

*Making a Visible Difference in*  
**American Samoa**

**Final Report**

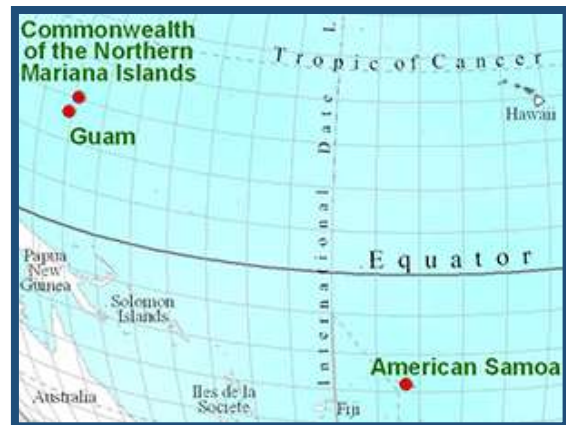


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## Overview

American Samoa and the other US Pacific Island territories are historically underserved communities compared to the US mainland. These territories are among the most economically distressed communities in the US, with rates of people living under the poverty level nearly four times the rate of the rest of the nation. American Samoa in particular has the lowest per capita income of any state, territory, or county, more comparable to Botswana or Panama than anywhere in the nation.



American Samoa is located halfway between Hawaii and New Zealand in the South Pacific Ocean

The U.S. Environmental Protection Agency's (EPA's) [Making a Visible Difference in Communities](#) (MVD) initiative was established to ensure that much needed resources reach US communities disproportionately impacted by pollution, economic distress and related challenges. After consultation with local government agencies, EPA decided to focus its work in American Samoa on accessing safe drinking water and mitigating and bracing for the effects of climate change.

Over the course of the MVD initiative, EPA has worked with federal and local stakeholders to help American Samoa:

- Reach 100% energy independence for the island of Ta'u through public-private partnerships while working towards the same goal for all the Manu'a islands.
- Reduce the percentage of treated water that does not produce revenue from as high as 73% down to 59%.
- Shutdown two contaminated drinking water wells and lift boil water notices for over 6,500 residents.
- More readily spend millions of dollars in EPA funding for critical drinking water and wastewater infrastructure by employing more local contractors and bolstering local economic opportunities.
- Conduct a Groundwater Exploration Plan to identify and prioritize safe sources of drinking water and help increase the island's resilience to sea level rise and drought.
- Assess contamination at the former Rainmaker Hotel to allow for redevelopment of the brownfield site and support a key component of the American Samoa Government's economic development plan for the territory.
- Conduct water quality monitoring and assess the health of watersheds and their adjacent coral reefs utilizing a ridge-to-reef assessment framework.

These items are only a sampling of the great work being conducted by EPA alongside our environmental partners. These accomplishments and more are expanded on throughout the report.

## Background

American Samoa has had significant drinking water problems, with ongoing boil water notices impacting the majority of the population. Additionally, American Samoa is on the frontline of climate impacts. For example, ocean acidification and coral bleaching may eliminate most of American Samoa's coral reefs within decades. In addition, the territory's economy, largely based in fishing and tourism, is directly dependent on the health of the environment.



Newly-installed piggery with improved waste management.

The American Samoa government has been ambitious in addressing environmental issues. It was the first US state or territory to implement a plastic bag ban on a jurisdiction-wide basis and first to ban spear fishing while scuba diving. The territory also undertook an aggressive pig waste compliance program to reduce the disease Leptospirosis. The effort, backed by EPA and USDA, helped American Samoa achieve attainment of aquatic life and recreational uses for six local watersheds. American Samoa EPA (AS-EPA) also built the first LEED Platinum building in the South Pacific between Hawaii and Australia.

Tutuila Island is the largest (140 km<sup>2</sup>) and main island of American Samoa. It contains a large, natural harbor, Pago Pago Harbor, whose surrounding areas suffered significant impacts from an earthquake and tsunami in 2009. Aunu'u and the Manu'a Islands of Ofu, Olosega, and Ta'u comprise the other populated islands. In all, the population of American Samoa is about 55,000.

## Access to Safe Drinking Water

Biological contamination of American Samoa Power Authority's (ASPA's) drinking water systems has led to island-wide boil water notices. Due in part to the geology of Tutuila Island, several of the main drinking water system's wells are under the direct influence of surface water. As part of the MVD effort, EPA identified a list of priorities to alleviate stresses on water quality and supply:

### **Relocating Wells**

Currently contaminated wells are located downstream or in close proximity of many pollutant sources, including human and animal waste. The highest priority to restore drinking water is relocating poorly sited wells upstream of pollutant sources. While ASPA continues to drill new wells, they expressed a pressing need to identify and prioritize sites to maximize likelihood of high-yielding wells.

