HI643627</b>	dry	<b>A</b>	?	?	?	<b>N</b>		<b>2,3,5</b>	<b>L M</b>
C	<b>Ka'anapali (Sheraton Kaanapali Shoreline)</b>	<b>HIW00022</b>	dry	?	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
B	<b>Kahului Harbor</b>	<b>HIW00104</b>	dry	<b>N</b>	?	?	?	<b>N</b>		<b>3,5</b>	<b>L</b>
B	<b>Kahului Harbor (Bay)</b>	<b>HIW00105</b>	dry	?	<b>N</b>	<b>N</b>	?	<b>N</b>	<b>chl-a(N), NH4(N)</b>	<b>3,5</b>	<b>L</b>
B	<b>Kahului Harbor- inshore of breakwater</b>	<b>HIW00053</b>	dry	?	<b>V</b>	<b>V</b>	<b>V</b>	<b>N</b>	<b>Turb (L)</b>	<b>3,5</b>	<b>L</b>
C	<b>Kahana (Mahinahina Condo Shoreline)</b>	<b>HI160433</b>	dry	?	?	?	<b>N</b>	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
C	Kaihalulu Bay	HI432263	dry	?	?	?	?	?		3	
C	Ka'ilii'iili Beach	HI641844	dry	?	?	?	?	?		3	
C	Kalama Beach Co. Park (Cove Park)	HI705118	dry	A	?	?	?	?		2,3	
C	<b>Kalama Beach Co. Park (Beach)</b>	<b>HIW00023</b>	dry	?	<b>N</b>	<b>N</b>	?	<b>N</b>	<b>chl-a(N), NH4(N)</b>	<b>3,5</b>	<b>M L</b>
C	<b>Kalama Beach station*</b>	<b>HIW00168</b>	dry	?	<b>N</b>	<b>N</b>	?	<b>N</b>	<b>chl-a(N), NH4(N)</b>	<b>3,5</b>	<b>M L</b>
C	Kalepolepo Beach	HI647373	dry	?	?	?	?	?		3	
C	<b>Kalepolepo (Waimahaihai)</b>	<b>HIW00141</b>	dry	<b>N</b>	?	?	<b>N</b>	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>

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C	Kamaole Beach 1	HI761092	dry	A	?	?	?	N	chl-a(N)	2,3,5	M L
C	Kamaole Beach 2	HI097179	dry	A	?	?	?	N	chl-a(N)	2,3,5	M L
C	Kamaole Beach 3	HI496115	dry	?	?	?	?	N	chl-a(N)	3,5	M L
C	Kanaha Beach (Kaa Shoreline)	HIW00020	dry	?	?	?	N	N	chl-a(N)	3,5	M L
C	Kanaha Beach	HI797225	dry	A	?	?	N	N	chl-a(N)	2,3,5	M L
C	Kanaio Beach	HI404881	dry	?	?	?	?	?		3	
C	Kapalua (Fleming's) Beach	HI391006	dry	?	?	?	?	N	chl-a(N)	3,5	M
C	Kapoli Beach Co. Park	HI599968	dry	?	?	?	?	?		3	
C	Kea'a Beach	HI593477	dry	?	?	?	?	?		3	
E	Kihei Coast-Kealia Pond	HIW00070		?	?	?	?	?	chl-a(N)	3,5	H
C	Ke'anae	HI959746	wet	?	?	?	?	?		3	
C	Keawakapu Beach	HI607763	dry	A	?	?	?	N	chl-a(N)	2,3,5	M L
C	Keonenui Beach	HI199865	dry	?	?	?	?	?		3	
C	Kihei Coast- nearshore waters to 60' from Kihei North - Kalama Beach	HIW00056	dry	?	L	L	L	N	nutrients, TSS (L)	3,5	M L
C	Kihei Coast-Kalepolepo	HIW00039		?	N	N	?	N	chl-a(N)	3,5	L
E	Kihei Coast-Kaonoulu Estuary	HIW00040		?	N	N	?	N	chl-a(N)	3,5	L
C	Kihei Coast-Estuary Boat Ramp	HIW00166		?	N	N	?	N		3,5	L
C	Kihei Coast-Cove Park*	HIW00167		?	N	N	?	N	chl-a(N)	3,5	L
C	Kihei Coast-Keawakapu*	HIW00074		?	?	N	?		chl-a(N)	3,5	M L
C	Kihei Coast-Kulanihakoi	HIW00043		?	N	N	?	N	chl-a(N), NH4(N)	3,5	M L
C	Kihei Coast-Lipoa-South	HIW00072		?	?	?	?	N	chl-a(N)	3,5	M L
C	Kihei Coast-Luana Kai	HIW00041		?	N	N	?	N	chl-a(N), NH4(N)	3,5	M L
C	Kihei Coast-Maui Coast	HIW00073		?	?	N	?	N	chl-a(N)	3,5	M L
C	Kihei Coast-Mokulele	HIW00042		?	N	N	?	N	chl-a(N)	3,5	M L
C	Kihei Coast-South Kam II	HIW00071		?	?	N	?	?	chl-a(N)	3,5	M L
C	Koki Beach Park (VFW)	HI650469	dry	?	?	?	?	?		3	
C	Ku'au Bay	HI276573	dry	?	?	?	?	?		3	
C	Kuiaha Bay	HI852861	dry	?	?	?	?	?		3	
C	La Perouse Bay	HI674004	dry	?	?	?	?	?		3	
C	Lahaina Harbor	HIW00137	dry	?	?	?	?	N		3,5	M

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C	Launiupoko St. Wayside Park	HI558359	dry	N	?	?	?	N		3,5	<del>L</del> M
C	Leho'ula Beach	HI884223	dry	?	?	?	?	?		3	
C	Lower Pa'ia (Pa'ia Outfall station)	HI864937	dry	A	?	?	?	N		2,3,5	L
C	Ma'alaea Beach	HI058731	dry	A	?	?	?	N	chl-a(N)	2,3,5	L
C	Ma'alaea Boat Harbor station*	HIW00082	dry	?	N	N	?	N	chl-a(N)	3,5	L
B	Ma'alaea Small Boat Harbor	HIW00140	dry	?	?	?	?	N	chl-a(N)	3,5	L
C	Mai Poina Oe Iau Beach Co. Pk. (Kihei N. station)	HI715975	dry	?	?	?	N	N	chl-a(N)	3,5	L
C	Mai Poina Oe Iau Beach Co. Pk.	HIW00025	dry	?	?	?	?	N		3,5	L
C	Maka'ala Pt.	HI978171	dry	?	?	?	?	?		3	
C	Makena Landing Beach	HI245556	dry	?	?	?	?	?		3	
C	Makena Landing-Maluaka Beach	HIW00142	dry	?	N	N	N	N	chl-a(N), NH4(N)	3,5	L
C	Mala Wharf area	HIW00138	dry	?	N	N	A	N	chl-a(N), NH4(N)	2,3,5	L
C	Mala Wharf-West Maui Coast	HIW00123	dry	?	?	?	?	N	chl-a(N)	3,5	<del>L</del> M
C	Mala Wharf	HIW00171	dry	N	?	?	N	N	chl-a(N)	3,5	M
C	Maliko Bay	HI423064	dry	?	?	?	?	?		3	
C	Malu'aka Beach	HI847607	dry	?	?	?	?	?		3	
C	Mantokuji Bay	HI482300	dry	?	?	?	?	?		3	
C	McGregor Pt.	HI227321	dry	?	?	?	?	?		3	
C	Mokapu Beach Park	HI861961	dry	?	?	?	?	?		3	
C	Mokulau	HI519980	wet	?	?	?	?	?		3	
C	Mokule'ia Beach	HI977299	dry	?	?	?	?	?		3	
C	Nahiku	HI983172	wet	?	?	?	?	?		3	
C	Napili Bay	HI764060	dry	?	?	?	?	?		3	
C	Nu'u Bay	HI176594	dry	?	?	?	?	?		3	
C	Olowalu (Shorefront)	HIW00021	dry	?	?	?	?	N	chl-a(N)	3,5	<del>M</del> L
C	Olowalu (Teen Challenge)	HI491359	dry	A	?	?	?	N		2,3,5	L
C	Oneloa Beach (Big Beach) (Makena Bch Station)	HI279887	dry	?	?	?	?	N	chl-a(N)	3,5	L
C	Oneloa Beach (Big Beach)-Ahihi-Kinau	HIW00144	dry	?	N	N	N	N	chl-a(N), NH4(N)	3,5	L
C	Oneuli Beach	HI756040	dry	?	N	N	A	N	chl-a(N), NH4(N)	2,3,5	L
C	Palauea Beach Park	HI997014	dry	?	?	?	?	?		3	
C	Papalaua	HIW00065	dry	?	?	?	?	?		3	
C	Pepeiaolepo Bay	HI136430	wet	?	?	?	?	?		3	

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MAUI Marine Waters

Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO3+NO2	Total P	TURB	Other Pollutants	Category	TMDL Priority
C	Polo Beach Park	HI339656	dry	?	?	?	?	?		3	
C	Po'olenalena Beach	HI684864	dry	?	?	?	?	?		3	
<b>C</b>	<b>Poolenalena-Makena Landing</b>	<b>HIW00143</b>	<b>dry</b>	<b>?</b>	<b>N</b>	<b>N</b>	<b>A</b>	<b>N</b>	<b>chl-a(N), NH4(N)</b>	<b>2,3,5</b>	<b>L</b>
C	Puamana Beach Co. Park	HI167153	dry	?	?	?	?	?		3	
C	Punalau	HI641109	dry	?	?	?	?	?		3	
C	Pu'u ola'i (Small Beach)	HI157533	dry	?	?	?	?	?		3	
<b>C</b>	<b>Pu'unoa Beach</b>	<b>HI373055</b>	dry	A	?	?	?	<b>N</b>		<b>2,3,5</b>	<b>L M</b>
<b>C</b>	<b>Spreckelsville</b>	<b>HI789952</b>	dry	A	?	?	?	<b>N</b>		<b>2,3,5</b>	<b>L</b>
<b>C</b>	<b>Ukumehame Beach Co. Pk.</b>	<b>HI814309</b>	dry	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
<b>C</b>	<b>Ulua Beach Park</b>	<b>HI588333</b>	dry	?	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M L</b>
<b>C</b>	<b>Wahikuli State Wayside Park</b>	<b>HI169380</b>	dry	?	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
C	Wai'anapanapa State Park	HI118874	dry	?	?	?	?	?		3	
C	Waiehu Beach Co. Park	HI916183	wet	?	?	?	?	?		3	
C	Waihe'e	HI343702	wet	?	?	?	?	?		3	
C	Waikoloa Beach	HI796679	dry	?	?	?	?	?		3	
<b>C</b>	<b>Wailea Beach Park</b>	<b>HI278988</b>	dry	A	?	?	?	<b>N</b>		<b>2,3,5</b>	<b>L</b>
C	Waimaha'ihai Beach	HI236756	dry	?	?	?	?	?		3	
<b>C</b>	<b>West Maui Coast-Hanakeana Cove</b>	<b>HIW00044</b>		?	<b>N</b>	<b>N</b>	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
<b>C</b>	<b>West Maui Coast-Kahana Cove</b>	<b>HIW00045</b>		?	<b>N</b>	<b>N</b>	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
<b>C</b>	<b>West Maui Coast-Kahana Sunset</b>	<b>HIW00075</b>		?	?	<b>N</b>	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
<b>C</b>	<b>West Maui Coast-Kahana Village</b>	<b>HIW00076</b>		?	?		?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
<b>C</b>	<b>West Maui Coast-Kaopala Bay</b>	<b>HIW00046</b>		?	<b>N</b>	<b>N</b>	?	<b>N</b>	<b>chl-a(N), NH4(N)</b>	<b>3,5</b>	<b>M</b>
<b>C</b>	<b>West Maui Coast-Lokelani</b>	<b>HIW00077</b>		?	?	<b>N</b>	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
<b>C</b>	<b>West Maui Coast-Napili Bay</b>	<b>HIW00078</b>		?	?	<b>N</b>	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>L M</b>
<b>C</b>	<b>West Maui Coast-nearshore waters to 60' from Honolua - Lahaina</b>	<b>HIW00060</b>		?	<b>L</b>	<b>L</b>	<b>L</b>	<b>N</b>	<b>nutrients, TSS (L)</b>	<b>3,5</b>	<b>M</b>
<b>C</b>	<b>West Maui Coast-S-Turns (Pohaku)</b>	<b>HIW00047</b>		?	<b>N</b>	<b>N</b>	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
<b>C</b>	<b>West Maui-Papakea</b>	<b>HIW00079</b>		?	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>
<b>C</b>	<b>West Maui-Puamana</b>	<b>HIW00080</b>		?	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M</b>

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HAWAII (BIG ISLAND) Stream Waters

Assessed Waterbody	Water body Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
Kumakua	Stream	EN	8-1-03		?	?	?	?	?	TSS (?)	3	
Hanaula	Stream	EN	8-1-06		?	?	?	?	?	TSS (?)	3	
Hapahapai	Stream	EN	8-1-07		?	?	?	?	?	TSS (?)	3	
Pali Akamoa	Stream	EN	8-1-08		?	?	?	?	?	TSS (?)	3	
Wainaia	Stream	EN	8-1-09	Dry	?	Ac	Ac	Ac	?	TSS (Ac)	3	
<b>Wainaia</b>	<b>Stream</b>	<b>EN</b>	<b>8-1-09</b>	<b>Wet</b>	?	Ac	Ac	Ac	<b>N</b>	TSS (Ac)	3, 5	<b>L</b>
<b>Halelua</b>	<b>Stream</b>	<b>EN</b>	<b>8-1-10</b>	<b>Wet</b>	?	?	?	?	<b>N1c</b>	TSS (?)	3, 5	<b>L</b>
Halawa	Stream	EN	8-1-11		?	?	?	?	?	TSS (?)	3	
<b>Aamakao</b>	<b>Stream</b>	<b>EN</b>	<b>8-1-12</b>	<b>Dry</b>	?	A	A	A	<b>N</b>	TSS (A)	3, 5	<b>L</b>
Aamakao	Stream	EN	8-1-12	Wet	?	A	A	A	A	TSS (A)	3	
<b>Niulii</b>	<b>Stream</b>	<b>EN</b>	<b>8-1-13</b>	<b>Dry</b>	?	A	A	A	<b>N</b>	TSS (A)	3, 5	<b>L</b>
Niulii	Stream	EN	8-1-13	Wet	?	A	A	A	A	TSS (A)	3	
<b>Waikama</b>	<b>Stream</b>	<b>EN</b>	<b>8-1-14</b>	<b>Dry</b>	?	A	A	A	<b>N</b>	TSS (A)	3, 5	<b>L</b>
Waikama	Stream	EN	8-1-14	Wet	?	A	A	A	A	TSS (A)	3	
Pololu	Stream	EN	8-1-15	Dry	?	?	?	?	?	TSS (?)	3	
Pololu	Stream	EN	8-1-15	Wet	?	?	?	?	Ac	TSS (?)	3	
<b>Wailoa/Waipio</b>	<b>Stream</b>	<b>EN</b>	<b>8-1-44</b>	<b>Dry</b>	?	<b>N</b>	<b>N</b>	<b>N</b>	A	TSS (A)	3, 5	<b>L</b>
<b>Wailoa/Waipio</b>	<b>Stream</b>	<b>EN</b>	<b>8-1-44</b>	<b>Wet</b>	?	<b>Nc</b>	<b>N1</b>	Ac	A	TSS (Ac)	3, 5	<b>L</b>
<b>Lalakea</b>	<b>Stream</b>	<b>EN</b>	<b>8-1-45</b>	<b>Dry</b>	?	Ac	Ac	Ac	<b>N</b>	TSS (Ac)	3, 5	<b>L</b>
Lalakea	Stream	EN	8-1-45	Wet	?	Ac	Ac	Ac	A	TSS (Ac)	3	
Waiulili	Stream	EN	8-1-47	Dry	?	?	?	?	?	TSS (?)	3	
Waiulili	Stream	EN	8-1-47	Wet	?	?	?	?	Ac	TSS (?)	3	
Waipunahoe	Stream	EN	8-1-49		?	?	?	?	?	TSS (?)	3	
Waialeale	Stream	EN	8-1-50		?	?	?	?	?	TSS (?)	3	
Waikoloa	Stream	EN	8-1-51		?	?	?	?	?	TSS (?)	3	
Kapulena	Stream	EN	8-1-52		?	?	?	?	?	TSS (?)	3	
Kawaikalia	Stream	EN	8-1-53		?	?	?	?	?	TSS (?)	3	
Nienie	Stream	EN	8-1-61		?	?	?	?	?	TSS (?)	3	
Waipunalau	Stream	EN	8-1-77		?	?	?	?	?	TSS (?)	3	
Nanue	Stream	EN	8-2-27		?	?	?	?	?	TSS (?)	2, 3	
<b>Hakalau</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-32</b>		?	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	TSS (?)	2, 3, 5	<b>M</b>
<b>Kolekole</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-33</b>	<b>Dry</b>	?	<b>V A</b>	<b>V A</b>	<b>V A</b>	A	TSS (A)	3, 5	<b>M</b>

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HAWAII (BIG ISLAND) Stream Waters

Assessed Waterbody	Water body Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
Kolekole	Stream	EN	8-2-33	Wet	?	A	A	A	A	TSS (A)	3	
Paheehee	Stream	EN	8-2-34	Dry	?	Ac	Ac	Ac	A	TSS (Ac)	2, 3	
Paheehee	Stream	EN	8-2-34	Wet	?	Ac	Ac	Ac	Ac	TSS (Ac)	2, 3	
<b>Kapeha Kapehu</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-37</b>	<b>Dry</b>	?	Ac	<b>N</b>	A	<b>N</b>	TSS (A)	3, <b>5</b>	<b>L</b>
Kapehu	Stream	EN	8-2-37	Wet	?	A	A	A	A	TSS (A)	3	
Kalaoa	Stream	EN	8-2-47	Bot h	?	Ac	Ac	Ac	Ac	TSS (Ac)	2, 3	
Kalaoa	Stream	EN	8-2-47	Dry	?	Ac	Ac	Ac	A	TSS (Ac)	2, 3	
<b>Kaieie</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-49</b>	<b>Dry</b>	?	<b>V A</b>	<b>V A</b>	<b>V A</b>	?	TSS (A)	3, <b>5</b>	<b>M</b>
<b>Kaieie</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-49</b>	Wet	?	<b>V</b>	<b>V</b>	<b>V</b>	?	TSS (?)	3, <b>5</b>	<b>M L</b>
<b>Kapue</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-53</b>	<b>Dry</b>	?	Ac	Ac	Ac	<b>N</b>	TSS (Ac)	3, <b>5</b>	<b>L</b>
Kapue	Stream	EN	8-2-53	Wet	?	Ac	Ac	Ac	?	TSS (Ac)	3	
<b>Honolii</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-56</b>	<b>Dry</b>	?	<b>V A</b>	<b>V A</b>	<b>V A</b>	<b>V N</b>	TSS (A)	3, <b>5</b>	<b>M L</b>
Honolii	Stream	EN	8-2-56	Wet	?	A	A	A	A	TSS (A)	3	
<b>Maili</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-57</b>	<b>Dry</b>	?	Ac	Ac	Ac	<b>N</b>	TSS (Ac)	3, <b>5</b>	<b>L</b>
Maili	Stream	EN	8-2-57	Wet	?	Ac	Ac	Ac	Ac	TSS (Ac)	3	
Pukihae	Stream	EN	8-2-59	Dry	?	Ac	Ac	Ac	A	TSS (Ac)	2, 3	
Pukihae	Stream	EN	8-2-59	Wet	?	Ac	Ac	Ac	Ac	TSS (Ac)	2, 3	
<b>Wailuku</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-60</b>	<b>Dry</b>	?	<b>V A</b>	<b>V N</b>	<b>V A</b>	A	TSS (A)	3, <b>5</b>	<b>L</b>
Wailuku	Stream	EN	8-2-60	Wet	?	A	A	A	A	TSS (A)	3	
<b>Waiakea</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-61</b>		?	<b>V</b>	<b>V</b>	<b>V</b>	?	TSS (?)	3, <b>5</b>	<b>H (IP)</b>
<b>Wailoa</b>	<b>River Estuary</b>	<b>EE</b>	<b>8-2-61-E</b>		?	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	TSS (?)	3, <b>5</b>	<b>M</b>
<b>Alenaio</b>	<b>Stream</b>	<b>EN</b>	<b>8-2-61.01.1</b>		?	<b>V</b>	<b>V</b>	<b>V</b>	?	TSS (?)	3, <b>5</b>	<b>H (IP)</b>

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HAWAII (BIG ISLAND) Marine Waters											
Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO3+NO2	Total P	TURB	Other Pollutants	Category	TMDL Priority
K	2nd Beach (next to Mahaiula)	HI616452	na	?	?	?	?	?		3	
K	Anaeho'omalua Bay	HI326172	na	A	?	?	?	?		2,3	
<b>C</b>	<b>Analani Pond (Puala'a)</b>	<b>HI707059</b>	dry	<b>N A</b>	?	?	?	?		<b>2,3</b>	
K	Banyan's Surfing Area	HI713314	na	A	?	?	?	?		2,3	
C	Hakalau Co. Pk.	HI138086	wet	?	?	?	?	?		3	
C	Halape Shelter	HI645539	dry	?	?	?	?	?		3	
<b>K</b>	<b>Hapuna Beach St. Rec. Area</b>	<b>HI621002</b>	na	A	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>2,3,5</b>	<b>L</b>
<b>B</b>	<b>Hilo Bay- inshore of breakwater and nearshore waters from Wainaku to Paukaa</b>	<b>HIW00098</b>	wet	?	<b>V</b>	<b>V</b>	<b>V</b>	<b>N</b>	<b>nutrients</b>	<b>3,5</b>	<b>M L</b>
B	Hilo Bay (Coconut Isle)	HI977673	wet	A	?	?	?	?		2,3	
<b>B</b>	<b>Hilo Bay (Exit of Ice Pond)</b>	<b>HI659453</b>	wet	A	?	?	<b>N</b>	?		<b>2,3,5</b>	<b>M L</b>
<b>B</b>	<b>Hilo Bay (Boat Landing)</b>	<b>HIW00027</b>	wet	?	?	?	?	?	<b>chl-a(N)</b>	<b>3,5</b>	<b>M L</b>
<b>B</b>	<b>Hilo Bay (Canoe Beach)</b>	<b>HI315019</b>	wet	<b>N</b>	?	?	?	<b>N</b>		<b>3,5</b>	<b>M L</b>
<b>B</b>	<b>Hilo Bay (Offshore)</b>	<b>HIW00031</b>	wet	?	?	<b>N</b>	?	<b>N</b>	<b>chl-a(N), NH4(N)</b>	<b>3,5</b>	<b>M L</b>
<b>B</b>	<b>Hilo Bay (Lighthouse)</b>	<b>HIW00028</b>	wet	<b>N</b>	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>M L</b>
<b>K</b>	<b>Honokohau Beach</b>	<b>HI315174</b>	na	?	<b>N</b>	<b>N</b>	<b>A</b>	<b>A</b>	<b>chl-a(A), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>
B	Honokohau Boat Harbor	HIW00099		?	?	?	?	?		3	
<b>C</b>	<b>Honoli'i Beach Co. Park</b>	<b>HI857411</b>	wet	<b>N</b>	?	?	?	<b>N</b>		<b>3,5</b>	<b>M L</b>
K	Ho'okena	HI152572	na	?	?	?	?	?		3	
E	James Kealoha Park	HI670254	wet	A	?	?	?	?		2,3	
C	Ka Lae (South Point)	HI107517	dry	?	?	?	?	?		3	
K	Kahalu'u Beach Co. Pk.	HI013290	na	A	?	?	?	?		2,3	
<b>K</b>	<b>Kahoiawa Bay</b>	<b>HIW00150</b>	na	?	<b>N</b>	<b>A</b>	<b>A</b>	<b>N</b>	<b>chl-a(A), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>
<b>K</b>	<b>Kahoiawa Bay-Makalawena</b>	<b>HIW00151</b>	na	?	<b>N</b>	<b>A</b>	<b>A</b>	<b>N</b>	<b>chl-a(A), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>
K	Kahuwai Bay	HI990843	na	?	?	?	?	?		3	
<b>K</b>	<b>Kahuwai Bay-Mano Pt.</b>	<b>HIW00153</b>	na	?	<b>N</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>chl-a(A), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>
<b>K</b>	<b>Kakapa Bay</b>	<b>HIW00152</b>	na	?	<b>N</b>	<b>A</b>	<b>A</b>	<b>N</b>	<b>chl-a(A), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>
C	Kalapana Beach (new) (Harry K. Brown Beach Co. Pk.)	HI542822	dry	?	?	?	?	?		3	

