

PROJECT SUMMARY

The Hilo Bay Watershed Advisory Group (HBWAG) proposes to develop a water quality monitoring program relieving the burden of government and seeking to fill a gap between state and county agencies. It is the desire of the HBWAG to collect base flow (ambient) and storm flow water quality data that can serve as baseline measurements for the Hilo Bay watershed. The purpose is to identify pollutants that may need application of Best Management Practices (BMPs) to bring suspect waters into compliance with current water quality standards. Without adequate baseline data for this watershed, it is difficult to determine sources of pollution and to recommend remediation solutions. Additionally, the water quality monitoring, if maintained through and after the BMPs, will allow the community to evaluate the effectiveness of the remediation actions and to determine if the waters have come into compliance with state water quality standards.

The Mission of the HBWAG is: “To bring the community together to understand and protect the ecology of the Hilo Bay Watershed”. This mission has been achieved through successful partnerships with the University of Hawaii at Hilo (UHH), USDA Natural Resources Conservation Service, The Big Island Resource Conservation and Development Council (BIRC&DC), The Pacific Aquaculture and Coastal Resources Center (PACRC), the Hawaii County Department of Water Supply (DWS), Hamakua Soil and Water Conservation District (SWCD), and the NOAA Mokuapāpapa Discovery Center. A list of accomplishments is included in Attachment B. This community-based organization was formed during the public input process phase of the Hilo Bay Watershed Project Public Input Final Report in July, 2003 to address the United States Environmental Protection Agency’s (USEPA) list of impaired waters in the Hilo Bay Watershed. The group consists of volunteers who, through partnerships, outreach, and personal commitment, address watershed and water quality issues. The fiscal sponsor for the HBWAG is the Big Island Resource Conservation and Development Council, a registered 501c3 non profit in the State of Hawaii. The Hawaii County Department of Planning will be the entity submitting the grant proposal to Coastal Zone Management (CZM) for its consideration.

This proposed project addresses the following Management Goals and Strategic Actions detailed in Tables 5 and 7 of the Ocean Resources Management Plan (ORMP).

From Table 5: **Water Quality Monitoring Project Results Indicators** for Management Goals and Strategic Actions under Perspective 1

Management Goals and Strategic Actions	WQ Monitoring Results Indicators
<p><i>Improve coastal water quality by reducing land-based sources of pollution</i></p> <ul style="list-style-type: none"> • Reduce soil erosion from upland forest ecosystems and conversation lands • Reduce pollutant loads from residential, agricultural, and 	<ul style="list-style-type: none"> • The number of identified disturbances that create pollution and BMPs recommended • The number of identified locations of under treated sewage from

Hilo Bay Watershed Advisory Group
Water Quality Monitoring Program

commercial uses in priority watersheds	residential agricultural or commercial contributions to non-point sources
<p><i>Protect beaches, wetlands, and coastal communities from shoreline erosion and other coastal hazards</i></p> <ul style="list-style-type: none"> • Develop and implement a comprehensive and integrated shoreline policy that addresses the impacts of chronic and episodic coastal hazards 	<ul style="list-style-type: none"> • Quantity of stressors and BMPs recommended in final report to minimize hazards
<p><i>Improve and ensure maintenance and appropriate use of environmental infrastructure</i></p> <ul style="list-style-type: none"> • Repair leaking sewers in priority watersheds • Reduce the number of individual wastewater disposal systems in the coastal environment 	<ul style="list-style-type: none"> • Number of identified inappropriate wastewater disposal methods and locations

From Table 7: **Water Quality Monitoring Project Results Indicators** for Management Goals and Strategic Actions under Perspective 3

Management Goals and Strategic Actions	WQ Monitoring Results Indicators
<p><i>Apply integrated and place-based approaches to the management of natural and cultural resources</i></p> <ul style="list-style-type: none"> • Develop integrated natural and cultural resources planning process and standardized tools • Build capacity for community participation in natural and cultural resources management 	<ul style="list-style-type: none"> • Establishment of HBWAG and partnerships that were formed over 4 years creates decision making process which was non-existent in the past • WQ Monitoring provides data sets that will lead to identification of environmental problems within watershed • Cooperative decision making between new partnerships using credible data will enhance cultural and natural management

The HBWAG water quality monitoring program will link directly with these specific management goals and strategic actions by assessing the current conditions and using the results indicators listed above towards remediation. The budget for the project is \$5020.

