

Hawaii's Polluted Runoff Control Program End of Year Report - Fiscal Year 2002



Department of Health Clean Water Branch Polluted Runoff Control Program

Overview

In some cases, one man can move a mountain, but in addressing non-point source pollution in Hawaii it requires the actions of many to make a difference. In Fiscal Year (FY) 2002, the Polluted Runoff Control Program's staff (the Program) of three managed over thirty (30) implementation projects, continued education and outreach efforts statewide, developed new partnerships and enhanced existing partnerships in their quest to address the non-point source pollution problems in Hawaii.



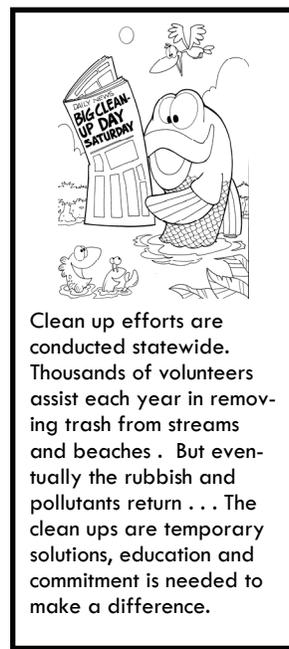
Every effort was made to meet the goals of Hawaii's Implementation Plan for Polluted Runoff Control, July 2000 (the Implementation Plan), the nine key elements outlined by the Environmental Protection Agency (EPA), and the Program's workplan.

The Program is determined to pull together all available resources within watersheds to seriously control polluted runoff. The Program continues to believe that voluntary efforts can be effective in addressing the state's nonpoint source pollution and the staff is apprehensive in taking on a regulatory role in the future.

October 1, 2001
through
September 30, 2002

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Clean up efforts are conducted statewide. Thousands of volunteers assist each year in removing trash from streams and beaches. But eventually the rubbish and pollutants return . . . The clean ups are temporary solutions, education and commitment is needed to make a difference.

Human Resources

The Program has struggled through another year without a Planner (PL). Qualified applicants on the State civil service list were contacted and offered an interview with the program, however, none were interested. The program has requested another civil service list but has not yet received one. The program has also informally talked to potential candidates to inform them of the vacancy. The Planner's duties therefore continue to fall on the shoulders of the three permanent staff members.

Denis Lau, Chief of the Clean Water Branch oversees the program. His experience and knowledge in environmental health and his contacts throughout the State are often key to placing the program in the forefront of people's minds.



Denis Lau (Chief), Lawana Collier (PPC), Jessica Pepler (EHS), Susan Kubo (IPA), and Colin Tanaka (GMS)

The Public Participation Coordinator (PPC) continues to lead the program, conduct education and outreach, and assumes many of the Planner's duties. The Grants Management Specialist (GMS) has made significant improvements in the efficiency of the Program's Request for Proposals process, contract management and grant tracking. Today the Program holds contractors to higher accountability levels than has been accepted in the past. This will help to ensure projects meet their objectives within reasonable timeframes. The Environmental Health Specialist (EHS) visited project sites and worked closely with contractors to keep projects moving forward. The EHS has also been important in helping the State work toward meeting the federal conditions of the Hawaii Coastal Nonpoint Source Pollution Control Program.



Lawana Collier (PPC), Maddie Ledda (PRC Secretary), Colin Tanaka (GMS), and Jessica Pepler (EHS)

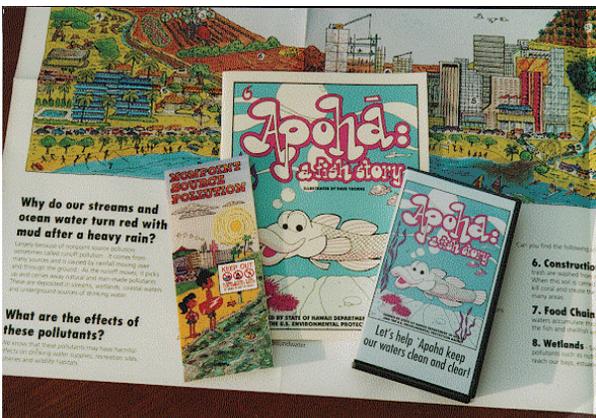
An IPA from the Natural Resources Conservation Service worked within the Program under a year long contract. She was asked to help implement the Unified Watershed Assessment program and encourage communities and agencies to develop Watershed Restoration Action Strategies. She had vast technical knowledge of best management practices (BMPs) and hands on experience working with contractors to implement and install BMPs. She contributed to the development of the draft Nonpoint Source Pollution Control rules and will be an asset to the Program as she continues to work within the State to address nonpoint source pollution.

Public Outreach and Education



Lawana Collier (PPC) talks to Waianae students about potential sources of polluted runoff in their watershed at the Waianae Keiki Water Festival 2002.

Many children are attracted to, or at the very least, interested in our presentation, booth or station because of Apoha the O'opu. This full body costume is in the image of a native Hawaiian fish and has been the program mascot for several years. There is such a high demand to use the costume for outreach events that two new costumes will be constructed next year. A child's excitement over their photo with Apoha is the catalyst to entice their parents or other adults to read the accompanying nonpoint source informational materials. This year the photo frame was updated and includes a simple description of nonpoint source pollution and ways people can help control it. Other attempts to increase the general public's awareness of polluted runoff issues are through public service announcements, the Program's display board posted at conferences, and the distribution of our brochure.



Outreach materials provided at scheduled events and upon request.

The Program continues its education and outreach efforts throughout the State. Information on nonpoint source pollution is distributed through various media., including coloring books, pencils, window clings, t-shirts, brochures, and posters. At large outreach events like the State Farm Fair or the Keiki Water Festivals, the Program focus their effort on the youth. Just in the month of September over 2,000 students, teachers and community members participated in our educational events, not including many other education efforts conducted through 319 funded projects.



Apoha poses at the Molokai Keiki Water Festival with Ruby Raindrop and Sammy Soil of the Natural Resources Conservation Service.

The vast majority of the state still remains unaware of polluted runoff, how individuals contribute to it and how they can prevent or control it. In some cases lack of information is not the problem, but it is the lack of a convenient, affordable or practical alternative that hinders individuals from changing the way they do business. The success of our outreach and education is in the changes in behavior we initiate. The program will be looking for new ways to inform and affect change in Hawaii's residents, as we all address nonpoint source pollution in the future.

Measuring Successes

Hawaii's Implementation Plan for Polluted Runoff Control (July 2000) provides an outline for the Program and its partners to address nonpoint source pollution for the next 15 years. The nine key elements required of the program are identified and planned activities to address these elements are placed in a timeframe. This year the Program has succeeded in meeting the key elements.

Key Element #1 – Explicit short and long-term goals, objectives and strategies to protect surface and ground waters.

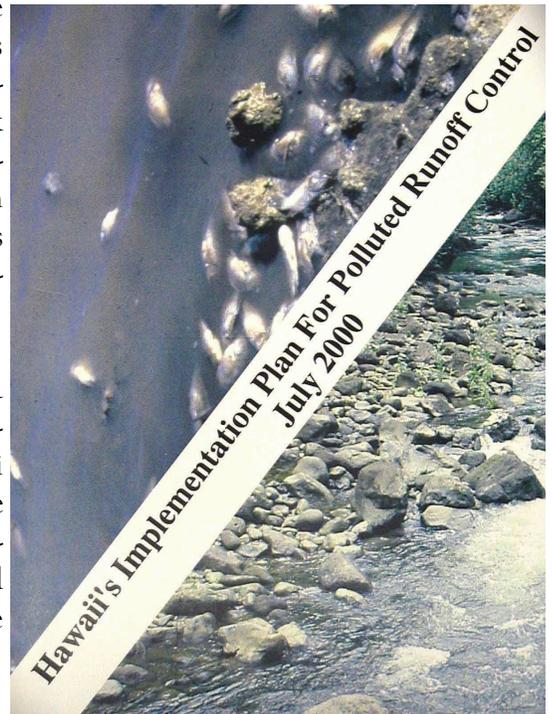
The Implementation Plan identifies several short-term goals that will help the state achieve three long-term goals. The first long-term goal is to “ensure that Hawaii's coastal waters are safe and healthy for people, plants, and animals and protect and restore the quality of Hawaii's streams, wetlands, estuaries, and other inland waters for fish and wildlife, recreation, aesthetic enjoyment and other beneficial uses by 2013.”

The first short-term goal is to update the Implementation Plan. Strategic meetings have taken place regarding the update. The actual updating of the Plan will be done throughout fiscal year 2003.

The second short-term goal is the revision to the State's water quality standards. Hearings were conducted this year on proposed changes to the water quality standards. Concerns regarding the revised standards were heard and the proposed changes are pending approval.