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HAWAII (BIG ISLAND) Marine Waters											
Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority
K	Kaluhika'a Beach	HI327989	na	?	?	?	?	?		3	
<b>K</b>	<b>Kamakaokahonu (Kailua Pier A-1)</b>	<b>HI261474</b>	na	<b>A</b>	?	?	<b>N</b>	?		<b>2,3,5</b>	<b>L</b>
<b>K</b>	<b>Kamakaokahonu</b>	<b>HIW00032</b>	<b>na</b>	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>L</b>
K	Kamoa Pt.	HI602472	na	?	?	?	?	?		3	
C	Kapoho Bay	HI391407	dry	?	?	?	?	?		3	
<b>C</b>	<b>Kapoho Tidepools (Vacationland)</b>	<b>HI122881</b>	dry	<b>A</b>	?	?	?	<b>N</b>		<b>2,3,5</b>	<b>L</b>
K	Kapu'a Bay	HIW00067	na	?	?	?	?	?		3	
K	Kauna'oa Beach	HI261869	na	?	?	?	?	?		3	
K	Ka'upulehu	HI770607	na	?	?	?	?	?		3	
C	Kawa Bay	HI535602	dry	?	?	?	?	?		3	
<b>K</b>	<b>Kawaihae Harbor/Pelekane Bay</b>	<b>HIW00155</b>	na	?	?	?	?	<b>N</b>		<b>3,5</b>	<b>L</b>
K	Kawaihae Harbor	HI978783	na	A	?	?	?	?		2,3	
K	Keahou Bay (Kona)	HI713293	na	?	?	?	?	?		3	
<b>K</b>	<b>Kealakekua Bay</b>	<b>HIW00149</b>	<b>na</b>	<b>?</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>chl-a(A), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>
<b>K</b>	<b>Kealakekua Bay (Off Curio Stand)</b>	<b>HIW00183</b>	na	?	?	?	?	<b>N</b>		<b>3,5</b>	<b>L</b>
K	Kealia Beach	HI514168	na	?	?	?	?	?		3	
E	Keaukaha Beach Park	HI849313	wet	A	?	?	?	?		2,3	
K	Keawaiki	HI929053	na	?	?	?	?	?		3	
K	Ke'ei	HI858729	na	?	?	?	?	?		3	
C	Kehena	HI459942	dry	?	?	?	?	?		3	
C	Keokea Beach Co. Pk.	HI784200	dry	?	?	?	?	?		3	
<b>C</b>	<b>Kolekole Beach Co. Park</b>	<b>HI693485</b>	wet	<b>N</b>	?	?	?	<b>N</b>		<b>3,5</b>	<b>L</b>
<b>K</b>	<b>Kuki'o Bay</b>	<b>HIW00154</b>	<b>na</b>	<b>?</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>chl-a(A), NH4(N)</b>	<b>2,3,5</b>	<b>L</b>
C	Lapakahi St. Hist. Park	HI490010	dry	?	?	?	?	?		3	
C	Laupahoehoe Beach Co. Park	HI380623	wet	?	?	?	?	?		3	
E	Lehia Beach	HI691720	wet	?	?	?	?	?		3	
<b>E</b>	<b>Leleiwi Beach Co. Pk.</b>	<b>HI540868</b>	wet	<b>A</b>	?	?	<b>N</b>	?		<b>2,3,5</b>	<b>M L</b>
<b>E</b>	<b>Leleiwi Beach Co. Pk. (Richardson Ocean Ctr.)</b>	<b>HIW00030</b>	wet	A	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>2,3,5</b>	<b>L</b>
K	Mahai'ula Bay	HI694255	na	?	?	?	?	?		3	
C	Mahukona Beach Co. Park	HI273526	dry	?	?	?	?	?		3	
K	Makalawena	HI901744	na	?	?	?	?	?		3	

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HAWAII (BIG ISLAND) Marine Waters												
Waterbody Type	Scope of Assessment	Geocode ID	Season	enterococci	Total N	NO <sub>3</sub> +NO <sub>2</sub>	Total P	TURB	Other Pollutants	Category	TMDL Priority	
K	Makole'a Beach	HI223059	na	?	?	?	?	?		3		
<b>K</b>	<b>Manini'owali</b>	<b>HI720408</b>	<b>na</b>	<b>?</b>	<b>N</b>	<b>A</b>	<b>A</b>	<b>N</b>	<b>chl-a(A), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>	
K	Mau'umae Beach	HI120357	na	?	?	?	?	?		3		
K	Miloli'i Beach	HI470112	na	?	?	?	?	?		3		
C	Ninole	HI124561	dry	?	?	?	?	?		3		
K	Ohai'ula Beach	HI143737	na	?	?	?	?	?		3		
K	Old Kona Airport St. Rec. Area	HI256093	na	?	?	?	?	?		3		
C	Onekahakaha Beach Co. Pk.	HI862286	wet	A	?	?	?	?		2,3		
<b>C</b>	<b>Onekahakaha Beach Co. Pk. (Puhi Bay #3)</b>	<b>HIW00029</b>	wet	?	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>3,5</b>	<b>L</b>	
<b>K</b>	<b>Paoao Point to Keawekaheka Point</b>	<b>HIW00145</b>	<b>na</b>	<b>?</b>	<b>N</b>	<b>A</b>	<b>A</b>	<b>N</b>	<b>chl-a(A), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>	
K	Pahoehoe Beach Co. Pk.	HI935352	na	?	?	?	?	?		3		
C	Papa'i (King's Landing)	HI112071	dry	?	?	?	?	?		3		
<b>K</b>	<b>Pine Trees</b>	<b>HI320616</b>	<b>na</b>	<b>?</b>	<b>N</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>chl-a(A), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>	
<b>K</b>	<b>Pine Trees-Honokohau</b>	<b>HIW00146</b>	<b>na</b>	<b>?</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>A</b>	<b>chl-a(N), NH4(N)</b>	<b>2,3,5</b>	<b>L</b>	
C	Pohoiki Beach	HI316864	dry	A	?	?	?	?		2,3		
K	Puako	HI668132	na	A	?	?	?	?		2,3		
K	Puako Bay	HIW00033	na	A	?	?	?	?		2,3		
K	Pueo Bay	HI930479	na	?	?	?	?	?		3		
C	Punalu'u	HI224651	dry	?	?	?	?	?		3		
K	Pu'uhonua o Honaunau	HI478461	na	?	?	?	?	?		3		
C	Road to the Sea	HI849236	dry	?	?	?	?	?		3		
<b>K</b>	<b>Spencer Beach Co. Pk.</b>	<b>HI936372</b>	na	A	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>2,3,5</b>	<b>L</b>	
K	Waialea Bay	HI381812	na	?	?	?	?	?		3		
<b>E</b>	<b>Wailoa River (Boat Ramp)</b>	<b>HIW00172</b>	wet	<b>N</b>	?	?	?	?		<b>3,5</b>	<b>M</b>	
C	Waipi'o Bay	HI534434	wet	?	?	?	?	?		3		
K	Honaunau Bay	HIW00176	na	?	?	?	?	?		3		
<b>K</b>	<b>Waiulua Bay to Anaehoomalu Bay</b>	<b>HIW00148</b>	<b>na</b>	<b>?</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>chl-a(A), NH4(N)</b>	<b>2,3,5</b>	<b>L</b>	
K	Wawaloli Beach	HI643938	na	?	?	?	?	?		3		
<b>K</b>	<b>Wawaloli Beach-Pine Trees</b>	<b>HIW00147</b>	<b>na</b>	<b>?</b>	<b>N</b>	<b>A</b>	<b>A</b>	<b>N</b>	<b>chl-a(A), NH4(A)</b>	<b>2,3,5</b>	<b>L</b>	
<b>K</b>	<b>White Sands Beach Co. Pk. (Magic Sands)</b>	<b>HI436267</b>	na	<b>A</b>	?	?	?	<b>N</b>	<b>chl-a(N)</b>	<b>2,3,5</b>	<b>L</b>	
C	Whittington Beach Co. Pk.	HI720900	dry	?	?	?	?	?		3		

**2006 STATE OF HAWAII WATER QUALITY MONITORING AND  
ASSESSMENT REPORT:**

Integrated Report To The U.S. Environmental Protection Agency and The U.S.  
Congress Pursuant To Sections §303(D) and §305(B), Clean Water Act (P.L. 97-  
117)

**CHAPTER V  
APPENDICES**



## **APPENDIX A: 2004 Listing & Delisting Criteria for Hawaii State Surface Waters Compiled under Clean Water Act §303(d) (valid and utilized in 2006)**

Section 303(d) of the federal Clean Water Act requires states to list impaired waters every two years after reviewing “all existing and readily available water quality-related data and information” from a broad set of data sources and to submit this list to the U.S. Environmental Protection Agency (EPA). If previously listed waters are not listed on the subsequent list, “good cause” must be demonstrated on the basis of availability of newer and/or more accurate water quality data, discovery of past analytical flaws, or changes in conditions such as closing of a discharge pipe or implementation of major non-point source pollution controls.<sup>1</sup>

For the 2004 List, the Hawaii State Department of Health (HIDOH) screened available data according to listing criteria, below, that allow sorting of surface water quality data into one of three priority rankings for decision-making. Data evaluated at the end of the current listing cycle shall have been collected within the six-year period prior to each EPA-required submittal deadline. A six-year window was chosen to ensure that data reviewed for each listing cycle are both recent and available in sufficient quantity to warrant a statewide water quality data review. In the process of generating this list, the State is assuming that waterbodies meet water quality standards unless a weight-of-evidence approach shows otherwise.

The format of Hawaii's Water Quality Standards<sup>2</sup> differs from other states' standards in that many of the criteria are expressed as geometric means of a representative data set, and are not intended for comparison with single sample values. The criteria contain allowances for rainfall events in the form of less strict "10 per cent" and "2 per cent" criteria. Because funding is limited for monitoring waterbodies in Hawaii, we use minimum sample size requirements to ensure a reasonable level of sampling of a waterbody over time and space. These sample sizes are not strict cutoffs, rather they are guides meant to systematize decision-making by the Department of Health in protection of environmental health and public health.

### Data Sources:

Data from the following sources may be used for making listing or delisting decisions in addition to or instead of routine HIDOH Clean Water Branch sampling, provided that an acceptable written Quality Assurance/Quality Control (QA/QC) Plan or other documented data quality assurance process was utilized during sample collection and analysis and is available for review, if requested:

- 1) United States Geological Survey (USGS)
- 2) National Oceanic & Atmospheric Administration (NOAA)
- 3) Universities
- 4) Community groups, individuals & respondents to a published, statewide “Call for Data”

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<sup>1</sup> Federal regulations concerning the listing process can be found at 40 CFR Part 130.7.

<sup>2</sup> State Water Quality Standards can be found at HAR 11-54.

- 5) HDOH Hazard Evaluation and Emergency Response Office (HEER)
- 6) Military
- 7) United States Fish and Wildlife (USFWS)
- 8) Superfund investigation and remediation projects
- 9) United States Department of Agriculture (USDA)
- 10) Special projects by HDOH Clean Water Branch
- 11) Other government agencies
- 12) Environmental Assessments and Environmental Impact Statements
- 13) Consulting Firms
- 14) Private & public entities operating under water pollution control permits

Basic Data Quality Requirements for All Listing Priorities:

Acceptable written QA/QC documentation appropriate for the project, and containing descriptions of procedures used during sample collection and analysis, must be available for review, if requested.

Additional Data Quality Requirements for Listing Priority 1:

1. Photographs and written descriptions of the sampling sites are available upon request.
2. A general visual assessment of the water body that contains sufficient information to place the water body in the context of surrounding land uses and overall condition of the habitat is also available upon request.

Listing Priority 1:

Waters will be listed if these criteria are met for conventional pollutants such as total suspended solids, nutrients and temperature and toxic substances compiled in the Hawaii Administrative Rule, Chapter 11-54, Water Quality Standards:

1. For conventional pollutants, at least ten (10) samples per water body were collected and analyzed, the geometric mean<sup>3</sup> of the data for a single waterbody exceeds the corresponding geomean criterion and at least one of the following requirements is met:
  - a. For streams, there must be at least two stations per stream (upper and lower) and at least five (5) samples per station.
  - b. For non-flowing fresh water bodies such as ponds and reservoirs, and for tidally-influenced water bodies such as estuaries and coastal waters, the samples must be distributed either on transects or randomly over the extent of the water body or section of water body sampled. In order to obtain a representative sample for evaluating water quality over the area of

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<sup>3</sup> The concept of a geometric mean may seem confusing: the nth root of the product of n numbers. However, people use an “arithmetic” mean in every day life for averaging. Unlike an “arithmetic” mean, a “geometric” mean or “geomean” multiplies numbers rather than adding them to find an average. This method allows people to use geometric means when they have highly variable number sets and do not want a few high or low values to distort an average.

concern, not only at a single point, samples should be collected along onshore-offshore transects extending seaward at least 50 feet, or at randomly scattered points across the surface of the area of concern.

2. In order to independently evaluate the “10% of the time” and “2% of the time” numeric criteria, sample sizes for the 10% criteria must be 100, for the 2% criteria must be 500. For listing, calculations using these data sets must exceed the corresponding criteria.
3. For toxic substances, at least three samples per water body were collected and analyzed, and the sample geometric mean exceeded the corresponding numeric criterion listed in §11-54-04(a).

#### Listing Priority 2:

Waters may be listed if all data requirements under Listing Priority 1 are not met, provided that at least one of the following factors is met and sufficient site documentation is available:

1. For Conventional Pollutants,
  - a. At least ten (10) samples per water body were collected and analyzed, but wet and dry season data must be combined because insufficient sample sizes exist to evaluate the wet and dry standards separately (Note: if the geometric mean of this data only exceeds the dry season standard, a majority of the dry season sample values must exceed the dry season standard to warrant listing; however, if the geometric mean of this data exceeds both the wet and dry season standards, the waterbody may be listed for both wet and dry exceedances), this category is referred to as Priority Listing 2a.
  - b. The majority of sample values in a data set of 5 - 9 values for a single waterbody exceed the corresponding geometric mean criterion in the rule by a factor of 2 or more, this category is referred to as Priority Listing 2b.
  - c. Calculations with a sample size of 50 to 90 show exceedance of the corresponding “10% of the time” criterion or
  - d. Calculations with a sample size of 250 to 450 show exceedance of the corresponding “2% of the time” criterion.
2. The type of water quality problem identified is particularly severe (i.e., each of two measurements of a toxic substance is more than twice the corresponding water quality criterion). This category is referred to as Priority Listing 2c.
3. For narrative information, at least three sampling events are presented, direct correlations to the narrative criteria in 11-54-04 can be established and the narrative standards are not attained. Data sets for evaluation of narrative criteria must include at least 3 sampling events and represent conditions in both the wet and dry seasons. These narrative criteria may be evaluated using HDOH approved habitat or biological assessments as long as they can be directly correlated to specific narrative criteria in HAR 11-54-04. This category is referred to as Priority Listing 2d.

4. For toxic substances, at least three samples per water body for toxic substances were collected and analyzed; compute the sample geometric mean and compare to the narrative criteria listed in §11-54-04(a). Acute toxicity standards for sediment may be evaluated using broadly accepted standards such as those developed in Canada and New York, provided that HDOH deems them appropriate for use in the Hawaiian environment. This category is referred to as Priority Listing 2e.

### Listing Priority 3:

These waters are considered a high priority for additional monitoring; data will be assessed at the end of the next listing cycle and a listing decision made at that time:

1.  $\leq 5$  sample values are available for conventional pollutants.
2.  $<3$  sampling events for determination of toxic or narrative standard exceedances.
3. Other information is limited and inconclusive.

The Department of Health reserves the right to list waters within any priority category when dilution calculations, predictive modeling, historical data or other supporting information indicate probable exceedance of the water quality standards and/or a risk to public and environmental health. These determinations will be made based on a weight of evidence approach with input from the U.S. Environmental Protection Agency.

### Delisting Criteria:

Waters may be delisted if the data show that water quality standards are attained, and the appropriate sample sizes and other information required under Listing Priority 1 are available.

## APPENDIX B: Contact Log

Contact Name	Affiliation	phone	email	Date contacted	method	rep	Response
All State Newspapers				10/2/2005	paid ad	lk	n/a
Susan Miller	DBEDT			9/30/2005	email	lk	will post to list
Bill Walsh	DLNR-DAR			9/30/2005	phone/email	lk	will post to list
Mike Kido	UH-HSRC	956-0811		10/4/2005	phone	lk	will submit data
Martha Yent	DLNR- State Parks	587-0287		9/29/2005	meeting	lk	will look
Jay Silberman	USGS	541-2077					
Adam Asquith	SeaGrant	822-2190	<a href="mailto:asquith@hawaii.edu">asquith@hawaii.edu</a>	10/20/2005	email	lk	no reponse
Reuben Wolff	USGS	587-2432		10/5/2005	phone	lk	see reports
Wendy Wiltse	EPA-Hawaii	541-2752		10/19/2005	phone	lk	referred new contacts
Ed Laws	UH	956-7402	<a href="mailto:elaws@hawaii.edu">elaws@hawaii.edu</a>	10/20/2005	email	lk	said we have all he has
Jeff Burgett	FWS	792-9472		10/7/2005	phone	lk	referred to G. Smith
Leticia Colmenares	WCC	236-9120	<a href="mailto:leticia@hawaii.edu">leticia@hawaii.edu</a>	10/19/2005	email	lk	check her website for data
Dan Hoover	UH	956-2703	<a href="mailto:dhoover@hawaii.edu">dhoover@hawaii.edu</a>	10/18/2005	phone	lk	will check
Curt Storlazzi	USGS		<a href="mailto:cstorlazzi@usgs.gov">cstorlazzi@usgs.gov</a>	10/18/2005	email	lk	sent references
Maqs Alam	UH	956-8121	<a href="mailto:alam@hawaii.edu">alam@hawaii.edu</a>	10/19/2005	email	lk	no response
Joanne Leong	UH-HIMB	236-7401	<a href="mailto:joanneleo@hawaii.edu">joanneleo@hawaii.edu</a>	10/18/2005	email	lk	no response
Roger Fujioka	UH	956-3096	<a href="mailto:rfujioka@hawaii.edu">rfujioka@hawaii.edu</a>	10/20/2005	email	lk	no response
Phil Moravcik	WRRC	956-3097	<a href="mailto:morav@hawaii.edu">morav@hawaii.edu</a>	10/19/2005	email	lk	does monitoring for city outfalls
Dick Brock	UH	956-2859	<a href="mailto:brockr@hawaii.edu">brockr@hawaii.edu</a>	10/17/2005	phone	lk	will compile
Steve Dollar	UH	956-7631	<a href="mailto:dollar@hawaii.edu">dollar@hawaii.edu</a>	10/17/2005	phone	lk	left message then emailed
Fred Mackenzie	UH	956-6344	<a href="mailto:fredm@hawaii.edu">fredm@hawaii.edu</a>	10/20/2005	email	lk	no response
Ross Sutherland	UH	956-3524	<a href="mailto:sutherla@hawaii.edu">sutherla@hawaii.edu</a>	10/20/2005	email	lk	no response
Mike Fitzsimmons	LSU	225-578-3079	<a href="mailto:fitzsimons@lsu.edu">fitzsimons@lsu.edu</a>	10/20/2005	email	lk	no response
Carl Berg	Hanalei Hui			10/17/2005	email	lk	will send
Gordon Smith	FWS	792-9457		10/17/2005	phone	lk	no data
David Ziemann	Oceanic Institute	259-7951	<a href="mailto:dziemann@oceanicistitute.org">dziemann@oceanicistitute.org</a>	10/19/2005	email	lk	no data to submit
Isabella Abbot	UH	956-8073		10/17/2005	phone	lk	will talk to grad student
Randy Bartlett	Maui Land & Pine		<a href="mailto:rtb@lava.net">rtb@lava.net</a>	10/20/2005	email	lk	no response
Pi'i La'eha	Maunalani Resort	885-6677		10/20/2005	phone	lk	will look
Nelson Aires	DLNR	587-4175		10/17/2005	phone	lk	no data to submit
Sam Gon	Nature Conservancy	537-4508		10/17/2005	phone	lk	left message
Mike Parsons	UHH	933-3903	<a href="mailto:mparsons@hawaii.edu">mparsons@hawaii.edu</a>	10/20/2005	email	lk	no response
Ceilia Smith	UH Botany	956-6947		10/21/2005	phone	lk	no answer
Christina McGuire	UH		<a href="mailto:mcquirec@hawaii.edu">mcquirec@hawaii.edu</a>	10/20/2005	email	lk	out of the office til 11/5
Allison Sherwood	UH		<a href="mailto:asherwoo@hawaii.edu">asherwoo@hawaii.edu</a>	10/20/2005	email	lk	no data to submit
Don Heacock	DAR	645-0532	<a href="mailto:donheacock@midpac.net">donheacock@midpac.net</a>	10/20/2005	phone	lk	will try to send info
Mike Yamamoto	DAR	587-0087	<a href="mailto:Mike.N.Yamamoto@hawaii.gov">Mike.N.Yamamoto@hawaii.gov</a>	10/21/2005	email	lk	no response
Glenn Higashi	DAR	587-0112	<a href="mailto:Glenn.R.Higashi@hawaii.gov">Glenn.R.Higashi@hawaii.gov</a>	10/21/2005	email	lk	no response

**APPENDIX C: Data Intake Log**

No.	Waterbody Type (Estuary, Embayment, Coastal, Oceanic)	Waterbody Name	Pollutants	Description of Data Pkg (Paper/Electronic, Data Format)	Last Name	First Name	Organization	Date Received	QA/QC Procedures (Y/N)	Geolocation (Y/N)	Pictures (Y/N)
2006-001	various	various	various	paper, 64 pp., notation: wqдох.wk4	Brock	Richard	UH Manoa	? See Linda	?	maps of station locations, 12 pages	?
2006-002	embayment	Kauai Lagoon	various	paper, 22 pp	Tagawa	Walter	GACI-FM	12/9/2004		map of station locations, 1 p.	?
2006-003	various	various	various	paper, 45 pp, notation: DMR's through June 2005	?	?	CWB	?	?	?	?
2006-004	embayment	Kauai Lagoon	various	paper, 40 pp.	Tagawa	Walter	GACI-FM	10/28/2004	?	map of station locations, 1 p.	?
2006-005	embayment	area fronting Hulopoe-Manele Bay Golf Course	various	paper, 137 pp.	Matsuda	Ralph	Castle & Cooke Resorts, LLC	10/13/2005; 10/14/2005 (duplicate sent to separate addressee)	?	map of station locations	?
2006-006	coastal	Wailoa Small Boat Harbor Entrance Channel and Turning Basin	various	paper, 69 pp. (p. 10 missing); duplicate 16 pp., includes p.10	Clarence	?	?	06/20/2005; 10/03/2005 (partial duplicate sent)	?	map of station locations	Y
2006-007	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 40 pp. Report 2-2003	?	?	Makena Resort Corp.	5/11/2004	?	photo map of station locations	?
2006-008	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 38 pp. Report 1-2004	?	?	Makena Resort Corp.	8/25/2004	?	photo map of station locations	?
2006-009	embayment	Kauai Lagoon	various	paper, 29 pp.	Tagawa	Walter	GACI-FM	2/3/2005	?	?	?

No.	Waterbody Type (Estuary, Embayment, Coastal, Oceanic)	Waterbody Name	Pollutants	Description of Data Pkg (Paper/Electronic, Data Format)	Last Name	First Name	Organization	Date Received	QA/QC Procedures (Y/N)	Geolocation (Y/N)	Pictures (Y/N)
2006-010	embayment	Kiholo Bay	various	paper, 7 pp.	Busch	Georgine	The Earl & Doris Bakken Foundation	7/21/2004	?	map of station locations, 1 p.	?
2006-011	embayment	Hulopoe Bay	various	paper, 119 pp.	Brock	Richard	Environmental Assessment Co.	11/21/1996	?	map of station locations, 1 p.	?
2006-012	embayment	Hulopoe Bay & Manele Bay	various	paper, 67 pp.	Brock	Richard	Environmental Assessment Co.	7/29/1999	?	map of station locations, 1 p.	?
2006-013	coastal	coastline near Waikoloa Resort	various	paper, 89 pp.	Rohr	Thos	Waikoloa	6/24/2005	?	map of station locations, 1 p.	?
2006-014	coastal	coastline near Waikoloa Resort	various	paper, 86 pp.	Rohr	Thos	Waikoloa	10/15/2004	?	map of station locations, 1 p.	?
2006-015	embayment	Hulopoe Bay & Manele Bay	various	paper, 124 pp.	Brock	Richard	Environmental Assessment Co.	11/5/1999	?	map of station locations, 1 p.	?
2006-016	embayment	Hulopoe Bay & Manele Bay	various	paper, 124 pp.	Brock	Richard	Environmental Assessment Co.	3/24/2000	?	map of station locations, 1 p.	?
2006-017	embayment	Hulopoe Bay & Manele Bay	various	paper, 118 pp.	Brock	Richard	Environmental Assessment Co.	12/8/1999	?	map of station locations, 1 p.	?
2006-018	embayment	Hulopoe Bay & Manele Bay	various	paper, 127 pp. 2005-6A,B	Brock	Richard	Environmental Assessment Co.	3/4/2005	?	map of station locations, 1 p.	?

No.	Waterbody Type (Estuary, Embayment, Coastal, Oceanic)	Waterbody Name	Pollutants	Description of Data Pkg (Paper/Electronic, Data Format)	Last Name	First Name	Organization	Date Received	QA/QC Procedures (Y/N)	Geolocation (Y/N)	Pictures (Y/N)
2006-019	embayment	Hulopoe Bay & Manele Bay	various	paper, 128 pp. 2005-12A,B	Brock	Richard	Environmental Assessment Co.	6/28/2005	?	map of station locations, 1 p.	?
2006-020	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 32 pp. Report 1-98	?	?	Makena Resort Corp.	11/1/2005	?	photo map of station locations	?
2006-021	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 33 pp. Report 1-97	?	?	Makena Resort Corp.	11/1/2005	?	photo map of station locations	?
2006-022	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 31 pp. Report 2-96	?	?	Makena Resort Corp.	11/1/2005	?	photo map of station locations	?
2006-023	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 21 pp. Report 1-95	?	?	Makena Resort Corp.	11/1/2005	?	photo map of station locations	?
2006-024	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 33 pp. Report 2000	?	?	Makena Resort Corp.	11/1/2005	?	photo map of station locations	?
2006-025	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 34 pp. Report 2001	?	?	Makena Resort Corp.	11/1/2005	?	photo map of station locations	?
2006-026	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 34 pp. Report 1-2002	?	?	Makena Resort Corp.	11/1/2005	?	photo map of station locations	?

