

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

In reply, please refer to:
EPO-0423

September 19, 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: Nawiliwili Bay Watershed Total Maximum Daily Loads

We have established Total Maximum Daily Loads (TMDLs) for four (4) waterbodies in the Nawiliwili Bay Watershed, Kauai (Nawiliwili Stream, Puali Stream, Papakolea Stream, and Huleia Stream), and are submitting them to the U.S. Environmental Protection Agency (EPA) for approval under Clean Water Act §303(d). These TMDLs account for nine (9) waterbody/pollutant combinations from the State's 2006 §303(d) list and an additional eleven (11) waterbody/pollutant combinations identified during TMDL development. Copies of the TMDL decision document ("Total Maximum Daily Loads for Nutrients, Sediment, and Bacterial Indicator in Major Streams of the Nawiliwili Bay Watershed, Kauai, Hawaii") 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

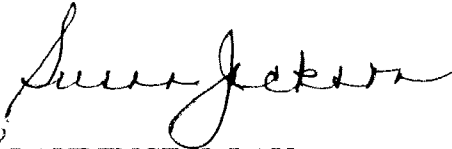
Ms. Alexis Strauss, Director
Water Division (W-1)
U.S. Environmental Protection Agency, Region IX
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Hawaii Department of Business, Economic Development, and Tourism), and the Clean Water State Revolving Fund Intended Use Plan (DOH), all of which serve the State Water Quality Standards (HAR §11-54).

During the development of the TMDLs there were a number of concerns expressed about the uncertainty surrounding specific implementation mandates, timelines, activities, costs, societal impacts, and environmental effectiveness (please see Sections 5.0 and 7.0 and Appendix I of the enclosed decision document). We responded to these concerns by providing more precise information about NPDES permit requirements associated with WLA implementation and by promoting a community-driven adaptive approach to implementing nonpoint source load allocations. We look forward to working with your staff to continue dealing with the details of these implementation issues as they arise.

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

Sincerely,



for LAURENCE K. LAU
Deputy Director
Environmental Health Administration

Enclosures



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

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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 nutrients, sediment, and enterococcus in the Nawiliwili Bay Watershed, Kauai, Hawaii. The TMDL submittal was dated September 19, 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 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 24 September 2008
Alexis Strauss
Director, Water Division

Enclosure

2015-7

TMDL Review Checklist

State: Hawai'i

Waterbodies: major streams of the Nawiliwili Bay Watershed (Huleia stream, Puali Stream, Papakolea stream, and Nawiliwili stream)

Pollutant(s): nutrients, total suspended solids, and enterococcus

Date of Submission: September 19, 2008

Date Received By EPA: September 22, 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.

Submittal letter dated September 19, 2008.

These TMDLs were approved by the Deputy Director of the Hawai'i Department of Health on September 19, 2008. The submittal included the letter requesting approval under CWA Section 303(d), the TMDL technical report ("Total Maximum Daily Loads for Nutrients, Sediment, and Bacterial Indicator in Major Streams of the Nawiliwili Bay Watershed"), and documentation of the public comment period and comments received.

The submittal addresses the waterbody-pollutant combinations within the Nawiliwili watershed, some of which were identified on the State's 2006 CWA Section 303(d) list. The State included additional TMDLs for certain waters based on review of existing data and confirmed impairment by specific pollutants.

EPA finds the State's analysis concerning waterbody impairment associated with total suspended solids, nutrients, 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.

The TMDL submittal addresses a total of 20 waterbody/pollutant combinations (TMDLs for TSS and nutrients are expected to lead to attainment of the turbidity criteria). Some 2006 303(d) listings are for wet season and some are for dry season. Separate wet and dry season WQC are applicable, so the TMDLs were developed for both seasons.

Huleia Watershed – *enterococcus*
Huleia Watershed – turbidity
Huleia Watershed – total suspended solids (TSS)
Huleia Watershed – total phosphorus (TP)
Huleia Watershed - nitrate + nitrite (N+N)
Huleia Watershed – total nitrogen (TN)

Papakolea - *enterococcus*
Papakolea – turbidity
Papakolea – total suspended solids (TSS)
Papakolea – total phosphorus (TP)
Papakolea - nitrate + nitrite (N+N)
Papakolea – total nitrogen (TN)

Puali - *enterococcus*
Puali – turbidity
Puali – total phosphorus
Puali – total suspended solids
Puali – nitrate + nitrite
Puali – total nitrogen

Nawiliwili - *enterococcus*
Nawiliwili – turbidity
Nawiliwili – total suspended solids
Nawiliwili – total phosphorus
Nawiliwili – nitrate + nitrite
Nawiliwili – total nitrogen

(Staff Report p. ii) TMDLs were developed for Papakolea Stream, which was not on the State’s 2006 303(d) list because it had previously been considered a tributary of Huleia Stream.