The third short-term goal is to increase the use of Best Management Practices (BMPs) and assess their effectiveness. The Program has continued to work with the counties to develop BMP Manuals for activities most likely to impact water quality. The City and County of Honolulu and Maui County have updated their grading ordinances and BMP manuals, and the Program is currently working with Kauai and Hawaii counties to upgrade their sediment and erosion control grading ordinance and BMP manual. The Program continues to work closely with the Soil and Water Conservation Districts to promote the use of BMPs, especially to address soil erosion on agricultural lands, to evaluate the effectiveness of various BMPs, and to develop a mechanism to track the implementation of BMPs.

The Program is working with the West Maui Soil & Water Conservation District to identify and evaluate the effectiveness of the many BMPs installed within the West Maui watershed. The District will submit to the State a list of all the BMPs installed, their location in West Maui, and where possible, the cost of installing and maintaining the BMPs. This will help the Program evaluate the effectiveness of the funding we provide to address polluted runoff.



Measuring Successes (cont.)

The fourth short-term goal is to increase the number of participants in the Program's education and outreach efforts. This was accomplished this year through participation in watershed festivals and school and community events. Increased participation, however, does not ensure the Program has changed people's attitudes enough, to prompt them to take action toward preventing polluted runoff. In fact one of our projects worked hard to inform the community of the effect illegal dumping is having on their waterways, streams and ocean, yet, the illegal dumping continues.

The fifth or last short-term goal addresses the Coral Reef Initiative and is lead by the Coastal Zone Management (CZM) Program. The PPC participated this year in evaluating project proposals for the CZM Program for community based coral reef projects. Many of these projects help to educate and encourage stewardship for Hawaii's coral reefs to protect and enhance these valuable resources. Their education includes nonpoint source pollution and the effect it can have on the coral reefs.

The second long-term goal is to "identify impaired water bodies and restore their designated uses through a Statewide approach to watershed management within 15 years."

The first short-term goal involves developing Watershed Assessments for the State's designated priority watersheds (Pelekane Bay, West Maui, South Molokai, Nawiliwili, and Koolaupoko).

Pelekane Bay and West Maui have Watershed Assessments and are working to implement projects in their watersheds. This year the Koolaupoko Watershed Assessment was completed and partially funded by a 319 grant. The document, produced by the Kailua Bay Advisory Council (KBAC), is titled "Kailua Bay Advisory Council Interim Master Plan for Ko'olaupoko Watersheds." The Program intends to solicit proposals for implementation projects identified in the Koolaupoko plan in early 2003.

The South Molokai and Nawiliwili Bay Watershed Assessments are currently being developed and will be completed in 2003. The program continues to partner with various government agencies and community based watershed groups to develop these plans. In Nawiliwili, the Program has attempted to bring together the Watershed Based Plan project and the Total Maximum Daily Load (TMDL) to be developed to alleviate the potential overlap of monitoring and research. The Program brought together a state agency (the University of Hawaii) and a non-profit group (Pacific Islands Communities Sustainable Communities Ecosystems, PISCES) to develop the Nawiliwili Watershed Assessment. In South Molokai, the Molokai-Lanai Soil and Water Conservation District developed a Plan of Work which will help the community prepare a Watershed Assessment for South Molokai.

The Program has not completed the categorization and prioritization of all watershed regions as identified in the second short-term goal, but is working with the University of Hawaii to develop Watershed Assessments for all of the Category I Tier 2 watersheds in the state. This project will begin early 2003 and will be completed within one year. These Assessments will include background information on each Tier 2 Watershed and suggestions for implementation projects which address nonpoint source pollution. After the University of Hawaii develops the Watershed Assessments, the state will identify who should take the Assessments out to communities for their input.

Measuring Successes (cont.)

The third short-term goal, to implement Watershed Restoration Action Strategies (WRASs), was a focus for the IPA. Pelekane Bay and West Maui were the only watersheds in position to implement their watershed based plans this year. The IPA felt that pushing the other watersheds to complete their WRASs would be the most beneficial direction the Program could take. South Molokai, Nawiliwili and Koolaupoko watersheds were inspired to complete their WRASs with the knowledge and incentive that the Program had funding available to implement projects identified in these plans.

The fourth short-term goal is to implement the watershed management educational program, including supporting the Farm-A-Syst and Home-A-Syst programs. In Hawaii these materials were adapted to better fit our island environment. The development and distribution of the new materials was funded through a 319 grant and is described in the Completed Projects Section of this report. The Soil and Water Conservation Districts have assisted the Program by distributing and effectively using the materials with their cooperators.

The fifth short-term goal is to implement water quality monitoring programs in the five priority watersheds. The Program has not done this and relies on the volunteer monitoring conducted by the 319 project contractors and the Department of Health's Clean Water Branch. However, the State's resources have not allowed for the Program to conduct consistent monitoring in the priority watersheds.

The State continues to work toward the next goal of completing TMDLs for all section 303(d) listed waters. The Program is looking for ways to enhance the efforts of the TMDL program with 319 funding in order to complete the TMDLs by the 2012 deadline. Currently there are 3 TMDLs completed and approximately 130 yet to be completed. The State will meet with Environmental Protection Agency (EPA) in November 2002 to discuss potential solutions to meeting this 2012 deadline.

The last short-term goal is to update and implement the Department of Health Strategic Plan in water quality monitoring objectives, strategies, and methodologies. Discussions have taken place and this update will be done in 2004.

The third long-term goal is to "develop and implement economically achievable management measures, as identified in Section 6217 of the Coastal Zone Act Reauthorization Amendments, which are appropriate to Hawaii's physical, economical, cultural, and social environment by 2013."

The first short-term goal was to produce Hawaii's Implementation Plan for Polluted Runoff Control integrating the updated NPS Management Program Plan and this was done in July 2000.

The second short-term goal was to prioritize management measures and focus implementation efforts. The Program continues to work with the Coastal Zone Management Program (CZM) to meet the conditions of the State's program approval. The conditions are to be met by June 2003. The activities required of the program to meet conditions have been burdensome due in part to the lack of resources. After meeting with EPA and the National Oceanographic and Atmospheric Administration (NOAA), a timeframe to complete the necessary work to meet conditions was agreed upon by the state and federal agencies involved. The conditions must be met before the Program can focus on implementation of the management measures.

Measuring Successes (cont.)

The third and fourth short-term goals were completed. The Attorney General reviewed Hawaii's statutes and determined that we lack statewide enforceable policies and mechanisms for polluted runoff control and therefore the state decided to draft Hawaii Administrative Rules 11-56, Nonpoint Source Pollution Control to meet this need. An attorney was contracted to look at other states' rules and provide the State with alternatives. Two statewide videoconferences were held to receive feedback from the public on the alternatives. After receiving comments the State decided a general prohibition would be most effective. The draft of the rules was completed in early September. The program will conduct statewide public informational meetings October 14 - 29, 2002, and accept written comments until November 15, 2002. The State will then review the comments and work with the Attorney General to redraft the rules as necessary. The next step would be to request the Governor's approval for formal public hearings. In order to meet the conditions of the approval of the CNPCP the rules should be signed by the Governor by June 2003.

The fifth and last short-term goal is to receive approval of the State's Coastal Nonpoint Pollution Control Program (CNPCP) from NOAA and the EPA. This will be accomplished when the State meets all the conditions of EPA and NOAA placed upon the approval of the CNPCP. The program continues to work with CZM toward meeting this goal by June 2003. The State has held monthly conference calls with EPA and NOAA to attempt to keep to a schedule that will, at a minimum, prepare the State to submit the necessary documentation to meet the conditions.

In working towards receiving approval of the CNPCP, the Program conducted several strategic activities this year. The State met with NRCS to discuss the development of a State Agricultural BMP Manual based on the NRCS Field Office Technical Guide. Work will begin on this in January 2003. The Program has worked with the counties as mentioned before to meet the condition of the Urban Runoff for New Development management measure. The Program has a draft of a report on the State's plan to implement the National Pollutant Discharge Elimination System (NPDES) Phase II to be submitted to meet the Urban Construction Site Erosion and Sediment Control and the Hydromodification Erosion and Sediment Control management measures. The IPA contacted the counties and construction industry to determine whether the Urban Construction Site Chemical Control and Dams Chemical and Pollutant Control management measures are met with existing BMP manuals. A report will be submitted. The EHS has reviewed and drafted a write up based on Chapter 5 of the Implementation Plan to meet the Urban Existing Development and Streambank and Shoreline Erosion management measures. The State has had discussions but not yet reached a solution to meet the Urban On Site Disposal Systems (OSDSs) management measure. The Wastewater Branch of the DOH feels that the minimum requirement for approval of this management measure, inspection at point of sale alone, will not help eliminate OSDSs nor help prevent nonpoint source pollution. The EHS submitted to EPA a draft document to meet the Critical Coastal Areas-1 management measure and this will likely be submitted in final with CZM's document to meet the Critical Coastal Areas-2 and 3 management measures.

