



## **AMERICAN SAMOA POWER AUTHORITY**



### **SCOPE OF WORK**

## **AUNUU WASTEWATER (WW) TREATMENT FEASIBILITY STUDY**

### **I. BACKGROUND**

The American Samoa Power Authority (ASPA) owns and operates two wastewater treatment plants (WWTP) and the associated collection system infrastructure on the island of Tutuila.

ASPA also owns and operates the WW collection system on the island of Aunuu, which flows to one lift station and from there it is pumped to the ocean outfall without any treatment.

Aunuu is a small island with almost 1 square mile of area. It has a population of 402 as of the 2020 census. The existing sewer system collects the sewer from all the buildings, except for the school which is on a septic tank system. Some government and department of education staff commute daily during the work week to Aunuu and are employed at the school.

The sewer collection system is small with about a mile of mainline PVC pipe and 10 manholes.

The gravity sewer system flows into one lift station that pumps the raw sewage to the 6 inch ocean outfall pipe. The ocean outfall discharge point is at the end of the pipe approximately 280 feet from shore at 10 feet of water. There has been concern over the years by some of possible raw sewer contamination at the near shore area close to the outfall.

### **II. AUNUU WW SYSTEM LOCATION MAPS (see maps below)**

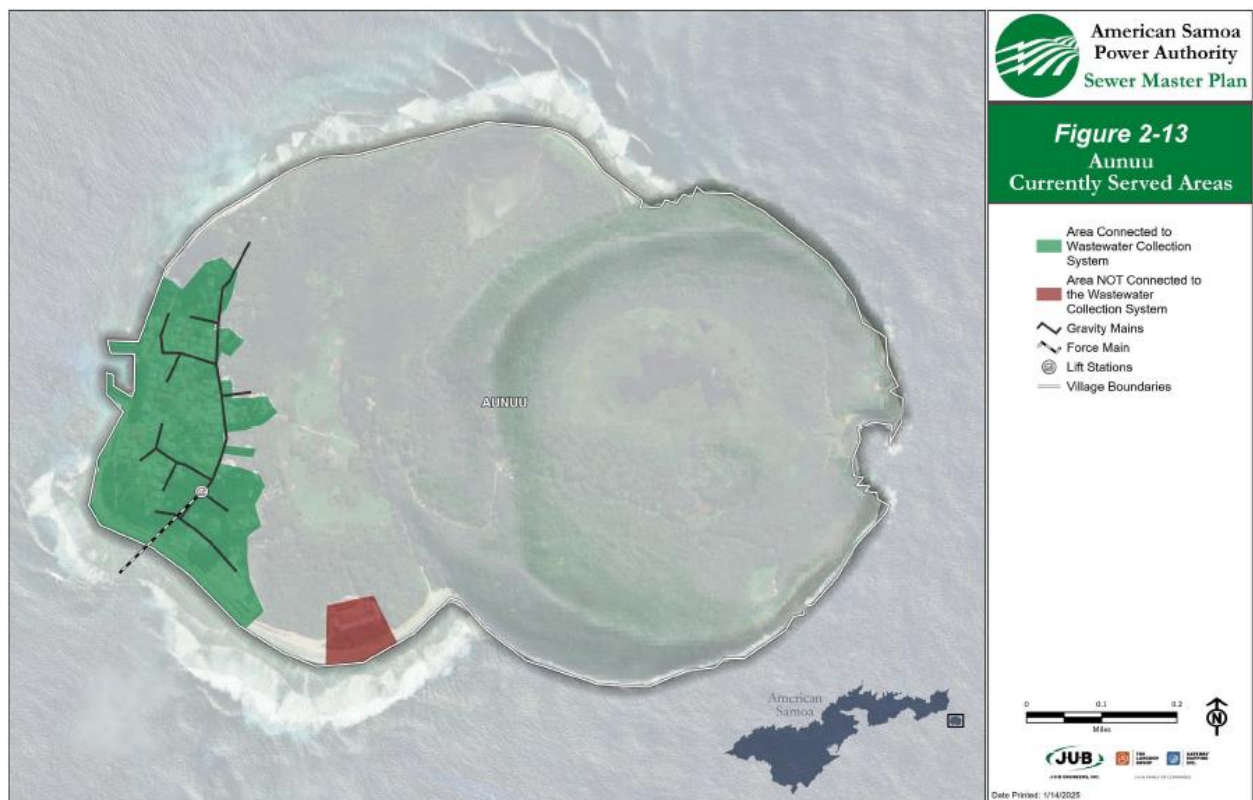
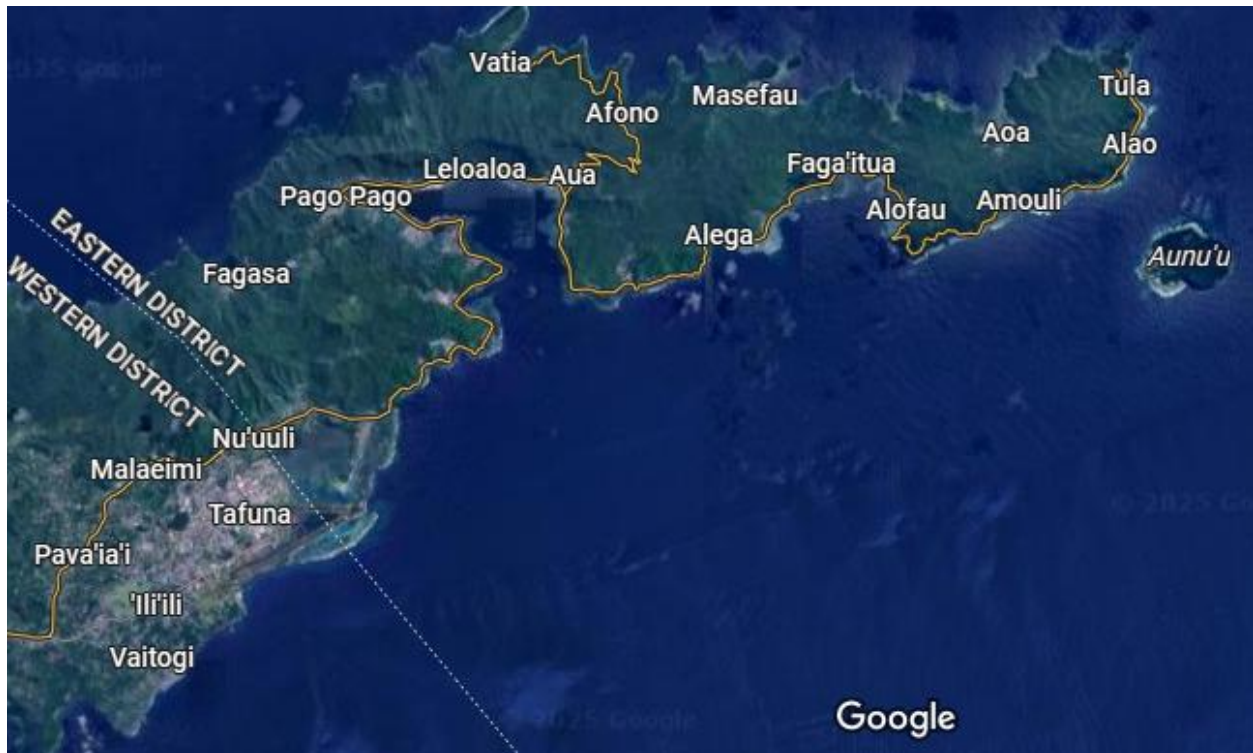


Figure 2-13: Aunu'u Service Area Map

### III. SCOPE OF WORK (SOW)

ASPA seeks a qualified firm to provide a comprehensive Aunuu WW Treatment Feasibility Study to determine necessary sewer system improvements and to determine the best, most appropriate/logical treatment and disposal method for Aunuu and the ASPA WW Division that shall meet all federal/local regulations and permits.