NARRATIVE PROJECT DESCRIPTION

The objective of the water quality program is to identify potential sources of pollution entering streams and rivers in the Hilo Bay watershed, and to recommend mitigation of the pollution through community awareness and/or working with residents, local, and government agencies. A report of the findings shall be shared with the community and stakeholders via the HBWAG website and monthly outreach meetings held at the Mokupāpapa Discovery Center in downtown Hilo.

The need for this type of research was highlighted in the Hilo Bay Watershed-Based Restoration Plan prepared two years ago by the Environmental Center at the University of Hawaii at Manoa, which listed multiple tasks with recommended projects addressing water quality, watershed management, and much needed research to identify the level of impairment in the bay and rivers. However, the plan was not implemented because of insufficient or non-existent water quality data regarding pollution within the watershed. Additional literature searches and inquiries regarding pollution issues within the watershed confirm that insufficient water quality data exists for the Hilo Bay watershed and because of this pollutant sources cannot be identified. This project attempts to fill this gap.

This project will sample numerous stream waters in an effort to reflect the overall water quality of the watershed and in determining if the specified parameters for inland waters meet the established criteria. Finding waters with levels exceeding the criteria will be noted and the proper agency notified. Improving coastal water quality will require an examination of the source or potential sources in non-point source situations followed by BMP implementation(s) with further sampling. This project will sample specific sites and note those exceeding the criteria. It does not implement BMPs, however, the HBWAG will support and track progress of any BMPs implemented as a result of this project. Similarly, if inappropriate wastewater disposal methods are observed, those will be documented and reported. Integrating these credible data with the on-going Breakwater Water Quality Study and Beaches (HDOH) program will provide validation and potentially identify areas where further research is needed.

One powerful tool for integrating place-based approaches is through dialogues and discussions within the community. The HBWAG has such a tool in place through a partnership with the National Oceanic and Atmospheric Administration (NOAA). The HBWAG presents a monthly lecture at the Mokupāpapa Discovery Center in downtown Hilo addressing various water quality and watershed topics with time set aside for questions, answers, and talking story. Ideas and concerns are shared in this friendly, welcoming environment. Building capacity for community participation is facilitated and encouraged through volunteering for on-going projects; e.g., beach cleanups, wastewater stenciling, grant writing.

Our proposed monitoring project plans to measure: Nitrate + Nitrite, Ammonium, Total Phosphorus, Total Nitrogen, Total Suspended Solids, and Turbidity. Samples will be taken in accordance with a Quality Assurance Plan using standard method guidelines and accepted practices in accordance with the Hawaii Department of Health (HDOH) and the

Hilo Bay Watershed Advisory Group
Water Quality Monitoring Program

Environmental Protection Agency(EPA). The samples will be tested at UHH Marine Science Laboratories on the University of Hawaii at Hilo campus. The samples will be collected by a HBWAG 2 person (see attached resumes for primary investigators) team bi-monthly over a 6 month period. Accessible stream sites will be pre-determined and the sampling will be done at random dates so as to preclude bias to the maximum extent possible. That is, specific dates each month shall be selected and samples taken regardless of weather. Each stream will be tested at an upper and lower site. The table below provides a summary of the streams, number of sites, parameters to be measured, and the cost for each sample analysis.

Table of Streams and number of sites.