As a direct result of the MVD initiative, EPA's Office of Water supplied \$150,000 to AS-EPA to fund a study alongside the University of Hawaii and USGS to inform future drilling and prioritize groundwater resources. Recommendations will account for bacterial contamination, salinity, potential drought, extreme weather events, and sea level rise. The study is currently underway and a final report is expected by the end of 2017.

During the course of the initiative, EPA worked alongside ASPA and AS-EPA to oversee and construct new wells. As the new wells came online, ASPA was able to incrementally close and become less reliant on contaminated wells. To this point, two contaminated wells have been brought offline and boil water notices have been lifted for Leone and Pago Pago.

### Rehabilitating Drinking Water and Wastewater Infrastructure

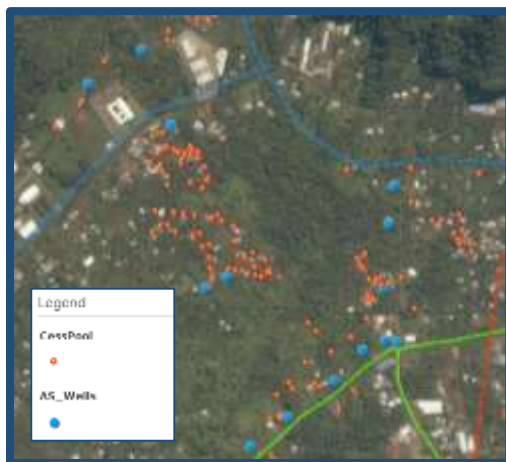
EPA provides ASPA with about \$9 million annually to replace, rehabilitate and install new water and wastewater infrastructure. Most recently, ASPA has used these funds to develop five new drinking water wells, install UV disinfection at both of their wastewater treatment plants, complete wastewater collection line around Pago Pago Harbor, and reduce water loss through water system improvements.



ASPA, DOI and USGS exploratory drilling for geothermal energy.

Treating and distributing water is a huge portion of American Samoa's energy cost and footprint. By replacing and rehabilitating drinking water pipes, ASPA has brought down the percentage of treated water that does not produce revenue from as high as 73% down to 59%.

Unfortunately, ASPA has struggled to award construction contracts due largely to local contractors' inability to secure required construction bonding. As part of the MVD initiative, EPA's Office of Water provided \$25,000 in contract support to examine performance bonding in American Samoa and make recommendations to alleviate this spending barrier. Based on EPA's examination of bonding issues and requirements applicable to the Territory, grant terms and conditions were relaxed to allow ASPA to follow their procurement regulations. Additionally, EPA provided recommendations for managing performance and payment bonding that will be incorporated into their new procurement rules. Changes in the bonding requirements will allow projects to be completed quicker and open competition to more local contractors.



Map depicting proximity of cesspools to drinking water wells around Malaeimi.

### Identifying and Eliminating Cesspools

One of the predominant sources of groundwater contamination are leaky cesspools and cesspits. These systems tend to be improperly designed, located, and constructed and can leak bacteria, viruses, and other contaminants.

The Cesspool Inventory Project was initiated to identify and record cesspools that are located in areas that are in close proximity to elevated water tables and groundwater aquifers. The project is meant to inform prioritization of cesspool removal and conversion to septic systems by partner agency, ASPA.

EPA has now funded cesspool inventories for the villages of Vatia, Aoa, Tafuna, Malaeimi, and the islands of Manu'a and Aunu'u, identifying over 400 cesspools. With EPA support, ASPA has concurrently converted 194 cesspools since 2006.

## Climate Change and Restoration

### **Renewable Energy Systems**

American Samoa has been highly dependent on petroleum imports since electricity is generated by diesel generators. Due to their unique geographic isolation and high shipping costs, petroleum prices have been, and are expected to continue to be extremely costly. As a result, the government established a Renewable Energy Committee to help bring sustainable renewable energy to the American Samoa. The Committee has developed energy strategies to take advantage of solar, wind, and geothermal potential on Tutuila Island and set a goal of supplying the Manu'a Islands' with 100% renewable energy. By installing utility-scale solar and battery storage microgrid systems to help bring clean, reliable power to this rural US territory, Ta'u and Ofu Islands, which are part of the Manu's Islands, are now meeting this very ambitious goal through assistance by EPA.