Measuring Successes (cont.)

Key Element #2 – Strong working partnerships and collaboration with appropriate State, interstate, Tribal, regional, and local entities (including conservation districts), private sector groups, citizen groups, and Federal agencies.

The Program promotes the partnering between all stakeholders and government agencies in each watershed to succeed in addressing nonpoint source pollution. The Program participates to the extent resources are available in statewide partnerships and encourages new partnerships when appropriate.

The Polluted Runoff Forum (PROF) did not hold a meeting this year. The mailing list of past participants in the PROF has been used this year to inform people of activities being conducted by CZM and DOH, and will be used to invite people to the informational meetings on the draft Nonpoint Source Pollution Control rules. The group along with the Focus Groups will be reconvened to assist in the development of the next five year Implementation Plan.

The PPC continues to participate in the Natural Resources Conservation Service (NRCS) State Technical Committee meetings each quarter. Many of the discussions this fiscal year have been focused on the new Farm Bill and how it will be utilized within the state. NRCS did not have the guidance and rules to implement the programs at the last meeting but are expected to at the next meeting in November 2002. The huge increase in funding has partners excited about the potential for more projects to be funded in Hawaii.

The program continues to work with the Soil and Water Conservation Districts and the Hawaii Association of Conservation Districts (HACD). In the past, the Hawaii Technical Committee for Nonpoint Source Pollution conducted meetings in conjunction with the HACD quarterly meetings in order to increase statewide participation. This year meetings were held in April and June. The meetings provided a means for the Program to share their activities and receive feedback. The committee will continue to encourage other agencies to participate as they did in the past.

The program participates on varying levels with watershed-based partnerships such as the Ala Wai Watershed Association, the Kailua Bay Advisory Council, the Mountain Watershed Partnerships, Malama Hawaii, and the Interagency Water Quality Committee. The Program staff cannot actively participate in all the groups throughout the year and tends to participate upon request. Other groups the Program is participating in are the Stream Systems Focus Group, the Water Quality Working Group, the Coral Reef Initiative and the Kailua Waterways Advisory-Stakeholder Group.

Key Element #3 – A balanced approach that emphasizes both state-wide nonpoint source programs and on-the-ground management of individual watersheds where waters are impaired or threatened.

Measuring Successes (cont.)

This element is accomplished every year as the Program works to address nonpoint source pollution through education and outreach programs and on the ground management of individual watersheds is conducted within the Unified Watershed Assessment program. The program is challenged to disperse information and funding to all islands within the state and then to also support the specific watersheds where waters are not meeting water quality standards. Both the statewide efforts and the watershed-based efforts are important but the Program is limited by the lack of staff resources. The Program tries to connect groups with others working on similar projects to share information and resources where possible.

Key Element #4 – The State program (a) abates known water quality impairment resulting from nonpoint source pollution and (b) prevents significant threats from present and future nonpoint source activities.

The State selects projects for 319 funding that demonstrate either the abatement of polluted runoff or the prevention of potential future nonpoint source pollution. The projects are described in following sections of this report.

Key Element #5 – An identification of waters and watersheds impaired or threatened by nonpoint source pollution and a process to progressively address those waters.

The State finalized its Unified Watershed Assessment Report in 1998, which identified priority watersheds. The Program has used this classification to target funding for projects within these watersheds. The Program continues to give these watersheds priority in our project selection process however this year we have expanded our focus to include Tier 2 watersheds. In prior years the State targeted a certain amount funds from various grants for each of the priority watersheds. By doing so the State now finds itself with unencumbered funds in grants near expiration. To address this issue, the Program has committed the older grant's funds to proposals, submitted under this year's Request for Proposals that meet the criteria of incremental funding. This has helped bring the Program closer to committing all of the grant funds of the older grants. This still leaves the Program seeking quality projects to commit funding of the more recent grants. The Program has made great improvements in the contracting process and grant management under the guidance of the GMS however we still do not have enough qualified proposals. In order to continue our progress the Program must solicit more proposals.

Measuring Successes (cont.)

Key Element #6 – The State reviews, upgrades, and implements all program components required by section 319(h) of the Clean Water Act, and establishes flexible, targeted, iterative approaches to achieve and maintain beneficial uses of water as expeditiously as practicable.

The Program continues to evolve and develop to best meet the program requirements of section 319(h) of the Clean Water Act. To achieve and maintain beneficial uses of state waters the Program must be critical and practical when selecting projects to fund. The Program evaluates the potential success in water quality improvements when selecting projects. In the past the Program's approach was to work to bring impaired waters to a point where they can achieve beneficial uses. Currently the Program is considering whether it is possible for these impaired waters to ever meet the beneficial uses desired by the State, and perhaps the Program needs to adjust their approach to look at maintaining the beneficial uses in non-impaired waters. For example, in the Ala Wai watershed there may be water bodies that will not meet water quality standards even through the implementation of 319 projects, and the funding targeted here may be better spent in maintaining waters in other watersheds where the beneficial uses are threatened. The Program will look more closely at this in the future.

Key Element #7 – An identification of Federal lands and activities that are not managed consistent with State nonpoint source program objectives.

No work was completed this past fiscal year pertaining to this Key Element because the State's priorities were focused elsewhere.

Key Element #8 – Efficient and effective management and implementation of the State's nonpoint source program, including necessary financial management.

This year the Program attempted to increase the efficiency of managing the thirty plus projects funded under section 319(h) by holding all contractors more accountable. The GMS worked closely with contractors to accurately manage the finances of the projects. He has standardized reporting forms to simplify the process and explains the Program's expectations so invoices can be paid as soon as possible. The EHS has also worked closely with the contractors to ensure project deliverables are submitted and projects proceed as intended. The overall management and implementation of the program is led by the PPC.

The State had intended to develop a non-regulatory Pollution Prevention Program (PPP) for agriculture by 2003, however, EPA and NOAA informed the State that this program is not needed to meet the conditional approval of the CNPCP. Therefore the State decided to focus efforts on activities required to meet conditions, including the development of the Agriculture Best Management Practices Manual. The work required to meet these conditions has been difficult. In previous years the Program

Measuring Successes (cont.)

funded a Planner position in the CZM program to work on these conditions. It is impossible for this one person to complete this work alone. This year CZM funded the Planner position to continue working on CZARA, and the funding from the Program was used for contracts to assist meeting the conditions. This leaves the Program without available staff to contribute time to these activities and again in the absence of a Planner the remaining program staff is required to somehow cover the activities. EPA and NOAA are aware of the situation, however, the requirements of the State for the CNPCP must still be met.

Key Element #9 – A feedback loop whereby the State reviews, evaluates, and revises its nonpoint source assessment and its management program at least every five years.

The Program will be reviewing and evaluating the program as we develop the next 5 year Implementation Plan. The State evaluates the Program with the EPA at the end of each year to determine how well the Program is meeting the State goals and how well the State is meeting the needs of addressing nonpoint source pollution throughout the state.

CURRENT CWA §319(h) PROJECTS

Summary of Current CWA §319(h) Projects

The Polluted Runoff Control Program currently oversees nineteen 319(h) projects and has six projects under contract development. The projects are funded under Fiscal Year (FY) grants beginning in 1998 through 2001. Under the Request for Proposals (RFP) for FY 2002 the State did not receive enough qualified proposals to commit all of the available grant funds and will therefore issue a RFP as soon as possible.

Projects on Oahu

- Salt Lake Watershed Improvement Program
- Heeia Coastal Restorations Project
- Kalihi Subwatershed Project
- Waimanalo Stream Restoration Total Maximum Daily Load Implementation
- The (Koolaupoko) Watershed Restoration Corps
- Cover Cropping to Reduce Nitrogen, Waialua
- Phytoremediation for Eutrophication

Projects on Maui

- West Maui Best Management Practices on Former Sugarcane Lands
- West Maui Strategic Fences and Ungulate and Invasive Species Removal
- Lahaina Watershed Revegetation Project

Projects on Kauai

- Demonstration and Training in Critical Area Stabilization Techniques on Agricultural Roads and Unprotected Waterways-East/West Kauai
- Nawiliwili Bay Watershed Restoration
- Nawiliwili Watershed Project (WRAS Development)

Projects on the Big Island of Hawaii

- Pelekane Bay Watershed Unified Watershed Assessment

Projects on Lanai

- Lanai Watershed Restoration

Statewide Projects

- Hawaii Water Environment Association (HWEA) Public Service Announcements
- Hawaii Association of Conservation Districts (HACD) Agricultural Road Stabilization
- NOAA Rainfall Frequency Atlas Maps Update
- Department of Education (DOE) School Watershed Project ('01-'03)

Demonstration and Training in Critical Area Stabilization Techniques on Agricultural Roads and Unprotected Waterways-East/West Kauai

Contractor: East Kauai Soil and Water Conservation District (EKSWCD)

Project Period: September 1999 through March 2003

Federal FY98 Funds/Match: \$50,904 / \$52,678

% of Project Completed: 51%

The project will demonstrate techniques to reduce soil erosion and sedimentation. The project will transfer this technology to agricultural landowners and land users on Kauai and statewide.

