LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:

EPO-0427

September 29, 2008

Ms. Alexis Strauss, Director
Water Division (W-1)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne St.
San Francisco, CA 94105

Dear Ms. Strauss,

Re: Hanalei Watershed Total Maximum Daily Loads

We have established Total Maximum Daily Loads (TMDLs) for six (6) waterbodies in the Hanalei Bay Watershed, Kauai (Hanalei Stream, Hanalei estuary, Waioli estuary, Waipa Stream, Waipa estuary, and Waikoko estuary) and are submitting them to the U.S. Environmental Protection Agency (EPA) for approval under Clean Water Act §303(d). These TMDLs account for eight (8) waterbody/pollutant combinations from the State's 2006 §303(d) list. Copies of the TMDL decision document ("Total Maximum Daily Loads for the Hanalei Bay Watershed – Phase 1, Streams and Estuaries") are enclosed.

As required by the Code of Federal Regulations (C.F.R.) and Hawaii Administrative Rules (HAR), 40 C.F.R. sec. 122.44(d)(1)(vii)(B) and HAR sec. 11-55-19(a)(4)(C), and intended by Hawaii's Continuing Planning Process for Surface Water Pollution Control (approved by EPA June 14, 1976 and last reviewed by EPA in August 2001), upon approval of a TMDL by EPA, any TMDL Waste Load Allocations (WLAs) are immediately effective to be applied in National Pollutant Discharge Elimination System (NPDES) permits. NPDES permits issued by the DOH shall include limitations needed to implement the WLAs in TMDLs, and the Department of Health (DOH) shall enforce these limits.

The State will assure implementation of the approved TMDL WLAs through the enforcement of NPDES permit conditions (HAR §11-55) and will pursue implementation of load allocations through Hawaii's Implementation Plan for Polluted Runoff Control (DOH), Hawaii's Coastal Nonpoint Pollution Control Program Management Plan (State of Hawaii Department of Business, Economic Development, and Tourism), and the Clean Water State Revolving Fund Intended Use Plan (DOH), all of which serve the State Water Quality Standards (HAR §11-54).

Due to the difficulty of drawing precise links between nonpoint sources (including natural background, endangered waterbirds, wildlife, livestock, and wetland farming) and waterbody

impairment in the Hanalei Bay Watershed, we are employing a phased approach to the development and implementation of these load allocations. This phased approach allows us to use available information to establish interim targets, begin to implement needed controls and restoration activities, monitor waterbody response to these actions, and plan for TMDL review and revision in the future. The next phase, which is currently underway, will establish TMDLs for the embayment receiving waters (Hanalei Bay) and provide a context for using new information to improve our management of pollutant loading and water quality dynamics throughout the watershed.

We note that the TMDL process repeatedly touches other issues that complicate our water pollution control efforts. The Hanalei TMDLs have generated considerable criticism from some quarters. The role of natural background sources in the ninety plus percent load reductions required to meet water quality standards have again raised nagging questions about the validity of the underlying standards, the feasibility of load allocations, and the role of common sense. While resolving questions about standards is not the role of TMDL decisions, our phased approach should give us information about feasibility of implementation that will help us to move beyond persistent challenges to turbidity and enterococcus standards. We also value the protection of native wildlife and preservation of taro growing, even though each contributes to pollutant loading, and we do not want to threaten their survival with overburdensome water quality regulation. We look forward to further talks with you, your staff, and the community on these issues.

If you have any questions regarding our TMDL process, please call me at (808) 586-4424.

Sincerely,

Laurence K. Lau

LAURENCE K. LAU
Deputy Director
Environmental Health Administration

Enclosures

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

SEP 3 0 2008

Laurence K. Lau, Esq.
Deputy Director
Hawaii Department of Health
P.O. Box 3378
Honolulu, HI 96801-3378

Dear Mr. Lau:

Thank you for submitting the Total Maximum Daily Loads (TMDLs) for total suspended solids and *enterococcus* in the Hanalei Bay watershed, Hawaii. The TMDL submittal was dated September 29, 2008.

Based on EPA's review of the TMDL submittal under Clean Water Act Section 303(d), I have concluded that the TMDLs adequately address the pollutants of concern and, upon implementation, will result in attainment of the applicable water quality standards. These TMDLs include wasteload and load allocations as needed, take into consideration seasonal variations and critical conditions, and provide an adequate margin of safety. The State of Hawaii provided sufficient opportunities for public review and comment on the TMDLs. All required elements are adequately addressed; therefore, the TMDLs are hereby approved pursuant to Clean Water Act Section 303(d)(2).

The State of Hawaii submittal also contains a general plan for implementing these TMDLs. Current federal regulations do not define TMDLs as containing implementation plans; therefore, EPA is not taking action on the implementation plan provided with the TMDLs. However, EPA generally concurs with the State of Hawaii's proposed implementation approaches.