No.	Waterbody Type (Estuary, Embayment, Coastal, Oceanic)	Waterbody Name	Pollutants	Description of Data Pkg (Paper/Electronic, Data Format)	Last Name	First Name	Organization	Date Received	QA/QC Procedures (Y/N)	Geolocation (Y/N)	Pictures (Y/N)
2006-027	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 28 pp. Report 1-2003	?	?	Makena Resort Corp.	11/1/2005	?	photo map of station locations	?
2006-028	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 39 pp. Report II- 2004	?	?	Makena Resort Corp.	11/9/2005	?	photo map of station locations	?
2006-029	coastal	coastline fronting Makena Resort/Golf Courses	nutrients	paper, 37 pp. Report 2-99	?	?	Makena Resort Corp.	11/10/2005	?	photo map of station locations	?
2006-030	estuary	Enchanted Lake	organochlorine pesticides	paper, 34 pp.	?	?	HIMB/KBAC	12/1/2004	?	photo map of station locations	?
2006-031	embayment	Hulopoe Bay & Manele Bay	various	paper, and disk	Brock	Richard	Environmental Assessment Co.	11/1/2003	?	map of station locations, 1 p.	?
2006-032	Kona and Anchialine Pools	Kukio, Kona	various	paper, 58 pp. Report 2005-08	Brock	Richard	Environmental Assessment Co.	11/2/2003	?	map of station locations	?
2006-033	Streams, Estuaries, and Embayment	Hanalei Bay region	various	7 email files, and paper copied for AR	Berg	Carl	Hanalei Hui	11/1/2005	?	map of station locations	?
2006-034	coastal	Kaloko Honokohau	various	web report reference <a href="http://pubs.usgs.gov/of/2005/1161">http://pubs.usgs.gov/of/2005/1161</a>	Storlazzi	Curt	USGS	10/17/2005	Y	map of station locations	Y
2006-035	coastal	Honolua Bay	various	web report reference <a href="http://pubs.usgs.gov/of/2005/1068">http://pubs.usgs.gov/of/2005/1068</a>	Storlazzi	Curt	USGS	10/17/2005	Y	map of station locations	Y
2006-036	coastal	South Molokai	various	report reference Coral Reefs, v. 23, p. 559-569	Storlazzi	Curt	USGS	10/17/2005	Y	map of station locations	Y

No.	Waterbody Type (Estuary, Embayment, Coastal, Oceanic)	Waterbody Name	Pollutants	Description of Data Pkg (Paper/Electronic, Data Format)	Last Name	First Name	Organization	Date Received	QA/QC Procedures (Y/N)	Geolocation (Y/N)	Pictures (Y/N)
2006-037	coastal	South Molokai	various	report reference Continental Shelf Research, v. 24(12), p. 1396-1419	Storlazzi	Curt	USGS	10/17/2005	Y	map of station locations	Y
2006-038	coastal	West Maui	various	web report reference <a href="http://pubs.usgs.gov/of/2004/1287">http://pubs.usgs.gov/of/2004/1287</a>	Storlazzi	Curt	USGS	10/17/2005	Y	map of station locations	Y
2006-039	Pearl Harbor estuary	Pearl Harbor	various	web report reference <a href="http://pubs.usgs.gov/of/2003/of03-430">http://pubs.usgs.gov/of/2003/of03-430</a>	Storlazzi	Curt	USGS	10/17/2005	Y	map of station locations	Y
2006-040	coastal	West Maui	various	web report reference <a href="http://pubs.usgs.gov/of/2003/of03-482">http://pubs.usgs.gov/of/2003/of03-482</a>	Storlazzi	Curt	USGS	10/18/2005	Y	map of station locations	Y
2006-041	coastal, estuaries, embayment, stream	various	various	website <a href="http://www.wcc.hawaii.edu/water">http://www.wcc.hawaii.edu/water</a>	Colmenares	Letty	WCC	10/20/2005	Y	map of station locations	Y
2006-042	coastal	Ewa Beach	various	CD in pdf format/permit requirement			Haseko Ewa Inc.	12/5/2005?			

# **Public Comments**

**2006 Integrated Report of Assessed  
Waters in Hawaii**

**Prepared Under the  
Clean Water Act §303 (d) and §305 (b)**

2006 Comment Received			2006 Comments Log							
ID	Name	Affiliation	phone	email	address	city	Gen	Coastal	Stream	Ground
1	Jo Ginger and Steve Schroeder			<a href="mailto:josteve2002@yahoo.com">josteve2002@yahoo.com</a>	2817 Panepoo Street	Kihei	Y	Y	Y	Y
2	Patricia Covici			<a href="mailto:covici@sbcglobal.net">covici@sbcglobal.net</a>				Y		
3	Vicki Schulte			<a href="mailto:loangal@hawaii.rr.com">loangal@hawaii.rr.com</a>	385 Kaupakalua Road	Haiku	Y	Y	Y	Y
4	Maury King		874-5955	<a href="mailto:maury@mauryonmaui.com">maury@mauryonmaui.com</a>	3500 A Kehala Drive	Kihei	Y	Y		
5	Brooke Porter			<a href="mailto:brooke@pacificwhale.org">brooke@pacificwhale.org</a>	Street	Lahaina		Y		
6	Alicia Mallo			<a href="mailto:alicia@pacificwhale.org">alicia@pacificwhale.org</a>	181 Hui F Road #7	Lahaina		Y	Y	Y
7	Lucienne de Naie			<a href="mailto:laluz@maui.net">laluz@maui.net</a>	PO Box 610	Haiku		Y	Y	Y
8	Michael Howden	Maui Water		<a href="mailto:mona@pacificwhale.org">mona@pacificwhale.org</a>				Y	Y	Y
9	Janet Hashimoto	EPA		<a href="mailto:hashimoto.janet@epa.gov">hashimoto.janet@epa.gov</a>			Y	Y	Y	
10	Carl Berg	HWH		<a href="mailto:cberg@pixi.com">cberg@pixi.com</a>		Hanalei		Y		
11	Thomas Young	HBWAG		<a href="mailto:thomas.young@hawaiiantel.net">thomas.young@hawaiiantel.net</a>	529 Kukuau St.	Hilo	Y	Y	Y	
12	Ann Fielding			<a href="mailto:annf@maui.net">annf@maui.net</a>	P. O. Box 1107	Makawao	Y	Y	Y	Y
13	Janet Ashman	HARC	877-6916	<a href="mailto:ashman.janet@gmail.com">ashman.janet@gmail.com</a>	P. O. Box 88	Puunene	Y	Y	Y	
14	Sheldon Braidman			<a href="mailto:sbraidman@hawaiiantel.net">sbraidman@hawaiiantel.net</a>	2387 S. Kihei Rd., C-402	Kihei		Y		
15	Robin Knox	Maui Tomorrow	579-9802	<a href="mailto:wqcinc@clearwire.net">wqcinc@clearwire.net</a>	P. O. Box 299	Makawao	Y	Y	Y	Y
16	Sharyn J. Matin	West Maui Preservation Association		<a href="mailto:wqcinc@clearwire.net">wqcinc@clearwire.net</a>	P. O. Box 10818	Lahaina	Y	Y	Y	Y
17	Sean O'Keefe	Alexander & Baldwin, Inc.	877-2959		P. O. Box 266	Puunene	Y		Y	
18	Alan Takemoto	Hawaii Farm Bureau	848-2074		2343 Rose St.	Honolulu	Y			
19	June Harrigan-Lum		955-8588		2311 Bingham St.	Honolulu	Y	Y	Y	Y

Jo Ginger and Steve Schroeder  
2817 Panepoo Street  
Kihei, Hi 96753

January 17, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814

via [barbara.matsunaga@doh.hawaii.gov](mailto:barbara.matsunaga@doh.hawaii.gov)

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

Dear Department of Health,

Please note my comments on the above report:

1. Marine and Estuaries: Too many of our test sites in Maui County are shown to be in level 5 category. We need full funding to correct this water quality deterioration.
2. Streams; 11 of our streams are listed as category 3 & 5 wherein existing data indicated non-attainment, TNDL needed, and more data needed. Again, full funding is requested so that we may meet our legal obligation to provide quality water to Maui's residents.
3. Groundwater: It is shocking to us as residents of Maui County, that we have virtually no monitoring and reporting of our groundwater quality. There appear to be no standards developed. We support full funding to establish and develop monitoring standards and the subsequent gathering and reporting of the data.

General comments: We need to develop more monitoring strategies and data management and make the data available to the public in a timely fashion and accessible via internet. Further notification of reports and data being available should be made to the general public via our news media or mass emailing list kept and updated by the DOH from all those individuals who have previously written comments on past public reports.

We request a written confirmation of receipt of our comments.

Jo Ginger

Steve Schroeder

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Any questions? Get answers on any topic at [Yahoo! Answers](http://Yahoo! Answers). Try it now.

January 17, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814 via

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

Dear Department of Health,

I paddle outrigger canoes on South Maui most every morning. There are days when I have been appalled by the sludge, fecal matter and oil slicks I have seen. Last week I saw a group of spotted rays feeding on an oily sludgy slick that spanned many 100 yards that had small plantlike or animal substances in it. I often see turtles with cancerous tumors on their backs. Last thursday off the Maui Lu resort I saw unmistakable human fecal matter floating on the surface.

Many boats still dump their waste into the waters. There is no current law that prohibits this. Three miles is not enough as the currents bring the sludge into the beaches of Kihei and Wailea. During the summer I was swimming at a beach near Wailea and swam right into fecal matter and toilet paper. .

The oceans around Maui are a sanctuary for the majestic humpback whales. It is difficult for me to understand why the federal government does not protect them and us more from the pollution and contamination in the waters of Maui.

Page 26 of the integrated report of assessed waters under clean water act 303{d} and 305[b] that has a table of results for Maui waters states that no microbiological testing was done. I strongly suggest that testing be started on a regular basis if this is in fact the case.

Please confirm receipt of this letter. Thank you for your attention.

Sincerely,

Patricia Covici

Kihei, HI

Vicki Schulte  
385 Kaupakalua Road  
Haiku, HI 96708

January 17, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814  
via [barbara.matsunaga@doh.hawaii.gov](mailto:barbara.matsunaga@doh.hawaii.gov)

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

Dear Department of Health,

Please note my comments on the above report:

I am an active ocean user and 18 year Maui resident.

1. Marine and Estuaries; I am concerned about storm runoff into the ocean, most particularly silt runoff as well as agricultural chemicals. I would like to see those chronically affected areas identified and assessed after wet weather events. I want to see pollution prevention and controls in place and support full funding for these activities.
2. Streams: I would like to see the streams meeting all categories of attainment as "11 Maui streams were listed in category 3 & 5- existing data indicated non-attainment, TMDL needed, more data needed". I support full funding for complete monitoring, data collection, data reporting and subsequent corrective actions to ensure clean water quality for Maui's residents and future.
3. Groundwater: There are no water quality standards for our groundwater. This is the source of our drinking water. I am outraged by this. Your report states that 81% of our aquifers are highly vulnerable to contamination. We need standards to protect the quality of the water and monitoring to determine if the standards are being met. I request full funding to achieve these goals.

General comments: We wish that there was a laboratory on Maui that we could take water samples for bacteriological testing and reporting. I request confirmation of receipt of my comments.

Sincerely,

Vicki Schulte

Maury King  
3500 A Kehala Drive  
Kihei, HI 96753

January 17, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814  
via [barbara.matsunaga@doh.hawaii.gov](mailto:barbara.matsunaga@doh.hawaii.gov)

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

Dear Department of Health,

Please note my comments on the above report:

I support formal confirmation of designated uses for water.

I request that we increase monitoring of all beaches, marine waters and offshore waters and that we fully fund this monitoring so that it will be complete for all areas of Maui County.

I request confirmation in writing of receipt of my comments by the DOH.

Mahalo & aloha

Sincerely,

Maury King

Maury King  
[rides@CarpoolMaui.com](mailto:rides@CarpoolMaui.com)  
[CarpoolMaui.com](http://CarpoolMaui.com)  
808-268-3656 - Verizon Mobile  
808-874-5955 - Home Phone/Fax

Brooke Porter  
3932 Mahinahina Street  
Lahaina, HI 96761

January 17, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814 via  
barbara.matsunaga@doh.hawaii.gov

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

Dear Department of Health,

Please note my comments on the above report:

1. Marine and Estuaries: Please realize that there needs to be a better system in place for water quality testing, specifically bacteriological, to protect ocean users and ensure the health of the ocean around Maui County.

Enterococcus is a serious concern for me as I am a frequent ocean user. Most of the coastal areas where I surf are not shown as tested areas for this bacteria. Additionally, I have been involved in the Blue Water Task force projects wherein we test for this specific bacteria. Results have shown that many times we are surfing in severely contaminated waters.

I request a written confirmation of receipt of my comments.

Sincerely,

Brooke Porter

Alicia Mallo  
181 Hui F Road # 7  
Lahaina, HI 96761

January 17, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814  
via [barbara.matsunaga@doh.hawaii.gov](mailto:barbara.matsunaga@doh.hawaii.gov)

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

Dear Department of Health,

Please note my comments on the above report:

I am a marine biologist and have lived in Hawaii for 3 years, 2 of those on Maui.

1. Marine and Estuaries; I am deeply concerned about the state of offshore reefs. The lack of monitoring in these areas concerns me. I feel that there need to be funds allocated to test waters offshore including the entire marine sanctuary. These offshore areas within the 100 fathom mark off of Maui are highly protected but there is no testing to ensure that we are meeting the highest standards as set for these waters. Agricultural runoff in the near coastal zones is also of high priority to me. I request full funding for monitoring in areas of known nearby agricultural zones and full data collection and reporting.
2. Streams; In reference to the Maui Stream Waters table, it seems that most of the areas still have insufficient data for us to ensure Maui's residents of clean water. I support full funding for monitoring, data collection and reporting along with full corrective actions as needed to ensure our future clean water supply.
3. Groundwater: Your report indicates that there is insufficient data to make a proper assessment of the Honokohau streams which is the water I drink. Coming from an urban and agricultural area of California where I could drink tap water that was clean, pure and tasted good, it was appalling to me after moving to Maui, a tropical paradise, to find that my water for drinking was contaminated, and yet it is supplied by the COUNTY OF MAUI. I itch after every shower!

I request a written confirmation of receipt of these comments.

Sincerely,

Alicia Mallo

Lucienne de Naie  
POB 610  
Haiku, HI 96708

January 17, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814  
RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act  $\beta$ 303(d) and  $\beta$ 305(b).

Dear Department of Health,

Thanks for your outreach for public comments. Please note my comments on the above report:

**Marine and Estuaries:** I am concerned about impacts to the quality of many of our marine waters due to runoffs of nitrates and other contaminants from non point source pollution, especially along the West Maui and South Maui coastlines. I hope that this report will result in increased funding so that these sites can be regularly monitored and neighboring landowners can be brought into compliance, so as not to continue to discharge these pollutants.

I am concerned about 7 houses that have been recently constructed immediately North of Puu ola'i in Maui which are dependent upon septic tank systems for their sewage needs. This area has some of the most friable soils on the whole Island of Maui and the houses overlook an ancient fishpond and wetlands which could be impacted by their leach fields. The wetlands area has a green growth on it since the houses have been constructed. There should be monitoring done at this site to make sure that nutrients are not entering the groundwater table and impacting the wetland processes.

I noticed in your above listed report that waters just off this area adjacent to Puu ola'i (Oneuli Beach) already have some impairment problems listed.

I hear constant citizen complaints about water quality at Baldwin beach park just outside Paia in Maui. Surfers and swimmers are subject to staph infections and the area where Kailua gulch meets the sea has flooded with muddy waters several times in 2006 closing the whole beach park. This area should be given more of a priority in terms of efforts to create natural riparian restoration in Kailua gulch that can help minimize the floods and allow storm waters to be absorbed and filtered mauka of the coastal dunes. This is a very popular area with visitors and residents that needs to have the healthiest possible conditions.

**Groundwater:** I support statewide groundwater quality standards being put in place to protect not only our drinking water, but also aquatic life in our streams and oceans. Groundwater interacts at all levels of our water supply. As a user of well water from the Honopou aquifer, I would be willing to submit water samples to be used as part of the State data collection and testing program if one were established.

There is a great need for the State and County to partner and commission testing of groundwater for multiple contaminants in the Central Maui aquifers (Waikapu, Kahului, Paia, Kamaole) since all of these are being proposed for municipal water sources in the future.

I request a written confirmation of receipt of these comments.

Sincerely,

Lucienne deNaie

January 17, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814

via [barbara.matsunaga@doh.hawaii.gov](mailto:barbara.matsunaga@doh.hawaii.gov)

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

Dear Department of Health,

Please note my comments on the above report:

1. Marine and Estuaries

From the above referenced report, I can see that there are numerous injection wells either on or close to the ocean. All these injection wells need to be monitored for potential pollution both of our near shore waters and also of our connected aquifers. I would question the sense of even having such injection wells, given the nature of our island geology. Also, large developments close to or even on our shorelines raise much the same concerns.

2. Streams

So much water is taken illegally and without adequate compensation to the public interest from throughout the East Maui Watershed, to the detriment of the natural ecologies of these streams, as well as to cultural uses such as taro growing. What is left in these streams cannot support taro cultivation and is indeed a health concern as inadequate stream flow supports disease mechanisms such as leptosporosis and giardia. All these water resources need to be monitored to insure adequate instream flows. This is imperative especially with Na Wai Eha, where large corporate owners have not cooperated in supporting the public interest.

3. Groundwater

Groundwater is the most important resource for the community at large; it is also the most neglected and subject to continuous pollution/impairment, especially from the large agricultural corporations such as HC&S and MLP. Known carcinogenic chemicals are freely used directly over our connected aquifers, to the detriment of the public at large. All wells, whether public or privately owned, need to be accurately monitored both for pollutants and to gauge sustainable withdrawal.

General comments: There is so much information to be gathered that is necessary for the public interest, especially for the equitable distribution and care of our water resources. The government's participation and support of such monitoring would be greatly appreciated by our island residents.

I request a written confirmation of receipt of my comments.

Sincerely,

Michael S. Howden, Lic.Ac.  
Member, Maui County Board of Water Supply

January 18, 2007

Kelvin Sunada, Chief  
Environmental Planning Office  
Environmental Management Division  
State Department of Health  
919 Ala Moana Blvd., Rm 312  
Honolulu, HI 96814

Dear Mr. Sunada:

This is in response to your public notice of Hawaii State Department of Health's (HIDOH) Draft 2006 Integrated Report of Assessed Waters in Hawaii prepared under Clean Water Act 303(d) and 305(b). This letter identifies areas of the draft Integrated Report that should be clarified and revised prior to your submittal of a final report to EPA for approval.

It should be consistently noted that the time frame for establishing TMDLs is 8 to 13 years from the date of the original listing. Although the TMDL activities of HIDOH are negotiated each year, EPA policy is to complete TMDLs within 13 years of the original listing. EPA suggests the removal of the sentence in Part 2, page 6, "[T]his schedule is negotiated on a continuing basis and is influenced by..." and replace with the same presented in Part 1, page 8, "[T]he time frame for establishing TMDLs should be 8 to 13 years from the date of the original listing. For example, a water segment originally included on the 1998 section 303(d) list, and still identified on the 2006 submission as requiring a TMDL, should be addressed by 2011." Also, the HIDOH TMDL development plans described in Part 2, page 20 need to be reviewed and updated.

The Assessment Decision Table in Part 4 does not appear to show a consistent logic in applying multi-category designation to all waterbodies. For example, numerous water bodies with attainment for some pollutants or attainment for all parameters except enterococci do not include a Category 2 designation. On the other hand, some waterbodies show no attainment for any parameters and yet have a Category 2 designation. Some waterbodies do not show any non-attainment and have a Category 5 designation. Waterbodies with no adequate data for all parameters or waterbodies with attainment for all parameters except enterococci which has no adequate data may not really be considered impaired or under a Category 5 designation. Additional comments are shown in the attached table with EPA's comments shown in red. EPA suggests that HIDOH reevaluate, provide a consistent logic for category designations, provide specific clarification and justifications for any deviation from the logic, and revise the table and pertinent text accordingly.

We also noted that "Table 7: List of Changes to 2004 Listed Coastal Waters" was not included in your Public Notice. Please include Table 7 in your submission of the final Integrated Report to EPA in the future.

Thank you again for the opportunity to comment. Please contact me at (415) 972-3452 or Pam Tsai at (415) 947-4196 if you have any questions regarding EPA's comments and suggestions.

Sincerely,

Janet Hashimoto, Chief  
Monitoring and Assessment Office

Attachment

cc: Alec Wong (CWB) w/o attachment  
Watson Okubo (CWB) w/o attachment  
Dale Mikami (CWB) w/o attachment

**Review of 2006 Waterbody Assessment Decisions (Integrated 303d List 305b) report for Hawaii**

**Dr. Carl J. Berg  
Hanalei Watershed Hui  
January 16, 2007**

**Here are some comments on the Waterbody Assessment, with reference to page numbers in Part 1 Marine Waters.**

**Pg. 10 and pg 15. There does not appear to be sufficient evidence to establish Clostridium standards and material cited as footnote #4 is not in a scientific peer-reviewed journal. Therefore the use of Clostridium as even as secondary indicator is of suspect value. More research is needed to determine the persistence of viable Clostridium spores in tropical soils. New quantitative gene identification and other technologies will speed measurements and probably make culture methods obsolete.**

**Pg. 13. Were the secondary checks in question for the Hydrolab multiprobe only? Then what relevance does that have to either turbidity measurements taken with another machine, or with the Enterococcus values determine by the DOH laboratory. You are getting rid of much valuable data. In addition, the review does not include the extensive data sets collected by HWH under the Targeted Watershed Initiative program. This includes valuable nutrient and turbidity data, as well as Enterococcus data. The rejection of these data severely jeopardizes the accuracy of the determinations for streams estuaries in Hanalei Watershed.**

**Pg. 17. Note that Hanalei Bay and the North Shore of Kauai are part of the National Marine Sanctuary. This should be specifically noted in its classification.**

**Pg. 25. Hanalei Bay at Waioli Beach Park turbidity values are available in DOH data collected by HWH.**

**Pg. 42. Decision code NC= should be Ac=Attained.**

**Pg. 43. Waioli Stream rows for wet and dry should be next to each other. I question if enough sampling was done and over enough of the stream to make this determination. Was HWH data used?**

**Pg. 45-48. The order in which these sites are listed seems haphazard, rather than with respect to geographic location. Many are misclassified coastal codes. I made corrections mainly for the Hanalei area.**

**Hanalei Bay Landing #156 and #93 should be combined. Check salinity. This is estuarine.**

**Hanalei Bay Pavilion 158 & 92 should be combined. DOH has turbidity data from HWH collections and its own weekly collections. Check salinity. Estuarine?**

**Hanalei Bay Mooring #157. Estuarine? HWH data does not support N**

**Hanalei Bay at Pinetrees #159 = Waioli Beach #91. Estuarine? Where is DOH turbidity data?**

**Hanalei Bay upstream from Dolphin #160 is Estuary, not bay, about 2 miles up-river.**

**Waioli Stream Estuary #163 is estuary, not Bay. HWH submitted lots of data on bacteria, turbidity, and nutrients. All far exceed state standards.**

**Hanalei Bay Weke Rd. #161 you have years of data for bacteria collected by both DOH and HWH. Also exceeds for nutrients and turbidity.**

**Hanalei River HI385259 is where? What stations? Why not use all of the nutrient data?**

**Pg. 46. Kalihiwai Bay should be next to Anini. DOH has data on turbidity. Should be estuary, not open coastal.**

**Waimea, Lucy Wright Beach Co. Park is Estuary. DOH data is available.**

**Pg. 47. Waikoko should be back in Hanalei Bay. HWH provided data on turbidity, nutrients, and bacteria. One of the most polluted places.**

**Pg. 48. Waipa Stream Estuary should be back in Hanalei Bay. HWH provided data on turbidity, nutrients, and bacteria. One of the most polluted places.**

## **PART 2. Streams**

**I reviewed this Part and found it accurate and well done.**

## **Part 3. Groundwater**

**I did not review.**

Environmental Planning Office  
Hawaii State Department of Health  
919 Ala Moana Blvd. Rm 312  
Honolulu, Hawaii 96814  
Email: [barbara.matsunaga@doh.hawaii.gov](mailto:barbara.matsunaga@doh.hawaii.gov)

As a member of the Hilo Bay Watershed Advisory Group (HBWAG) Steering Committee, I have been authorized by the group to **formally request an additional two weeks to allow us adequate time to provide you with our comments on the current Draft 2006 Integrated Report of Assessed Waters in Hawaii Prepared Under Clean Water Act §303(d) and §305(b)** -- via a fully coordinated commenting letter which will be coming to you from our HBWAG Spokesperson.

However, at this time, I also wish to offer my comments as long term resident and property owner and an individual HBWAG steering committee member on the current Draft 2006 Integrated Report of Assessed Waters in Hawaii Prepared Under Clean Water Act §303(d) and §305(b). I am limiting my comments to a discussion of two streams, the Alenaio and the Waiakea, that I believe have been inappropriately listed and targeted for TMDL prioritization. However, the application of my comments to the bigger picture of how water bodies are listed in the State of Hawaii is requested.

My comments are as follows:

- Water Quality Inventories and Problem Identification - Recent work efforts of the Hilo Bay Watershed Advisory Group to prepare a Watershed Restoration Plan for the Hilo Bay Watershed were facilitated by an EPA grant via the Hawaii Department of Health (DOH) with report assistance under a contract with the University of Hawaii at Manoa. These funds were part of the EPA program to bring impaired waters into compliance with water quality standards. The work focused on the collection of background information and input from the community on their perception of the causes of water body impairment and the preparation of a draft Watershed Restoration Plan. These Watershed Restoration inventories and findings generated a wealth of information regarding public *perception* but fell short in obtaining any meaningful or measurable water quality impairment data. The data that was reviewed proved insufficient to pinpoint actual causes of impairment within the watershed.
- Inappropriate Listing - I believe that the decision to list the Alenaio and Waiakea Streams during the 2004 listing cycle was inappropriate and should be corrected by de-listing these streams at the present time. The DOH listing chart indicates that enterococci, turbidity, and total suspended solids contamination is unknown (?) and that the source of information for the three contaminants: total nitrogen, NO<sub>3</sub>+NO<sub>2</sub>, and P are a 'visual listing from legacy sources' (V). I do not understand how a listing decision could have been made given this lack of data, especially since the ramifications of these listings are so significant. These are DRY STREAMBEDS; therefore what are the declared existing

and designated uses of these two streams and are they appropriate? As you are aware, uses identified in section 101(a)(2) of the clean water act (Hawaii's Water Quality Standards are similar) include: public water supplies, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agriculture and industrial uses. The Alenaio and Waiakea streams are ephemeral streams along their full reaches. Because of the lack of water flow or any permanent or semi-permanent aquatic habitat in these ephemeral streams and after discussions with biological experts familiar with these specific areas, we question the existing uses of the streams (using the regulatory definition of that term). I would like clarification on the declared existing use and the designated use, if there are any.

- A Use Attainability Analysis should be conducted - Due to these factors, I respectfully request that the DOH conduct a Use Attainability Analysis to ensure that the actual uses can be attained. The Clean Water Act Section 131.3(g) Use Attainability Analysis is a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors. States may remove a designated use which is not an existing use, as defined in sec. 131.3, or establish a sub-category of a use if the State can demonstrate that attaining the designated use is not feasible because (1) naturally occurring pollutant concentrations prevent the attainment of the use; or (2) natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use.
- Use of the recently conducted USGS sampling study results - In 2003, the DOH EPO contracted the USGS to study the Alenaio and Waiakea streams at three sites. The objectives of this study (at a cost not to exceed \$296,000) were to provide stream flow and water quality (suspended-sediment and nutrient) data in support of TMDLs to be prepared for five streams draining into Hilo Bay. A goal was to collect base flow and storm flow. It was acknowledged that collection of stream flow, contaminant concentration, and discharge data is not an easy or inexpensive task. Data collected as part of the study is to be used to estimate loads for Waiakea and Alenaio streams. Moreover, the data is supposed "to provide some of the information necessary to calibrate various hydrologic and water-quality models and provide a benchmark for monitoring improvements in water quality related to implementation of best management practices." We understand this to mean that the results of this study are to be applied to improve models that will be used in other parts of the State. This is of great concern to us for the following reasons.
- Sampling Questioned - I am very concerned that due to the infrequency of rainfall during the study period, the USGS study was unable to accumulate baseline data. The project concentrated on the Waiakea stream while the investigation of the Alenaio stream received only a limited amount of time at the end of the contract period. During the study period, there were four rainfall events for Alenaio and not many more for Waiakea stream. In addition, the data quality for the Waiakea Stream was compromised by a major stream construction project that was conducted during the sampling study, at the mid-point on the stream between the USGS recording stations. This State and County project entailed the construction of a concrete bridge and other work that resulted in major discharges to the area. Therefore I believe that the data collected at the lower USGS site has limited, if any, value and should not be used in establishing or modifying any

model that will be used for the remaining one hundred and thirty two TMDLs to be done in Hawaii.