Factors beyond the control of the EKSWCD, have caused great delays in completing the contract. All best management practices were installed and video taped. The project is creating the narrative to accompany the video footage and developing a plan to distribute the video and information developed to the public.



Nawiliwili Bay Watershed Restoration

Contractor: Pacific Islands Sustainable Community Ecosystems (PISCES)

Project Period: June 2001 through December 2002

Federal FY00 Funds/Match: \$64,000 / \$69,000

% of Project Completed: 90%

The project will demonstrate Best Management Practices that will improve water quality, implement educational and water quality assessment programs, develop a video to transfer information to others, and install and monitor storm drain inserts.

An informational video that address pollution problems within the Nawiliwili Bay Watershed was created and is currently being distributed. Storm drain inserts appear to be successful in removing debris, grease, and oil from stormwater runoff and are currently being analyzed. Water quality data continues to be collected and is currently being analyzed.



Nawiliwili Bay Advisory Meeting

Nawiliwili Watershed Project (WRAS Development)

Contractor: University of Hawaii, Department of Geology and Physics

Project Period: October 2001 through May 2003

Federal FY99 Funds/Match: \$106,080 / \$207,903

% of Project Completed: 50%

The project will assess current pollution levels and identify potential sources of contamination in the Nawiliwili Bay Watershed.

Phase I of the project has been completed. This includes a compilation and analysis of all water quality data and information available on the Nawiliwili Bay Watershed. Water quality data is currently being collected and plans for creating a watershed model are being developed.

The University continues to work with a local community group (PISCES) to ensure that the public is involved in the WRAS development. Work done within the watershed under this project will also assist the State in developing the TMDL for Nawiliwili Stream.



Pelekane Bay Watershed Unified Watershed Assessment

Contractor: Mauna Kea Soil and Water Conservation District (MKSWCD)

Project Period: December 2001 through July 2003

Federal FY99 Funds/Match: \$200,000 / \$160,000

% of Project Completed: 43%

This project will demonstrate Best Management Practices that improve vegetative ground cover and reduce soil erosion on arid dry rangeland.

Construction of a makai boundary fence has begun. Monitoring for erosion, percentage of vegetative cover and growth, stubble height, and water quality has also begun. Results of this monitoring will be analyzed to determine the effectiveness of BMPs installed.



Kawaihae Harbor at the base of the Pelekane Bay Watershed.

Heeia Coastal Restorations Project

Contractor: Friends of Heeia State Park
Project Period: May 2001 through December 2002
Federal FY00 Funds/Match: \$84,000 / \$84,000
% of Project Completed: 90%

The project will reduce nonpoint source pollution entering Kaneohe Bay through Heeia stream by planting vegetation along stream banks and removing alien flora from the immediate area.

Monthly stream clean ups, mangrove clearings, and planting of native and non-invasive species continue as well as daily and weekly educational presentations to schools and community groups. Water quality data is still being collected and is in the process of being analyzed.



Students participating in Park activities are encouraged to pull Mangrove seedlings out of the ground before they grow too big.

Cover Cropping to Reduce Nitrogen, Waialua

Contractor: Hawaii Farm Bureau Federation (HFBF)
Project Period: March 2002 through July 2003
Federal FY99 Funds/ Match: \$40,000 / \$43,500
% of Project Completed: 35%

This project demonstrates a Best Management Practice using cover crops to reduce the concentration of nitrates in soil following corn cropping and will distribute information gathered from the trials to encourage others to adopt this practice.

Students from Waialua High School have been recruited and trained in collecting project data and corn production. An operation and maintenance plan has been developed for the field sites and planting of the corn crop will be in October.



One of the sites in Waialua where the corn and cover crop rotation will take place.

Salt Lake Watershed Improvement Program

Contractor: City and County of Honolulu, Department of Environmental Services

Project Period: December 1999 through December 2002

Federal FY 99 Funds/Match : \$20,000 / \$29,000

% of Project Completed: 75%

The project will reduce silt build up and odor in Salt Lake through monitoring, educational outreach programs, and by limiting the use of storm drain inserts, filtration devices, and chemical and biological treatments.

The project has been slow to complete contract activities. Several informational meetings were held concerning urban runoff and fertilizer and pesticide use within the Salt Lake Watershed. The project conducted storm drain stenciling, stream bank restorations, and developed educational information that was distributed to over 100 people during a Salt Lake Watershed Awareness Day held in September.



Salt Lake Waterway is overgrown with algae.

The (Koolaupoko) Watershed Restoration Corp

Contractor: Waimanalo Health Center

Project Period: June 2000 through November 2002

Federal FY 99 Funds/ Match: \$80,000 / \$80,000

% of Project Completed: 95%

The project will reduce sediment and nutrients from entering streams from eroding banks by planting vegetation along stream banks.

Native plants used to revegetate the stream bank are thriving and no longer in need of irrigation. The Waimanalo Health Center continues to maintain the three revegetated project sites. The final report for the project is due on November 15, 2002, which should supply results of an actual decrease in sediments and nutrients entering the stream. The experiences here will be transferred to other individuals and organizations interested in stream bank restoration.



Waimanalo Stream after streambank and channel restoration.

Department of Education School Watershed Project ('01-'03)

Contractor: Department of Education (DOE), Environmental Education Specialists

Project Period: May 2002 though August 2004

Federal FY00 & 01/Match: \$164,046 / \$165,737

% of Project Completed: 5%

The project will develop a teacher development program for the Honolulu district schools through which teachers will learn how to assist students in achieving selected content standards in the context of watershed study, which deepens understanding of nonpoint source pollution and fosters environmental stewardship. Working through the DOE, the Polluted Runoff Control Program can reach students statewide.

A project resource teacher was hired to coordinate the teacher development courses. The courses will be developed by mid-October and held in late-November. A draft plan for an educational network was developed. The network will allow classroom teachers and support personnel an opportunity to share their successes and challenges in dealing with watershed related programs.



CURRENT PROJECTS FUNDED UNDER A MACROALGAL BLOOM §104(b)(3) GRANT

CWA Section 104(b)(3) provides funding for projects that accomplish storm water control, sludge management, and pretreatment. Currently PRC utilizes these funds in administering two contracts with demonstration sites and implementation of Best Management Practices to control storm water.

The funds have been targeted for the West Maui Watershed. West Maui identified the abundance of macro algae, in its Watershed Owners Manual, to be a species that 'grows like a weed' and is difficult to control. Algal blooms in West Maui involve three types of macroalgae: *Cladophora*, *Hypnea*, and *Ulva*. Elevated concentrations of dissolved nitrogen and phosphorus in the narrow band of nearshore water where macro algae thrives is attributed to groundwater seeps which carry fertilizer leachate from large-scale agriculture, cesspools, and septic systems. With funding provided to contractors on Maui, PRC works to reduce nutrient input to the ocean from the watershed, and help improve the quality of West Maui's coastal waters for recreational use and aesthetic purposes.

Lanai Watershed Restoration

Contractor: Department of Water Supply, County of Maui
Project Period: October 2001 through December 2002
Federal FY 00 Funds/Match: \$50,000 / \$50,000
% of Project Completed: 50%

The project will restore the Lanai Watershed by preventing further loss of soil and reducing nutrient loads of near shore waters through planting ground cover, installing fencing to prevent ungulates from causing erosion in the upper watershed, and removing weeds that increase fire hazard or that do not provide good erosion protection.

Several miles of fencing trails have been cleared and installation of fencing materials has begun. Educational presentations have been developed and the contractor is currently presenting the information to local schools and the community. The project is also developing movie theatre advertisements to inform the general public about non-point source pollution and other issues facing the island of Lanai.



The project coordinator and her fencing crew.

