

National Fish and Wildlife Foundation

NFWF/Legacy Grant Project ID: 0302.10.021921

Coral Reef Conservation Fund 2010 - Submit Final Programmatic Report (Activities and Outcomes)

Grantee Organization: Coalition of Reef Lovers

Project Title: Nutrient Pollution Reduction in American Samoa

Project Period 05/03/2010 - 10/30/2011
Award Amount \$48,646.11
Matching Contributions \$49,000.00
Project Location Description (from Proposal) United States Territory of American Samoa South Pacific

Project Summary (from Proposal) Reduce nutrient run-off to coral reefs by testing 100 detergents for reactive and total phosphate content. Project will create a banned product identification manual for Customs to use to enforce the high-phosphate detergents ban in American Samoa.

Summary of Accomplishments 130 different types of Detergents and soaps were tested for their Phosphate content. A Identification guide was created and printed showing the products and identification information along with their average phosphate contents. One 30 minute production covering nutrient pollution and focusing on the coral reef habitat was created. 4 commercials were produced for public awareness of the problem. The Government of American Samoa started a review of the Executive order NO.010A-2007 on Oct 31 2011 to correct the mistake that was discovered by CORL in the detergent ban.

Lessons Learned Two major problems occurred in the project the first biggest problem was in making the lab quality water needed for the testing. We found out that the use of governmental water supply (GWS) was not feasible due to its very high Salt concentration. To use the GWS we had to pass it through a double RO filtration and double Deionization filters. This was very expensive and slow to do. While we also had village water available, its use was very limited due to the drought which occurred throughout the projects length. We never expected to be hit by a long dry spell here, as we normally get 120-200" of rain a year. The Second problem and lesson learned was that the wording of the actual law (Executive Order) was incorrect and currently makes the Governors' Executive Order pretty much worthless. This was a mistake made by the American Samoa Government. As currently written the Ex. order as of 10/28/2011 would allow detergents and soaps that contain up to 33% phosphate to enter the territory. No detergent or soap tested over this 33% in Phosphate (PO4). The difference was in using phosphorous (P) concentration at 11% which equals about 33% in Phosphate (PO4) concentration. This mistake also caused the ASG Customs to delay and then cancel the workshop activity until ASG revises the Executive Order at which time both the ASG department of Marine and Wildlife Resources and Local EPA will conduct the final workshop on using the ID guide.

Conservation Activities	Testing of 100 Detergent/soap items for phosphate levels
Progress Measures	Other (determin # illegal soaps being sold by stores)
Value at Grant Completion	100
Conservation Activities	Testing of surfactant concentrations in 6 streams
Progress Measures	Other (# of streams testing positive for surfactants)
Value at Grant Completion	6
Conservation Activities	Creation of High Phosphate Detergent Guide
Progress Measures	Other (Number of Guides created)
Value at Grant Completion	200
Conservation Activities	Creation of TV awareness ads

Progress Measures Value at Grant Completion	Other (# of TV ads created) 3
Conservation Activities Progress Measures Value at Grant Completion	Production of a 30 minute nutrient pollution video Other (percent completed at 10 months) 100%
Conservation Outcome(s) Conservation Indicator Metric(s) Baseline Metric Value Metric Value at Grant Completion Long-term Goal Metric Value Year in which Long Term Metric Value is Anticipated	Reduction in Active Phosphates in streams Phosphorus levels in streams/rivers (mg/L) 4ppm 3ppm .5ppm 2012
Conservation Outcome(s) Conservation Indicator Metric(s) Baseline Metric Value Metric Value at Grant Completion Long-term Goal Metric Value Year in which Long Term Metric Value is Anticipated	Reduction in algae blooms Phosphorus levels on reef (mg/L) 1ppm .8ppm .15ppm 2012
Conservation Outcome(s) Conservation Indicator Metric(s) Baseline Metric Value Metric Value at Grant Completion Long-term Goal Metric Value Year in which Long Term Metric Value is Anticipated	AS Customs provided guide info. to enforce HPD Ban: Other (# of citations issued) 0 5 20 2013



Final Programmatic Report Narrative

Instructions: Save this document on your computer and complete the narrative in the format provided. The final narrative should not exceed ten (10) pages; do not delete the text provided below. Once complete, upload this document into the on-line final programmatic report task as instructed.

1. Summary of Accomplishments

In four to five sentences, provide a brief summary of the project's key accomplishments and outcomes that were observed or measured.