- TMDL Requirement for Listed Streams and Probable Waste of Limited Resources at Issue - In contracting to perform the work requested by DOH, USGS warns that, “As previously discussed with the DOH, implementation of TMDLs for these streams will probably not be sufficient to bring Hilo Bay into compliance with State water-quality standards, in part because of the many nonpoint sources along the shoreline of Hilo Bay that do not discharge into these streams, specifically those along the commercial harbor. In addition, much of Hilo Bay is less than thirty (30) feet deep. It is quite possible that contaminant-laden sediments have accumulated in Hilo Bay. The breakwater and reef, in particular, would shelter the bay from wave activity that might resuspend and transport these sediments out of the bay. These sediments may be acting both as a trap and source of nutrients, other contaminants, and suspended sediment on those occasions when resuspension does occur.”
- Future Cost Issues – I am very concerned that our limited public resources will be spent on costly projects that are meaningless and, if implemented, prove to be futile. Given the lack of water in these two streams, the insufficiency of data to establish a baseline, and the cost involved in any further attempts to do gather data and to establish TMDLs that have a very poor likelihood of successfully improving water quality.

**Based on the inputs and concerns I have expressed above, I respectfully request that these two streams be de-listed and not considered for TMDL activity.**

I appreciate the opportunity to provide my comments and sincerely hope that these comments are taken into serious consideration before finalization of this document. As I mentioned above, a formal letter to you providing coordinated comments of the HBWAG will also be transmitted to you for your consideration within the next two weeks.

Sincerely,

Thomas Young  
Member Hilo Bay Watershed Advisory Group Steering Committee  
Member Hamakua Soil and Water Conservation District  
529 Kukuau Street  
Hilo, Hawaii 96720

Les Takayama Chair  
Waiakea Soil and Conservation District  
154 Waianuenue Avenue #322  
Hilo, Hawaii 96720

Lesley Hill Chair  
Hamakua Soil and Conservation District  
154 Waianuenue #322  
Hilo, Hawaii 96720

Ann Fielding  
P. O. Box 1107  
Makawao, HI 96768  
(808) 572-8437  
annf@maui.net

January 17, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard, Room 312  
Honolulu, Hawaii 96814  
via [barbara.matsunaga@doh.hawaii.gov](mailto:barbara.matsunaga@doh.hawaii.gov)

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

Dear Department of Health,

Please note my comments on the above report:

I have been a marine biologist in Hawaii since 1974. In that time, I have been involved in near shore and stream activities. I am also a homeowner living in Haiku and am concerned about our drinking water.

1. Marine and Estuaries; I am concerned about storm runoff into the ocean, most particularly silt runoff as well as agricultural chemicals. I would like to see those chronically affected areas identified and assessed after wet weather events. I want to see pollution prevention and controls in place and support full funding for these activities.
2. Streams: I would like to see the streams meeting all categories of attainment as “11 Maui streams were listed in category 3 & 5- existing data indicated non-attainment, TMDL needed, more data needed”. I support full funding for complete monitoring, data collection, data reporting and subsequent corrective actions to ensure clean water quality for Maui’s residents and future.
3. Groundwater: There are no water quality standards for our groundwater. This is the source of our drinking water. I am outraged by this. Your report states that 81% of our aquifers are highly vulnerable to contamination. We need standards to protect the quality of the water and monitoring to determine if the standards are being met. I request full funding to achieve these goals.

General comments: I would like to see a laboratory on Maui where the public could take water samples for bacteriological testing and reporting.

I request confirmation of receipt of my comments.

Sincerely,

Ann Fielding

# HAWAII AGRICULTURE RESEARCH CENTER

MAUI SUBSTATION • P.O. BOX 88 • PUUNENE, HAWAII 96784

TELEPHONE: (808) 877-6916

January 19, 2007

Environmental Planning Office  
Hawaii State Department of Health  
919 Ala Moana Blvd., Rm 312  
Honolulu, Hawaii 96814

RE: Comments on Draft 2006 INTEGRATED REPORT OF ASSESSED WATERS IN HAWAII PREPARED UNDER CLEAN WATER ACT §303(d) AND §305(b)

The Hawaii Agriculture Research Center (HARC) offers the following comments on the Draft 2006 INTEGRATED REPORT OF ASSESSED WATERS IN HAWAII PREPARED UNDER CLEAN WATER ACT §303(d) AND §305(b).

HARC has reviewed the above document and, as noted in comments submitted in previous years, continues to have serious concerns about the methods by which waterbodies, particularly streams, are being listed as impaired. We are extremely concerned about the long-term ramifications to the State of those listings, especially since TMDLs will have to be done for these streams even if there is no scientific justification for the impairment classification.

The following is an outline of our concerns.

## **Use of limited and unreliable data to support listings**

The use of photographs to assess water quality is scientifically unsound and unacceptable. As noted in the document itself, this practice is inappropriate and should not be used to support listings.

## **State Water Quality Standards cannot be met even under natural conditions**

Natural levels of turbidity regularly exceed our state water quality standards set for turbidity. Other states account for their background levels as part of the standards setting process and there is no sound justification for Hawaii to ignore our own conditions. Instead, our standards seem to have been set using drinking water standards. This is an impossibly high standard that is unnecessary and unrealistic.

## **Scientifically questionable habitat and biotic assessment protocol still being used**

We continue to object to the use of the Hawaii Stream Bioassessment Protocol to assess stream health within the regulatory context. This protocol has been rejected as not scientifically rigorous and has no place in impairment determinations.

## **Listing of dry gulches with prioritization for TMDL development**

We fail to see the point of spending hundreds of thousands of dollars to try to determine whether

a dry (undiverted) gulch that has no water in it except during heavy rainfalls and cannot support aquatic life, is impaired and requires TMDLs. Common sense must be applied to these determinations and expenditures of public resources.

Hawaii has limited resources and should use them to list truly impaired waterbodies so that TMDLs can be developed and implemented speedily for those waters that are in fact unhealthy.

Thank you for the opportunity to comment.

Sincerely,

Janet Ashman  
Environmental Specialist

SHELDON BRAIDMAN  
2387 S. KIHEI RD., C-402  
KIHEI-MAUI, HI 96753

January 20, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814 via  
[barbara.matsunaga@doh.hawaii.gov](mailto:barbara.matsunaga@doh.hawaii.gov)

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

Dear Department of Health,

Please note my comments on the above report:

Marine and Estuaries: Please note that there a better system is required and put into service for water quality testing, specifically bacteriological, to protect ocean users and ensure the health of the ocean around Maui County.

I and many of my friends are members of the Maui Canoe Club and the Kihei Canoe Club. We are frequent ocean users. Combined club membership is approximately 350 people. Many of the coastal areas that we paddle in are not shown as tested areas for this bacteria known as Enterococcus. This is a serious concern.

It is my understanding that the Blue Water Task force projects where test for this specific bacteria were made, have shown that many times we are canoeing in contaminated waters.

Please confirmation an email receipt of my comments and inform me of your departments plans for more extensive testing. .

Sincerely,

Sheldon Braidman



# MAUI TOMORROW

January 19, 2007

Ron  
Sturtz  
*President*

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814

Lucienne  
de Naie  
*Senior Vice  
President*

Judith  
Michaels  
*Executive Vice  
President*

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

To Whom It May Concern:

Richard  
Michaels  
*Secretary*

We commend the Department of Health (DOH) for completing a major milestone in preparing the state's first Integrated Report of Assessed Waters. It is obvious that a great deal of thought, time and attention was given to this important effort. Respectfully, we submit the following comments on the above referenced report:

Vicki  
Schulte  
*Treasurer*

## Part 1 - Marine and Estuaries

Susan  
Bradford

### Comment No. 1 - Scope of waters included

We support the expansion of the geographic area of assessment units to include the larger waterbody area that the sampling station represents.

Sean  
Lester

Ed  
Lindsey

### Comment No. 2 – Marine Monitoring Program

#### Shoreline bacteriological monitoring (BEACH program) -

We request that the report include the location of beach monitoring stations used in the assessment, preferably by mapping. We question whether 13 beach monitoring stations are sufficient for the entire island of Maui given the extensive shoreline, proximity of sewage sources to coastal areas, and large number of recreational users.

Mark  
Sheehan

Renee  
Loux  
Gordon

Lance  
Holter

We request that the monitoring strategy include locations where wet weather events cause elevated bacterial levels, and that sampling events include wet weather conditions.

Michael  
Howden



West Maui Preservation Association  
P.O. Box 10818  
Lahaina, Maui, HI 96761  
[www.SAVEWESTMAUI.com](http://www.SAVEWESTMAUI.com)  
[info@SAVEWESTMAUI.com](mailto:info@SAVEWESTMAUI.com)

January 19, 2007

Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard Rm 312  
Honolulu, Hawaii 96814

RE: 2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b).

To whom it may concern:

We commend the Department of Health (DOH) for completing a major milestone in preparing the state's first Integrated Report of Assessed Waters. It is obvious that a great deal of thought, time and attention was given to this important effort. Respectfully, we submit the following comments on the above referenced report:

## **Part 1 - Marine and Estuaries**

### *Comment No. 1 - Scope of waters included*

We support the expansion of the geographic area of assessment units to include the larger waterbody area that the sampling station represents.

### *Comment No. 2 – Marine Monitoring Program*

#### **Shoreline bacteriological monitoring (BEACH program) -**

We request that the report include the location of beach monitoring stations used in the assessment, preferably by mapping. We are concerned that there is not adequate monitoring of recreational waters in West Maui. In particular we are concerned about bacterial contamination in the vicinity of Honokowai Channel given the extent of the North Beach shoreline and the presence of three recreational parks in close proximity to the Lahaina Wastewater Reclamation Facility and associated infrastructure such as pumping stations, lift stations, and

aging sewer pipes. The large number of housing developments currently under construction will only bring more population into contact with these already impaired waters.

We request that the monitoring strategy include sampling of the discharge of Honokowai Channel and other locations where wet weather events cause elevated bacterial levels, and that sampling events include wet weather conditions. The monitoring strategy should coordinate shoreline monitoring with monitoring of contaminated runoff in the Honokowai Channel to discern if the channel is conveying bacteria to coastal waters.

**Open coastal waters bacteriological monitoring** – We request that the monitoring program include bacteriological monitoring of open coastal waters in addition to shoreline areas. Turbid plumes of water are observed offshore of Honokowai Channel in wet and dry conditions, and extend well beyond the 300 meters from shore that is currently designated as recreational waters. Recreational users including long distance swimmers and kayakers frequently use the waters beyond the reef line. The monitoring in this area should extend seaward beyond the location of any existing or planned injection well sites.

**Shoreline and offshore chemical monitoring** – The report indicates that shoreline and offshore chemical monitoring has been curtailed due to limitations of available resources. We request that the DOH plan for full funding of this monitoring. The report indicates that not all marine waters have been assessed, and of those assessed, most are considered impaired by the levels of nutrients present. The report indicates that the coastal segment from Honokowai Point to Kaanapali is impaired by nutrients. It is imperative that monitoring of these impairments continue in support of the legally required TMDL.

We request that the monitoring program include testing for toxic pollutants (heavy metals, organic chemicals, herbicides, pesticides). Every chemical for which there is a marine water quality standard should be monitored. Monitoring of toxic chemicals is needed to protect the aquatic ecosystems. Healthy aquatic ecosystems are necessary to protect the fishery and the Hawaiian cultural practices that depend on the existence of the fishery. These cultural practices are protected by recorded unilateral declaration of restriction that includes the entirety of North Beach Shoreline and the three recreational parks. We request that these protected areas be monitored for toxic chemicals, in addition to nutrients.

### *Comment No. 3 – Enterococcus Standard Attainment*

The report in Section C.1. (page 15 of 29) discusses the use of *Clostridium perfringens* as a secondary indicator of the presence of sewage. While we support development of criteria that are more specific indicators of pathogenic organisms, we strongly object to an attainment methodology that is based on anything other than the promulgated standard. *C. perfringens* should not be

used as a criterion at this point in time because it has not been subject to the rulemaking process and required public review. We request that all waters exceeding Enterococcus criteria be listed as non-attainment status without regard to the levels of *C. perfringens* present.

It is our understanding that the state is considering changing the current recreational bacteriological standards, specifically raising the criteria value from 7 cfu/100 ml to 33 cfu/100 ml. We request that DOH provide a written rationale that explains basis of current criteria and the basis of proposed criteria. We request public access via internet to data or reports that underlie the rationale. Because this is a complex issue of great concern to the public, we request an advance notice of rulemaking. We request that informational meetings be held in West Maui prior to rulemaking in order to inform the public about the proposed change and the science and regulatory rationale supporting the change.

#### *Comment No. 4 – Collaboration with other monitoring programs*

We support the Department in its efforts to collaborate with other state and federal agencies, private consulting firms, and volunteer monitoring programs. However, we are concerned that the data be of adequate quality to use for assessment. We are specifically concerned that the experimental design of studies not be biased and that such studies specifically adhere to EPA guidance. We urge the state to conduct outreach to county governments in order to strengthen the implementation of the water quality management program through county decision-making and permitting (such as Special Management Area permits that require marine water quality studies). We urge the DOH to provide specific guidance regarding the design of water quality monitoring programs that are supportive of and compliment the state monitoring program.

#### *Comment No. 5 – Documentation of Data Submitted*

We request that the marine assessment report include documentation of public participation, in particular of the data submitted by parties other than DOH. West Maui Preservation Association, a Hawaii non-profit organization, submitted water quality data for use in the preparation of the State's water quality assessment (305(b) report) and 2006 listing of impaired waters (303(d) list). The data were accompanied by photos showing the plumes of turbid water observed in the nearshore waters in the vicinity of Honokowai channel in both wet and dry weather conditions.

These data indicate impairment of the water quality in the nearshore coastal waters in the vicinity of the discharge of Honokowai Stream to the ocean. The data were collected by Dr. Richard Brock of Environmental Assessment Co. The data, along with study methodology, sampling locations and other information needed for 305(b) assessment are contained in a report entitled, entitled "A Quantitative Assessment of Water Quality and Marine Communities In An Area Fronting the Development of the North Beach Project Site (Former Kaanapali Airstrip)", December 2004, EAC Report No. 2004-16. This report documents

study in which samples were collected at 21 locations and 7 control locations during 8 biennial surveys (February and August 2001 thru 2004) and two heavy rainfall event surveys (four inches or more within a 24-hour period) December 1, 2001 and January 5, 2004.

## **Part 2 - Streams**

*Comment No. 6 Increase scope of stream monitoring* – The report indicates that all streams assessed were placed into Category 3 (insufficient data to make a use support determination). We urge the DOH to plan for full funding for this program. We specifically request monitoring of Honokowai Stream and Honokowai Channel. The current listing of Honokowai Stream is based on visual assessment alone. Visual observation of the channel indicates the presence of contaminated runoff. Dr. Brock's reports (previously referenced) implicate the Honokowai Channel as the source of observed exceedances of water quality criteria.

## **Part 3. Groundwater Assessment**

*Comment No. 7 Establish groundwater quality criteria* –

The report indicates that groundwater quality standards have not been established for the state. We request that DOH make the establishment of groundwater quality standards the highest level of priority. It is clear that in West Maui the protection of the quality of our groundwater resources is inadequate. We request development of criteria for use as source of drinking water supply, and for aquatic life protection of the freshwater and marine ecosystems which may ultimately be impacted by groundwater flows.

*Comment No. 8 Establish ambient groundwater monitoring network-*

The groundwater assessment identifies areas of existing groundwater contamination; great potential for additional contamination to occur, and classifies 213 Maui aquifers as "highly vulnerable to contamination". The current assessment data appears to have come exclusively from testing of finished (treated) public water supply wells. This data indicates that 12 West Maui drinking water wells are contaminated. We request that DOH place the highest priority the establishment of an ambient groundwater monitoring network that includes not only aquifers that may be potentially used for drinking water, but also monitors areas with high potential for contamination of any aquifer. A monitoring program that only detects problems at the point of use is not adequate to protect the resource.

*Comment 9 Comprehensive Groundwater Protection Plan*

The report indicates that the Comprehensive State Groundwater Protection Program is under review by EPA. The assessment report documents 29 different

state programs or activities designed to protect our groundwater resources. Despite numerous programs and the involvement of three state agencies, groundwater quality on Maui is not being protected. We request that DOH hold informational meetings in West Maui to present the plan to the public prior to the public comment period. The development of a comprehensive groundwater protection plan and the monitoring and standards necessary to implement the plan should be the highest priority of state government. Water is life and quality of water is a major factor in quality of life.

## **Part 4. Assessment Decision Table**

*Comment No 14. Priority ranking for TMDLs* – We request that DOH include priority ranking for TMDLS for all waterbodies included on the 2006 303(d) list. We request that the schedule for completing those TMDLS be developed. We request that Honokowai Stream and the marine segment from Kaanapali to Honokowai Point be given high priority. This area has a long history of documented water quality problems and documented exceedances of state water quality criteria in an area of exponential population growth.

## **General Comments**

*Comment No. 9 Provide supporting data* – We request that future assessment reports include a section that provides information on the data underlying the assessment. We request that meta data for data sets used in assessment be included. At a minimum the meta data should include contact information regarding owner of data and where data resides, database software or access needed, geographic area covered, parameters covered, and period of record,

We request that future assessment reports Include period of record, frequency of monitoring, and summary statistics for data used in the assessment to include: Minimum value, maximum value, mean or geometric mean, number of data points; coefficient of variability, and standard deviation.

We request that DOH move quickly to make environmental data more available to the public via internet, preferably as a searchable database.

*Comment No. 10 Designated Uses* – We request that the state revise the state water quality standards to include specific designated uses. This will make the applicability of criteria to a given waterbody clear and unambiguous.

### *Closing Remarks*

In closing, we recognize the tremendous challenges faced by the state in protecting the precious water resources on which we all depend for life itself. We are appreciative of the hard work of everyone involved in these programs. However, we believe it is inexcusable for state government to neglect critical needs for water quality planning and management due to reported lack of resources, while the state has a budget surplus in excess of \$400 million. As the public comment period for this report closes, the legislature debates how to spend the budget surplus. We urge DOH to immediately make these critical funding needs known to our lawmakers, and to ask for dedication of part of the budget surplus to meeting these needs

Sincerely,

Sharyn J. Matin, President  
West Maui Preservation Association



ALEXANDER & BALDWIN, INC.

17 – Sean M. O’Keefe

January 19, 2007

State of Hawaii Department of Health  
Environmental Planning Office  
Attention: Mr. Kelvin Sunada  
919 Ala Moana Boulevard, Third Floor  
Honolulu, HI 96814

Subject: **Draft 2006 Integrated Report of Assessed Waters in Hawaii**

Dear Mr. Sunada:

Alexander and Baldwin, Inc. (A&B) is pleased to provide comments regarding the draft report titled *2006 Integrated Report of Assessed Waters Prepared Under Clean Water Act §303(d) and §305(b)*. Our major comments and concerns are with those portions of the report relating to the draft 303(d) list of impaired waters and are summarized below.

**Errors, Inconsistencies, and Insufficient Information Make Meaningful Evaluation Difficult or Impossible:**

While we appreciate the time and effort which the Department of Health has obviously put into preparing this report, key errors or omissions make meaningful evaluation and comment difficult or in some cases impossible. Most notably, detailed information regarding the analytical data used to make listing decisions is not included in the draft report, as it was for the 2004 303(d) report (see “Results” section, pages 15 through 23, and Appendix C of the *Final 2004 List of Impaired Waters in Hawaii Prepared Under Clean Water Act §303(d)*). The inclusion of this information in the 2004 report allowed stakeholders to identify errors in the proposed listings for Wailoa/Waipio Stream (Hawaii) and Waihee Stream (Maui), and to identify and comment on streams for which listing decisions appeared to be based on inadequate information. The omission of this information from the 2006 report precludes such a detailed evaluation of listing decisions without requesting and obtaining the actual data from the Clean Water Branch, an effort which was not possible given the constraints of the public comment period. Other errors or inconsistencies which inhibit meaningful evaluation include the use of the decision code “Ac” throughout the Assessment Decision Table in Part 4 of the report with no definition of this code provided, and apparent inconsistencies between the Assessment Decision Table in Part 4 and Table 3, Detailed Summary of Changes in Part 2 with regard to the 2004 303(d) list. We strongly recommend that the Department revise the report to provide more detailed information regarding listing decisions, and to address errors and inconsistencies, prior to closing the opportunity for public comment.

### **Inadequate Public Comment Period**

Although the Department noticed the availability of the draft report and provided for a nominal 30 day public participation period, we believe that the opportunity for public comment on the draft report has been inadequate, particularly given the complexity of the document and the major changes entailed by the integration of the requirements of §303(d) and §305(b) into one report. The publication of the notice of availability just days before the Christmas holidays effectively reduced the time available for stakeholders to review and assess the report. Moreover, the *Hawaii Continuing Planning Process* (DOH; May 1991), which is supposed to guide the water quality planning process, provides for a public comment period of at least 45 days. We therefore strongly believe, and hereby request, that the public comment period should be extended to provide adequate time for interested stakeholders to complete a comprehensive review and evaluation of the report.

### **Use of Visual Assessments to Support Listing**

Many of the streams currently included on the 303(d) list are listed based solely on “visual assessments” of water quality with little or no actual water quality data available to support those listings. Virtually all of these streams were originally included on the 1998 303(d) list based on an analysis by the Environmental Protection Agency of photographs taken during the assessments; EPA staff involved in the listing decision did not actually visit these streams. In many cases, the pre-1998 visual assessments do not meet the present-day listing criteria approved by EPA. (Data sets for evaluation of narrative criteria must include at least three sampling events and represent conditions in both wet and dry seasons, and must be supported by adequate QA/QC procedures. According to EPA’s “Revised Review of Hawaii’s 1998 Section 303(d) Water Body List”, its visual assessments were based on one to three (“usually one”) visits to a limited number of sites on the water body, generally during dry weather conditions, “and therefore represents an incomplete evaluation”.) Recognizing the inherent limitations of basing listing decisions on a review of photographs, DOH-EPO stated in its 2004 report that they “do not support future listing determinations based on photographic assessments only”. These limitations are further highlighted by the streams for which subsequent visual assessments or numerical water quality data refutes the previous visual assessments. A&B strongly urges a review of past listing decisions based on visual assessments and delisting of streams for which listing is not supported by other, more reliable water quality data. Failure to do so will result in the expenditure of enormous resources in developing and implementing TMDL’s for water bodies that may not actually be impaired.

Under Hawaii’s water quality standards, waters cannot be determined to be impaired for turbidity based solely upon a visual assessment if the visual observation fails to account for the provisions of HAR Section 11-54-4(c). Under this section of the water quality standards, the narrative water quality standard relating to “soil particles resulting from erosion on land” (typically a major contributor to observed turbidity) is deemed met when the land on which the erosion is occurring is being managed in accordance with soil

conservation practices or when the discharge is receiving the best degree of treatment or control and the impact on the water body is deemed to be “acceptable”. That is, a visual observation of turbidity is not a violation of water quality standards unless it can be shown that the requirements of §11-54-4(c) are not being complied with. To our knowledge, the visual assessments evaluated and considered by EPA contained no information that would allow a determination as to whether the requirements of this section were being met at the time of the assessment. Visual assessments that do not consider §11-54-4(c) should not be used as the basis for listing streams as impaired for turbidity.

### **Listing Criteria**

As in the past, we have serious concerns regarding listing criteria for waters under the *2004 (& 2006) Priority Ranking and Listing/Delisting Criteria for Hawaii State Surface Waters*. In some cases, the existing listing criteria allow listing of waters which do not actually exceed water quality standards and should be revised. Specific concerns include:

- Listing for impairment by conventional pollutants can be based on as few as five water quality samples. A&B believes that data sets of this size do not provide a statistically valid basis for comparison with the water quality standards as they may be widely skewed by the inclusion of one or more samples collected during or soon after large storms. While a minimum sample size of five is consistent with a 1998 recommendation by EPA, EPA’s recommendation was based not on whether such a small sample size would provide reliable data, but rather on the limited data then available for analysis and a concern that “use of a larger minimum sample size would result in exclusion of streams from consideration for listing”. This is simply not a statistically valid justification for evaluation, and amounts to allowing streams listed based on poor quality data for not other reason than because that is all that is available.
- For conventional pollutants, Listing Priority 2 allows sample data collected during wet and dry seasons to be combined where there is insufficient data to evaluate the wet and dry standards separately. Water bodies can be listed if (1) the geometric mean of the data (including wet season data) exceeds the dry season standard and a majority of dry season data exceed the dry season standard or (2) the geometric mean of the data exceeds both the wet and dry standards or (3) the majority of sample values in a smaller data set (five to nine samples) exceed the geometric mean criteria by a factor of two or more. In each of these cases, water bodies could conceivably be listed without the geometric mean of the wet or dry season data exceeding the corresponding wet or dry standard – that is, without an actual exceedance of the applicable water quality standard. The wet and dry season standards are separate and distinct standards. In order to determine whether a water quality standard is exceeded, wet season data should be compared to the wet season standard, dry season data should be compared to the dry season standard, and a minimum sample size (at least ten samples) should be established for comparison to each standard.
- For comparison with the “ten percent of the time” and “two percent of the time” criteria, DOH requires a minimum of 100 and 500 samples, respectively, for Listing Priority 1 or 50 and 250 samples, respectively, for Listing Priority 2. These standards

are intended to allow for exceedances of the “geometric mean” standards for relatively short periods of time due to large rainfall events, when larger pollutant concentrations in streams are unavoidable. Appropriately, the listing criteria require significant data sets for comparison with these standards in order to ensure a reliable assessment of the data. However, if one were to evaluate whether a stream was meeting the numerical water quality standard for a total suspended solids over the six month wet season, it could reach 50 mg/L ten percent of the time and 80 mg/L for two percent of the time but would have to meet the “geometric mean not to exceed” standard for the remaining 90 percent of the time. Although some statistical variance is allowed for by use of a geometric mean, it would seem that the size of the data set used to evaluate compliance with the standard which applies ninety per cent of the time should be comparable to the size of the data set required to evaluate compliance with the “ten percent of the time” and “two percent of the time” criteria. As such, a minimum sample size considerably larger than is specified in the listing criteria would appear to be appropriate. A single anomalously high data point (such as might be collected during a large storm) may so skew the geometric mean of a small data set as to suggest impairment even where the criteria applicable to storm events (i.e., the “ten percent of the time” and “two percent of the time” criteria are never exceeded).