The enclosed review discusses the basis for this decision in greater detail. I appreciate the State's work to adopt these revised TMDLs and look forward to our continuing partnership in TMDL development. If you have questions concerning this approval, please call me at (415) 972-3572 or Janet Hashimoto at (415) 972-3452.

Sincerely yours,

Alexis Strauss 30 Sept. 2008
Alexis Strauss
Director, Water Division

Enclosure

TMDL Review Checklist

State:	**Hawai'i**
Waterbodies:	**Hanalei Bay watershed (including Hanalei River, Hanalei River Estuary, Waikoko Stream Estuary, Waioli Stream Estuary, Waipa Stream Estuary, Waipa Stream)**
Pollutant(s):	***Enterococcus*, Turbidity/Total Suspended Solids**
Date of Initial Submission:	**September 29, 2008**
Date Received By EPA:	**September 30, 2008**
EPA Reviewer:	**Heather Goss / Peter Kozelka**

1. Submittal Letter:
State submittal letter indicates final TMDL(s) for specific water(s)/pollutant(s) were adopted by state and submitted to EPA for approval under 303(d). Acknowledge if any supplemental material was provided and receipt date.

The submittal letter, dated September 29, 2008 from Laurence Lau to Alexis Strauss, was received by EPA on September 30, 2008. These TMDLs for Hanalei Bay Watershed for turbidity/total suspended solids and *enterococcus* were approved by the Deputy Director of the Hawai'i Department of Health on September 29, 2008. The submittal included the letter requesting EPA approval under CWA Section 303(d), the TMDL technical report and Appendices A through F ("Total Maximum Daily Loads and Load Targets for the Hanalei Bay Watershed"), dated September 2008.

EPA finds the State's analysis concerning waterbody impairment associated with total suspended solids (as surrogate for turbidity) and *enterococcus* to be reasonable and consistent with the requirements of Section 303(d).

2. TMDLs Included:
The submittal clearly identifies the water segments and pollutants or stressors for which TMDLs were developed. The submittal should include the water segment identifier (e.g., NHD code) for each segment addressed. The submittal should clearly identify the TMDLs adopted for currently 303(d) listed waterbody-pollutant combinations. It should also clarify if TMDLs were adopted for new impairment findings (by waterbody-pollutant combinations) that do not exist on the current 303(d list. If appropriate, the submittal should describe any assessment decisions that may have resulted in non-impairment status for water/pollutant combinations that exist on State's most current 303(d) list.

(TMDL Report pg. 8)
The TMDL submittal addresses these waterbody/pollutant combinations on the 2006 303(d) list:

Hanalei Stream, turbidity dry season
Hanalei Stream, *enterococcus* year round
Hanalei River Estuary, turbidity year round
Hanalei River Estuary, *enterococcus* year round
Waikoko Stream Estuary, turbidity year round
Waioli Stream Estuary, turbidity year round

Waipa Stream Estuary, turbidity year round
Waipa Stream, turbidity dry season

The submittal contains TMDLs for total suspended solids (TSS) as a surrogate for turbidity TMDLs.

Although Hanalei Bay is also on the 2006 303(d) list, separate TMDLs for Hanalei Bay have not been developed at this time, but will be considered in the future as water quality in the Bay is more thoroughly monitored and assessed during implementation of the Hanalei Bay watershed TMDLs.

3. Water Quality Standards Attainment:
TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

(TMDL Report pp. 10-16)
The TMDLs are designed to implement Hawai'i water quality standards (HAR Section 11-54) for the above mentioned waters. Portions of the Hanalei stream system that run through the National Wildlife Refuge (lower stream reach and upper estuary) are Class 1.a waters. The applicable standards for Class 1.a. waters are based on protection of scientific and educational purposes, native breeding stock, baseline references from which human-caused changes can be measured, compatible recreation, aesthetic enjoyment, and other non-degrading uses.

Hanalei stream headwaters and a portion of the upper reach tributaries, as well as the upper reaches of Waioli Stream and Waipa Stream, are Class 1.b. The applicable standards for Class 1.b waters are based on protection of domestic water supplies, food processing, native breeding stock, support and propagation of aquatic life, baseline references from which human-caused changes can be measured, scientific and educational purposes, compatible recreation, and aesthetic enjoyment.

All remaining waters, including a large portion of Hanalei Stream upper reaches, the lower reach of Hanalei Estuary, the lower reaches of Waioli and Waipa streams and their estuaries, and the entire Waikoko stream system (stream and estuary) are Class 2 waters. The applicable standards for Class 2 waters are based on protection of use for recreational purposes, support and propagation of aquatic life, agricultural and industrial water supplies, shipping, and navigation.