HWEA Public Service Announcements

Contractor: Hawaii Water Environment Association
Project Period: August 2001 through December 2002
Federal FY 00 Funds/Match: \$30,000 / \$41,000
% of Project Completed: 39%

This project will develop Public Service Announcements (PSA) to help the State educate the public about the causes of sewage spills, the impacts of sewage spills to public health and the associated monetary costs to sewer users, and the important role of the public in minimizing the occurrence of sewage spills.

All three PSAs were shot and edited. Currently, a press conference is being planned to announce the launch of the PSAs. A brochure that discusses how people can help prevent sewage spills is also being developed.

Hawaii Association of Conservation Districts Agricultural Road Stabilization

Contractor: Hawaii Association Conservation Districts (HACD)

Project Period: September 2001 through June 2003

Federal FY00 Funds/ Match: \$60,000 / \$47,000

% of Project Completed: 60%

The project will establish demonstration sites throughout the state to measure the effectiveness of various soil and fiber amendments available in the commercial market for reducing erosion and dust production from agricultural roads.

Most field trials have been completed successfully. When all data from the field trials have been collected, the data will be analyzed to determine which dust suppressants are best suited for Hawaii's varying soil types.



Dust particles kicked up by passing trucks are collected in buckets for weight analysis.

NOAA Rainfall Frequency Atlas Maps Update

Contractor: University of Hawaii, Department of Meteorology

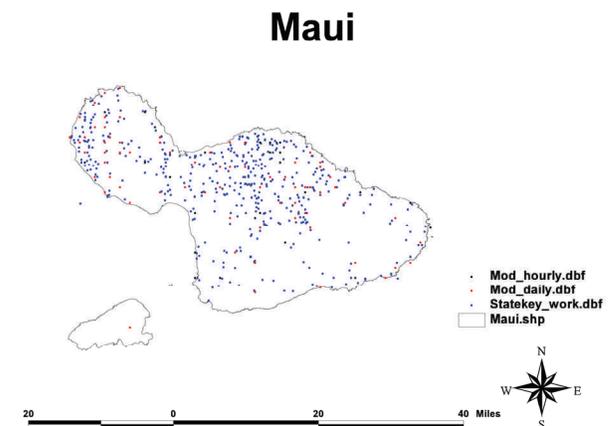
Project Period: October 2001 through June 2003

Federal FY01 Funds/Match/Other Federal Funds: \$30,000 / \$70,000 / \$30,000

% of Project Completed: 40%

This project is providing supplemental rainfall data for the National Weather Service's update of the Rainfall Frequency Atlas for Hawaii in order to improve reliability of computer runoff models used for nonpoint source pollution prevention and control.

To date, the islands of Hawaii and Maui have finished being researched and information from an additional 75 rain gauges have been digitized and sent to the National Weather Service for incorporation into the Rainfall Frequency Atlases. The islands of Oahu and Kauai are currently being researched.



A map showing the distribution of rain gauges available for data collection.

Pelekane Bay Watershed Unified Watershed Assessment

Contractor: Mauna Kea Soil and Water Conservation District (MKSWCD)

Project Period: December 2001 through July 2003

Federal / Non-Federal Funds: \$200,000 / \$160,000

% of Project Completed: 43%

This project will demonstrate Best Management Practices that improve vegetative ground cover and reduce soil erosion on arid dry rangeland.

Construction of a makai boundary fence has begun. Monitoring for erosion, percentage of vegetative cover and growth, stubble height, and water quality has also begun. Results of this monitoring will be analyzed to determine the effectiveness of BMPs installed.



Kaiwaihā Harbor at the base of the Pelekane Bay Watershed.

West Maui Best Management Practices on Former Sugarcane Lands

Contractor: West Maui Soil and Water Conservation District (WMSWCD)

Project Period: October 26, 2001 through October 2003

Federal / Non-Federal Funds: \$86,000 / \$70,500

% of Project Completed: 30%

This project is developing a Watershed Restoration Action Strategy and installing Best Management Practices that will address dust, sediment runoff, and flooding problems on former sugarcane lands.

Best Management Practices continue to be constructed and maintained on Maui Pineapple Company and Pioneer Mill Company land. However, because of labor constraints, construction has been slow this year. The project is creating a master list of all the BMPs constructed in the West Maui Watershed. This information can then be used to determine what level of effort is required in a watershed to adequately reduce nonpoint source pollution.



Cross slope planting—an example of BMPs being employed by Maui Pineapple Company.

West Maui Strategic Fences and Ungulate and Invasive Species Removal

Contractor: West Maui Soil and Water Conservation District (WMSWCD)

Project Period: September 2001 through October 2003

Federal FY99 Funds/ Match: \$200,000 / \$166,000

% of Project Completed: 50%

This project demonstrates the use of strategic fences to aid in the removal of ungulate and invasive species from watersheds and prevent further degradation by these feral pigs, cattle, goats, and deer.

The contractor continues to clear fence trails and construct strategic fencing within the West Maui Watershed. The project found the feral pigs to be more adept in traversing steep terrain and therefore longer sections of fencing will be needed to exclude the pigs. Monitoring of the number of feral ungulates removed from inside the fenced areas will begin shortly. This information will help determine if the strategic fences are useful in deterring feral animals from reaching the upper watershed.



The Polluted Runoff Control Program conducts a site visit, by helicopter, to monitor the progress of the trail clearings.

Lahaina Watershed Revegetation Project

Contractor: Pacific Islands Land Institute (PILI)

Project Period: March 2002 though March 2004

Federal FY00 Funds/ Match: \$109,430 / \$109,600

% of Project Completed: 15%

This project demonstrates how nonpoint source pollution from abandoned agricultural land can be reduced using culturally appropriate and economically beneficial plants.

Initial monitoring data has been collected and a baseline survey and inventory of the project site was developed. Several stakeholder meetings have been held to develop an operational and maintenance plan and monitoring plan for the project site. Restoration of the project area using native plant species is expected to begin in December.



Lahaina Watershed

Waimanalo Stream Restoration Total Maximum Daily Load Implementation

Contractor: University of Hawaii Pacific Biomedical Research Center
Project Period: June 2002 though August 2004
Federal FY 01 Funds/Match: \$120,000 / \$120,000
% of Project Completed: 5%

The project will improve water quality problems in the Waimanalo Stream and the Koolaupoko Watershed by implementing specific measures identified in the Waimanalo Stream Total Maximum Daily Load Implementation Plan.

The project has hired project staff and is contacting stakeholders in the Waimanalo Watershed to be a part of the project's advisory group. A monitoring plan is being developed and initiation of stream bank restorations should be early next year.



This Moorhen, a native Hawaiian bird, is one of several native species who rely on Waimanalo Stream.

West Maui Best Management Practices on Former Sugarcane Lands

Contractor: West Maui Soil and Water Conservation District (WMSWCD)
Project Period: October 26, 2001 through October 2003
Federal FY99 Funds/Match: \$86,000 / \$70,500
% of Project Completed: 30%

This project is developing a Watershed Restoration Action Strategy and installing Best Management Practices that will address dust, sediment runoff, and flooding problems on former sugarcane lands.

Best Management Practices continue to be constructed and maintained on Maui Pineapple Company and Pioneer Mill Company land. However, because of labor constraints, construction has been slow this year. The project is creating a master list of all the BMPs constructed in the West Maui Watershed. This information can then be used to determine what level of effort is required in a watershed to adequately reduce nonpoint source pollution.



Cross slope planting—an example of BMPs being employed by Maui Pineapple Company.

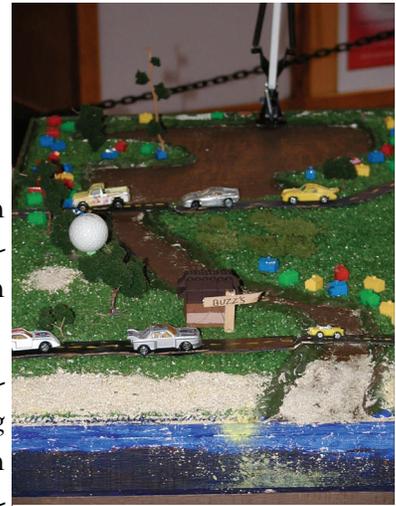
Kalihi Subwatershed Project

Contractor: Protect the Planet (PTP)
Project Period: July 2002 through July 2003
Federal FY 99 Funds/ Match: \$38,500 / \$38,500
% of Project Completed: 5%

The project intends to improve the waters of Keehi Lagoon through the restoration of a section of Kalihi Stream and the establishment of a nonpoint source pollution education and community action program.

The contractor is developing a monitoring plan to track the progress of the project's restoration and outreach efforts and is working with local teachers in developing a curriculum that includes information on nonpoint source pollution and will use the restoration site as an outdoor classroom.