#### **Water Quality Standard for Turbidity**

A large number of streams included on the proposed 303(d) list are listed either solely or partly due to reported impairment by turbidity; many based on visual assessments only. The current numerical water quality standard for turbidity (2.0 NTU dry season/5.0 NTU wet season), which applies to all streams in the state, is as strict or stricter than the turbidity standard for drinking water and does not consider the normal background turbidity present in streams, particularly during storm events (when turbidity greater than 200 NTU is common), irrespective of any inputs from human sources. As a result, many streams are currently listed as impaired, and many more will undoubtedly be listed as more data is collected, based on turbidity data that is wholly consistent with healthy Hawaiian streams (according to EPA, low turbidity streams and rivers – those typically located at the upper reaches of an undeveloped watershed – are those with turbidities less than 20 NTU – *four to ten times the Hawaii standard*). In comparison, roughly two-thirds of the states which have a numerical turbidity standard at all employ a relative criteria based on background turbidity levels (typically establishing their WQS at 5-10 NTU *above background*). We believe strongly that a review and revision of the State WQS for turbidity is necessary in order to prevent the continued listing of streams for turbidity levels that exceed the current standard but are in fact not indicative of actual water quality impairment.

#### **Impaired Gulches?**

Some “streams” are listed as impaired even though they are ephemeral streams that are normally dry except during large storm events. These “streams” are more accurately described as dry gulches, and it is unclear why the Department has chosen to devote scarce resources to monitoring and developing TMDL’s for these “water bodies”. The most obvious examples are Alenaio Gulch and Waiakea Gulch, both located in the Hilo

Bay Watershed on the island of Hawaii. Neither of these gulches is even listed in the Hawaii Stream Assessment, yet both are listed as impaired (based on visual assessment only) and are currently undergoing development of TMDL's. Clearly no designated uses could possibly be attained in these dry gulches, due to the very limited time when water is present. Moreover, since flow in these gulches occurs only during large storm events, water quality commensurate with periods of high runoff can be expected virtually all whenever there is flow. We have similar concerns for other stream systems where impairment decisions have been based solely on stormwater flows in normally dry lower reaches. We strongly recommend that the Department carefully consider the normal flow regimes and actual uses of water bodies such as these prior to making determinations regarding impairment, and prioritize its efforts to address water quality issues in streams (or stream segments) where there exists a potential for designated uses to be achieved.

A&B appreciates the opportunity to provide comments on the proposed list of impaired waters, and would welcome the opportunity to discuss any of our comments with DOH-EPO staff.

Sincerely,

Sean M. O'Keefe  
Director, Environmental Affairs  
Alexander & Baldwin, Inc.

cc: G.S. Holaday, HC&S  
D. Heafey, HC&S  
M. Ching, A&B  
J. Ashman, HARC



**18 – Alan Takemoto**

**Hawaii Farm Bureau**

FEDERATION

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January 19, 2007

Environmental Planning Office  
Hawaii State Department of Health  
919 Ala Moana Blvd., Rm 312  
Honolulu, Hawaii 96814

Subject: Draft 2006 INTEGRATED REPORT OF ASSESSED WATERS IN HAWAII  
PREPARED UNDER CLEAN WATER ACT §303(d) AND §305(b)

The Hawaii Farm Bureau Federation (HFBB) appreciates the opportunity to offer the following comments on the draft report.

This document is of extreme importance to all farmers in the State and should be on the radar screen for all Hawaii citizens because the listing of a waterbody as impaired dictates that at some time in the future, a TMDL assessment will have to be done and that the TMDL should be implemented. The cost of these activities in terms of human and fiscal resources is enormous. Because of this, every possible effort should be made to ensure that when the decision is made to list a waterbody, it is (a) based on water quality standards that are meaningful and scientifically supported and (b) based on appropriate and adequate sampling.

As a long-time member of the Hawaii Department of Health Water Quality Standards Technical Advisory Group, we know that some of our Hawaii water quality standards (e.g., the turbidity standards) were set arbitrarily and are not achievable. Before any further listings are made, these standards must be amended. In fact, those listings based on violations of the current turbidity standard should be removed immediately and re-evaluated at such time as an appropriate standard is in place.

Furthermore, we continue to object to the listing of streams for which only a "visual assessment" provides the basis for the listing. This is scientifically unsound and only serves to call into question all listing decisions made by the Department.

HFBB respectfully requests that rather than expend Departmental energy on adding new waterbody impairment listings at every assessment, the focus should be on working with the scientific and regulated community to promulgate appropriate and meaningful standards that can be used to rationally assess the health of the State's waters. The consequences of ignoring this as a prerequisite to any listing is the inevitable eventuality that all of Hawaii's waterbodies, regardless of the scientific reality, will be considered unhealthy and impaired.

Thank you for your consideration of these comments.

Alan Takemoto  
Executive Director

**From:** June  
**To:** [Linda.Koch@doh.hi.gov](mailto:Linda.Koch@doh.hi.gov)  
**Sent:** Friday, January 19, 2007 4:21 PM  
**Subject:** Comments on 2006 CWA Plntegrated 305(b)/303(d) Report

Aloha, Linda: I have only two major comments on the format and content of the 2006 Integrated Clean Water Act 305(b)/303(d) Report:

1. Part 1 - Marine Waters: part 1 opens with the sentence "Overall, the quality of the waters of the State is very good." However, the Report goes on to state that of a total of 534 coastal water bodies tallied (how? is this the number of watersheds delineated in the State?), 219 out of 264 coastal water bodies with adequate data have been listed for at least one pollutant. Because  $219/264 = 82.9$  per cent of coastal waters assessed for this Report have been listed, there can be no logical argument made that "the quality of the waters of the State is very good," especially since much of the measured pollutant load, including bacteria, derives from the adjacent watershed. If the true percent of assessed and unpolluted marine waters is  $100 - 82.9 = 17.1\%$ , then, using the ranking scale 0-20%="poor"; 21-40%="fair"; 41-60%="good"; 61-80%"very good"; and 81-100% = "excellent" places Hawaii's coastal waters in the "poor" category. In other words there needs to be a rational connection between data analysis and judgment of the results. The beginning sentence should read, "On the basis of available data, the quality of the marine waters of the State is ranked as poor".
2. Part 2 - Streams: This section is well-prepared and logical. In order to clarify the decision criteria, I urge staff to start the process of connecting the numerical and narrative Water Quality Criteria to designated stream uses listed in HAR Chapter 11-54, Water Quality Standards.
3. Part 3 - Groundwater: Hawaii's groundwater is in generally good condition, but many potentially toxic chemicals are not included in the State and Federal drinking water standards. Protecting groundwater is a result not only of standards assessment but of keeping up with the toxic status of many new dissolved chemical contaminants and is an ongoing process. The Report should mention the dynamic nature of protecting groundwater sources of drinking water from toxins.

Thank you for the opportunity to review the 2006 Report. Please contact me via reverse e-mail if you have any questions, June

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**Response to Comments – 2006 State of Hawaii Water Quality  
Monitoring and Assessment Report**



September 12, 2007

Aloha All Commenters,

The Hawaii State Department of Health (HIDOH) would like to thank you for your submittal of comments on the Draft 2006 STATE OF HAWAII WATER QUALITY MONITORING AND ASSESSMENT REPORT: Integrated Report To The U.S. Environmental Protection Agency and The U.S. Congress Pursuant To Sections §303(D) and §305(B), Clean Water Act (P.L. 97-117)

Your comments are an important part of the public process, which will report to the US Congress on the status our State waters in relation to specific requirements of the Clean Water Act. HIDOH has taken your comments, combined them with other comments received, prepared a response to comments document, and modified our final report accordingly. These components are then part of the public record, and contained in a final permanent file. The report and the supporting documents will be posted on our website as soon as the documents are finalized and submitted to the United States Environmental Protection Agency (USEPA).

The USEPA will then evaluate the report and approve or disapprove or partially approve our findings. We will post the USEPA's letter to our website as soon as it is available. Again we would like to thank you for your participation in evaluating this draft report.

Mahalo nui loa,

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**Response to Comments – 2006 State of Hawaii Water Quality Monitoring and Assessment Report**

**September 12, 2007**

The Department of Health received 19 comments from a broad range of interested parties. These comments were compiled in this document in the order in which our office received them. Several commenters voiced similar thoughts. These comments were consolidated into the general comments category for ease of reading.

**General Comments:**

Many comments were supportive of our programs and stated their full support for full funding to expand sampling efforts. Thank you for your support for more resources and funding. We welcome your enthusiasm and hope you will participate in the process to assess our waters. Grassroots efforts by volunteer groups that have the technical capacity to help us sample are greatly appreciated. Please contact our office if you would like to help in this regard. We also would appreciate your public participation in the rule making process by providing input and comments when the next round of Water Quality Standards are proposed for revision. Please keep checking our website to view the status of new projects.

Some comments challenged the underlying water quality standards (WQS) and the assessment decision criteria. Other comments challenged the total maximum daily load (TMDL) process and projects. While DOH addresses some of these comments and will bear them in mind when it approaches the next round of WQS review and as it proceeds with TMDLs, DOH is not now changing the WQS standards, assessment decision criteria, or TMDLs as part of the present actual assessment of waters.

This report is a required assessment of the States waters by applying the Water Quality Standards to data collected over the past 6 years.

The original draft was entitled “2006 Draft Integrated Report of Assessed Waters in Hawaii.” The new title is “2006 State of Hawaii Water Quality Monitoring and Assessment Report.”

**Commenter 1:** Jo Ginger and Steve Schroeder, Kihei, Maui, email dated Jan. 17, 2007.

**Comment 1.1** *“Too many of our test sites in Maui County are shown to be in level 5 category. We need full funding to correct this water quality deterioration...full funding is requested so that we may meet our legal obligation to provide quality water to Maui’s residents.”*

**Response:** The Water Quality Monitoring and Assessment Report is used for documenting conditions of all waters, and listing those that are considered to be impaired under State standards. However, it is not a direct funding document. An important and often overlooked part of maintaining environmental health is volunteer groups, such as the one you belong to. Efforts on your part via citizen sampling efforts are very valuable, and can often fill in gaps in data that may exist when proper quality assurance is utilized. We encourage you to continue to participate in activities that protect our Hawaii.

**Comment 1.2** *“It is shocking to us as residents of Maui County, that we have virtually no monitoring and reporting of our groundwater quality. There appear to be no standards developed. We support full funding to establish and develop monitoring standards and subsequent gathering and reporting of data.”*

**Response:** In order to assure that drinking water remains safe for human consumption, the Maui Department of Water Supply, private water system owners, and the Department of Health periodically monitor groundwater sources as well as surface water sources for a number of chemical parameters, as required by Federal and State drinking water requirements. Information on the quality of groundwater sources used as drinking water are available annually (revised in July 1 each year) through your public water system. Contact your public water system to request a copy of the “Water Quality Report” or “Consumer Confidence Report” for your water system. This report is required annually and must be provided to consumers.

While there are no standards developed specifically for groundwater quality, Hawaii utilizes drinking water standards when testing groundwater for drinking water purposes. Standards (guidelines) for groundwater quality also exist through various environmental protection programs (UST/LUST, State Superfund, Pesticides, etc), which must evaluate the quality of groundwater when determining remediation of potential contaminating activities. These standards and guidelines, along with other information on new and emerging contaminants and identification of potential sources of contamination will provide the basis for the Groundwater Protection Program to develop and implement a comprehensive groundwater quality monitoring plan and program to assess the quality of groundwater resources in the State. Such a monitoring program will be very costly and consequently may not be fully funded. However, we appreciate your support to fully fund such a program.

**Comment 1.3** *“We need to develop more monitoring strategies and data management and make the data available to the public in a timely fashion and accessible via internet.”*

**Response:** DOH concurs with your comment, as these items are a high priority for us to implement.

**Commenter 2:** Patricia Covici, Kihei, Maui, email dated Jan. 17, 2007

**Comment 2.1** *“There are days when I have been appalled by the sludge, fecal matter and oil slicks I have seen.”*

**Response:** An important and often overlooked part of maintaining environmental health is volunteer groups, such as the one you belong to. Efforts on your part are very valuable, and can often fill in gaps in data that may exist when proper quality assurance is utilized. We encourage you to continue to participate in activities that protect our Hawai'i. We rely heavily on individuals to be the eyes and ears of our department. Problem areas or offenders may go unnoticed by us unless the public alerts us to these situations. We all play a role in keeping our islands clean and beautiful.

**Comment 2.2** *“Many boats still dump their waste into the waters. There is no current law that prohibits this. Three miles in not enough as the currents bring the sludge into the beached of Kihei and Wailea.”*

**Response:** Although most people are conscientious and law-abiding, there exists segments of the population that are not. Efforts are constantly being made to catch these problems, but it is often an uphill battle.

**Comment 2.3** *“Page 26 of the integrated report of assessed waters under clean water act 303{d} and 305{b} that has a table of results for Maui waters states that no microbial testing was done. I strongly suggest that testing be started on a regular basis if this is in fact the case.”*

**Response:** Microbiological testing has been, and is performed across Maui at various locations several times a week. The statement that you referred to only applies to the 6 waters that are mentioned in the table that have other conventional pollutant data available.

**Commenter 3:** Vicki Schulte, Haiku, Maui, email data Jan. 17, 2007

**Comment 3.1** *“I am concerned about storm runoff into the ocean, most particularly silt runoff as well as agricultural chemicals. I would like to see those chronically affected areas identified and assessed after wet weather events. I want to see pollution prevention and controls in place and support full funding for these activities.”*

**Response:** We share your concern about storm runoff, and much effort is aimed at catching these problem areas as they are found and in finding ways to prevent them. Best Management Practices (BMPs) are stressed for applicable projects, and are required for permitted projects. A large source of assistance actually originates from the general public, in the form of individuals alerting DOH of problem areas. This type of assistance is greatly appreciated and the public is encouraged to continue these grass roots efforts. Sampling (coastal) is done year-round, several times a week, including wet-weather.

**Comment 3.2** *“I support full funding for complete monitoring, data collection, data reporting and subsequent corrective action to ensure clean water quality for Maui’s residents and future.”*

**Response:** The Water Quality Monitoring and Assessment Report documents the condition of all State waters, and lists those that are impaired under State standards. This information can be used to support funding requests for monitoring, assessment and corrective action. It is not however, a direct source of funding. The sampling of the waters of Maui as well as the other islands does have to be prioritized based on available resources.

**Comment 3.3** *“There are no water quality standards for our groundwater. This is the source of our drinking water. I am outraged by this. Your report states that 81% of our aquifers are highly vulnerable to contamination. We need standards to protect the quality of the water and monitoring to determine if the standards are being met. I request full funding to achieve these goals.”*

**Response:** While there are no standards developed specifically for groundwater quality, Hawaii applies drinking water standards when testing groundwater and surface water sources for drinking water purposes. These standards must be met for all new and existing water sources.

Standards (guidelines) for groundwater quality also exist through various environmental protection programs (UST/LUST, State Superfund, Pesticides, etc.) which must evaluate the quality of groundwater when determining remediation of potential contaminating activities.

The statement in the report that 81% of our aquifers are highly vulnerable to contamination is based on solely on the criteria defined in the “Aquifer Identification and Classification for Kauai, Oahu, Maui, Molokai, Lanai, and Hawaii: Groundwater Protection Strategy for Hawaii”, by John Mink and L. Stephen Lau. The criteria used to define “vulnerability to contamination” is whether the aquifer is “confined or unconfined” and based on the authors familiarity with environmental conditions. Vulnerability as defined here does not take into account location of potential contaminants, depth to the groundwater, or other environmental and contaminant factors.

In order to assure that drinking water continues to be safe, groundwater sources of drinking water are periodically tested for a number of chemical parameters by the Maui Department of Water Supply, private public water system owners, and the Department of Health, as required by Federal and State drinking water requirements. Information on the quality of groundwater used as drinking water sources, that provide water to the water systems that serves your area, are available annually (every July 1) through your public water system. Contact your public water system to request a copy of the “Water Quality Report” for your water system. This report is required annually and must be provided to consumers.

In addition, the Groundwater Protection Program is developing a comprehensive groundwater quality monitoring plan and program to assess the quality of groundwater resources in the State. Please keep in mind that such a monitoring program may be very costly and may not be fully funded. However, we appreciate your support to fully fund such a program.

**Comment 3.4** *“We wish there was a laboratory on Maui that we could take water samples for bacteriological testing and reporting.”*

**Response:** There is a State Laboratory on Maui, however samples are limited to State agencies. There may be private labs available, however charges may apply. Please see Response 12.4 for information about private laboratories.

**Commenter 4:** Maury King, Kihei, Maui, email dated Jan. 17, 2007

**Comment 4.1** *“I support formal confirmation of designated uses for water”*

**Response:** Formal confirmation of the attainment of designated uses for water is inhibited by the lack of explicit relationships between water quality criteria attainment and designated use attainment in the State Water Quality Standards and existing state policy. In response to a similar comment from EPA (comment 9.3), we added a logical framework for making waterbody attainment decisions (for both water quality criteria and designated uses) for the 2006 water quality monitoring and assessment reporting cycle to the final report (p. 28).

Future amendment of the State Water Quality Standards, as well as future revision of water quality monitoring and assessment methodologies and decision criteria, could provide clearer explanation of the relationships between water quality criteria attainment and designated use attainment. Water Quality Standards are reviewed and revised every three years, while water quality monitoring and assessment methodologies and decision criteria are reviewed and revised every two years. Please contact our office to be directly notified about the schedule for review and revision processes. Please also see responses to comments 9.3, 11.3, 15.16, and 19.2.

**Comment 4.2** *“I request that we increase monitoring of all beaches, marine waters and offshore waters and that we fully fund this monitoring so that it will be complete for all areas of Maui County.”*

**Response:** The numbers of samples for coastal monitoring have been increasing for the past several years, and it is our hope that this trend will continue. Offshore sampling will hopefully resume this calendar year. Please continue your efforts in participating in environmental groups. It is an invaluable source of assistance that aids in protecting Hawaii’s waters.

**Commenter 5:** Brooke Porter, Lahaina, Maui, email dated Jan. 17, 2007

**Comment 5.1** *“Please realize that there needs to be a better system in place for water quality testing, specifically bacteriological, to protect ocean users and ensure the health of the ocean around Maui.*

*Enterococcus is a serious concern for me as I am a frequent ocean user. Most of the coastal areas where I surf are not shown as tested areas for this bacteria. Additionally, I have been involved in the Blue Water Task Force projects wherein we test for this specific bacteria. Results have shown that many times we are surfing in severely contaminated waters.”*

**Response:** The microbiological testing has a set of permanent, or core, sampling sites, and a rotating set that changes every six months. Both sets vary in location, but in general cover the island coastline. It may be possible that there are sampling stations in the areas that you surf (see list of sampling areas on pages 24-27 of the report), however it may not have met the minimum number, or date requirements of this report. Efforts are being made to increase the coverage of sampling, and numbers of samples have increased each of the past several years. Please continue your efforts in participating in environmental groups. It is an invaluable source of assistance that aids in protecting Hawaii’s waters.

**Commenter 6:** Alicia Mallo, Lahaina, Maui, email dated Jan. 17, 2007

**Comment 6.1** *“I am deeply concerned about the state of offshore reefs. The lack of monitoring in these areas concerns me. I feel there need to be funds allocated to test waters offshore including the entire marine sanctuary. These offshore areas within the 100 fathom mark off of Maui are highly protected but there is no testing to ensure that we are meeting the highest standards as set for these waters”*

**Response:** It is hoped that offshore monitoring will resume on a regular basis this calendar year.

**Comment 6.2** *“Agricultural runoff in the near coastal zones is also of high priority to me. I request full funding for monitoring in areas of known nearby agricultural zones and full data collection and reporting.”*

**Response:** Runoff continues to be a major concern for DOH, and much effort is put into minimizing this type of pollution and in finding ways to prevent them. Best Management Practices (BMPs) are stressed for applicable projects, and are required for permitted projects. A large source of assistance in preventing runoff actually originates from the general public, in the form of individuals alerting DOH of problem areas. This type of assistance is greatly appreciated and the public is encouraged to continue these grass roots efforts.

**Comment 6.3** *“In reference to the Maui Stream Waters table, it seems that most of the areas still have insufficient data for us to ensure Maui’s residents of clean water. I support full funding for monitoring, data collection and reporting along with full corrective actions as needed to ensure our future clean water supply.”*

**Response:** The 303(d)/305(b) report documents the condition of all State waters, and lists those that are impaired under State standards. It is not however, a direct source of funding. The waters of Maui as well as the other islands do have to be prioritized based on available resources.

**Comment 6.4** *“Your report indicated that there is insufficient data to make a proper assessment of the Honokohau streams which is the water I drink. Coming from an urban and agricultural area of California where I could drink tap water that was clean, pure and tasted good, it was appalling to me after moving to Maui, a tropical paradise, to find that my water for drinking was contaminated, and yet it is supplied by the COUNTY OF MAUI. I itch after every shower!”*

**Response:** The Honokohau streams are currently not being used as drinking water sources by the County of Maui Department of Water Supply. Drinking water for the Honokohau provided by County’s public water system is currently supplied by wells in Kapalua and must meet Federal and State drinking water standards.

Information regarding the quality of water being supplied to you by your public water system may be obtained by contacting your public water supplier and request a “Water Quality Report”. This report is required annually and must be provided to consumers.

**Commenter 7:** Lucienne de Naie, Haiku, Maui, email dated Jan. 17, 2007

**Comment 7.1** *“I am concerned about impacts to the quality of many of our marine waters due to runoffs of nitrates and other contaminants from non point source pollution, especially along the West Maui and South Maui coastlines. I hope that this report will result in increased funding so that these sites can be regularly monitored and neighboring*

*landowners can be brought into compliance, so as not to continue to discharge these pollutants”*

**Response:** Runoff and its contents (such as nitrates, etc.) continue to be a major concern for DOH, and much effort is put into minimizing this type of pollution. Best Management Practices (BMPs) are stressed for applicable projects, and are required for permitted projects. A large source of assistance in preventing runoff actually originates from the general public, in the form of individuals alerting DOH of problem areas. This type of assistance is greatly appreciated and the public is encouraged to continue these grass roots efforts.

The Water Quality Monitoring and Assessment Report documents the condition of all State waters, and lists those that are impaired under State standards. This information can be used to support funding requests for monitoring, assessment and corrective action. However, changes in the extent of water quality impairments and monitoring and assessment needs from one reporting cycle to the next do not guarantee similar changes in funding.

**Comment 7.2** *“I am concerned about 7 houses that have been recently constructed immediately North of Puu olai in Maui which are dependent upon septic tanks systems for their sewage needs. This area has some of the most friable soils on the whole Island of Maui and the houses overlook an ancient fishpond and wetlands which could be impacted by their leach fields. The wetlands area has a green growth on it since the houses have been constructed. There should be monitoring done at this site to make sure that nutrients are not entering the groundwater table and impacting the wetland processes. I noted in your above listed report that waters just off this area adjacent to Puu ola’i (Oneuli Beach) already have some impairment problems listed.”*

**Response:** Thank you for notifying us about this particular area. Public assistance is an invaluable asset in maintaining Hawaii’s environmental health. Your information will be sent to the Clean Water Branch representative on Maui for investigation.

**Comment 7.3** *“I hear constant citizen complaints about water quality at Baldwin beach park just outside Paia in Maui. Surfers and swimmers are subject to staph infections and the area where Kailua gulch meets the sea has flooded with muddy waters several times in 2006 closing the whole beach park. This area should be given more of a priority in terms of efforts to create natural riparian restoration in Kailua gulch that can help minimize the floods and allow storm waters to be absorbed and filtered mauka of the coastal dunes. This is a very popular area with visitors and residents that needs to have the healthiest possible conditions.”*

**Response:** Thank you for your concern. We will pass this information on to our Polluted Runoff Control program. They may be able to find a group interested in working on a natural riparian restoration project.

**Comment 7.4** *“I support statewide groundwater quality standards being put in place to protect not only our drinking water, but also aquatic life in our streams and oceans. Groundwater interacts at all levels of our water supply. As a user of well water from the Honopou aquifer, I would be willing to submit water samples to be used as part of the State data collection and testing program if one were established.*”

**Response:** In order to assure that drinking water quality remains safe, all groundwater sources of drinking water are periodically monitored for a number of chemical parameters by the Maui Department of Water, private water system owners, and the Department of Health, as required by Federal and State drinking water requirements.

Information on the quality of groundwater used as drinking water sources, that provide water to the water systems that serves your area, are available annually (every July 1) through your public water system. Contact your public water system to request a copy of the “Water Quality Report” for your water system. This report is required annually and must be provided to consumers.

While there are no standards developed specifically for groundwater quality, Hawaii utilizes applies drinking water standards when testing groundwater and surface water sources for drinking water purposes. As you might expect these standards are set to make water safe for human consumption. New sources of water are not allowed to serve public water systems without demonstrating that they serve water meeting safe drinking water standards or are required to use effective treatment technology prior to their approval.

Standards (guidelines) for groundwater quality also exist through various environmental protection programs (UST/LUST, State Superfund, Pesticides, etc.) which must evaluate the quality of groundwater when determining remediation of potential contaminating activities. These standards and guidelines, along with other information on new and emerging contaminants and identification of potential sources of contamination will provide the basis for the Groundwater Protection Program to develop and implement a comprehensive groundwater quality monitoring plan and program to assess the quality of groundwater resources in the State. Please keep in mind that such a monitoring program may be costly and may not be fully funded.

Also, thank you for your offer to submit water samples as a user of well water from the Honopou aquifer. The State must follow EPA-approved quality assurance (QA) and quality control (QC) procedures that are based on scientific protocols for sampling and testing drinking water to assure that the test results meet EPA standards. Since funding does not allow us to collect samples from every water well, groundwater monitoring program criteria regarding locations for collecting samples, testing parameters, and other factors will be evaluated in the selection of wells that will actually be sampled. If your well meets these criteria, we could welcome your participation in an appropriate groundwater monitoring program. If there are direct connection between the Honopou aquifer and downgradient surface waters, it may be useful to test your well within the

context of a surface water monitoring program that seeks to identify and quantify groundwater sources of pollutants.