(Staff Report p. 1-7) The State completed water quality assessment during the TMDL development process and established additional impairments and threats by elevated *enterococcus* in all four streams; by excessive TSS in Papakolea, Puali, and Nawiliwili; by elevated total phosphorus in Papakolea and Nawiliwili; and by excessive turbidity, nitrate+nitrite, and total nitrogen in Papakolea. In some cases, TMDLs were defined although load reductions were not needed for certain parameters.

(Staff Report p. ii) Although TMDLs are provided for *enterococcus* in all four streams, they are not presented in the Executive Summary tables. In general DOH does not consider chronic exceedances of enterococcus criteria to unequivocally represent threats to human health or impairments of recreational use.

(Staff Report p. 1-5) Although there are multiple listings for Nawiliwili Bay on the 2006 303(d) list, separate TMDLs for Nawiliwili Bay have not been developed at this time. “Although the TMDL decisions proposed in this document apply only to the freshwater segments of the four inland streams, not to the inland estuary or marine embayment, it is expected that the implementation of these TMDLs will lead to estuary and marine water quality improvements.”

TMDL (loading capacity), estimated existing loads, and load reductions required for TSS, N+N, TN, TP, and *enterococcus* in each stream segment under six flow conditions (wet season, dry season, and four storm flow regimes) are the numerical expression of the proposed TMDL decisions.

The State reasonably concluded that implementation of the TMDLs, load allocations, and waste load allocations, will result in elimination of the adverse effects associated with elevated concentrations of nutrients, total suspended solids and enterococcus and will bring about attainment of applicable standards for these pollutants.

3. Water Quality Standards Attainment:

TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

(Staff Report pp. 1-2 to 1-5)

The TMDLs are designed to implement Hawai'i water quality standards (HAR Section 11-54) for the above mentioned waters.

According to Hawaii classification of designated uses (HAR §11-54-3), the Huleia Stream system (inland freshwater and brackish waters) and Papakolea Stream network (inland freshwater) include both Class 1 and Class 2 segments, while the other two inland water systems (Papakolea, Puali, and Nawiliwili) are exclusively Class 2. Throughout all Class 1 waters (including wetlands), any conduct which results in a demonstrable increase in levels of point or nonpoint source contamination is prohibited.

In Class 1.b. segments in the northwest headwaters of the Huleia tributary network, beneficial uses to be protected are 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.

In Class 1.a. segments in the Huleia Estuary and Papakolea Stream, the beneficial uses to be protected include those in Class 1.b. segments (except for domestic water supplies and food processing) and other nondegrading uses which are compatible with the protection of ecosystems associated with this class.

The applicable standards for Class 2 waters are based on protection of the beneficial use for recreational purposes, support and propagation of fish and other aquatic life, agricultural and industrial water supplies, shipping, and navigation.

The submittal clearly summarizes applicable water quality standards for *enterococcus*, total suspended solids, turbidity, total phosphorus, nitrate + nitrite, and total nitrogen. The standards for total suspended solids, turbidity, total phosphorus, nitrate + nitrite, and total nitrogen are defined by three numeric criteria—a geometric mean and two exceedance values (2% and 10%) for each of two seasons (wet and dry). The submittal clearly defines the time periods over which these criteria are calculated. The standards for *enterococcus* are defined by a geometric mean and single sample maximum (though TMDLs are generally based on the geometric mean criterion only.)

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.

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.

(Staff Report pp. 1-6 to 1-8)

The numeric targets for pollutant concentrations in a water body selected for this technical report are based on the Hawaii water quality criteria identified in Table 1-1. The geometric mean (GM) water

quality criteria, which vary seasonally, are used as the endpoints for baseline flow conditions. To address critical conditions, the analysis assumes that higher concentrations of pollutants occur during storm events; such events occur approximately 20% of the time; and the geometric mean of concentrations occurring during these events should approximate the wet season 10% not to exceed criteria. Therefore, the 10% not to exceed criteria are used as the TMDL target for stormflow conditions.

Based on the 2004 EPA explanation of the appropriate use of the single sample maximum criterion, the *enterococcus* bacteria TMDLs established by the State of Hawaii are generally based on the geometric mean criterion only, and the water quality target is a geometric mean concentration of 33 CFU/100 ml.

The submittal does not include TMDLs for turbidity, but the expectation is that implementing TMDLs calculated for TSS and nutrients will lead to attainment of the turbidity criteria (TSS and nutrient concentrations as surrogate numeric targets for turbidity).

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 Nawiliwili 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.