The Polluted Runoff Control Program recently participated with PTP and the City and County of Honolulu in an island-wide watershed model contest for high school and intermediate school students. Students made physical models of their watersheds and demonstrated how polluted runoff occurs and identified the potential sources of nonpoint source pollution.



Watershed Model.

Phytoremediation for Eutrophication

Contractor: City and County of Honolulu , Department of Environmental Services
Project Period: August 2002 through April 2004
Federal FY 00 Funds/ Match: \$97,055 / \$99,494
% of Project Completed: 0%

The purpose of this project is to improve the water quality of Keehi Lagoon through the installation of floating phytoremediation platforms (FPP) systems in Salt Lake. The FPP will remove nutrients and pollutants, reducing algae growth and siltation, helping to control the foul odors surrounding the waterway. Educational workshops will also be produced.

No activities, other than minor contract modifications, have been conducted as of yet.



Floating platforms growing two different types of plants will be placed within the Salt Lake Waterway.

Best Management Practice Improvement on Maui Pineapple Company and Pioneer Mill Company Land

Contractor: West Maui Soil and Water Conservation District (WMSWCD)

Project Period: April 2000 through April 2003

Federal FY98 Funds/Match: \$285,000 / \$90,000

% of Project Completed: 75%

The project will reduce further degradation of near coastal waters by constructing sediment retention basins and enhancing current Best Management Practices.

Best Management Practices continue to be constructed and maintained on Maui Pineapple Company and Pioneer Mill Company land. Best Management Practices constructed include five sediment basins, an access road, and grass filter strips. However, because of labor constraints, construction has been slow this year.



Grassed Waterway

Implementing Best Management Practices to Remediate Sediment Runoff

Contractor: West Maui Soil and Water Conservation District (WMSWCD)

Project Period: May 2001 through April 2003

Federal FY98 Funds/Match: \$47,000 / \$47,000

% of Project Completed: 85%

The project will demonstrate how the implementation of Best Management Practices on Maui Pineapple Company land in West Maui will help prevent the further degradation of West Maui near coastal waters.

The WMSWCD continues to install BMPs, such as ford crossings, sediment basins, and road drainage improvements. Due to current labor shortages, the project will not be completed until April 2003.



In some pineapple fields, the soil particles are so fine, the pineapple plants are covered in dust.

CURRENT CONTRACTS FUNDED BY THE OIL TAX EMERGENCY RESPONSE FUND

During the 2001 State Legislative session, the Polluted Runoff Control Program supported the Hawaii Association of Conservation Districts' (HACD) request to the legislature for additional funding from an oil tax increase. This was intended to provide a Water Quality Specialist in each Soil and Water Conservation District to carry out the Agriculture Pollution Prevention Plan (P3) as outlined in Hawaii's Implementation Plan for Polluted Runoff Control.

HACD was successful in obtaining a \$150,000 a year allocation to the Clean Water Branch for these positions. Contracting issues delayed the start of these projects and the Program changed direction away from the development of the P3 to the development of a State agricultural Best Management Plan manual. These field agents are still critical to the continues efforts to address nonpoint source pollution. Six positions are currently being funded; three in the State FY 2001 budget and three in the State FY 2002 budget.

If these field agents are successful in assisting the State, the State will need to determine how to fund all six field agents in FY 2004.

Hawaii Association of Conservation Districts Conservation Specialists

Contractor: Hawaii Association of Conservation District (HACD)

Project Period: June 2002 through June 2003

Federal / State Funds: None / \$150,000 **% of Project Completed:** 20%

The HACD will hire three conservation specialists to assist the Polluted Runoff Control Program and the Soil and Water Conservation Districts (SWCD) in providing technical assistance and implementing best management practices to reduce the amount of nonpoint source pollution entering State waters. These conservation specialists will be located in Mauna Kea (Hawaii), Aiea (Oahu), and Lihue (Kauai). HACD will partner with the USDA Natural Resources Conservation Service to provide support for the Conservation Specialists at the three locations.

University of Hawaii Project Managers/Field Agents

Contractor: University of Hawaii (UH), Sea Grant Extension Service

Project Period: August 28, 2002 through August 28, 2003

Federal / Non-Federal Funds: \$47,334 / \$149,363 **% of Project Completed:** 5%

UH will hire three field agents to assist the Polluted Runoff Control Program and the Soil and Water Conservation Districts (SWCD) in providing technical assistance and implementing best management practices to reduce the amount of nonpoint source pollution entering State waters. These field agents will be located in Hilo (Hawaii), Pearl Harbor (Oahu), and Wailuku (Maui).

COMPLETED CWA §319(h) PROJECTS

Summary of Completed CWA §319(h) Projects

Eleven 319(h) projects were completed during this fiscal year.

Oahu Projects

- Cover Crops for Erosion Control in Koolaupoko
- Kalihi Community Resource Improvement Stream Project (Phase II)
- Pearl Harbor Watershed Environmental Restoration Projects
- Waianae Coast Community-Based Watershed Management Program (Phase II)
- Waters of Kawainui Marsh: An Educational/Interactive Website

Molokai Projects

- Moomomi Watershed Project
- Partnership Plan and Plan of Work for UWA South Molokai

Hawaii Projects

- Pelekane Bay Watershed Project (Phase II)

Statewide Projects

- HACD Water Quality Grant
- Increasing Public Awareness of Pollution Risks Using Farm*A*Syst/Home*A*Syst
- Student Water Quality Monitoring Project

Combined, these projects provided \$786,884 of matching funds and in-kind services. These projects addressed various types of nonpoint source pollution including, urban runoff, soil erosion, rubbish, farm runoff, and invasive species.

Increasing Public Awareness of Pollution Risks Using Farm*A*Syst/Home*A*Syst

Contractor: University of Hawaii at Manoa
College of Tropical Agriculture and Human Resources (CTAHR)

Project Period: September 1, 2000 through June 30, 2002

Federal Funds: \$64,568 **Non-Federal Funds:** \$66,890

The primary objective of the project was to educate community members, agency personnel, and teachers in the assessment of nonpoint source pollution risks and the identification of risk-reducing activities using a localized version of the national Farm*A*Syst/Home*A*Syst (FAS/HAS) educational and pollution assessment materials. The localized version of FAS/HAS materials were developed as Hawaii's Pollution Prevention Information (HAPPI) program under a previous Clean Water Act Section 319(h) grant.



Carl Evenson, Project Manager

The strategy for public education was a series of workshops targeted at areas in Hawaii with documented water quality problems including South Molokai, West Maui, Koolaupoko, Honolulu, and Central Maui. A total of 20 Workshops were completed, directly educating 825 participants. Workshop effectiveness was measured through evaluations and follow-up surveys. Though there were some difficulties in achieving a 100% evaluation/survey participation, the majority of comments were favorable. The evaluations/surveys suggest the program was successful in educating individuals about major water pollutants in Hawaii, about how their actions affect water quality, and about the availability of resources to help them minimize their impact.

20 Workshops were completed, educating 825 participants about major water pollutants in Hawaii, how their actions affect water quality, and the availability of resources to help them minimize their impact.

HAPPI workshops are a valuable tool to help inform the public, local government agencies, and teachers of nonpoint source pollution problems in Hawaii and ways to mitigate both home and farm sources of pollution. Overall, the workshop series was a good venue to let groups know about the existence of the HAPPI program.

The workshop series also helped to establish and solidify partnerships throughout the state. These partnerships include the Natural Resource Conservation Service, the Molokai-Lanai Soil and Water Conservation District, the West Maui Soil and Water Conservation District, the Windward Oahu Soil and Water Conservation District, the Maui Board of Water Supply, the Friends of Heeia, the Seeds of Molokai, the City and County of Honolulu, the Family and Community Education Organization, the Pearl City Urban Garden Center, the Hawaii State Library, and the Hawaii Humane Society.



Pelekane Bay Watershed Project (Phase II)

Contractor: Mauna Kea Soil and Water Conservation District (MKSWCD)
Project Period: July 1, 1998 through December 31, 2001
Federal Funds: \$115,100 **Non-Federal Funds:** \$82,453

The purpose of this project was to reduce soil erosion within in the Pelekane Bay Watershed by improving land management practices, restoring vegetative ground cover, and encouraging a broader knowledge and stewardship of the land.

It is estimated that 7.8-13.7 acre-feet of sediment leaves the Pelekane Bay Watershed each year. Dr. Jene Michaud, Assistant Professor of Geology, UH Hilo

The project was successful in increasing the amount of reliable water available to critical areas of the watershed by installing a 1 million gallon reservoir in the mauka portion of the watershed. In conjunction with fencing materials purchased, these infrastructures will result in the enhanced ability of the land user to rotate cattle through an increased number of paddocks. The increased number of paddocks allows for a greater re-growth period for the vegetation in each paddock.