**Comment 7.5** *“There is a great need for the State and County to partner and commission testing of groundwater for multiple contaminants in the Central Maui aquifers (Waikapu, Kahului, Paia, Kamaole) since all of these are being proposed for municipal water sources in the future.”*

**Response:** The State Department of Health (DOH) works with Maui County Water Supply Department to monitor, test, and treat all public drinking water sources to ensure that drinking water meets the EPA and the State’s drinking water standards.

Additionally, there are several mechanisms in place to review proposed future water sources. First, through the Department of Land and Natural Resources - Commission on Water Resources Management (CWRM) proposed new wells must undergo an application and review process. Secondly, the Department of Health - Safe Drinking Water Branch requires that all new drinking water sources serving public water systems must undergo a review and approval process (including preliminary water quality testing) prior to allowing the water to be used for drinking/human consumption.

Finally, through its Source Water Assessment and Protection and the Groundwater Protection Program, the DOH conducts source water assessments and is developing a comprehensive groundwater quality monitoring plan and program to assess and protection the quality of groundwater resources in the State.

**Commenter 8: Michael Howden, Member, Maui County Board of Water Supply, email dated Jan. 17, 2007**

**Comment 8.1** *“...I can see that there are numerous injection wells either on or close to the ocean. All these injection wells need to be monitored for potential pollution both of our near shore waters and also of our connected aquifers.”*

**Response:** DOH is looking at new ocean monitoring sites selected near injection wells and at better coordination with the monitoring of onsite disposal systems and their interaction with surface waters.

**Comment 8.2** *“So much water is taken illegally and without adequate compensation to the public interest from throughout the East Maui Watershed, to the detriment of the natural ecologies of these streams, as well as to cultural uses such as taro growing. What is left in these streams cannot support taro cultivation and is indeed a health concern as inadequate stream flow supports disease mechanisms such as leptosporosis and giardia. All these water resources need to be monitored to insure adequate instream flows. This is imperative especially with Na Wai Eha, where large corporate owners have not cooperated in supporting the public interest.”*

**Response:** Insuring adequate quantities of water for supporting natural ecologies, taro cultivation and protecting humans from water-related diseases is primarily the responsibility of the State of Hawaii Commission on Water Resource Management (CWRM). The Department of Health has a strong interest in water quantities. Instream flows for many streams in East Maui and Na Wai Eha (DOH) are currently the focus of various CWRM administrative proceedings. One East Maui waterbody (Ohia Stream) and Na Wai Eha are currently listed as impaired waters by the DOH. Although none of the listed impairments are explicitly connected with non-attainment of existing cultural uses, related designated uses (including protection of native breeding stock, recreation, aesthetic enjoyment, domestic water supplies, and agricultural water supply), or with protection from disease mechanisms such as leptospirosis and giardia, various water quality criteria (including temperature, conductivity, salinity, dissolved oxygen, pH, turbidity, TSS, nitrogen, phosphorous, enterococci, and toxicity) are implicitly connected with these use attainments and health protections. One of Na Wai Eha, Iao stream, is listed as a medium priority for the development of turbidity and trash TMDLs. While there are no current plans to monitor or assess any of these streams for the attainment of existing cultural uses, related designated uses, and public health risk from specific disease mechanisms such as leptospirosis and giardia, the TMDL process and other DOH water pollution control and water quality management programs can provide mechanisms for planning and conducting these kinds of monitoring and assessment activities.

**Comment 8.3** *“Groundwater is the most important resource for the community at large; it is also the most neglected and subject to continuous pollution/impairment, especially from the large agricultural corporations such as HC&S and MLP. Known carcinogenic chemicals are freely used directly over our connected aquifers, to the detriment of the public at large. All wells, whether public or privately owned, need to be accurately monitored both for pollutants and to gauge sustainable withdrawal.”*

**Response:** To ensure that water continues to be safe for human consumption, groundwater sources of drinking water (for public water systems) are periodically monitored for a number of parameters by the Maui Department of Water Supply, private public water suppliers, and the Department of Health, as required by Federal and State drinking water requirements. Individual wells owners are responsible for water quality testing of their wells.

Since it is not possible to sample all wells for all possible pollutants, the DOH-SDWB will use drinking water standards and groundwater remediation guidelines, along with information on new and emerging contaminants, identification of potential sources of contamination, and other factors to provide the basis for prioritizing monitoring efforts as we development and implementation of a comprehensive groundwater quality monitoring plan and program to assess the quality of groundwater resources in the State. Please keep in mind that such a comprehensive monitoring program may be very costly and may not be fully funded. Therefore the DOH-SDWB must have a mechanism in place to prioritize its non-regulatory monitoring activities.

The State Department of Natural Resources (DLNR) - Commission on Water Resources Management (CWRM) is the agency that is responsible for managing water quantity withdrawals and monitoring groundwater table levels in aquifers to ensure sustainable withdrawal. Individual private wells are subject to certain construction and reporting requirements.

**Comment 8.4** *“There is so much information to be gathered that is necessary for the public interest, especially for the equitable distribution and care of our water resources. The government’s participation and support of such monitoring would be greatly appreciated by our island residents.”*

**Response:** The State DOH monitors all public drinking water sources for contaminants regulated by the Safe Drinking Water Act. See response above to Comment 7.4

The State Department of Natural Resources (DLNR), Commission on Water Resource Management (CWRM), as well as county water supply departments monitor the pumping rates and freshwater levels in drinking water aquifers to monitor a sustainable withdrawal. Individual private wells are subject to certain construction and reporting requirements, but water quality testing is typically the owner’s responsibility.

**Commenter 9:** Janet Hashimoto, Chief, Monitoring and Assessment Office, Region IX, U.S. Environmental Protection Agency, email dated Jan. 18, 2007

**Comment 9.1** *“It should be consistently noted that the time frame for establishing TMDLs is 8 to 13 years for the date of the original listing. Although the TMDL activities of DOH are negotiated each year, EPA policy is to complete TMDLs within 13 years of the original listing. EPA suggests the removal of the sentence in Part 2, page 6”[T]his schedule is negotiated on a continuing basis and is influence by...,” and replace with the same presented in Part 1, page 8, “[T]he time frame for establishing TMDLs should be 8 to 13 years fro the date of the original listing.”*”

**Response:** For the purposes of this document, the DOH prefers to emphasize federal requirements (Clean Water Act and Code of Federal Regulations) rather than EPA policy. To maintain internal consistency in the final report, we removed the three sentences presented in Chapter I, page 7, beginning with "Computation of Total Maximum Daily Loads..." and replaced them with the language presented in Chapter II, page 3, 6 and 7.

**Comment 9.2** *“Also, the DOH TMDL development plans described in Part 2, page 20 need to be reviewed and updated.”*

**Response:** The TMDL development plans were reviewed and updated, and are now described in Chapter II, page 27.

**Comment 9.3** *The Assessment Decision Table in Part 4 does not appear to show a consistent logic in applying multi-category designation to all waterbodies. ...EPA suggests that DOH reevaluate, provide a consistent logic for category designation, provide specific clarification and justifications for any deviation from the logic, and revise the table and pertinent text accordingly.*

**Response:** We added a description of the logical framework for multi-category designation to the final report (p. I-28); and reviewed the Assessment Decision Table in Chapter IV for consistency with this framework;

Logical framework for making waterbody attainment decisions (Rules of Logic):

1. Neither the State Water Quality Standards nor existing state policy explain the relationship between water quality criteria attainment and designated use attainment.

2. Attainment of one or more water quality criterion (including all narrative and numeric criterion) does not establish attainment of one or more designated uses (with exceptions, see below)

3. Non-attainment of a single water quality impairment criterion (including all narrative and numeric criterion) establishes a water quality impairment.

4. Categorization designations (waterbody attainment decisions) have the following meanings, and are applied to all waterbodies according to these Rules of Logic (1.-5.) and the 2004 Priority Ranking and Listing/Delisting Criteria for Hawaii State Surface Waters:

Category 5 - one or more designated use non-attainments or water quality impairments.

Category 4 - one or more designated use non-attainments or water quality impairments, but a TMDL is not needed.

Category 3 - insufficient data for determining designated use attainment and water quality impairment.

Category 2 - one or more designated use attainments

Category 1 - all designated uses attained

5. Limited Designated use attainment is established as follows:

Recreational use - attainment of enterococci criteria (exception to 2. above)

Native aquatic stream life use - results of HSBP

Any use - results of Use Attainability Analysis

So in effect, when we break down the inland waterbodies into their classifications, we are left with two main uses, Class 1 and Class 2. The class 1 is further divided into Class 1a and 1b. The bolded uses are the only ones for which an attainment decision is readily available based on the application of the rules of logic above.

*General Class 1 uses:*

1. **recreational purposes - attainment of enterococci criteria (exception to 2. above)**
2. **support and propagation of aquatic life - Subsistence fishing use - results of tissue toxicity testing (and human health risk assessment if warranted) or results of HSBP (including designated reference sites)**
3. agricultural and industrial water supplies – undefined parameter combination
4. shipping, and navigation - undefined parameter combination

*Class 1.a*

1. scientific and educational purposes- undefined parameter combination
2. **protection of native breeding stock - results of bioassessment (including designated reference sites)**
3. baseline references from which human caused changes can be measured - undefined parameter combination
4. **compatible recreation - attainment of enterococci criteria (exception to 2. above)**
5. aesthetic enjoyment - undefined parameter combination
6. other nondegrading uses which are compatible with the protection of the ecosystems associated with waters of this class - undefined parameter combination

*Class 1.b*

1. domestic waters supplies – undefined parameter combination
2. food processing – undefined parameter combination,
3. **protection of native breeding stock - results of HSBP (including designated reference sites)**
4. **the support and propagation of aquatic life - results of HSBP (including designated reference sites) and/or results of tissue toxicity testing (and human health risk assessment if warranted)**
5. baseline references from which human-caused changes can be measured, - undefined parameter combination
6. scientific and educational purposes - undefined parameter combination
7. **compatible recreation - attainment of enterococci criteria (exception to 2. above)**
8. aesthetic enjoyment- undefined parameter combination

*Class 2 uses*

1. protection and propagation of fish, shellfish, and wildlife- undefined parameter combination
2. **recreation in and on these waters - attainment of enterococci criteria (exception to 2. above)**

**Comment 9.4** “We also noted that “Table 7: List of Changes to 2004 Listed Coastal Waters” was not included in your Public Notice.”

**Response:** We have included the missing table 7 in our final submission of the report.

**Commenter 10:** Carl Berg, Hanalei Watershed Hui, Hanalei, Kauai, email dated Jan. 16, 2007

**Comment 10.1** *“[Part 1] Pg 10 and pg 15. There does not appear to be sufficient evidence to establish Clostridium standards and material cited as footnote #4 is not in a scientific peer-reviewed journal. Therefore the use of Clostridium as even as a secondary indicator is of suspect value.”*

**Response:** EPA allows the DOH to use clostridium perfringens as a secondary indicator/tracer for protecting public health and welfare. We do not intend to pursue establishing a Clostridium standard for Hawaii. However, both the DOH and C&C of Honolulu find value in the use of Clostridium perfringens as a secondary indicator/tracer. Currently Enterococcus has been shown to be an unreliable indicator (BEACH Conference 2006). Several sewage spills on Oahu in 2006 show that Enterococcus is ineffective during any rain event. Since no single indicator looks very promising for the next 2 to 3 years, we need to have a “tool box” approach to make decisions. (There was an “Experts” meeting in March 2007, convened by EPA for the purposes of reviewing and finding new indicators and to respond to the NRDC lawsuit). Until, EPA develops new indicator standards, DOH will continue to use Clostridium perfringens as a secondary indicator in a “tool box” approach.

**Comment 10.2** *“Were the secondary checks in question for the Hydrolab multiprobe only? Then what relevance does that have to either turbidity measurements taken with another machine, or with the Enterococcus values determine by the DOH laboratory. You are getting rid of much valuable data. In addition, the review does not include the extensive data sets collected by HWH under the Target Watershed Initiative program. This includes valuable nutrient and turbidity data, as well as Enterococcus data. The rejection of these data severely jeopardizes the accuracy of the determinations for streams estuaries in Hanalei Watershed.”*

**Response:** Please understand that the Hydrolab and nutrient data will not be completely tossed out; only not used for this reporting cycle. The use of the Hach turbidity, Hydrolab and nutrient data along with the microbiological data for the report was discussed at length, and it was decided that for this report the Hydrolab and nutrient data would not be used. These data would be reevaluated for the next cycle, and there is a possibility that it may be used for the next report. There were missing calibrations, secondary checks, and secondary check violations for the Hydrolab. After discussion, both the microbiological and Hach turbidity data have been included in the assessment. The tables now reflect the additional data.

**Comment 10.3** *“Note that Hanalei Bay and the North Shore of Kauai are part of the National Marine Sanctuary. This should be specifically noted in its classification.”*

**Response:** The marine Waterbody Demarcation Map for Kauai now shows the boundaries of the Hawaiian Islands Humpback Whale National Marine Sanctuary and

indicates its relationship with Class AA open coastal waters and embayments (p. III-19).

**Comment 10.4** “*Hanalei Bay at Waioli Beach Park turbidity values are available in DOH data collected by HWH.*”

**Response:** See Comment 10.2.

**Comment 10.5** “*Decision code NC= should be Ac=Attained*”

**Response:** This has been corrected.

**Comment 10.6** “*Waioli Stream rows for wet and dry should be next to each other. I question if enough sampling was done and over enough of the stream to make this determination. Was HWH data used?*”

**Response:** This has been corrected. No HWH data was submitted for the freshwater portion of Waioli Stream and the 2004 assessment decisions for the stream remain unchanged. (p. IV-2). Data was submitted for the bridge site and the mouth portions of the estuary, but the 2004 assessment decisions for the Waioli Stream Estuary remain unchanged. (p. IV-6).

**Comment 10.7** “*Pg. 45-48 the order in which these sites are listed seems haphazard, rather than with respect to geographical location. Many are misclassified coastal codes. I made correction mainly for the Hanalei area.*

- *Hanalei Bay Landing #156 and #93 should be combined. Check salinity. This is estuarine.*
- *Hanalei Bay Pavilion 158 & 92 should be combined. DOH has turbidity data from HWH collections and its own weekly collections. Check salinity. Estuarine?*
- *Hanalei Bay Mooring #157. Estuarine? HWH data does not support N*
- *Hanalei Bay at Pinetrees #159 = Waioli Beach #91. Estuarine? Where is DOH turbidity data?*
- *Hanalei Bay upstream from Dolphin #160 is Estuary, not bay, about 2 miles up-river.*
- *Waioli Stream Estuary #163 is estuary, not Bay. HWH submitted lots of data on bacteria, turbidity, and nutrients. All far exceed state standards.*
- *Hanalei Bay Weke Rd. #161 you have years of data for bacteria collected by both DOH and HWH. Also exceeds for nutrients and turbidity.*
- *Hanalei River HI385259 is where? What stations? Why not use all of the nutrient data?*
- *Pg. 46. Kalihiwai Bay should be next to Anini. DOH has data on turbidity. Should be estuary, not open coastal.*
- *Waimea, Lucy Wright Beach Co. Park is Estuary. DOH data is available.*
- *Pg. 47. Waikoko should be back in Hanalei Bay. HWH provided data on turbidity, nutrients, and bacteria. One of the most polluted places.*

- Pg. 48. *Waipa Stream Estuary should be back in Hanalei Bay. HWH provided data on turbidity, nutrients, and bacteria. One of the most polluted places.*”

**Response:** Data was checked for the sites mentioned, and changes made where applicable as shown in the table below. Please refer to Table 7 – Change Table and Chapter IV for details.

Location	Waterbody Type	Notes
<i>Hanalei Bay Landing #156</i>	B	These two areas were combined into one unit (HIW00093). Geographically this is a marine waterbody, not an inland waterbody (not an estuary).
<i>Hanalei Bay Landing #93</i>	B	
<i>Hanalei Bay Pavilion #158</i>	B	These two areas were combined into one unit (HIW00092). Both DOH and HWH turbidity data have been included in the final assessment. The assessment result for turbidity changed from “?” (unknown) to “N” (not attained). Geographically this is a marine waterbody, not an inland waterbody (not an estuary).
<i>Hanalei Bay Pavilion #92</i>	B	
<i>Hanalei Bay Mooring #157</i>	B	HWH microbiological data for this site was not readily available and/or not found, but may be resubmitted and reconsidered for the next monitoring and assessment cycle. Geographically this is a marine waterbody, not an inland waterbody (not an estuary).
<i>Hanalei Bay at Pinetrees #159</i>	B	These two areas were combined into one unit (HIW00091). Both DOH and HWH microbiological and turbidity data have been included in the final assessments. The assessment result for enterococci (microbiological) changed from “N” (not attained) to “A” (attained). The assessment result for turbidity changed from “?” (unknown) to “N” (not attained). Geographically this is a marine waterbody, not an inland waterbody (not an estuary).
<i>Waioli Beach #91</i>	B	
<i>Hanalei Bay upstream from Dolphin #160</i>	E	HIW00160 has been designated as an estuary.
<i>Waioli Stream Estuary #163</i>	E	HIW00163 has been designated as an estuary. HWH data for this site was not readily available and/or not found, but may be resubmitted and reconsidered for the next monitoring and assessment cycle. Regardless, HWH nutrient data would not be used for current assessment decisions (see response to Comment 10.2), and the current assessment decision for turbidity (“N”, not attained) would be unaffected by additional HWH data if those data “far exceed state standards.”

<b>Location</b>	<b>Waterbody Type</b>	<b>Notes</b>
<i>Hanalei Bay Weke Rd. #161</i>	E	These two areas were combined into one unit (HI385259) that has been designated as an estuary. Both DOH and HWH microbiological and turbidity data have been included in the final assessments. The assessment results for enterococci (microbiological) changed from “?” (unknown) at Weke Rd. and “N” (not attained) at Hanalei River to “N” (not attained) at HI385259. The assessment result for turbidity remained unchanged. HWH nutrient data was not readily available and/or not found for this area, but may be resubmitted and reconsidered for the next monitoring and assessment cycle. Regardless, HWH nutrient data would not be used for current assessment decisions (see response to Comment 10.2).
<i>Hanalei River HI385259</i>	E	
<i>Pg. 46. Kalihiwai Bay</i>	C	The waterbodies remain arranged alphabetically, rather than geographically, for ease of organization and reading. DOH turbidity data have been included in the final assessments. The assessment result for turbidity remained unchanged. Geographically this is a marine waterbody, not an inland waterbody (not an estuary).
<i>Waimea, Lucy Wright Beach Co. Park</i>	C	Lucy Wright Beach Co. Park was renamed Waimea Bay Beach (Near River station). Geographically this is a marine waterbody, not an inland waterbody (not an estuary). DOH microbiological data have been included in the final assessments. The assessment result for enterococci changed from “N” (not attained) to “A” (attained) due to the inclusion of clostridium data in the microbiological assessment.
<i>Pg. 47. Waikoko</i>	E	The waterbodies remain arranged alphabetically, rather than geographically, for ease of organization and reading. HWH data for these sites was not readily available and/or not found, but may be resubmitted and reconsidered for the next monitoring and assessment cycle. Regardless, HWH nutrient data would not be used for current assessment decisions (see response to Comment 10.2), and the current assessment decisions for turbidity (“N”, not attained) would be unaffected by additional HWH data if those data confirm each of these two places as “One of the most polluted places.”
<i>Pg. 48. Waipa Stream Estuary</i>	E	

**Commenter 11:** Thomas Young (Member, Hilo Bay Watershed Advisory Group Steering Committee and Member, Hamakua Soil and Water Conservation District), Les Takayama (Chair, Waiakea Soil and Water Conservation District) and Lesley Hill (Chair, Hamakua Soil and Water Conservation District), email dated Jan. 16, 2007

**Comment 11.1** *“As a member of the Hilo Bay Watershed Advisory Group (HBWAG) Steering Committee, I have been authorized by the group to **formally request an additional two weeks to allow us adequate time to provide you with our comments on the current Draft 2006 Integrated Report of Assessed Waters in Hawaii Prepared Under Clean Water Act §303(d) and §305(b)** -- via a fully coordinated commenting letter which will be coming to you from our HBWAG Spokesperson.”*

**Response:** We regret that your request for an extension of the public comment deadline could not be granted due the pressing nature of our obligation to submit the final report to EPA.

**Comment 11.2** *“Inappropriate Listing - I believe that the decision to list the Alenaio and Waiakea Streams during the 2004 listing cycle was inappropriate and should be corrected by de-listing these streams at the present time.”*

**Response:** The decision to list Alenaio and Waiakea streams was issued by EPA on March 02, 2002. Since that time, the data required to revisit this decision (as established in the Listing and Delisting Criteria for Hawaii State Surface Waters in 2002, 2004, and 2006) has not been readily available, and therefore the streams cannot be delisted.

**Comment 11.3** *“The Alenaio and Waiakea streams are ephemeral streams along their full reaches. Because of the lack of water flow or any permanent or semi-permanent aquatic habitat in these ephemeral streams and after discussions with biological experts familiar with these specific areas, we question the existing uses of the streams (using the regulatory definition of that term). I would like clarification on the declared existing use and the designated use, if there are any.”*

**Response:** Water does flow in ephemeral streams and can sustain occasional, semi-permanent, and permanent aquatic habitat (including hyporheic ecosystems) and riparian, floodplain, and other terrestrial habitat that supports the protection and propagation of fish, shellfish, and wildlife and/or supports recreation in and on the streams. We would like to obtain contact information for "the biological experts familiar with these specific areas" so that we may consult with them.

"Existing uses" means those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards (HAR §11-54-1). Although various "existing uses" of Hawaii streams have existed and been declared by various parties over the last 31 years, DOH has not comprehensively surveyed this history to determine the scope of these uses and the previous extent of their official acknowledgement by DOH.

Designated uses of all Hawaii streams (including "Intermittent Streams" as defined in HAR §11-54-1) are declared by HAR §11-54-3(b)(1)(A), §11-54-3(b)(1)(B), and §11-54-3(b)(2) and vary with stream class (1.a., 1.b., and 2.). Alenaio and Waiakea are class 2 streams, in which "The uses to be protected [designated uses] ... are all uses compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters" [HAR §11-54-3(b)(2)]. Given that "The objective of class 2 waters is to protect their use for recreational purposes, the support and propagation of aquatic life, agricultural and industrial water supplies, shipping, and navigation," we assume that such uses are usually compatible with class 2 designated uses. We request any information validating or invalidating the existence of such uses in Alenaio and Waiakea streams. Among such uses, stream characteristics suggest that shipping and navigation are not "existing uses" of these streams, while all the others may exist.

Although we're not sure about the context of public comments and questions about the "appropriateness" of the declared uses (appropriate with regard to what, or for what purpose?), in the most fundamental context determining the appropriateness of these uses would require us to determine the appropriateness of their enabling legislation, which would be a matter for consideration by the United States Congress and the DOH water quality standards review process.

Given the broad declaration of designated uses in the State water quality standards, it is easier to determine if an "existing use" is a designated use than vice-versa. For example, support of traditional and customary native Hawaiian beliefs, values, and practices, along with many of the other "reasonable and beneficial uses" and instream uses protected under the State Water Code (Hawaii Revised Statutes Chapter 174C), are existing uses of streams (including Alenaio and Waiakea) that are generally compatible with their designated uses.

**Comment 11.4** *"A Use Attainability Analysis should be conducted - Due to these factors, I respectfully request that the DOH conduct a Use Attainability Analysis to ensure that the actual uses can be attained."*

**Response:** We question the need for and benefit of conducting a Use Attainability Analysis (UAA) to ensure that actual uses can be attained, since an "existing use" (if this is the intended meaning of "actual use") is by definition attained (no UAA necessary). When requesting that DOH consider removing or revising designated uses for state waters, please identify the particular uses to be removed or the specific revisions to be considered. Even if DOH removed or revised designated uses for streams (including "Intermittent Streams" as defined in HAR §11-54-1), they would still be state waters and would still be regulated by the pertinent water quality criteria, anti-degradation policy, and water quality certification requirements established by the State Water Quality Standards (HAR §11-54) and by NPDES permit requirements (HAR §11-55). Also, the pollutant loads that they carry to receiving waters (in this case, downstream estuaries and Hilo Bay) would still be subject to TMDL load allocations [Clean Water Act §303(d)]. Unless there is significant socioeconomic harm that could potentially be softened or reversed by removing or revising designated uses,

or significant ecosystem, water pollution control, or water quality benefits that would result, conducting a UAA is a low-priority or unnecessary task that would inappropriately drain our limited environmental health program resources.

The State regulatory framework includes broad definitions of designated uses that are not, in general, specifically attached to particular water quality criteria and/or attainment assessment methodologies. We encourage public participation in the water quality standards review and revision process to help us make this framework more understandable and more useful for water pollution control and water quality management.

**Comment 11.5** *“Sampling Questioned - I am very concerned that due to the infrequency of rainfall during the study period, the USGS study was unable to accumulate baseline data. ... In addition, the data quality for the Waiakea Stream was compromised by a major stream construction project that was conducted during the sampling study, at the mid-point on the stream between the USGS recording stations. ... Therefore I believe that the data collected at the lower USGS site has limited, if any, value and should not be used in establishing or modifying any model that will be used for the remaining one hundred and thirty two TMDLs to be done in Hawaii.”*

**Response:** The water level and streamflow data accumulated by USGS provides a continuous baseline of actual conditions for the entire period during which the instruments were deployed in each stream. As intended, the sediment and nutrient concentration data accumulated by USGS provides a baseline of water quality conditions across a range of streamflow conditions. Due to the infrequency of rainfall during the study period, instrument deployment was extended beyond the original contract period. This allowed us to sample the number and range of stormflow events originally intended for the project.

The value of the data collected is evaluated in the forthcoming USGS open file report “Suspended-Sediment and Nutrient Loads for Waiakea and Alenaio Streams, Hawaii, 2003 to 2006” and in the forthcoming DOH TMDL proposal. The data can be used for what it is – measurements of suspended sediment and nutrient concentrations at a single point in Waiakea Stream that were influenced at certain times by upstream construction activities. This does not limit the data's utility for describing actual water quality conditions and identifying the causes of those conditions. The data can still be used for modeling watershed response to land disturbance and rainfall, and thus can still be used for developing Waiakea Stream TMDLs and for informing the establishment and modification of models that will be used for remaining TMDLs.