Stream	No. Sites	Nitrate + Nitrite	Ammonium	Total Phosphorus	Total Nitrogen	Total Suspend Solids	Turbidity
Honoli'i	2	\$5	\$5	\$5	\$5	\$5	\$5*
Pauka'a	2	\$5	\$5	\$5	\$5	\$5	\$5*
Pūkihae	2	\$5	\$5	\$5	\$5	\$5	\$5*
Wailuku	2	\$5	\$5	\$5	\$5	\$5	\$5*
Kaumana Springs Source	1	\$5	\$5	\$5	\$5	\$5	\$5*
Waiakea Pond Upper Reach	1	\$5	\$5	\$5	\$5	\$5	\$5*
Alenaio	2	\$5	\$5	\$5	\$5	\$5	\$5*
Waiakea	2	\$5	\$5	\$5	\$5	\$5	\$5*

* - In Kind (Reference Budget)

This program will provide several benefits to the community:

- Hilo Bay watershed has two ephemeral streams deemed “impaired” and listed in 303(d)/305(b) report by HDOH to the USEPA without specific impairment parameters defined and without scientific data to support the listing. This project shall provide data towards substantiating whether the impairment exists.
- The community will benefit through the collection of water quality data using sound scientific methods that can substantiate whether the impairment exists.
- The data shall serve as a basis for future comparisons as population growth occurs and allow for environmental impacts to be assessed.
- The development and implementation of BMPs will commence once specific problems are identified and corrective action agreed upon by the stakeholders.
- An informed community can better serve themselves and help government in making decisions regarding water quality.

The HBWAG water quality monitoring program will be performed during the six month period from January 1, 2008 to June 30, 2008 or sooner if funds become available. It is anticipated that further funding will be sought to continue the monitoring program with possible expansion to the wider county/State. This will be accomplished via the Hawaii

Hilo Bay Watershed Advisory Group
Water Quality Monitoring Program

Association of Conservation Districts building upon their current yearly water quality program. A summary report of this program will be generated and distributed to partners and archived to the HBWAG website.

BUDGET & PARTNERSHIPS

The following table provides a detailed list of the work to be accomplished, the role of each partner, and an estimated cost for performing those tasks required to implement the Water Quality Monitoring Program. The Pacific Aquaculture and Coastal Resources Center has partnered with HBWAG to provide staff for consulting on water quality data presentation and analysis, issues, and a computer for storing data plus working space for meetings. The Hawaii County Planning Department will act as liaison between agencies and stakeholders and will provide maps, consultation, and other information regarding land use and development. Copying services will also be supplied by the Planning Department. The local HDOH staff has agreed to consult with HBWAG regarding test sites and methods. The fiduciary sponsor, Big Island Resource Conservation and Development Council will oversee the funds and provide financial reports

PROJECT BUDGET

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AGENCY/ORGANIZATION	TASK	HOURS/\$	RATE/HOUF		
HI County Planning	Staff to provide consulting, maps, and stakeholder liaison, copy service for presentation materials & reports				
BI RC&DC	Staff to oversee funds, generate financial reports				
HBWAG	Volunteers to collect samples (32 Hr/month) for 6 months	192	\$18		
Turbidity Equipment	HOCH 2100P (includes shipping + tax)	\$880			
UHH Analytical Laboratory Analyses (720 Samples*)	Lab University Rate for testing	\$3600			
Sample bottles	Nalgene 1 liter/1 case(24)				
Sample containment	Cooler + ice	\$42			
Meeting Space	1 Per Month	6	\$25		
Meetings (1 per month)	HBWAG, DOH, PACRC personnel	24	\$18		
Writer (QA plan + report)	Write QA Plan + report	24	\$18		
Fuel expense to/from sites	Estimate 12 days \$20.00 per day	\$240			
Lunch (2 persons/day)	\$5 per person x 12 days	\$120			
Processing of photo surveillance of sites	HBWAG volunteer	6	\$18		
HBWAG	Volunteer does turbidity test (14 test/month)x six month	\$5			
Total					