Over 60 stores on the main Island of Tutuila were visited and over 150 detergent and soap samples were purchased. A total of 138 different types of detergent and soap products were tested for Phosphorus concentrations. Water samples from seven streams were collected and analyzed for orthophosphate and Surfactants. A foreign detergent and soap identification guide was created for use by the public and American Samoa governmental departments. To help with public awareness 5 TV commercials were created and provided to the local Television station for air play. One 30 minute Under the Waves of American Samoa video was produced on Nutrient Pollution and the Coral Reef Ecosystem.

2. Project Activities & Outcomes

Activities

- Describe and quantify (using the approved metrics referenced in your grant agreement) the primary activities conducted during this grant.

#1) Conservation Activities Testing of 100 Detergent/soap items for phosphate levels

A total of 138 detergent and Soaps were tested for their phosphorus contents

Progress Measures Other (determine # illegal soaps being sold by stores): because of an error in the executive orders wording no product exceeded the 11% "phosphorous" level, One product did surpass a 11% Phosphate concentration.

Value at completion The metric was set for 100 samples, this metric was surpassed as a total of 138 different detergents and soaps were tested. Some of the detergents having high 7%+ Phosphate concentrations were retested using different production lot samples to better determine a average Phosphorus concentration of the products.

#2) Conservation Activities Testing of surfactant concentrations in 6 streams

A total of seven streams were tested for Surfactant levels, the drought hampered the obtaining of more than 6 sample collections from every stream tested.

Progress Measures Other (# of streams testing positive for surfactants)

All seven streams tested showed both Surfactants and Phosphates in the water samples, The stream in Alofau Village had the highest levels while the streams in Pago Pago, Nu'uuli, and Tafuna had the lowest levels. Phosphate concentrations and Surfactant levels seemed to be correlated but no statistical analysis was conducted due to the small than anticipated sampling numbers.

Value at Grant Completion 6 surpassed one additional stream was tested.

#3) Conservation Activities Creation of High Phosphate Detergent Guide.

A Imported Detergent and Soap Phosphate Identification Guide has been created in both printed and electronic formats (PDF and Illustrator) A raw copy in Adobe Illustrator programming has been supplied to American Samoa Governmental Department of Environmental Protection Agency.

Progress Measures Other (Number of Guides created) 250 copies of version 1 have been made.

Value at Grant Completion 200 (Surpassed by 50 with additional copies to be printed once final correction is made in the executive order)

#4) Conservation Activities Creation of TV awareness ads

A total of Five TV commercials were made on the nutrient pollution problem and the role that detergents and soaps play. The commercials were from 30 seconds to 1.5 minutes in length.

Progress Measures Other (# of TV ads created) 5 total were produced

Value at Grant Completion 3 Surpassed Two extra commercials were produced

#5) Conservation Activities Customs workshop on HPD's. Unfortunately this activity could not be met, the reason for this is explained in detail in the following project discrepancies section

Progress Measures Other (% of customs agents attending workshop) Total # 0

Value at Grant Completion 100% actual value at project completion 0%

#6) Conservation Activities Production of a 30 minute nutrient pollution video

A 30minute episode of Under the Waves of American Samoa "Nutrient Pollution and the Coral Reef Ecosystem" was produced for distribution to the schools and local TV stations.

Progress Measures Other (percent completed at 10 months). The project was 90% completed by month 10

Value at Grant Completion 100% Value was reached as the project video was put into DVD format on 10-27-2011

- Briefly explain discrepancies between the activities conducted during the grant and the activities agreed upon in your grant agreement.

Activity #1) Testing of 100 Detergent/soap items for phosphate levels: The testing accuracy of the methods and equipment used proved to be high enough to allow a lower number of tests for each product. This left extra reagents and allowed the addition of extra products to be tested.

Activity#2) Testing of surfactant concentrations in 6 streams: During the project period American Samoa experienced a drought which caused many of the islands streams to dry up. While the number of streams tested was over the 6 as planned, the number of samples obtained was lower than what we had planned for. This led to a low sample number for most of the streams and as a result we couldn't do any statistical analysis to see if there were any correlations between levels of Phosphates and Surfactants.

Activity #3) Creation of High Phosphate Detergent Guide. Extra guides were created as we had the materials to do so In addition a Flier was created for public awareness.