**Comment 11.6** *“Future Cost Issues – I am very concerned that our limited public resources will be spent on costly projects that are meaningless and, if implemented, prove to be futile.”*

**Response:** We are also concerned with the best use of public funds. Please submit your recommendations and supporting rationale for specific waterbody/pollutant combinations that should be prioritized for TMDL development.

**Comment 11.7** *“Based on the inputs and concerns I have expressed above, I respectfully request that these two streams be de-listed and not considered for TMDL activity.”*

**Response:** The data required to de-list these streams (as established in the Listing and Delisting Criteria for Hawaii State Surface Waters in 2002, 2004, and 2006) is not readily available, therefore the streams cannot be delisted. The cutoff date for data that will be used for 2008 listing and de-listing decisions is November 01, 2007.

DOH must submit Alenaio and Waiakea TMDLs for EPA approval in order to fulfill current federal grant workplan commitments. Essentially, TMDLs are plans to achieve water quality standards. Thus as long as these streams cause or contribute to the non-attainment of existing uses, designated uses, water quality criteria, and/or the State's antidegradation policy in any state waters, they will remain in consideration for TMDL activity.

**Commenter 12:** Ann Fielding, Makawao, Maui, email dated Jan. 17, 2007

**Comment 12.1** *“I am concerned about storm runoff into the ocean, most particularly silt runoff as well as agricultural chemicals. I would like to see those chronically affected areas identified and assessed after wet weather events. I want to see pollution prevention and controls in place and support full funding for these activities.”*

**Response:** The sampling is performed year-round; so wet-weather events are captured as well as dry events.

**Comment 12.2** *“I would like to see the streams meeting all categories of attainment...I support full funding for complete monitoring, data collection, data reporting and subsequent corrective actions to ensure clean water quality for Maui's residents and future.”*

**Response:** The Water Quality Monitoring and Assessment Report documents the condition of all State waters, and lists those that are impaired under State standards. This information can be used to support funding requests for monitoring, assessment, and corrective action, it is not however, a direct source of funding. The sampling of the waters of Maui as well as the other islands does have to be prioritized based on available resources.

**Comment 12.3** *“ There are no water quality standards for our groundwater. This is the source of our drinking water. I am outraged by this. Your report states that 81% of our aquifers are highly vulnerable to contamination. We need standards to protect the quality of the water and monitoring to determine if the standards are being met. I request full funding to achieve these goals.”*

**Response:** While there are no standards developed specifically for groundwater quality, Hawaii utilizes drinking water standards when testing groundwater used for drinking

water purposes. Standards (guidelines) for groundwater quality also exist through various environmental protection programs (UST/LUST, State Superfund, Pesticides, etc.), which must evaluate the quality of groundwater when determining remediation of potential contaminating activities.

The statement in the report that 81% of our aquifers are highly vulnerable to contamination is based solely on the criteria defined in the “Aquifer Identification and Classification for Kauai, Oahu, Maui, Molokai, Lanai, and Hawaii: Groundwater Protection Strategy for Hawaii”, by John Mink and L. Stephen Lau. The criteria used to define “vulnerability to contamination” are whether the aquifer is “confined or unconfined” and based on the authors’ familiarity with environmental conditions. Vulnerability as defined here does not take into account location of potential contaminants, depth to the groundwater, or other environmental and contaminant factors.

To ensure that water continues to be safe for human consumption, groundwater sources of drinking water (for public water systems) are periodically monitored for a number of parameters by the Maui Department of Water Supply, private water suppliers, and the Department of Health, as required by Federal and State drinking water requirements. Information on the quality of groundwater used as drinking water sources, that provide water to the water systems that serves your area, are available annually (every July 1) through your public water system. Contact your public water system to request a copy of the “Water Quality Report” for your water system. This report is required annually and must be provided to consumers.

Finally, the Groundwater Protection Program is developing and implementing a groundwater monitoring strategy to provide more information about the condition of the State’s groundwater. This system will need first to establish a list of parameters that are indicative of groundwater quality, identify a number of analytical methods suitable for measuring these parameters, and develop a method for prioritization by which to approach the extremely large task of measuring groundwater quality statewide.

**Comment 12.4** *“I would like to see a laboratory on Maui where the public could take water samples for bacteriological testing and reporting.”*

**Response:** Commercial and public service laboratories are generally used for private/individual water quality testing. Laboratories are located primarily on O`ahu unless a neighbor island branch office is available. Commercial and public service laboratories include:

AECOS INC.  
45-939 Kamehameha Hwy, Suite 104  
Honolulu, HI 96744  
Phone: 808-234-7770  
Email: [aecos@aecos.com](mailto:aecos@aecos.com)

Food Quality Labs (FQ Labs)  
3375 Koapaka St., Suite G314  
Honolulu, HI 96819  
Phone: 808-447-3797  
Email: [fql@fqlab.com](mailto:fql@fqlab.com)

Oceanic Analytical Laboratory Inc.  
99-193 Aiea Hts. Dr., Suite 121  
Aiea, HI 96701  
Phone: 808-486-5227  
Email: [info@oceanic-labs.com](mailto:info@oceanic-labs.com)

University of Hawai`i-Manoa  
College of Tropical Agriculture and Human Resources (CTAHR)  
Agricultural Diagnostic Service Center (ADSC)  
1910 East West Rd., Sherman Lab 134  
Honolulu, HI 96822  
Phone: 808-956-6706  
Email: [adsc@ctahr.hawaii.edu](mailto:adsc@ctahr.hawaii.edu)

***Note: The Department of Health does not recommend or endorse any water quality testing laboratory.***

**Commenter 13:** Janet Ashman, Environmental Specialist, Hawaii Agriculture Research Center, Maui, email dated Jan. 19, 2007

**Comment 13.1** *“The use of photographs to assess water quality is scientifically unsound and unacceptable. As noted in the document itself, this practice is inappropriate and should not be used to support listings.”*

**Response:** Photographs are frequently used in enforcement actions to support determinations that violations of State water quality standards and/or permit conditions have occurred. Photographs are also an important part of the DOH weight of evidence approach to assessing the attainment of water quality standards. However, photographs used in the past as part of the State’s assessment methodology were given unreasonable weight in a previous federal court review of EPA’s approval of the State’s assessment decisions. As a result, the State revised its assessment methodology to clarify the limited role and weight of photographic evidence in assessment decisions. DOH does not assess water quality exclusively by photographic evidence, however the use of photographs in a weight of evidence approach to water quality assessment is scientifically sound, acceptable, and appropriate.

**Comment 13.2** “State Water Quality Standards cannot be met even under natural conditions. Natural levels of turbidity regularly exceed our state water quality standards set for turbidity. Other states account for their background levels as part of the standards

setting process and there is no sound justification for Hawaii to ignore our own conditions. Instead, our standards seem to have been set using drinking water standards. This is an impossibly high standard that is unnecessary and unrealistic.”

**Response:** There are many instances where natural conditions including turbidity are meeting the WQS, please refer to Chapter IV – Assessment table. Hawaii also accounts for background levels as part of the standards setting process, as documented in the technical rationales and other administrative records supporting the ongoing promulgation of these standards. We are not aware of any evidence in these records that our standards were set using drinking water standards. In fact, surface water standards are sometimes stricter than drinking water standards because of the smaller size of aquatic receptor organisms (e.g. fish v. humans) and their greater health risk from exposure to given pollutant concentrations throughout their lifecycle.

This Integrated Report evaluates existing data from the last 6 years against the standards and makes a yes/no statement regarding whether that Standard is exceeded. The new Integrated Report format gives more detail into WQS attained/not attained, as compared to the 2004 Listing format and is intended to show if the designated uses are being attained. There are many instances where natural conditions are meeting the WQS, please refer to Chapter IV - Assessment table. The issue of a amending WQS for any parameter is considered during the rule review cycle for the WQS, generally held every 3 years. We acknowledge your past comments and interest in participating in the workgroup for rulemaking. To continue this dialogue, please contact our office, or keep checking our website. Once a change is recommended for the WQS, the rationale document and public hearing meetings are included.

**Comment 13.3** *“Scientifically questionable habitat and biotic assessment protocol still being used. We continue to object to the use of the Hawaii Stream Bioassessment Protocol to assess stream health within the regulatory context. This protocol has been rejected as not scientifically rigorous and has no place in impairment determinations.”*

**Response:** DOH uses the Hawaii Stream Bioassessment Protocol (HSBP) to **help** evaluate the attainment of designated and existing native and other aquatic life uses protected by the Clean Water Act and the Water Quality Standards (WQS). The HSBP is not a water quality criterion per se. The new reporting structure specifically targets determining whether designated and existing uses are attained. The use of HSBP did not result in any listing of streams this year, however it did put several streams into Category 2 (some uses attained). DOH uses a weight-of-evidence in listing/delisting decisions, and the HSBP is another line of evidence.

Bioassessment methodology is well recognized and accepted throughout the country and is incorporated with Biocriteria in many states. Bioassessments are a tool to help measure habitat/biological conditions and serve three functions: 1) screening or initial assessment of conditions; 2) characterization of impairment and diagnosis; and 3) trend monitoring to document improvements or further degradation over time (see EPA 2002b).

Federal law allows (and encourages) the use of bioassessment for many CWA purposes: Aquatic Life Use Attainment [CWA section 305(b)]; Nonpoint Source Pollution Management (CWA section 319); TMDLs [CWA section 303(d)]; and NPDES permits (CWA section 402). The CWA has a national objective "to restore and maintain the chemical, physical and biological integrity of the Nation's waters" See CWA section 101(a).

The Hawaii Stream Bioassessment Protocol is the only written manual for assessment that contains a complete set of field procedures applicable to Hawaii's unique stream ecology and is part of our Quality Management Plan and Quality Assurance Program Plan. The only other available field protocol for stream assessments is the one developed by USGS for its National Water-Quality Assessment (NAQWA) studies in the United States, which focused primarily on the composition of stream sediments, water and fish at sites in Hawaii along Manoa, Waikele and Waihee Streams, and on groundwater quality at a number of sites on Oahu. DOH is aware of other assessment methodologies in Hawaii, but none offer a complete Quality Assurance protocol.

DOH combines water quality data with measurement of habitat and aquatic community parameters as part of our screening process for streams with respect to pollution sources. We are carrying out a technical ranking exercise, not a detailed study of each stream, which would provide ancillary information for our uses but not replace the ranking process for TMDL and project implementation use.

DOH uses the HSBP to evaluate the attainment of designated and existing aquatic life uses protected by the Clean Water Act and the Water Quality Standards (WQS). Currently, DOH uses a scoring system contained within the metrics of the protocols for evaluating the narrative criteria in H.A.R. section 11-54-04(a), which is applicable to all narrative descriptions obtained from fieldwork. This index of biotic integrity (IBI) quantifies the designated uses of aquatic life and native aquatic life. In this manner, the HSBP serves our needs.

The process by which we evaluate any potential new protocols is: a) review the methodology and its effectiveness in answering relevant questions; b) review the accompanying QA/QC plan; c) then apply the protocol and evaluate results against the narrative WQS criteria. If the proposed protocol is to be applied by DOH staff, we would need to incorporate it into the DOH Quality Management Plan, which is approved by EPA. HSBP has been accepted as an evaluation tool in our QMP.

The "level of scientific validity" is established for DOH by the use of carefully described methodologies and QA/QC procedures. Because science proceeds in a point-counterpoint manner, controversy over methodologies will always exist. Although there is argument over whether a metrics-based approach (HSBP) is appropriate for Hawaii's streams, we have not been able to adequately evaluate other approaches because of a lack of field manuals and QA/QC plans. In other words, we have too little information to evaluate data quality and relevance of these other approaches to DOH

water quality management needs. We are able to use the HSBP for water pollution/land use impact evaluations; these elements are missing from other approaches applied to the State's streams. The HSBP meets our program needs of determining whether a waterbody is meeting the designated or existing uses as defined.

**Comment 13.4** *“Listing of dry gulches with prioritization for TMDL development We fail to see the point of spending hundreds of thousands of dollars to try to determine whether a dry (undiverted) gulch that has no water in it except during heavy rainfalls and cannot support aquatic life, is impaired and requires TMDLs. Common sense must be applied to these determinations and expenditures of public resources.*

*Hawaii has limited resources and should use them to list truly impaired waterbodies so that TMDLs can be developed and implemented speedily for those waters that are in fact unhealthy.”*

**Response:** Dry gulches that flow in response to heavy rainfall can carry heavy pollutant loads into coastal waters. They are also state waters ("Intermittent Streams" as defined in HAR §11-54-1) regardless of their ability to support aquatic life, and are regulated by the pertinent designated uses, water quality criteria, anti-degradation policy, and water quality certification requirements established by the State Water Quality Standards (HAR §11-54) and by NPDES permit requirements (HAR §11-55).

Because the pollutant loads they carry to downstream receiving waters can be a considerable source of receiving water impairment, these dry gulches are therefore subject to TMDL load allocations [Clean Water Act §303(d)]. Essentially, TMDLs are plans to achieve water quality standards. Thus as long as dry gulches cause or contribute to the non-attainment of existing uses, designated uses, water quality criteria, and/or the State's antidegradation policy in any state waters, they will remain in consideration for TMDL development and implementation. This comment is also addressed in responses to comments 11.4., 11.6., and 11.7.

**Commenter 14: Sheldon Braidman, Kihei, Maui, email dated Jan. 19, 2007**

**Comment 14.1** *Marine and Estuaries: “Please note that there a better system is required and put into service for water quality testing, specifically bacteriological, to protect ocean users and ensure the health of the ocean around Maui County.”*

**Response:** The bacteria enterococcus is an indicator bacterium is intended to signal the presence of human sewage but enterococcus itself most likely will not make you sick. It is suppose to indicate the presence of other harmful bacteria or viruses closely associated with human sewage. The problem with enterococcus is that it reproduces in the environment and its presence does not always mean that there is human fecal contamination. We know that when it rains and the streams flow into coastal waters, the enterococcus counts go up. We see this statewide. To help us detect human fecal influences, we used supplemental indicator bacteria called Clostridium perfringens.

When we find high indicator counts, we investigate to find out why. If we know of a sewage spill, we have the beach posted without waiting for test results.

**Comment 14.2** *“I and many of my friends are members of the Maui Canoe Club and the Kihei Canoe Club. We are frequent ocean users. Combined club membership is approximately 350 people. Many of the coastal areas that we paddle in are not shown as tested areas for this bacteria known as Enterococcus. This is a serious concern.”*

**Response:** If you let us know where your canoe club regularly practices, we may be able to add that site on our monitoring list.

**Comment 14.3** *“It is my understanding that the Blue Water Task force projects where test for this specific bacteria were made, have shown that many times we are canoeing in contaminated waters.”*

**Response:** See Comment 14.1.

**Commenter 15:** Robin Knox, Boardmember, Maui Tomorrow, email dated Jan. 19, 2007

**Comment 15.1** *“We support the expansion of the geographic area of assessment units to include the larger waterbody area that the sampling station represents.”*

**Response:** Thank you for your comment. DOH will continue to refine the assessment unit description process to achieve a higher level of confidence in the use attainment decision exercise.

**Comment 15.2** *“We request that the report include the location of beach monitoring stations used in the assessment, preferably by mapping. We question whether 13 beach monitoring stations are sufficient for the entire island of Maui given the extensive shoreline, proximity of sewage sources to coastal areas, and large number of recreational users.”*

**Response:** There are actually more than the 13 sites listed. In total, there are currently 57 sites around Maui, although only a portion of these is sampled at any given time. The numbers vary, but are usually around 18 sites. Sites are rotated every 6 months, with coverage around the island. The number of samples and sites across the island has been increasing each year, and it is hoped that this coverage will continue.

**Comment 15.2a** *“We request that the monitoring strategy include locations where wet weather events cause elevated bacterial levels, and that sampling events include wet weather conditions. The monitoring strategy should coordinate shoreline monitoring with monitoring of contaminated runoff including streams that may be conveying bacteria to the shoreline.”*

**Response:** Sampling is performed year-round. It is known that the streams have high entero content, especially during periods of heavy rainfall and runoff. Areas of input into the coastal waters will have high counts, so sites are usually located away from these inputs. This enables a better picture of what the conditions of the beach is rather than what the stream is putting into the beach.

**Comment 15.2b** *“We request that the state post the bacterial data for recreational waters on the internet in a prominent and timely fashion so that the public may be informed of most current bacterial data.”*

**Response:** We will try to add additional stations in the future. Ideally, an additional staff member would be very helpful on Maui. Currently, we have only one staff member on Maui whose duties also include that of several other programs (Wastewater, Solid Wastes, and sometimes Clean Air). Our bacterial data is on the Clean Water Branch (CWB) website <http://emdweb.doh.hawaii.gov/CleanWaterBranch/WaterQualityData> and also on the Maui Chapter, Surfrider Foundation website <http://www.surfrider.org/maui/enterodata.htm>. We are in the process of improving the CWB website and will try to get the data up in a timely fashion.

**Comment 15.2c** *“We request that the monitoring program include bacteriological monitoring of open coastal waters, especially within the Hawaiian Islands Humpback Whale National Marine Sanctuary.”*

**Response:** We will consider bacteria monitoring on open coastal waters in the near future, pending staff and funding allocations. Since whales are mammals, they may also have the indicator bacteria, enterococcus in their gut. We know that seals have enterococcus in their gut. We will find out if whales have enterococcus are similar.

**Comment 15.2d** *“The report indicates that shoreline and offshore chemical monitoring has been curtailed due to limitations of available resources. We request that the DOH plan for full funding of this monitoring. The report indicates that not all marine waters have been assessed, and of those assessed, most are considered impaired by the levels of nutrients present. The continued monitoring and assessment of water chemistry is essential to protection of the fragile coastal ecosystems, including coral reefs. The monitoring data will be key to prioritization of the legally mandated Total Maximum Daily Load (TMDL) studies for the 219 coastal segments on the 2006 303(d) list.”*

**Response:** We are currently monitoring shoreline areas for nutrients and turbidity and are planning to start up offshore nutrient sampling again. We temporarily restricted offshore monitoring in favor of monitoring all streams in the State due to the lawsuit by Earth Justice against EPA.

The Water Quality Monitoring and Assessment Report documents the condition of all State waters, and lists those that are impaired under State standards. This information can be used to support funding requests for monitoring, assessment, and corrective

action. The waters of Maui as well as the other islands do have to be prioritized based on available resources.

**Comment 15.2e** *“We request that the monitoring program include testing not only for conventional and non-conventional pollutants, but also for toxic pollutants (heavy metals, organic chemicals, herbicides, pesticides). Every chemical for which there is a marine water quality standard should be monitored.”*

**Response:** Running tests for every toxic pollutant in the EPA standards is very expensive and beyond the budget of the program and DOH Laboratory. The Water Quality Monitoring and Assessment Report documents the condition of all State waters, and lists those that are impaired under State standards. The waters of Maui as well as the other islands do have to be prioritized based on available resources.

**Comment 15.3a** *“We request clarification of the methodology for attainment decisions for the Enterococcus standard. The report in Section C.1. (page 15 of 29) discusses the use of Clostridium perfringens as a secondary indicator of the presence of sewage. It is not clear whether the attainment decisions were made solely on the basis of the legal standard (Enterococcus) or were based on the use of the secondary indicator, C. perfringens. We strongly object to an attainment methodology that is based on anything other than the promulgated standard. C. perfringens should not be used as a criterion because it has not been subject to the rulemaking process and required public review. We request that all waters exceeding Enterococcus criteria be listed as non-attainment status without regard to the levels of C. perfringens present.”*

**Response:** At the 2006 Beaches Environmental Assessment and Coastal Health Act (BEACH) Conference, studies have shown that Enterococcus reproduces in the biofilm (slime) of pipes and drainage canals and is not a good indicator bacterium for human fecal contamination. That is why the DOH uses Clostridium as a secondary indicator. For general information about BEACH see <http://www.epa.gov/waterscience/beaches/>, and the 2006-conference information can be found at [http://www.tetrattech-ffx.com/beach\\_conf2006](http://www.tetrattech-ffx.com/beach_conf2006) as well as direct information about the 2006 BEACH Conference study on Entero in biofilms [http://www.tetrattech-ffx.com/beach\\_conf2006/pdf/sessionIX/ferguson.pdf](http://www.tetrattech-ffx.com/beach_conf2006/pdf/sessionIX/ferguson.pdf).

Dr. Roger Fujioka of the UH, Water Resources Research Center has been saying this for twenty years and is now being proven right. Natural Resource Defense Council (NRDC) recently sued EPA for not protecting the public recreational water users and EPA was supposed to come up with new methods/protocols by October 2005, which they did not. Please see [http://docs.nrdc.org/water/wat\\_07032301A.pdf](http://docs.nrdc.org/water/wat_07032301A.pdf) for more information. Current methods are over 20 years old.

DOH participated in an EPA conference call of States in response to the lawsuit. DOH also attended the Stakeholders Workshop in December 2006, in Washington DC to further its recommendations and nominate experts to the March 26-31, 2007 Experts Workshop in Warrington, Virginia to draw up new methods/protocols. The experts invited to the workshop were tasked to come up with new methods/protocols. Dr.

Roger Fujioka was invited to participate. Any changes to the recreational standards will need to go through public review process.

**Comment 15.3b** *“It is our understanding that the state is considering changing the current recreational bacteriological standards, specifically raising the criteria value from 7 cfu/100 ml to 33 cfu/100 ml. We request that DOH provide a written rationale that explains basis of current criteria and the basis of proposed criteria. We request public access via internet to data or reports that underlie the rationale. Because this is a complex issue of great concern to the public, we request an advance notice of rulemaking. We request that informational meetings be held on Maui prior to rulemaking in order to inform the public about the proposed change and the science and regulatory rationale supporting the change.”*

**Response:** We will provide a rationale for the proposed changes and public notice all documents. We acknowledge your request for informational meetings and we include the neighbor islands in all public meetings. The issue of amending WQS for any parameter is considered during the rule review cycle for the WQS, generally held every 3 years. If the public is interested in participating in the workgroup for rulemaking, please contact our office, or keep checking our website. Once a change is recommended for the WQS, the rationale document and public hearing meetings are included.

**Comment 15.4** *“We strongly support the Department in its efforts to collaborate with other state and federal agencies, private consulting firms, and volunteer monitoring programs. We believe such collaboration on monitoring will result in the most efficient use of taxpayer dollars. We urge the state to conduct outreach to county governments in order to strengthen the implementation of the water quality management program through county decision-making and permitting (such as Special Management Area permits). We urge the DOH to provide specific guidance regarding the design of water quality monitoring programs that are supportive of and compliment the state monitoring program.”*

**Response:** DOH agrees that collaboration is the most efficient means for quality results. These kinds of outreach and guidance efforts are in progress across all Department water quality programs. Both CWB and EPO staff are available for outreach activities on a time and resource available basis. DOH welcomes any data that can meet the rigorous EPA requirements. If groups are interested, please contact our offices.

**Comment 15.5** *“We request that the marine assessment report include documentation of public participation, in particular of the data submitted by parties other than DOH.”*

**Response:** This section fulfills this request

**Comment 15.6** *“We request that the marine waters assessment include a summary table of changes similar to that provided in Table 3 of the stream assessment report.”*

**Response:** The table is now included.

**Comment 15.7** *“We request that the marine waters assessment report include a table and mapping that clarifies waterbody types, decision unit boundaries and applicable criteria for each waterbody (see Table 2 of the streams assessment report for example).”*

**Response:** Maps and illustrations are very helpful tools. The Marine Waterbody Demarcation Maps show the approximate boundaries between some embayments and all open coastal waters and oceanic waters (three waterbody types) and the boundaries between Class A and Class AA marine waters (two waterbody classes). (p. I-19 to I-23). The State of Hawaii Administrative Rules Chapter 11-54 are available on the EPO website at: <http://www.hawaii.gov/health/about/rules/11-54.pdf> . These rules are the principal authority for clarifying waterbody types and applicable criteria. Decision unit boundaries define segments within a single waterbody type that are segregated from the entire extent of this single waterbody type for monitoring and assessment purposes.

**Comment 15.8** *“The report indicates that all streams assessed were placed into Category 3 (insufficient data to make a use support determination). We urge the DOH to plan for full funding for this program. We request monitoring of listed streams be increased to gather sufficient data for assessment. In addition we request that the monitoring program be expanded to include streams that were not included at all in the assessment due to lack of data.”*

**Response:** The Water Quality Monitoring and Assessment Report documents the condition of all State waters, and lists those that are impaired under State standards. This information can be used to support funding requests for monitoring, assessment, and corrective action. However, changes in the extent of water quality impairments and monitoring and assessment needs from one reporting cycle to the next do not guarantee similar changes in funding. The waters of Maui as well as the other islands do have to be prioritized based on available resources.

**Comment 15.9** *“We urge DOH to continue efforts to establish a comprehensive waterbody inventory. An inventory of the resources to be protected and proper classification of waterbody type and applicable standards is critical to protection of the quality of water resources.”*

**Response:** DOH is currently seeking fiscal resources to accomplish this task for our water management purposes. In the meantime, the Department of Land and Natural resources is nearing publication of an Atlas of Hawaii Watersheds.

**Comment 15.10** *“We strongly support the efforts of DOH to provide further definition of hydrologic units, waterbody types, and criteria for other waterbody types in addition to the streams”*

**Response:** WQS revision is a significant task that requires substantial resources to be allocated for data collection and interpretation. DOH is currently gathering information

for the next round of revisions; we would appreciate any direct contribution to the revision process. Please keep in contact with our office for notice of the next formal process to begin.

**Comment 15.11** *“The report indicates that groundwater quality standards have not been established for the state. We request that DOH make the establishment of groundwater quality standards the highest level of priority. It is clear that on Maui, the Safe Drinking Water Act alone is not adequate to protect the quality of our groundwater resources. We request development of criteria for use as source of drinking water supply, and for aquatic life protection of the freshwater and marine ecosystems which may ultimately be impacted by groundwater flows.”*

**Response:** While there are no standards developed specifically for groundwater quality, Hawaii utilizes drinking water standards when testing groundwater used for drinking water purposes. These standards and other drinking water requirements constitute the criteria for groundwater use as sources of drinking water.

Standards (guidelines) for groundwater quality also exist through various environmental protection programs (UST/LUST, State Superfund, Pesticides, etc.), which must evaluate the quality of groundwater when determining remediation of potential contaminating activities.