The submittal clearly summarizes applicable water quality standards for turbidity and *enterococcus*. The standards for turbidity are defined by three numeric criteria—a geometric mean, two exceedence values (2% and 10%). The submittal clearly defines the time periods over which these criteria are calculated. The standards for *enterococcus* are defined by two numeric criteria—a geometric mean and the single sample maximum.

The submittal contains technical analysis describing a strong relationship between total suspended solids (TSS) and turbidity; thus TSS serves as a surrogate for turbidity TMDLs.

The State reasonably concluded that attainment of the numeric targets and associated TMDLs, wasteload allocations, and load allocations will result in attainment of the applicable numeric water quality objectives. EPA concurs that TSS TMDLs are appropriate for addressing turbidity impairments.

4. Numeric Target(s):
Submission describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. Numeric water quality target(s) for TMDL identified, and adequate basis for target(s) as interpretation of water quality standards is provided.

(TMDL Report pp. 10-16)
The numeric targets used for the TMDL and load target development for turbidity are set equal to the

applicable numeric standards, as described above. The TSS targets under baseflow (dry weather) conditions for streams are lower than for the 2% and 10% storm event targets, ensuring compliance with seasonal mean standards. The TMDL targets for *enterococcus* are set equal to the applicable numeric standards, which are defined by two numeric criteria.

EPA concludes that the State's approach to developing these TMDLs, based on existing numeric water quality standards, is reasonable and protective of the beneficial uses of the waterbodies in Hanalei Bay Watershed.

5. Source Analysis:
Point, non-point, and background sources of pollutants of concern are described, including the magnitude and location of sources. Submittal demonstrates all significant sources have been considered.

(TMDL Report pp. 36-41)
There are no permitted NPDES dischargers or point sources of these pollutants in the watershed. The submittal provides a clear description of the non-point sources in the Hanalei Bay watershed, utilizing all available water quality data related to turbidity and *enterococcus*.

Pollutant sources were quantified by land cover type (e.g., bare land, cultivated land, grassland) since loadings can be highly correlated with land-based activities. Analysis was based on model results of existing conditions, which were calibrated to observed data.

EPA concluded that all significant sources of turbidity and *enterococcus* have been considered in the source analysis for the TMDLs.

6. Loading Capacity Linkage Analysis:
Submittal describes relationship between numeric target(s) and identified pollutant sources. Submittal clearly identifies loading capacity. For each pollutant, describes analytical basis for conclusion that sum of allocations and margin of safety does not exceed the loading capacity of the receiving water(s).

(TMDL Report, pp. 42-47, and Modeling Report)
The submittal defines the linkage between point and nonpoint sources and linked watershed/receiving waterbody ambient water quality using modeling approaches from the US EPA's TMDL Modeling Toolbox. A watershed model (LPSC) and a receiving water model (EFDC) were both used and linked together. The models were initially calibrated using observed hydrologic and water quality data to characterize existing conditions in the Hanalei Bay watershed system. After calibration, iterative simulations were performed until numeric targets were achieved in the receiving waters.

EPA concludes that the sum of allocated loads will not result in exceedences of loading capacities in the receiving waters for any of the pollutants of concern.

7. TMDL and Allocations:
TMDL—Submittal identifies the total allowable load, which is set equal to or less than the loading capacity. TMDL is expressed in terms of mass-based, concentration-based or other equivalent approaches that are consistent with federal requirements. If TMDL has seasonal features then please describe. TMDLs and allocations should be expressed in terms of daily time steps. If the TMDL and/or allocations are also expressed in terms other than mass loads per day, the submittal explains why it is reasonable and appropriate to express the TMDL in those terms.

Allocations—Submittal identifies appropriate waste load allocations for all point sources and load allocations for all non-point sources. Allocations are expressed in terms of mass-based, concentration-based or other equivalent approaches, the submittal explains why it is reasonable and appropriate to

express in those terms. If point sources are present, submittal identifies existing NPDES permits by name and number. More discussion of point sources in watershed. If no point sources are present, waste load allocations are zero. More discussion of non-point sources. If no non-point sources are present, then load allocations are zero.

TMDL or Loading Capacity
(TMDL Report pp. 57-61, 61-70)
The TMDLs for the identified non-point sources are expressed as mass loads per day. For TSS, TMDL allocations were calculated for three conditions (baseflow, 10% runoff, and 2% runoff) for both dry season and for wet season.

For *enterococcus*, TMDL allocations were calculated for two conditions (baseflow-geometric mean, runoff-SSM) for both dry season and for wet season

The loadings were calculated such that the sum of all the loadings to the receiving water would not cause an exceedence of TMDL numeric targets. Load reductions required to achieve these TMDLs are also presented.