#### A. Study investigation and assessment:

1. Obtain all relevant data and information regarding ASPA, the ASPA WW Division, ASEPA, the ASEPA Water Quality Standards, Aunuu community economic situation, and the Aunuu small community WW system.
2. Obtain all relevant information regarding federal and local regulations/permits, the ASEPA Water Quality Standards and typical EPA NPDES and Army Corps of Engineers (ACE) permit information.
3. Research the July 2022 King Tides event, which was declared a federal national emergency, and talk to the locals to understand how to harden a possible future treatment system on Aunuu against such natural disasters.
4. Review of the 2003 WW Master Plan, the 2007 Aunuu WW Facilities Plan, the 2025 WW Utility Plan (WWUP) and the 2025 WW Secondary Treatment Feasibility Study (for the Tafuna WWTP). Note down the important/valuable data and information from these plans related to Aunuu. Note, the 2025 WWUP had a survey done of manhole lid and invert elevations.
5. Research the history of the Aunuu WW system with ASPA, ASEPA and USEPA. The current discharge is unregulated when there should be a permit since it is a point source. At any time EPA could take enforcement action, therefore it is better to proactively address the contamination.
6. Contact Glatzel Darby Costa (GDC) a private coastal marine consulting firm doing work in American Samoa (author of the 2007 Aunuu WW report), and the local coastal related government agencies like Department of Marine and Wildlife (DMWR), ASEPA and NOAA Fisheries for relevant information about Aunuu and its sewer outfall. Determine if there are any existing coastal area studies or reports near the sewer outfall that would be useful for a possible future NPDES permit, Endangered Species Act (ESA) consultation, and ACE permit.

7. To prepare for possible EPA NPDES, ESA consultation and ACE permits, have qualified biologists collect data, assess the land environment and near shore environment to prepare an initial biological survey. A marine biologist must also assess the condition of the surrounding area around the ocean outfall.
8. Provide a thorough sewer line camera inspection of the inside of all the sewer service/mainline pipes and an engineer's assessment of the entire existing WW system from the house connection's service laterals, to the mainlines, manholes, the lift station, the outfall and the area adjacent to the outfall.
9. Verify that the WW Utility Plan's WW system survey information and manhole cover elevations/inverts are accurate.
10. Monitor the sewer flow over a minimum period of twelve (12) months throughout the entire collection system, at select/strategic manholes (minimum of six manholes) and at the inlet of the lift station, with sufficient wet weather data to adequately determine an accurate I/I analysis, and the sewer dry weather flow, wet weather flow, maximum flow, minimum flow, average flows and peak flows.
11. From the sewer flow monitoring results and the WW system survey information, conduct hydraulic modeling including system capacity analysis and projected 20 year capacity analysis. Even though the population has decreased over the recent decades, for this study use a more conservative approach and assume the population remains unchanged from the year 2020 to 20 years ahead.
12. Correlate monitored sewer flows and salinity levels with rain events, low tide and high tide to determine how these events potentially add to the I/I and discuss ways to mitigate them.
13. Provide a minimum of six (3 dry weather and 3 wet weather) separate effluent samples/tests from the lift station of different wet weather and dry weather flows testing for BOD, TSS, turbidity, total P, total N, ammonia, toxicity, salinity and other typical sewer constituents.
14. Determine all necessary sewer flows and loads for the Aunuu WW system used to further develop alternative treatments, methods and sizing purposes.
15. Research and compare other similar US Territory sized islands and their WW collection and treatment systems to determine which ones would be appropriate to Aunuu.
16. Selected firm shall have a minimum of two meetings with local ASEPA and federal USEPA officials to discuss local as well as federal concerns, rules, regulations, permit conditions, local water quality standards, any other questions related to this study.

17. Discuss all the challenges of operating and maintaining a WW treatment system on the remote island of Aunuu.
- B. Study findings and development of the most reasonable treatment alternatives based on the previous investigation and assessment:
1. Using the 2007 study as a basis for this investigation, and considering the challenges due to the remote location and size of Aunuu, ASPA's goal is to consider and study the feasibility of treatment systems with the following characteristics: 1) types that are less complex in nature, 2) ones that are simplest to operate and maintain, 3) will be most affordable and energy efficient to operate and maintain and 4) have a relatively small footprint since space is limited.
  2. Based on the investigation, inspection, assessment, and findings – analyze and develop several reasonable/viable treatment system alternatives. One alternative to consider is a "containerized WWTP" for a typical Secondary NPDES Permit that would meet American Samoa's Water Quality Standards and must identify potential sites to locate the treatment system.
  3. Analyze and develop acceptable EPA WW treatment systems that do not require an ocean outfall and those that do require one.
  4. Complete a 30 page maximum environmental information document for the alternatives considered.
  5. Describe advantages, disadvantages and valid supportive reasoning of each viable alternative. Including necessary staffing and implementation considering all aspects such as water quality impacts, bio-solids/landfill impacts, site size considerations, other non-water quality environmental impacts and social impacts (rate payer impacts) along with a detailed cost analysis.
  6. Detail the cost impacts that shall include capital costs, annual O&M costs, and annual O&M costs per 1000 gallons treated WW, the major upgrade cost after 20 years and total life cycle cost.
- C. Study recommendations, upgrades, capital improvement plan (CIP) and an implementation plan based on the previous findings:
1. Based on the findings, goals, challenges, permit conditions, discharge standards, pros and cons, conduct a screening of viable WW treatment alternatives, and select the top ranked feasible WW treatment system for Aunuu and the ASPA WW division – one that