Activity #4) Creation of TV awareness ads extra commercials and versions of one or two were made

Activity #5) Customs workshop on HPD's. While all the products were created and ready to do the Custom's training workshop(s) the error that was found in the executive order needs to be first corrected before Customs can dedicate their staff time. The Attorneys from both ASG and ASG EPA have met with Mike King (CORL President) and have reviewed the mistake, as of 11 -1 -2011 no final word from The Attorney's has been received on the change of wording to the amended order. ASG EPA will be conducting the workshop once the final version of the executive order is signed by the Governor.

Activity #6) Production of a 30 minute nutrient pollution video No changes

Outcomes

- Describe and quantify progress towards achieving the project outcomes described in your grant agreement. (Quantify using the approved metrics referenced in your grant agreement or by using more relevant metrics not included in the application.)

1) Conservation Outcome(s) AS Customs provided guide info. to enforce HPD Ban:

A draft copy of the identification guide was provided to the ASG customs and EPA for review, The Land Based Sources LAS group also received draft pages for review.

Conservation Indicator Metric(s) Other (# of citations issued):

According to an ASG Customs employee only one container of detergents and soaps was stopped from being sold and returned to its origin. This was due to having no labels that listed ingredients. CORL was also informed by customs that if the product didn't have ingredients listed in English that from now on

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they would be declined entry. While this enforcement doesn't have anything to do with the Phosphate ban it does help as the main detergents and soaps having higher phosphate concentrations were those lacking any ingredients in English listed on their label.

Baseline Metric Value: 0

Metric Value at Grant Completion 5: Value reached 1

Long-term Goal Metric Value 20

Year in which Long Term Metric Value is Anticipated: 2012 The amended executive order should be completed and signed by August 2012

#2) Conservation Outcome(s) Reduction in Active Phosphates in streams Some streams tested in 2007 are showing a drop in phosphate concentrations seeing that water levels were lower than normal the dilution factor is also less. This would indicate that the public is using less of the imported detergents and soaps and more of those made in the USA that contain no Phosphates

Conservation Indicator Metric(s) Phosphorus levels in streams/rivers (mg/L): Baseline Metric Value 4ppm The average Phosphate levels in streams during the 2007 study were 3ppm to 4ppm. Metric Value at Grant Completion 3ppm. While this level was reached it shouldn't be considered as a result of the project at this time.

Long-term Goal Metric Value .5ppm

Year in which Long Term Metric 2012

Value is Anticipated This value will not be reached in 2012 but could be reached by the end of 2013

#3) Conservation Outcome(s) Reduction in algae blooms. Algae blooms did decrease in the nearshore coral reef areas, but no decreases were apparent in the streams that were flowing during the study period

Conservation Indicator Metric(s) Phosphorus levels on reef (mg/L)

Baseline Metric Value 1ppm

Metric Value at Grant Completion .8ppm The actual average phosphate level was .4ppm to .7ppm

Long-term Goal Metric Value .15ppm

Year in which Long Term Metric 2012

Value is anticipated This value will not be reached in 2012 but could be reached by the end of 2013

- Briefly explain discrepancies between what actually happened compared to what was anticipated to happen.

1) Conservation Outcome(s) AS Customs provided guide info. to enforce HPD Ban:

Because the Executive Order (EO) is unenforceable as written as the word Phosphorous was used along with 11% no citations could be issued during the project period under the EO. However the truth in labeling act was used to stop the entry of one container of detergents and soaps from China that contained no ingredients listing on the label. Once the EO is amended and approved The ASG EPA will conduct a workshop if needed to instruct the Customs workers on using the identification guide. Depending upon the final new Phosphate level decided upon (at this time .5% or 0%) citations will be issued.

#2) Conservation Outcome(s) Reduction in Active Phosphates in streams

Samples taken from the same streams during this project period were 2.5ppm to 3.2ppm the majority of these samples were also taken when the streams were low. This would indicate that the actual amount of phosphates has dropped below the base line value. The low water levels did hamper the collection of samples at many of the streams on chosen collection dates and the total number of samples analyzed was therefore lower than desired for statistical analysis.

The reaching of the long term metric of .5% will not be reached by 2012 as stocks of detergents already within the Territory will need to be used up.

#3) Conservation Outcome(s) Reduction in algae blooms

The decrease in algae blooms could have been caused by the lower than normal water conditions in the streams that reduced the amount of Phosphates entering the coastal areas. This could have been due to slower flow rates and the longer retention times where the nutrients were utilized better by the algae and other organisms within the streams.

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- Provide any further information (such as unexpected outcomes) important for understanding project activities and outcome results.