EPA concludes that the sum of the allowable loads from watershed sources will not exceed the loading capacity of the receiving water.

(TMDL Report p. 50)
Wasteload Allocations
The submittal states that currently no point sources have been issued NPDES permits in Hanalei Bay. If wasteload allocatons are required to accommodate future point source discharges, then the load allocations will be appropriately revised and the overall changes in TMDL allocations will be submitted to USEPA for approval.

Load Allocations
This report only provides load allocations associated with the *enterococcus* and turbidity TMDLs in the Hanalei Bay watershed. Loadings for the pollutants were divided among different types of land cover. Relative loadings were calculated for: bare land, cultivated land, evergreen forest, grassland, high intensity developed, low intensity developed, palustrine emergent, palustrine forest/scrub, scrub/shrub, and water.

EPA concludes the state's approach of setting the TMDLs and allocations is appropriate for the waters and pollutants of concern and consistent with the provisions of CWA and federal regulations.

8. Margin of Safety:
Submission describes explicit and/or implicit margin of safety for each pollutant.

(TMDL Report pp. 50)
The TMDLs include both an explicit and an implicit margin of safety (MOS). The explicit MOS was computed as 5% of the calculated TMDL value. The implicit MOS was incorporated through the use of conservative assumptions during the TMDL development process.

EPA considers this a permissible and appropriate approach for dealing with uncertainty concerning the relationship between TMDL, wasteload allocations, load allocations, and water quality conditions.

9. Seasonal Variations and Critical Conditions:
Submission describes method for accounting for seasonal variations and critical conditions in the TMDL(s).

(TMDL Report, p. 52)
In the Hanalei Bay watershed, the critical conditions for turbidity and *enterococcus* coincide with storm events, which can occur throughout the year. The necessary reductions were based on model simulation of an entire critical year. The submittal develops TMDLs for the wet and dry seasons so that wet and dry water quality standards, where applicable, would be attained during the appropriate season and the additional year-round water quality standards would be attained throughout the year.

EPA concludes that the state's analysis adequately accounts for the seasonal variations in critical conditions by establishing TMDLs and allocations that vary in response to differences in flow conditions.

10. Public Participation:
Submission documents provision of public notice and public comment opportunity; and explains how public comments were considered in the final TMDL(s).

(TMDL report pp. 78-80)
Hawaii held numerous public meetings for these TMDLs. The Hanalei Watershed Hui, a community-based organization, held six community meetings during TMDL development, soliciting information directly from the public. The draft TMDL was available for public review and comment in February 2007 and the State provided a responsiveness summary in September 2008.

The State demonstrated that it provided sufficient opportunities for public comments and considered public comments in its final decision by providing a reasonably detailed responsiveness summary.

11. Technical Analysis:
Submission provides appropriate level of technical analysis supporting TMDL elements.

The technical analysis supporting the TMDLs included considerations of available water quality and flow data and detailed descriptions of watershed sub-basins and sources. It utilized a methodology for calculating load capacities and TMDLs that is conceptually sound.

EPA concludes that the State was reasonably diligent in its technical analysis of TSS/turbidity and *enterococcus* in the Hanalei Bay watershed system.

12. Reasonable Assurances:
If waste load allocations are made less stringent based on inclusion of load allocations that reflect nonpoint source reductions, submission describes how there are reasonable assurances necessary nonpoint source reductions will occur.

Not applicable

13. Other:

The 2006 303(d) list had the following relevant waterbody-pollutant combinations:
(See TMDL report, Table 2, pg. 8)
Hanalei Bay upstream of Dolphin (HIW00160)
Hanalei Stream (ID 2-1-19), turbidity dry season**
Hanalei Stream (ID 2-1-19), *enterococcus* year round**
Hanalei River Estuary (HI385259), turbidity year round †
Hanalei River Estuary (HI385259), *enterococcus* year round †
Waikoko Stream Estuary (HIW00162), turbidity year round
Waioli Stream Estuary (HIW00163), turbidity year round
Waipa Stream Estuary (HIW00164), turbidity year round
Waipa Stream (ID 2-1-17), turbidity dry season

Note that this submittal identifies Total Maximum Daily Loads (TMDLs) for total suspended solids (TSS) as a surrogate for turbidity TMDLs.

*** The name of this waterbody in previous lists was "Hanalei River."*
† The name of this waterbody in previous lists was "Hanalei River Estuary" (Weke Road station; it is a segment of the entire brackish water estuary).

The submittal also identifies applicable water quality standards and suggested TSS reductions for Waioli Stream and Waikoko stream, however these are not formal TMDLs and EPA is not taking action on those two waterbody-pollutant combinations.