As part of *MVD*, EPA awarded ASPA two different grants to replace diesel generators, the primary source of electricity, with solar and energy storage all-electric systems on the Island of Ta'u and Ofu. In 2016, EPA provided ASAP a \$70,715 grant to retire an old, large diesel generator with a backup generator only to be used in emergencies. This utility-scale renewable energy system includes 1.4 megawatts (MW) of solar photovoltaic panels and 6 MW hours of Tesla batteries installed by SolarCity, allowing island residents to continually utilize this renewable energy even when the sun is not shining. This new solar-storage system will reduce diesel fuel by approximately 109,500 gallons per year while improving air quality. To learn more about the system, visit [SolarCity's blog: http://blog.solarcity.com](http://blog.solarcity.com).



Solar Plant on Ta'u Commissioned in October 2016.

In 2015, EPA also awarded ASPA a grant of \$42,200 for a similar solar-storage system on the Island of Ofu. This system includes 342 kilowatts (kW) of solar and 1,085 kW hours of a battery energy storage system. An additional 150 kW solar system and 500 kW hours of battery storage will be added to allow the Manu'a Islands to reach their self-sufficient, 100% renewable energy goal while providing cheap greenhouse gas-free electricity.

These EPA grants are funded by the [West Coast Collaborative](#) and EPA's [National Clean Diesel Campaign](#) under the Diesel Emission Reduction Act. The West Coast Collaborative is an ambitious public-private partnership between leaders from federal, state, local and tribal governments, the private sector and environmental groups committed to voluntarily reducing diesel emissions along the Western US, as well as the Pacific island territories.

## Coral Reefs

Coral reefs are sensitive to many threats including starfish outbreaks, red tides, sediment runoff, temperature fluctuations, and extreme weather events. In American Samoa, they are home to thousands of marine species, including many fished by locals.

EPA participates in the U.S. Coral Reef Task Force alongside 11 other Federal and seven states and territory agencies in an effort to preserve and protect coral reef ecosystems. American Samoa has two priority coral reef watersheds: Faga'alu and Vatia. Working alongside NOAA, USGS, and AS-EPA, EPA helped fund a nonpoint source pollution reduction project to cut sediment flowing into Faga'alu Bay by installing sediment retention ponds and BMPs at an upstream quarry which had previously tripled sediment loading into Faga'alu Bay.



*Sediment Control at Faga'alu Quarry*

In addition, EPA awarded \$292,000 to AS-EPA as part of a Wetland Program Development Grant to conduct water quality monitoring and assess the health of watersheds and their adjacent coral reefs. One of the effort's goal is to produce a ridge-to-reef ecosystem health index for prioritizing implementation of management interventions by October 2017.

## Brownfields

The Rainmaker Hotel was one of American Samoa's most recognizable landmarks and largest hotel, but has since been abandoned and demolished. After public health concerns about the site were raised in 2009, the American Samoa Development Corporation contracted the removal of asbestos, however the possibility of chemical and hazardous material contamination still remained.

Redevelopment of the site is a key component of the American Samoa Government's economic development plan for the territory.

As part of MVD, EPA provided \$90,000 in technical assistance to conduct a Targeted Brownfield Assessment on the Rainmaker site. Despite delays associated with lingering debris, EPA is moving forward with the project contractor on creating a soil sampling and analysis plan. The goal of the technical assistance is to minimize uncertainties of contamination associated with the valued Rainmaker Hotel site and allow for moving forward with redevelopment.

## Next Steps

EPA has a long history in working with our partners in American Samoa and will continue to support the territory beyond the tenure of this initiative. As of FY2017, EPA provides AS-EPA with \$2.7 million annually to support its environmental protection programs and ASPA with \$9 million annually to improve drinking water and wastewater infrastructure.

The work conducted by EPA and our partners over the course of this initiative is only one incremental step towards achieving our goals of protecting and preserving human health and the environment of American Samoa. Moving forward, we hope to continue working with the territory to:

- Eliminate all boil water notices by drilling new wells and shutting down the remaining seven contaminated wells.
- Complete the Targeted Brownfield Assessment of the Rainmaker site to allow for redevelopment of some of the territory's most valuable real estate.
- Expand renewable energy in the territory by helping them achieve their 100% fossil-free goal throughout the Manu'a Islands.
- Reduce drinking water system loss from 59% to closer to the national average of 16% by replacing aging and inadequate drinking water infrastructure.
- Tap into new drinking water sources which are more resilient to salt water intrusion resulting from sea level rise and drought.
- Protect coral reefs by leveraging funding for projects which will reduce sediment, nutrients and other loadings to vulnerable watersheds.

Together, our agencies will continue to work towards providing safe and reliable drinking water, mitigating and adapting to climate change, and restoring the natural resources and aging infrastructure of the territory. Through rigorous implementation and oversight of our programs, EPA is committed to incrementally work towards Making a Visible Difference in American Samoa.