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AMERICAN SAMOA REGIONAL DEMONSTRATION PROJECT IN NON-POINT SOURCE POLLUTION REDUCTION AND HABITAT EVALUATION, MITIGATION AND RESTORATION

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American Samoa's wetlands have experienced dramatic losses over the last 100 years. Some experts estimate that close to 70% of American Samoa's original wetland acreage has been lost in that time. Although early wetland records are non-quantifiable, through the use of aerial photographs and ground truthing it was quantified that AS lost nearly 30% of its remaining wetland resources between 1961-1991 at a rate of 4.5 acres per year. Loss of wetlands continues at incredible speeds due to the lack of suitable land available for development combined with an ever-growing population. Only 34% of the land on Tutuila, home to 99% of the population, has a slope less than 30% , which represents the land realistically available for development.

In 1995, the American Samoa Coastal Management Program (ASCMP) was awarded one of six (6) state-based regional demonstration projects for pollution reduction and habitat evaluation, mitigation and restoration. This ambitious project was undertaken to exact substantive on-the-ground wetlands restoration and enhancement work in two villages, Masefau on Tutuila Island and the School Swamp on the Island of Aunu'u. However, more important than the restration/enhancement itself was the village-based participatory planning approach used to power the project. Dubbed the "Community-Based Wetlands Management Program (CBWMP)," this bottom-up, pro-active approach to wetlands protection in American Samoa helped to build working relationships between the villages and the government, thereby paving the way for real and lasting conservation.

What follows is a summary of each component of the project. While deemed an overall success, the projects were not without their set-backs. And although the final paperwork for the grant has been processed, ASCMP considers the project to be just getting started.

NOTE: A video highlighting this grant from "start to start" will be completed in August 2000.

Masefau Restoration

Drainage Improvements

Once it had been established that toxins did not cause damage to the mangroves, ASCMP began to investigate the possibility that inadequate drainage contributed to mangrove mortality after the 1994 hurricane. Upon further review, ASCMP concluded that the existing culvert opening from the swamp to the sea was too small, thereby limiting tidal flushing while trapping freshwater from the mountains with probable detrimental effects to the mangrove seedlings struggling to establish themselves. In partnership with the Department of Public Works, ASCMP redesigned the existing culvert into a bridge structure, thereby increasing tidal flushing. This structural change had dramatic effects on the mangrove swamp as natural regeneration began in earnest.

Removal of Dead Mangroves

ASCMP partnered with the Land Grant Forestry Department of the American Samoa Community College (ASCC) in holding a workshop in which members of the community were instructed on how

to properly use a chain-saw as well as tree felling techniques. On two separate occasions, villagers worked to cut and remove the dead mangroves from the swamp, thereby creating adequate clear spaces for replanting. However, because the dead tree snags provide good habitat not all of the snags were removed.

Scrap Metal Clean-Up

American Samoa was hit by two devastating hurricanes in successive years 1990 and 1991. As a result of tremendous winds from the storms, much debris entered the Masefau swamp. A community field day was organized by ASCMP with assistance from the community facilitator and liaison as well as the American Samoa Power Authority to clean the mangrove swamp of all solid waste materials. The afternoon was a great success as three truckloads of material, including tin roofing, refrigerators, bottles and cans, etc., were transported from the wetland to the dump.

Seedling Planting

The combination of creating increased open space through removal of dead mangroves and increased flushing from replacing the culvert with a bridge created more suitable conditions for natural regeneration of mangroves. ASCMP monitored this regeneration closely and deemed that although a massive replanting effort was not necessary, it would be appropriate to supplement areas where the natural regeneration was not as successful. Therefore, in partnership with ASCC and ASEPA, ASCMP oriental mangrove seedlings were planted to assist/enhance the natural regeneration process which had previously been assisted through improvements to drainage infrastructure.

Piggery Improvements

Through a competitive process, ASCMP identified two piggeries in Masefau to relocate from the wetland to an upland location. The new piggeries would not only be located in a more ecologically advantageous position within the watershed, but would incorporate waste control technologies including a solid waste separator, septic system and composting facilities designed by ASEPA. The two piggeries were completed in March 1999 and are presently fully operational.

Delineate and Survey Wetland

Because land issues are extremely sensitive and complicated, many negotiations with the village leaders must be completed prior to even setting foot onto someone's property, let alone for it to be surveyed. There is a great deal of distrust of governmental intentions when land is involved; therefore, opportunities to map or survey are often denied to the government by the families. Using a wetlands village facilitator and wetlands village liaison chosen by the village council, ASCMP has been successful in creating a working relationship with the village of Masefau. The delineation team consisting of ASCMP, ASEPA, and DPW began the delineation in 1998. The village is invited along and is able to formulate a separate village delineation in accordance with historical and cultural experiences. A wetlands developmental zone will demarcated through consensus between the government and the community and protected using resolutions and ordinances created and adopted by the village itself. Unfortunately, after completing approximately 50% of the delineation, a villager called a halt to the exercise. Therefore, the delineation of the Masefau wetlands remains partially complete. ASCMP is in consultation with the village regarding completing the delineation.

Establish Gray Duck Habitat

The upper reaches of the Masefau wetland consists of a fresh water marsh area once utilized by the village for taro cultivation. In 1995, a land owner in Masefau constructed a church within the marsh

PROTECTING WATER RESOURCES

area. A Stop Order was issued to the man and work was halted with the structure 80% complete. Through extensive site visits and negotiations, the landowner will be able to complete construction of the church and the surrounding land would be put under a conservation easement, in perpetuity, as an environmental reserve.

Educational Sign

A local artist was contracted to create the artwork for an educational sign related to the wetlands of Masefau.

Aunu'u Restoration

Toxicity Testing

Soil samples were taken from both the burned out wetland area where solid waste had been dumped and from a control site within the wetland. Samples were sent to the AECOS Lab in Honolulu and tested for a range of parameters, including metals and priority pollutants. The parameters detected in the burned area were polynuclear aromatic hydrocarbons (PAHs) when compared to the control site. The amounts did not exceed Hawaii soil standards.

Re-vegetate Dump Site

The former dumpsite was re-vegetated with 43 puzzlenut seedlings at the beginning of the rainy season in September of 1998. In May of 1999, it was noted that of the original 43 plants, 22 had survived.

Establish New Village Landfill

ASCMP, American Samoa Power Authority (ASPA) and ASEPA cooperated to close the existing landfill on the edge of the wetland and to relocate the landfill to an upland site where there is less potential for wetland and drinking water contamination. ASPA Water Division staff were consulted on a new location in relation to ASPA's plans for groundwater development. ASPA Solid Waste Division staff then transported heavy equipment and other materials to Aunu'u for closure of the existing landfill by cover and compaction as well as construction of the new fill in an upland area.

Community Based Wetlands Ordinances and Resolutions

In 1998, a community facilitator and liaison were selected by the village council and hired by ASCMP on a short-term contract to assist with community relations regarding wetlands. Multiple village meetings were held wherein all aspects of wetlands, including functions and values, regulatory issues, delineation and restoration were discussed. The village developed both a resolution and ordinances to protect their wetland resources. In addition, they signed an agreement allowing ASCMP to conduct a wetlands delineation.

Wetlands Delineation

For two weeks in June 1999, ASCMP, accompanied by the Department of Public Works (DPW) and relevant land owners, conducted a delineation of Aunu'u's wetlands.

Educational Signage

A local artist was contracted to create the artwork for an educational sign related to the wetlands of Aunu'u.