A monitoring plan was developed for the Watershed and included information on monitoring goals, activities, and procedures. In accordance with this plan, baseline information on stubble height and vegetative cover was collected and will be used in the future as a benchmark for comparison. Furthermore, Hawaii Preparatory Academy students are now trained to assist in data collection and analyses for both monitoring and project management.

Because of the coordination and outreach activities conducted under this grant, the MKSWCD was successful in brining together numerous watershed stakeholders and increasing community awareness of polluted runoff in the Pelekane Bay Watershed. A Memorandum of Agreement was signed between several stakeholders within the Watershed, including the MKSWCD, Department of Health, Queen Emma Foundation, Department of Land and Natural Resource's Division of Forestry and Wildlife, Parker Ranch, and County Fire Department that will allow coordinated watershed efforts to continue.



Pelekane Bay Watershed October 2001



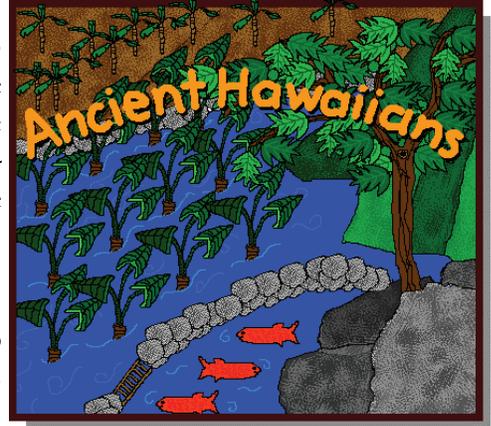
Pelekane Bay Watershed March 2002

Waters of Kawainui Marsh: An Educational / Interactive Website (www.kawainuimarsh.com)

Contractor: Learning Education Technology (LET) Academy
Project Period: April 19, 2000 through December 30, 2001
Federal Funds: \$29,310 **Non-Federal Funds:** \$57,106

The purpose of this project was to teach students about nonpoint source pollution and other water quality issues existing in their watershed. The goal was for LET Academy and Lanikai Elementary School's 6th Grade Academy to research and gather information to produce an interactive website that could educate the residents of Hawaii about nonpoint source pollution. The website would address current activities in the watershed, as well as historical activities and their impacts on the water quality of the Marsh.

The project was successful in getting students excited to learn about their watershed and teach others about the impacts human activities have on the water quality within the watershed. The website generated a lot of excitement within the community and the website was entered in the 2001 international CyberFair where it won the Gold Award.



Lanikai Elementary School won the Gold Award in the 2001 international CyberFair. The CyberFair involves thousands of students from 55 different countries around the world.

The website included information on the history of Kawainui Marsh, the ancient Hawaiians and the concept of an ahupuaa (mountain to the ocean), watershed management, flood control, and the effects of development and recreational activities on water quality.

In addition to general watershed information, the website also contained water quality data collected by the students. Water quality parameters included metals, pH, dissolved oxygen, nitrates, ammonia, phosphates, turbidity, cyanides, and temperature. The data was collected to give the students, as well as the community, a general sense of the water quality within the watershed and the importance of Kawainui Marsh in improving water quality.

"Technology can be used for much more than simply teaching students what they don't know; it can help them understand themselves and where they fit in this complex society."

Lauren Apiki, Project Manager

Waianae Coast Community-Based Watershed Management Program (Phase II)

Contractor: City and County of Honolulu (CCH)
Department of Environmental Services

Project Period: January 1, 2001 through June 30, 2002

Federal Funds: \$28,903 **Non-Federal Funds:** \$40,286

The project's goal was to increase Waianae coast residents' sense of watershed stewardship and prevent further degradation of water quality due to human impacts. The project sought to perform water quality monitoring, clean up activities, and produce public outreach materials.



Signs printed in Hawaiian and English are hung on bridges urging residents not to dump rubbish into the channelized streams.

The project produced a variety of educational and outreach materials targeted towards Waianae residents. Over 2000 brochures in three different languages were printed in English, Hawaiian, and Tagalog explaining nonpoint source pollution and prevention. Hawaii Assessment Pollution Prevention Information (HAPPI) materials developed by the University of Hawaii, were printed and distributed with flyers to approximately 167 Waianae farmers.

The Hawaiian Studies students at Waianae High School helped develop a website and educational video. The website (www.kanewai.com) provides information on Kaala watershed, including general information and water quality data collected by the students. Water quality parameters included pH, dissolved oxygen, nitrates, phosphates, and visual assessments. The educational video discusses nonpoint source pollution prevention and was shown on television stations and in schools.

Five clean up events were conducted during the project period resulting in participation from over 1500 volunteers, removal of over 1600 lbs. of rubbish from streams, beaches, and the ocean, and the stenciling of 15 storm drains.

Three debris boom barriers previously installed in Ulehawa stream were maintained and monitored. Throughout the project period, over 600 bags of rubbish were prevented from going into the ocean by these three debris boom barriers. Five clean up events, with the participation of over 1500 volunteers, resulted in the removal of over 1600 lbs. of rubbish, and the stenciling of 15 storm drains.

The project also provided support to Nani O Waianae, a non-profit organization operating a telephone hotline to report illegal dumping activities. During the project's advertisement of the Nani O Waianae, the hotline saw a dramatic increase in the number of telephone calls they received each month. Most calls resulted Nani O Waianae providing contact information to the caller so they could have their concern addresses by the proper agency or organization.

Mo'omomi Watershed Project

Contractor: Molokai-Lanai Soil and Water Conservation District
Project Period: May 6, 1999 through February 28, 2002
Federal Funds: \$30,179 **Non-Federal Funds:** \$82,344

The purpose of the project was to improve the water quality of Molokai's north shore through the implementation of management measures designed to prevent, reduce, and control further degradation Molokai's soil, water, air, plant, and animal resources. Management measures included vegetating critical areas of the watershed, deferred grazing management, educating watershed stakeholders, and relocating the beach's old access road to a less sensitive area in the watershed.

"The closure of the "old" road after being graded and revegetated and the installation of three water diversions has drastically reduced the soil erosion from impacting the ocean waters by more than 75%" Debbie Kelly, Project Manager

A conservation plan was developed as a framework for implementation of conservation measures to address the project purpose and goals. The conservation plan was used as a tool to assist the land user to better manage the area of land use. For example, deferred grazing (i.e. removing livestock from a target area to allow the land to rest for a sufficient period) allows vegetation to regenerate naturally at a less cost and low impact to the owner and the environment.

At first, the access road closure created problems for some residents that did not understand the reasoning for the closure. Realization and understanding was reached once the winter rains came and access to the beach was still possible on the new road. The cleaner waters were very noticeable, even during rain activity. Comments shared among visitors to the area taught many about careful planning and land management.

Educational outreach efforts were successful in generating community-wide support for this and other projects being conducted within the Moomomi Watershed. In fact, at a recent community meeting, work done by the U.S. Fish and Wildlife Service to reduce sediment from reaching Molokai's north shore received applause from all meeting attendees. Copies of a brochure created through this project were sent to over 400 homestead and community members to promote more awareness of this project and the nonpoint source pollution problems on Molokai.



Newly planted vegetation quickly spreads across the old access road.

Pearl Harbor Watershed Environmental Restoration Projects

Contractor: University of Hawaii
Leeward Community College

Project Period: April 18, 2000 through December 31, 2001

Federal Funds: \$49,947 **Non-Federal Funds:** \$91,907

The project goal was to abate water quality impairment by preventing litter pollution, urban runoff, and improper disposal of chemicals and waste through direct service and educational outreach activities; controlling soil erosion and mangrove overgrowth by restoring streambanks, planting native plants and trees and conducting marshland and fishpond maintenance; conducting and centralizing studies to assess priorities, strategies, and benefits of implementing BMPs; conducting both general field surveys and site driven monitoring projects; and to create and strengthen partnerships.

807 volunteers contributed 4,900 hours of in-kind services for a total of \$82,324 in matching funds.

The project was successful in partnering with 25 stakeholders within the Pearl Harbor watershed. These partners include Advanced Educational Systems, Ahupuaa Action Alliance, Aiea Community Association, Aloha United Way, Belt Collins, Kahi Mohala Hospital, Leeward Lions, Malama Hawaii, Mililani Girl Scouts, Nakamura Gakuen University and Junior College, Oahu Mauna Kilo Cultural Mapping, Ocean Conservancy/Sea Grant, Pearl City Benchmarking, Pearl Harbor Historic Trail, St. Francis School for Girls, The Nature Conservancy, US Navy & US Air Force, and US Fish & Wildlife Service.