(Staff Report pp. 3-3 to 3-5)

There are six permitted NPDES dischargers that are point sources of these pollutants in the watershed; one individual (Jas W. Glover, NPDES ID HI0020842) and the rest covered by the industrial general permit. These dischargers discharge stormwater associated with their industrial activities. There are also numerous active NPDES permits regulating stormwater discharge associated with construction activities in the watershed. Those permits do not impose effluent limits but rather require best management practices. The industrial permittees are listed in the staff report text, but the construction permittees are only listed in Appendix E.

The submittal provides a clear description of the non-point sources in the Nawiliwili Bay watershed, utilizing all available water quality data related to the pollutants of interest. Data were from the Kauai County Department of Water and other sources cited in the Staff Report. The non-point sources include natural processes, agricultural activity, construction, urban runoff and wastewater disposal systems. The staff report discusses the locations of the sources, the pathways, and the magnitudes of each individual pollutant (Table 3-1).

Additionally, sewage effluent from two wastewater treatment plants in the watershed is not discharged to surface water and thus not regulated by NPDES permits. Disposal of this effluent via injection wells and surface application may be a component of non-point source loading.

EPA concluded that all significant sources of *enterococcus*, total suspended solids, turbidity, total phosphorus, nitrate + nitrite, and total nitrogen 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).

(Staff Report p. 3-6)

Ideally, the linkage should be developed based on a long-term set of monitoring data that allows the resulting TMDL to associate certain water-body responses to flow and loading conditions. For this TMDL, long term and continuous monitoring data were not available for the decision area. Therefore, the linkage was established using a combination of regional monitoring data and best professional judgment.

Two methods were initially investigated to estimate the TMDLs for the stream systems: hydrologic watershed modeling and statistical gauge analysis. The hydrologic watershed modeling effort incorporated the U.S. Army Corps of Engineers HEC-HMS program. The HEC-HMS (Hydrologic Engineering Center-Hydrologic Modeling System) model was designed to simulate the event-based and continuous precipitation-runoff process of a dendrite watershed system. The model can be used to simulate a large river basin water supply, flood hydrology, small urban watershed, or natural watershed runoff.

The statistical gauge analysis analyzed the relationship between recorded stream flow and recorded precipitation. The gauge analysis used flow and precipitation gauges representing tributary areas with similar hydrologic characteristics to the Huleia, Papakolea, Puali and Nawiliwili sub-basins. A HEC-HMS model was developed and calibration was attempted using streamflow data collected during the water quality sampling efforts from January to April 2003. Due to the multiple undocumented flow diversions and impoundments throughout the decision area (see Section 1.2.1.3), the model could not be calibrated to the collected flow data. Therefore, a statistical gauge analysis was selected as the linkage methodology.

EPA concludes that the sum of allocated loads will not result in exceedances 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

(Staff Report pp. 3-14 to 3-16, and 3-24 to 3-25)

The load capacity of TSS, TN, TP, and N+N was determined by multiplying the total flow volumes by the pollutant concentrations corresponding to the TMDL endpoints (targets). These TMDLs are expressed as mass loads per day. TMDL allocations were calculated for five conditions (baseflow, 1 year storm event, 2 year storm event, 5 year storm event, and 10 year storm event) for both dry season and for wet season. For *enterococcus*, TMDL allocations were calculated for both dry season and for wet season. Load reductions are expressed in concentration per volume, and were calculated by comparing the geometric mean of measurements obtained from the four streams with the TMDL target geometric mean

concentration of 33 CFU/100 ml. Pathogen concentrations are highly variable, and the Staff Report acknowledges that direct contributions of various types of non-point sources were not estimated due to a lack of data on bacterial source tracking, production rates, etc. The percent reduction specified for each stream system was applied equally to potential pathogen source areas in each watershed. There was no land-use specific data available to allocate loadings between urban, agricultural and land uses.

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

(Staff Report pp. 3-16 to 3-17)

Wasteload Allocations

Wasteload allocations for TSS, TN, and TP are based on the facility area (obtained from permit files), the contributing watershed area of the land use district in which the facility is located, and the TMDL storm loading capacity for that land use. There was insufficient information to allocate N+N between different land uses. For the base flow TMDLs, wasteload allocations are '0' (*de minimus*) since the total area of the NPDES permitted facilities in a sub-basin is so small that it yields an extremely low WLA when an areal-proportional computation is employed.

Since NPDES-permitted industrial facilities are not expected to be a source of human sewage, no waste load allocations are assigned for *enterococcus*.