The error discovered in the executive order was a major setback in the completion of the main conservation measures. While we knew the 11% phosphorus level was still too high and were pushing the ASG on a lower level the word used in the final EO was Phosphorous not Phosphorus.

The difference being that the word Phosphorous is specifically used for the lowest valence of Phosphorus this use would then only ban those soaps having low valence compounds over 11%, not all of the compounds that contain phosphorus within their ingredients. It would also make the determination of the Phosphorus concentrations very difficult and costly.

If the wording had been Phosphorus then it would have been better, but the level restricted would be still too high as the ratio between Phosphorus P and Phosphate PO₄ (the bio-usable form of Phosphorus) is 1:3. So the 11% phosphorus restriction would mean 33% phosphates. The highest phosphate concentration found in a detergent was 13%, and would have been the only one to surpass the 11% level if the word Phosphates was to be used. This error in the EO must be corrected before enforcement can be started.

The Attorneys from both ASG Department of Commerce and ASG Environmental Protection Agency have been informed about the wording mistake and a meeting was held to determine the best wording for the amended EO. Also extra clauses to the EO were decided upon that place the burden of proof for any additional detergents and soaps not tested upon the importer. The final level has yet to be determined and announced but it has been decided to make the level quite a bit lower than the 11% one, this new level will most likely be between 0.5% and 0.0% Phosphorus or 1.5% and 0% Phosphate. The results from this project were very important in the determination of the re-wording and lowered concentration levels that will be allowed in the revamped EO.

3. Lessons Learned

Describe the key lessons learned from this project, such as the least and most effective conservation practices or notable aspects of the project's methods, monitoring, or results. How could other conservation organizations adapt their projects to build upon some of these key lessons about what worked best and what did not?

We at first attempted to measure both Total Phosphate and Reactive Phosphate (orthophosphate) concentrations of the detergents and soaps using the HACH DR890 colorimeter Phosphor3 method however it was discovered that many of the products tested have substances in their ingredients that added turbidity and interfered with the testing for the orthophosphate. The HACH Molybdovanadate method for testing for Orthophosphates might work without interferences and should be investigated if anyone else is to attempt using the HACH Colorimeters to determine orthophosphate levels in detergents and soaps.

Weather played a role in the collection of samples and in the amount of time needed to perform the lab analysis. The drought we experienced caused low water conditions to the point where many streams stopped running above ground, this limited the number of samples collected. The lack of water also made us rely on the water supplied by the American Samoa Power Authority, to reach the purity level needed for laboratory use we had to run the water through two reverse osmosis filters and then through a doubled up Deionizer to obtain water that was below 0.00 ppt dissolved solids and 0.00ppm phosphates. This tripled the cost of producing the lab water needed.

4. Dissemination

Briefly identify any dissemination of lessons learned or other project results to external audiences, such as the public or other conservation organizations. The Commercials were provided to KVZK television station for air play and the ads have a potential to reach nearly all of the residents of American Samoa.

The Under The Waves episode titled Nutrient Pollution and the Coral Reef Ecosystem is being delivered to schools throughout American Samoa and will reach about 28,000 students.

A project page has been started on the CORL web site that is dedicated to the reduction of Nutrients entering the coral reef ecosystems of American Samoa. This project and the final outcome of the EO and its enforcement will be added to the project page creating a case study from discovery to final outcome that others can freely access. It is hoped that other

Small Island Nations and Territories can learn from this project page and effectively duplicate it lessening their nutrient pollution problems.

5. Project Documents

Include in your final programmatic report, via the Uploads section of this task, the following:

- 2-10 representative photos from the project. Photos need to have a minimum resolution of 300 dpi;

Photo #1 Ariel Laundry Detergent the most widely used Phosphate level 4%

Photo #2 Lab work and more lab work

Photo #3 HACH Colorimeter sample testing results

- report publications, GIS data, brochures, videos, outreach tools, press releases, media coverage;
- any project deliverables per the terms of your grant agreement.

Several photos are included in this electronic report however due to the limited bandwidth (dial up connection). Additional photos, Video productions, and printed materials are being sent Via USPS Priority mail.

POSTING OF FINAL REPORT: *This report and attached project documents may be shared by the Foundation and any Funding Source for the Project via their respective websites. In the event that the Recipient intends to claim that its final report or project documents contains material that does not have to be posted on such websites because it is protected from disclosure by statutory or regulatory provisions, the Recipient shall clearly mark all such potentially protected materials as “PROTECTED” and provide an explanation and complete citation to the statutory or regulatory source for such protection.*