requires an ocean outfall and one that does not require an ocean outfall, and permitting considerations associated with each.

2. For the alternative that continues to discharge to the ocean, prepare a conceptual plan and cost estimates to upgrade the existing outfall and to extend it to deeper waters as required by a typical Secondary NPDES Permit and Army Corps of Engineer's Permit. Consider benefits in maximizing dilution factor and incorporating diffusers into the design.
3. Recommend and rank the most advantageous WW system with detailed pre-design schematics/features clearly explained and described, CIP and an implementation plan. Also, give detailed reasons why the recommended alternative is the most feasible one.
4. The recommended alternative must detail its operation and maintenance needs, O&M monthly/annual costs, number of new operators required and their skill levels, the type of certifications needed and how many certified operators it will take to run the new facilities. The study shall mention the problems and their solutions associated with its maintenance.
5. The report shall discuss potential effluent reuse and what that would entail.
6. Prepare plan of upgrades with estimated costs for the existing collection system and lift station.
7. Provide a conceptual/preliminary design, implementation plan and cost estimates (capital and O&M) for the recommended treatment system and improvements. These pre-design conceptual drawings/designs shall be detailed enough to provide enough information for adequate planning purposes, approved by the selected firm's Engineer of Record (EOR).
8. The report shall discuss the impacts on the sewer rates.
9. Include recommendations to improve the existing WW system and to reduce the I/I by at least 50%.
10. Conduct a village meeting for their awareness to announce the recommended alternative and potential site locations with the local Aunuu mayor, chiefs, and landowners.
11. To conclude, the consultant shall give a presentation to the ASPA and EPA staff and submit a final professional engineer stamped final report.

#### D. Additional SOW requirements

- No claim for additional compensation will be allowed which is based upon a misunderstanding or lack of knowledge by the Offeror.
- The Offeror shall initially collaborate with ASPA regarding the study format and minimum content as listed in this SOW. Offeror shall be in close communication with ASPA throughout the report preparation process.
- The Selected Firm is expected to evaluate the WW system remotely and also locally on-site here in American Samoa.
- Offeror shall plan on a minimum of three visits to American Samoa: initial visit to implement the sewer monitoring devices, begin the onsite investigation, the sewer line camera inspection, and assessment, the second visit about halfway through to ensure all relevant information has been received and give a presentation on the study's status, and then the final visit to present the final report and to conduct the village meeting.
- The report shall be submitted in logical increments similar to the following:
  - i. Milestone schedule and timeline
  - ii. Outline of study
  - iii. 30% submittal
  - iv. 60% submittal
  - v. 90% submittal
  - vi. 100% draft submittal. Final report is complete once ASPA and USEPA approves of Final submittal.
  - vii. Each submittal will be succeeded by an ASPA and EPA review with comments within 20 calendar days. These comments shall be addressed and incorporated into the next submittal if recommended. Also, an ASPA/EPA comment and selected firm response list shall be maintained and shared with ASPA.
- Minimum Deliverables:
  - i. The complete and ASPA approved Study.
  - ii. Study related and collected information/data, sewer system pictures, hydraulic model, and survey data.
  - iii. Planning, pre-design, engineered and EOR stamped documents related to the study such as value-engineering analysis, calculations, technical specifications and standards.
  - iv. Milestone schedule and timeline to completion with summary descriptions.
  - v. Post report presentation/workshop slides, summary and agenda.
  - vi. Three (3) hard bound copies and electronic copies (i.e. AutoCAD, pdf, Excel spreadsheet, ArcGIS) of report, summary, maps, tables, figures and all deliverables.
  - vii. Other items as necessary.