(Staff Report p. 3-19 to 3-25)

Load Allocations

Load allocations for TSS, TN, TP, and N+N for each stream (for both wet and dry seasons) were determined by subtracting the WLA and MOS values from the TMDL load capacity. For *enterococcus*, load percent reductions were calculated by comparing the geometric mean of measurements obtained from the streams with the TMDL target geometric mean concentration of 33 CFU/100 ml. The maximum enterococci concentration recorded for each stream was compared to the TMDL target maximum concentration (33 cfu/100 ml). Load capacities were the loads remaining after applying the required reductions to the current loads. The percent reduction specified for each stream system was applied equally to potential pathogen source areas in each watershed. There was no land-use specific data available to allocate loadings between urban, agricultural and land uses.

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. See 40 CFR 130.2(i).

8. Margin of Safety:

Submission describes explicit and/or implicit margin of safety for each pollutant.

(Staff Report p. 3-19)

This TMDL analysis incorporates both implicit MOS and a 5% explicit MOS. Factors contributing to the implicit MOS include the conservative hydrologic modeling assumption of no diversions or impoundments of streamflow.

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).

(Staff Report p. 3-26)

Where appropriate, the TMDLs are based on the wet season and dry season water quality criteria established by the State of Hawaii water quality standards. The flow volumes of interest for the TMDL decisions are baseline flow (Wet and Dry Season), and storm flow. The Wet Season is from November 1 through April 30, and the Dry Season is from May 1 through October 31. The entire record of flow data from each USGS gauge was used to estimate average baseflow for each season. The storm flow pollutant loading analysis was developed for an event-based load determination: if x-inches of precipitation falls, how much pollutant loading can be expected. Separation of storm flow from USGS recorded flow data was accomplished by subtracting the estimated base flows (for the applicable season) from recorded flow gauge data.

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).

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

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. The methodology used for calculating load capacities and allocations is conceptually sound.

EPA concludes that the State was reasonably diligent in its technical analysis of *enterococcus*, total suspended solids, turbidity, total phosphorus, nitrate + nitrite, and total nitrogen in the Nawiliwili 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 contained the following relevant waterbody-pollutant combinations:

Huleia Stream (ID 2-2-15), dry season: TN, N+N, turbidity, enterococci (unknown?)

Huleia Stream (ID 2-2-15), wet season: enterococci (unknown?)

Puali Stream (ID 2-2-14), dry season: TN, N+N, turbidity, enterococci (unknown?)

Puali Stream (ID 2-2-14), wet season: TN, N+N, turbidity, enterococci (unknown?)

Nawiliwili Stream (ID 2-2-13), dry season: TN, N+N, turbidity, enterococci (unknown?)

Nawiliwili Stream (ID 2-2-13), wet season: TN, N+N, enterococci (unknown?)

TMDLs in this submittal are for the following waterbody-pollutant combinations, some based on the 2006 303(d) list, and some added during TMDL development process:

Huleia Watershed – *enterococcus*†

Huleia Watershed – turbidity*
Huleia Watershed – total suspended solids (TSS)
Huleia Watershed – total phosphorus (TP)
Huleia Watershed - nitrate + nitrite (N+N)
Huleia Watershed – total nitrogen (TN)

Papakolea ‡ - *enterococcus*†
Papakolea ‡ – turbidity*
Papakolea ‡ – total suspended solids*
Papakolea ‡ – total phosphorus*
Papakolea ‡ - nitrate + nitrite*
Papakolea ‡ – total nitrogen*

Puali - *enterococcus*†
Puali – turbidity*
Puali – total suspended solids*
Puali – total phosphorus
Puali – nitrate + nitrite
Puali – total nitrogen

Nawiliwili - *enterococcus*†
Nawiliwili – turbidity*
Nawiliwili – total suspended solids*
Nawiliwili – total phosphorus*
Nawiliwili – nitrate + nitrite
Nawiliwili – total nitrogen

† had been listed as ‘unknown’ on 303(d) list; determined to be impaired during TMDL development
* not originally on 303(d) list; determined to be impaired during TMDL development

‡ Papakolea Stream, previously considered as a tributary of Huleia Stream, is now treated by State as a distinct freshwater segment for TMDL development purposes, since it actually flows into the estuarine portion of the Huleia Stream System, not the freshwater portion.

Huleia Stream is divided into two segments for the purpose of the TMDL: Kamooloa, Halfway Bridge, and Stone Bridge.

Nawiliwili Stream is divided into two segments for the purpose of the TMDL: Upper Nawiliwili and Lower Nawiliwili.

Note: Nawiliwili Bay is on 2006 303(d) list, but no TMDL was developed for the Bay.

The 2002 303(d) list contained the following relevant waterbody-pollutant combinations:

Nawiliwili Stream (ID 2-2-13), turbidity
Huleia Stream (2-2-15), turbidity