The project was successful in completing 102 site visits, field trips, and surveys. During these site visits, 46 water quality samples were taken from Waiawa stream to West Loch to gather background information on the watershed. Parameters included temperature, depth, salinity, dissolved oxygen, pH, and chlorophyll a. Overall, the site visits and surveys verify the substantial impairment of Pearl Harbor from increased population, homeless and urban growth patterns, highway outfalls, traffic, loss of permeable surfaces, and vegetative overgrowth.

The project was successful in completing 20 clean up events resulting in the removal of over 1,500 bags of litter and debris. Participation in the project included over 800 volunteers for education/outreach activities.



The view of the Pearl Harbor watershed from Leeward Community College shows the diverse nature of the watershed. Agriculture, urban development, and the US Naval Base reflect a few of the land uses within the watershed.

Kalihi Community Resource Improvement Stream Project (KCRISP) Phase II

Contractor: Hawaii's Thousand Friends
Project Period: August 29, 2001 through August 31, 2002
Federal Funds: \$30,000 **Non-Federal Funds:** \$43,689

The objective of this project was to facilitate the restoration of and encourage stewardship for Kalihi stream through the development of an educational video and through the physical restoration of the riparian habitat along a portion of Kalihi stream. The purpose of the video was to present the rich cultural and natural history of Kalihi stream and its restoration potential. The purpose of the riparian restoration was to demonstrate water quality improvements as a result of a healthy riparian habitat as well as allow for future use of the area as an educational facility.

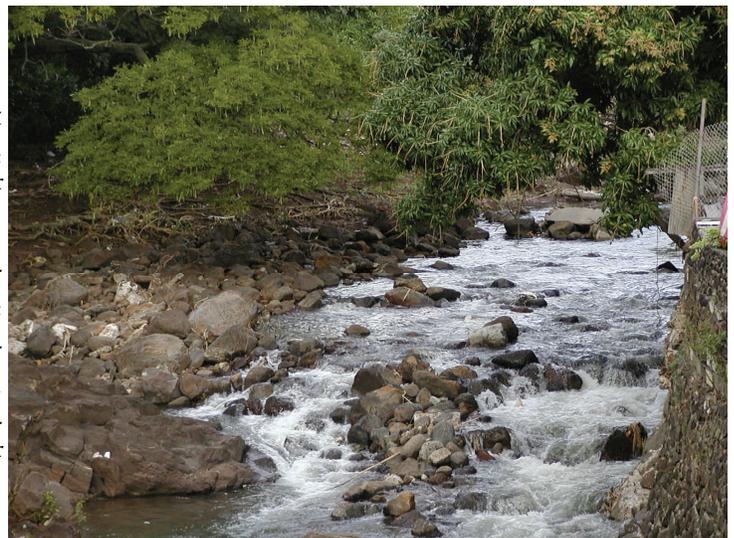


Over 200 bags of trash were removed from a 1200 square foot area of the stream and riparian area.

The video was made widely available at libraries and schools and will continue to be presented to Neighborhood Boards and similar groups throughout the watershed. The video was distributed to 21 individuals and presented to over 100 individuals at 13 different venues. The video was also televised four different occasions on a local television station.

The video was effective in educating Kalihi residents about nonpoint source pollution and best management practices by helping them find a personal connection to the stream. The evaluation forms filled out by viewers at the end of each video screening indicated that the audience felt they knew much more about nonpoint source pollution and what they could do to reduce the amount of pollution entering our streams and coastal waters.

There were 9 workdays held throughout the project period, which involved 100 people contributing over 560 hours. Over 200 bags of trash and other bulky items, including car parts, mattresses, pipes, hoses, and carpets were removed from a 1200 square foot area of the stream and riparian area. Within this area, invasive vegetation was removed and replaced with 97 native plants. 75% of the plantings survived and have become an established part of Kalihi Stream's riparian buffer zone.



Kalihi Stream

Hawaii Association of Conservations District's (HACD)

Water Quality Grant

Contractor: Hawaii Association of Conservation Districts
Project Period: September 12, 2001 through May 31, 2002
Federal Funds: \$45,000 **Non-Federal Funds:** \$136,659

The Hawaii Association of Conservation Districts (HACD) has been an active partner of the Polluted Runoff Control (PRC) Program for several years. The objective of this grant was to continue to assist the PRC Program in education efforts, and in controlling, and reducing the contamination of Hawaii's inland, coastal, and ground waters from nonpoint source pollution. Specifically, this grant sought to assist in developing a nonpoint source compliance program, including both regulatory and non-regulatory mechanisms, educating federal, state, and county government agencies about nonpoint source pollution, and developing partnerships with other agencies and organizations to address nonpoint source pollution.



More than 160 people attended the conference, representing federal, state, and county government agencies, educational institutions, community groups, and private organizations.

The Hawaii Water Quality Conference was held on May 14, 15, and 16, 2002 and was entitled "The Changing World of Water Quality in Hawaii." More than 160 people attended the conference, representing federal, state, and county government agencies, educational institutions, community groups, and private organizations. The conference featured 30 speakers and covered a wide range of topics, including: watershed management, 319 success stories, TMDLs, waste management, and composting. Evaluations were distributed to all conference attendee, however only 10 evaluation forms were returned. Overall, the conference was an excellent way to create water quality awareness and increase interagency cooperation.

The project was also successful in establishing technical assistance programs on every island by actively securing funding from the Board of Water Supply, the Environmental Response Revolving Fund, and each County.



Conference attendees participated in a field tour of Kaneohe Bay via a glass-bottom boat.

Cover Crops for Erosion Control in Koolaupoko

Contractor: Hawaii Agriculture Research Center
Project Period: December 15, 1999 through June 30, 2002
Federal Funds: \$11,000 **Non-Federal Funds:** \$14,000

The project demonstrated the use of new best management practices for controlling and reducing soil erosion and herbicide application. This was accomplished by identifying effective groundcover species for establishment of *Acacia koa* demonstration sites in the Koolaupoko and Kaiaka-Waialua Watersheds that could be transferred to other farmers who are converting agricultural lands to agroforestry operations.

This project was successful in showing the benefits of establishing effective cover crops as a means to reduce soil loss from agroforestry land. Nine ground covers (grasses and legumes) were examined during the trial periods. Native grasses (Pili and Emoloa) proved to be the most effective cover crops and 30 days after the establishment of these ground covers, it was estimated soil loss from each trial site was reduced by more than 90% using Pili grass and 50% using Emoloa grass instead of standard weed cover. When compared to bare ground, these grasses reduced soil loss by more than 97%. After 60 days, the Pili grass remained an effective cover crop continuing to reduce soil erosion by more than 34%. Also, Koa trees grown in conjunction with Pili or Emoloa grass were much taller and heartier after 60 days.



Newly planted Koa trees.



Newly planted cover crops surrounding young Koa trees.

Student Water Quality Monitoring Project

Contractor: Hawaii State Department of Education
Project Period: November 1999 through December 2001
Federal Funds: \$220,000 **Non-Federal Funds:** \$146,550

The goal of this project was to foster environmental stewardship and action-oriented behaviors in students that could help reduce nonpoint source pollution. This goal was achieved by developing and implementing a water monitoring training program that will improve teachers' understanding of water quality issues and strengthen their institutional skill in teaching environmental stewardship, developing partnerships, and creating and nurturing a cadre of master teachers to conduct workshops to institutionalize and expand the environmental stewardship process to a broader school audience.

The benefits of this project will be seen in the following years as teachers involved in the training program use what they've learned and apply it in their classrooms. Surveys administered to teachers at the end of these training programs indicate the teachers feel they will be able to incorporate the concepts of watershed management and water quality into their required lesson plans. Perhaps in the future, the Polluted Runoff Control Program will follow up with these teachers and determine if their students have developed an increase in environmental stewardship and knowledge.

Partnership Plan and Plan of Work for the Unified Watershed Assessment, South Molokai

Contractor: Molokai-Lanai Soil and Water Conservation Districts
Project Period: November 2001 through July 2002
Federal Funds: \$25,000 **Non-Federal Funds:** \$25,000

The objective of this project was to identify and bring together stakeholders of South Molokai, conduct a preliminary assessment of existing environmental data for the South Molokai watershed and associated streams, wetlands, and ocean, conduct educational and public participation efforts to cultivate stakeholder support for efforts to improve the water quality of South Molokai, and prepare for the development of a Watershed Restoration Action Strategy for South Molokai.

The MLSWCD was successful in developing a Watershed Advisory Group with 29 South Molokai Watershed stakeholders and also identified over 75 stakeholders within the Watershed who have a large invested interest in the Watershed.

The Program is currently waiting to receive the final report, the partnership plan, and the plan of work that were to be developed as a result of this contract.



South Molokai Watershed.