**Comment 15.12** *“The groundwater assessment identifies areas of existing groundwater contamination; great potential for additional contamination to occur, and classifies 213 Maui aquifers as” highly vulnerable to contamination”. The current assessment data appears to have come exclusively from testing of finished (treated) public water supply wells. This monitoring is simply not adequate for assessment of the quality of the groundwater resource. We request that DOH place the highest priority the establishment of an ambient groundwater monitoring network that includes not only aquifers that may be potentially used for drinking water, but also monitors areas with high potential for contamination of any aquifer. In particular, monitoring of groundwater quality under agricultural lands is needed. A review of the limited, available data indicate that this is the primary threat to Maui’s drinking water supply, as well as an exposure route for fertilizers, pesticides and herbicides to reach groundwater that eventually discharge to ocean waters and may impact sensitive marine systems.”*

**Response:** The statement regarding the classification of aquifers as “highly vulnerable to contamination” is based solely on the non-confinement criterion defined in the “Aquifer Identification and Classification for Maui: Groundwater Protection Strategy for Hawaii”, by John Mink and L. Stephen Lau. The criteria used to define “vulnerability to contamination” is whether the aquifer is “confined or unconfined” and based on the authors familiarity with environmental conditions. Vulnerability as defined here does not take into account location of potential contaminants, depth to the groundwater, or other environmental and contaminant factors.

The current assessment data is primarily, but not exclusively from testing of public water supply wells. Due to the high quality of the groundwater, most wells used to provide drinking water are simply disinfected prior to the water being provided to the public and therefore reflect the actual quality of the groundwater aquifer below. Some of the wells do indeed require treatment for the removal of chemicals which demonstrate the ability of certain chemicals to contaminate our aquifers.

We agree that it is inadequate to use drinking water data to assess the quality of the groundwater resource. Public drinking water wells represent approximately 450 of what has been estimated at over 3,000 wells statewide. In addition, we agree that an ambient groundwater monitoring network should be established in order to further this assessment. For this reason, and with EPA's concurrence, the Department of Health has initiated the development of a groundwater monitoring plan which would significantly expand our knowledge of the current quality of groundwater throughout the State.

In order to ensure that drinking water is safe, groundwater sources of drinking water are periodically monitored for a number of chemical parameters by the Maui Department of Water Supply, public water systems, and the Department of Health, as required by Federal and State drinking water requirements. Due to the fact that it is not possible to sample all wells for all possible pollutants, some form of prioritization will be necessary. The DOH-SDWB will use drinking water standards and groundwater remediation guidelines, along with information on new and emerging contaminants, identification of potential sources of contamination, and other factors to provide the basis for prioritizing monitoring efforts as we develop and implement a comprehensive groundwater quality monitoring plan and program to assess the quality of groundwater resources in the State. This comprehensive groundwater quality monitoring plan will include ambient water quality monitoring. Please keep in mind that such a comprehensive monitoring program may be very costly and may not be fully funded. Therefore the DOH-SDWB must have a mechanism in place to prioritize its non-regulatory monitoring activities.

**Comment 15.13a** *“The report indicates that the Comprehensive State Groundwater Protection Program is under review by EPA. The assessment report documents 29 different state programs or activities designed to protect our groundwater resources. Despite numerous programs and the involvement of three state agencies, groundwater quality on Maui is not being protected.”*

**Response:** The Environmental Protection Agency (EPA) has completed its review of the Groundwater Protection Program Strategy/Plan and has concluded that it does not fully incorporate comments from other agencies and does not analyze or propose how these agencies will work with the DOH to protect groundwater. As such, EPA has concurred with our proposal to move from strategy development to generating groundwater quality data to aid in better planning and decision making. The re-direction of the Groundwater Protection Program will move towards the development and implementation of a groundwater/drinking water quality monitoring program.

While there are no standards developed specifically for groundwater quality, Hawaii utilizes drinking water standards when testing groundwater for drinking water purposes. Standards (guidelines) for groundwater quality also exist through various environmental protection programs (UST/LUST, State Superfund, Pesticides, etc.) which must evaluate the quality of groundwater when determining remediation of potential contaminating activities. These standards and guidelines, along with other information on new and emerging contaminants and identification of potential sources of contamination will provide the basis for the Groundwater Protection Program to develop and implement a comprehensive groundwater quality monitoring plan and program to assess the quality of groundwater resources in the State. Please keep in mind that such a monitoring program may be very costly and may not be fully funded. The Hawaii Groundwater Protection Program currently operates on an annual budget of less than \$300,000 of Federal grant monies and no State funding.

Upon completion of the State Comprehensive Groundwater/ Drinking Water Quality Monitoring Program, the DOH-SDWB will provide for informational meetings to present the monitoring plan.

**Comment 15.13b** *“The Maui County Council was recently compelled by public outrage to legally ban the use of the Homokuapo wells for human consumption due to contamination with agricultural chemicals. This is a dismal indictment of the state’s efforts to protect groundwater quality.”*

**Response:** Maui County drilled the Hamakuapoko wells in 1992 and shut them down because the groundwater was contaminated with agricultural pesticides which included DBCP (1,2dibromo-3-chloropropane), EDB (ethylene dibromide), and TCP (1,2,3trichloropropane) which were allowed for use when applied for use long ago.

Maui County and the Honolulu Board of Water Supply employ granulated activated carbon (GAC) systems to remove pesticides from well water. The carbon in the GAC system absorbs the contaminants from the water, and once absorbed, the chemicals are not easily released. Treated groundwater must meet federal and state drinking water standards which are described in the response above to Lucienne de Naie. The well water can be treated to meet all federal and state drinking water standards. The county made a policy choice to ban the use of the wells, which is its prerogative.

**Comment 15.13b** *“We request that DOH hold informational meetings on Maui to present the plan to the public prior to the public comment period.”*

**Response:** Public informational meetings are an important part of the review process for the Comprehensive State Groundwater Protection Program Plan. Informational meetings on the Plan will be scheduled accordingly.

**Comment 15.14** *“We request that DOH include priority ranking for TMDLS for all waterbodies included on the 2006 303(d) list. We request that the schedule for completing those TMDLS be developed.”*

**Response:** Priority rankings for TMDLS for all waterbodies included on the 2006 303(d) list appear in Table 8. of the final report. We did not receive any public comments regarding priority rankings for specific waterbodies. Therefore we retained the ranking rationale described in our December 18, 2006 letter, whereby high priority for Total Maximum Daily Loads (TMDLS) development is assigned only to those waterbody/pollutant combinations for which TMDL development is currently in progress.

The schedule for completing those high priority TMDLS is explained on p. 27 of the final report.

**Comment 15.15** *“We request that future assessment reports include a section that provides information on the data underlying the assessment. We request that Meta data for data sets used in assessment be included. At a minimum the meta data should include contact information regarding owner of data and where data resides, database software or access needed, geographic area covered, parameters covered, and period of record.*

*We request that future assessment reports Include period of record, frequency of monitoring, and summary statistics for data used in the assessment to include: Minimum value, maximum value, mean or geometric mean, number of data points; coefficient of variability, and standard deviation.*

*We request that DOH move quickly to make environmental data more available to the public via internet, preferably as a searchable database.”*

**Response:** DOH recognizes the importance of data management and will continue to explore ways to provide more metadata and summary statistics in the report without making the report too large in overall size. For streams, a data summary table has been included on pg. 21. DOH has determined that a traveling window of 6 years is a representative temporal period. If you would like to see the data grouped for statistical purposes, please contact our offices and we can make the data available to you. DOH is also working on a real-time public access database to allow interested parties to evaluate the data via the Internet. There is currently no timeline available for this project.

**Comment 15.16** *“We request that the state revise the state water quality standards to include specific designated uses. This will make the applicability of criteria to a given waterbody clear and unambiguous. We request that the designated uses include use of surface water for drinking water supply. We also request that human health criteria for toxic pollutants be developed for surface waters designated for use as a drinking water supply.”*

**Response:** DOH started the requested revision process by adding a logical framework for making waterbody attainment decisions (for both water quality criteria and designated uses) for the 2006 water quality monitoring and assessment reporting cycle to the final report (p. II-28). Future amendment of the State Water Quality Standards, as well as future revision of water quality monitoring and assessment methodologies and decision criteria, provides the mechanisms for continuing this process. Your comments will be considered as part of the next WQS review, and we invite you to participate.

This comment is also addressed in responses to comments 4.1., 9.3., 11.3., and 19.2.

**Commenter 16:** Sharyn J. Matin, President, West Maui Preservation Association, email dated Jan. 19, 2007

**Comments are the same as those submitted by Commenter 15, Robin Knox of Maui Tomorrow. Please see those responses.**

**Commenter 17:** Sean O’Keefe, Director, Environmental Affairs, Alexander & Baldwin, Inc. Maui, email dated Jan. 19, 2007

**Comment 17.1** *“Most notably, detailed information regarding the analytical data used to make listing decisions is not included in the draft report, as it was for the 2004 303(d) report (see “Results” section, pages 15 through 23, and Appendix C of the Final 2004 List of Impaired Waters in Hawaii Prepared Under Clean Water Act §303(d)).”*

**Response:** The format for the assessment report has changed. Although these tables were not required by the guidance documents provided by EPA, we have added Data Summary Tables (Tables 3 and 4) for streams similar to those that were part of the 2004 List. Please see the response to Comment 15.5.

**Comment 17.2** *“Other errors or inconsistencies which inhibit meaningful evaluation include the use of the decision code “Ac” throughout the Assessment Decision Table in Part 4 of the report with no definition of this code provided, and apparent inconsistencies between the Assessment Decision Table in Part 4 and Table 3, Detailed Summary of Changes in Part 2 with regard to the 2004 303(d) list. We strongly recommend that the Department revise the report to provide more detailed information regarding listing decisions, and to address errors and inconsistencies, prior to closing the opportunity for public comment.”*

**Response:** DOH corrected the definitions at the beginning of Decision Table and the linkages between the Streams Changes Table (formerly Table 3, now Table 6) and the Chapter IV - Decision Table. We also proofed for errors and inconsistencies. The information and level of detail provided in this report is consistent with the guidance

provide by the EPA. In the future, please refer to any guidance (provided by EPA in odd numbered years) for information of what is expected in the Integrated Report.

**Comment 17.3** *“Although the Department noticed the availability of the draft report and provided for a nominal 30 day public participation period, we believe that the opportunity for public comment on the draft report has been inadequate, particularly given the complexity of the document and the major changes entailed by the integration of the requirements of §303(d) and §305(b) into one report. The publication of the notice of availability just days before the Christmas holidays effectively reduced the time available for stakeholders to review and assess the report. Moreover, the Hawaii Continuing Planning Process (DOH; May 1991), which is supposed to guide the water quality planning process, provides for a public comment period of at least 45 days. We therefore strongly believe, and hereby request, that the public comment period should be extended to provide adequate time for interested stakeholders to complete a comprehensive review and evaluation of the report.”*

**Response:** We regret that the public comment period could not be extended due to the pressing nature of our obligation to submit the final report to EPA. We will provide a longer comment period for the next report.

**Comment 17.4** *“A&B strongly urges a review of past listing decisions based on visual assessments and delisting of streams for which listing is not supported by other, more reliable water quality data.”*

**Response:** DOH reviews legacy visual listings as soon as there is enough data available. This report is a review of past listing decisions. It is constantly under review. As we acquire more data, we utilize the listing criteria to evaluate the data against the standards. Many visual ‘legacy’ listings of the past have been confirmed by numeric exceedances of one or more water quality criteria. However, one stream this year will be entirely delisted from the legacy visual listing of turbidity based on newly acquired numeric data.

**Comment 17.5** *“Under Hawaii’s water quality standards, waters cannot be determined to be impaired for turbidity based solely upon a visual assessment if the visual observation fails to account for the provisions of HAR Section 11-54-4(c). Under this section of the water quality standards, the narrative water quality standard relating to “soil particles resulting from erosion on land” (typically a major contributor to observed turbidity) is deemed met when the land on which the erosion is occurring is being managed in accordance with soil conservation practices or when the discharge is receiving the best degree of treatment or control and the impact on the water body is deemed to be “acceptable”. That is, a visual observation of turbidity is not a violation of water quality standards unless it can be shown that the requirements of §11-54-4(c) are not being complied with. To our knowledge, the visual assessments evaluated and considered by EPA contained no information that would allow a determination as to whether the requirements of this section were being met at the time of the assessment. Visual*

*assessments that do not consider §11-54-4(c) should not be used as the basis for listing streams as impaired for turbidity.”*

**Response:** Visual assessment of turbidity has been used by DOH as a basis for enforcement of the “objectionable turbidity” water quality standards, HAR 11-54-4(a)(3), independently of the narrative water quality criterion relating to “soil particles resulting from ...” Moreover, meeting the requirements of HAR Section 11-54-4(c) merely provides a potentially responsible party with relief from enforcement action under HAR Section 11-54-4(a)(6). It doesn’t relieve the DOH of its federally mandated duties to list impaired receiving waters that do not attain the water quality standards and to establish and implement plans for future attainment of those standards. Thus it is during the post-assessment stages of polluted runoff control planning that watershed-specific information about land management, conservation program pursuit, discharge treatment and control, and acceptability of impact to receiving waters becomes most relevant. However, much of this information is only available to the DOH when it is voluntarily submitted by the landowner or land operator. We would appreciate any assistance that can be provided in obtaining this information for current watershed planning areas.

No new determinations of impairment based solely upon a visual assessment were added to the 2006 List of Impaired Waters. At present, legacy visual assessments of turbidity impairment can only be delisted according to the current Listing and Delisting Criteria for Hawaii State Surface Water. In 2006, delistings based on the measured attainment of numeric turbidity and/or TSS criteria include Ukumehame Stream on Maui.

**Comment 17.6** *“As in the past, we have serious concerns regarding listing criteria for waters under the 2004 (& 2006) Priority Ranking and Listing/Delisting Criteria for Hawaii State Surface Waters. In some cases, the existing listing criteria allow listing of waters which do not actually exceed water quality standards and should be revised. Specific concerns include:*

**Comment 17.6a** *“Listing for impairment by conventional pollutants can be based on as few as five water quality samples. A&B believes that data sets of this size do not provide a statistically valid basis for comparison with the water quality standards as they may be widely skewed by the inclusion of one or more samples collected during or soon after large storms. While a minimum sample size of five is consistent with a 1998 recommendation by EPA, EPA’s recommendation was based not on whether such a small sample size would provide reliable data, but rather on the limited data then available for analysis and a concern that “use of a larger minimum sample size would result in exclusion of streams from consideration for listing”. This is simply not a statistically valid justification for evaluation, and amounts to allowing streams listed based on poor quality data for not other reason than because that is all that is available.”*

**Response:** Although we agree with the commenter that more data is always better, the number of watersheds and financial resources to monitor throughout the state limits

DOH. Enormous personnel and laboratory resources would be required to collect the necessary data that would be required to maintain a higher level of confidence. Now, as in the 1998 listing cycle, we are limited by the amount of data available, so we will continue to follow USEPA recommendations. We will revisit the assessment criteria development process for the 2008 assessment during the summer of 2007. Please submit comments when that document is public noticed.

**Comment 17.6b** *“For conventional pollutants, Listing Priority 2 allows sample data collected during wet and dry seasons to be combined where there is insufficient data to evaluate the wet and dry standards separately. Water bodies can be listed if (1) the geometric mean of the data (including wet season data) exceeds the dry season standard and a majority of dry season data exceed the dry season standard or (2) the geometric mean of the data exceeds both the wet and dry standards or (3) the majority of sample values in a smaller data set (five to nine samples) exceed the geometric mean criteria by a factor of two or more. In each of these cases, water bodies could conceivably be listed without the geometric mean of the wet or dry season data exceeding the corresponding wet or dry standard – that is, without an actual exceedance of the applicable water quality standard. The wet and dry season standards are separate and distinct standards. In order to determine whether a water quality standard is exceeded, wet season data should be compared to the wet season standard, dry season data should be compared to the dry season standard, and a minimum sample size (at least ten samples) should be established for comparison to each standard.*

**Response:** The Listing Priority 2 criterion was established to take into account the EPA’s requirement to identify waterbodies that are “threatened” and their recommendations regarding sample set size. In practice, there is no case where a waterbody would be listed without an actual exceedance of the applicable water quality standard. For example, please refer to Table 3, page 21. Papaa, Kauai is listed with 10 samples exceeding the TN and NO<sub>2</sub>-NO<sub>3</sub> Dry Standards utilizing 8 dry and 2 wet season samples. For TN, the WQS for dry season is 0.180 mg/l and wet season is 0.250 mg/l. The upper site samples ranged from 0.043 to 0.092 mg/l (wet season sample was 0.043mg/l). The lower site samples ranged from 1.77 to 2.63 mg/l (wet season sample was 1.77 mg/l). We do not apply the 2b (between 5-9 samples) decision rule because although the geomean of the 8 samples was significantly over the twice the standard, there was no majority. The upper site samples were well within attainment. The lower site samples exceeded the standard by 10+ times. It is also significant to note that the 2 wet season samples were lower than the dry season sample values. This decision tree utilizes a yes/no process as found in Figure 1. Although in theory, a waterbody could be listed without an actual exceedance of the applicable water quality standard utilizing limited data, within the next assessment cycle, those limited data segments get targeted for more data collection. The decision is then confirmed, modified or the waterbody is de-listed. In the case of Papaa stream, it is highly likely that this stream is severely impaired between the upper sampling location and the lower site since the data seem to indicate significant addition of pollutants are being introduced to the stream.

**Comment 17.6c** *“For comparison with the “ten percent of the time” and “two percent of the time” criteria, DOH requires a minimum of 100 and 500 samples, respectively, for Listing Priority 1 or 50 and 250 samples, respectively, for Listing Priority 2. These standards are intended to allow for exceedances of the “geometric mean” standards for relatively short periods of time due to large rainfall events, when larger pollutant concentrations in streams are unavoidable. Appropriately, the listing criteria require significant data sets for comparison with these standards in order to ensure a reliable assessment of the data. However, if one were to evaluate whether a stream was meeting the numerical water quality standard for a total suspended solids over the six month wet season, it could reach 50 mg/L ten percent of the time and 80 mg/L for two percent of the time but would have to meet the “geometric mean not to exceed” standard for the remaining 90 percent of the time. Although some statistical variance is allowed for by use of a geometric mean, it would seem that the size of the data set used to evaluate compliance with the standard which applies ninety per cent of the time should be comparable to the size of the data set required to evaluate compliance with the “ten percent of the time” and “two percent of the time” criteria. As such, a minimum sample size considerably larger than is specified in the listing criteria would appear to be appropriate. A single anomalously high data point (such as might be collected during a large storm) may so skew the geometric mean of a small data set as to suggest impairment even where the criteria applicable to storm events (i.e., the “ten percent of the time” and “two percent of the time” criteria are never exceeded).”*

**Response:** DOH has historically not applied the 10% or 2% rule for water quality assessment decisions. In reality, the geomean method tempers the skewing of the data set by large anomalous data points. For interested parties, DOH has included Table 5 on page 25 that applies these rules on Priority 1 (greater than 10 season-specific) data sets. The results were quite interesting. Some streams did not have an exceedance of geomean but did have more than 2 instances of exceedance of the 10% or 2% values. However, in general, the 10% and 2% value exceedance agree with the Standard geomean exceedance method. For this assessment cycle, we did not utilize the 10% or 2% since the Listing Criteria specifically mentions the size data set required and we did not have such data sets.

**Comment 17.7** *“A large number of streams included on the proposed 303(d) list are listed either solely or partly due to reported impairment by turbidity; many based on visual assessments only. ... We believe strongly that a review and revision of the State WQS for turbidity is necessary in order to prevent the continued listing of streams for turbidity levels that exceed the current standard but are in fact not indicative of actual water quality impairment.”*

**Response:** DOH **must** maintain any previously listed waterbody until enough data are obtained to apply the appropriate criteria for decision-making. While waterbodies may be listed by application of the listing criteria for priority 1 and 2, to be delisted, data must satisfy Listing Priority 1 criterion requirements.

Please note that while we agree that review of the turbidity criteria is in order, some of the existing stream turbidity criteria are validated by their measured attainment in numerous waterbodies for the current monitoring and assessment reporting cycle.

**Comment 17.8** *“Some “streams” are listed as impaired even though they are ephemeral streams that are normally dry except during large storm events.”*

**Response:** Please see response 11.3 and 11.4 for discussion on ephemeral streams.

**Commenter 18** Alan Takemoto, Executive Director, Hawaii Farm Bureau, fax dated Jan 19, 2007

**Comment 18.1** *“...every possible effort should be made to ensure that when the decision is made to list a waterbody, it is (a) based on water quality standards that are meaningful and scientifically supported and (b) based on appropriate and adequate sampling.”*

**Response:** The meaningfulness of and scientific support for the water quality standards is documented in and ensured by the technical rationales and other administrative records supporting the ongoing promulgation of these standards. The appropriateness and adequacy of sampling is documented in the packages of data that are readily available for our use in making water quality assessment decisions and is ensured by the comparison of these data packages with the Listing and Delisting Criteria for Hawaii State Surface Waters. The water quality standards are reviewed and revised (as appropriate) on a three-year cycle and the water quality assessment decision criteria are reviewed and revised (as appropriate) on a two-year cycle.

This comment is also addressed in responses to comment 13.2.

**Comment 18.2** *“In fact, those listing based on violations of the current turbidity standard should be removed immediately and re-evaluated at such time as an appropriate standard is in place.”*

**Response:** This assessment report only evaluates data against the existing standards. The issue of a proper Water Quality Standards (WQS) for turbidity or any other WQ parameter should be considered during the next WQS rule review cycle.

**Comment 18.3** *“...we continue to object to the listing of streams for which only “visual assessment” provides the basis for the listing. This is scientifically unsound and only serves to call into question all listing decisions made by the Department.”*

**Response:** DOH **must** maintain any previously listed waterbody until enough data are obtained to apply the appropriate criteria for decision-making. While waterbodies may be listed by application of the listing criteria for priority 1 and 2, to be delisted, data must satisfy priority 1 criteria requirements. Review of past listing decisions based on

visual assessments is underway, as we collect more data for these streams. No streams were added to this year's list based solely on visual assessments, and some components of visual assessment listings were delisted based on their measured attainment of numeric water quality criteria.

**Comment 18.4** *“HFBF respectfully requests that rather than expend Departmental energy on adding new waterbody impairment listing at every assessment, the focus should be on working with the scientific and regulated community to promulgate appropriate and meaningful standards that can be used to rationally assess the health of the State’s waters. The consequences of ignoring this as a prerequisite to any listing is the inevitable eventuality that all of Hawaii’s waterbodies, regardless of the scientific reality, will be considered unhealthy and impaired.”*

**Response:** The Clean Water Act requires states to review and revise (as appropriate) their water quality standards on a three-year cycle and to make waterbody impairment decisions on a two-year cycle. Balancing these requirements in conjunction with limited State resources and shifting EPA priorities is an ongoing challenge. Please continue to provide us with scientific and regulatory information and knowledge that can help to meet these requirements, and identify any HFBF resources that might be available to help us meet these challenges.

Please note that the appropriateness and meaningfulness of some of the existing standards is validated by the measured attainment of various water quality criteria in numerous waterbodies for the current monitoring and assessment reporting cycle.

**Commenter 19** June F. Harrigan-Lum, Ph.D, email dated Jan 19, 2007

**Comment 19.1** *“Part I - Marine Waters: part I opens with the sentence "Overall, the quality of the waters of the State is very good." However, the Report goes on to state that of a total of 534 coastal water bodies tallied (how? is this the number of watersheds delineated in the State?), 219 out of 264 coastal water bodies with adequate data have been listed for at least one pollutant. Because  $219/264 = 82.9$  per cent of coastal waters assessed for this Report have been listed, there can be no logical argument made that "the quality of the waters of the State is very good," especially since much of the measured pollutant load, including bacteria, derives from the adjacent watershed. If the true percent of assessed and unpolluted marine waters is  $100-82.9 = 17.1\%$ , then, using the ranking scale 0-20%="poor"; 21-40%="fair"; 41-60%="good"; 61-80%"very good"; and 81-100% = "excellent" places Hawaii's coastal waters in the "poor" category. In other words, there needs to be a rational connection between data analysis and judgment of the results. The beginning sentence should read, "On the basis of available data, the quality of the marine waters of the State is ranked as poor".*

**Response:** Thank you for your comments, it will further our efforts to produce a quality document. Regarding your comment #1, the introductory paragraph has been removed.

**Comment 19.2** *“I urge staff to start the process of connecting the numerical and narrative Water Quality Criteria to designated stream uses listed in HAR Chapter 11-54, Water Quality Standards.”*

**Response:** DOH started this process by adding a logical framework for making waterbody attainment decisions (for both water quality criteria and designated uses) for the 2006 water quality monitoring and assessment reporting cycle to the final report (p. I-28). Future amendment of the State Water Quality Standards, as well as future revision of water quality monitoring and assessment methodologies and decision criteria, provides the mechanisms for continuing this process.

This comment is also addressed in responses to comments 4.1, 9.3., 11.3., and 15.16

**Comment 19.3** *“Part 3 - Groundwater: Hawaii's groundwater is in generally good condition, but many potentially toxic chemicals are not included in the State and Federal drinking water standards. Protecting groundwater is a result not only of standards assessment but of keeping up with the toxic status of many new dissolved chemical contaminants and is an ongoing process. The Report should mention the dynamic nature of protecting groundwater sources of drinking water from toxins.”*

**Response:** We agree that protecting groundwater is a result not only of monitoring existing requirements but of keeping up with the toxic status of many new dissolved chemical contaminants, and this is an ongoing process that is dynamic in nature. The state and federal governments are working on this issue.

To meet this challenge, several activities at the Federal and State level are being developed or implemented. The EPA is currently examining the status and health/environmental issues dealing with emerging environmental contaminants through the Unregulated Contaminants Monitoring Rule (UCMR2), the Contaminant Candidate List (CCL), and studies that look at the presence of endocrine disruptors, pharmaceuticals and household products in our water supplies. The DOH SDWB staff is working with the Hawai'i Department of Agriculture and the University of Hawai'i on initial projects designed to: (1) test drinking water/ groundwater quality on O`ahu (to be expanded to the other islands) for four new and emerging pesticides being used in the State; (2) test for historical pesticide contaminants (Atrazine and its breakdown compounds, Bromacil and Hexazinone) that have been previously detected in groundwater wells that are not part of the routine drinking water monitoring program; and (3) expand the Pesticide Leaching Model to also include non-pesticides. The Pesticide Leaching Model employs geographic information system (GIS) to incorporate soil hydrologic information and a pesticide property database to predict the leaching potential of a pesticide.