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# War in the Pacific National Historical Park

## Asan Springs Water Supply Facility Rehabilitation

The Guam Waterworks Authority (GWA) is proposing to restore the Asan Springs Water Supply Facility to increase input to the Agana-Asan-Piti Integrated Water Supply and Storage System to meet water supply demands in the villages of Hagåtña, Asan-Ma'ina and Piti. The National Park Service (NPS) is reviewing a request by GWA to restore the Asan Springs water supply facility, which is partially on NPS lands in the village of Asan. This document provides details about the project. Comments may be submitted online (<https://parkplanning.nps.gov/AsanSprings>) or via mail or email options provided at the end of this document.

The need for this proposed project is to provide a clean, dependable water source that meets water quality standards and corrects deficiencies previously documented by the Guam Environmental Protection Agency (GEPA). Additionally, this project would reduce the need for additional infrastructure (wells and pumping systems) to deliver water from the north side of the island to this area. Alternatively, there would be a need to purchase water from the Navy to be supplied to the villages that would be supplied with Asan Spring water.

The Asan Springs Site is in Asan village in central western Guåhan (Figure 1). The Asan Springs Site and NPS Proposed Right-of-Way (Project Area) is located on a steep slope above the lower residential area of the village and is partially within the Asan Inland Unit of the national park. The Asan Springs water supply system consists of several buildings surrounded by a fence (Figure 2). The Project Area is 1.08 acres, and the property is owned by the GWA and the NPS.

The Asan Springs Reservoir has been a key component of the water system of the village of Asan and the surrounding area on the Island of Guåhan. The concrete reservoir (the impoundment structure with roof shown in the expanded inset image on Figure 2) was constructed by the U.S. Navy in February 1916 to impound the flow from Asan Spring. A concrete overflow spillway along the front retaining wall of the reservoir drains to an open-top collection basin that routes the overflow water into a buried storm drainage pipe extending northeast. By the late 1950s to early 1960s, the gravity fed system was changed to a pump system. Circa 1972, a pump house building with a chlorinator room was constructed. Circa 1994, a new pump house building, and separate chlorinator building, were constructed and replaced the former pump house, which had been demolished. The Agana-Asan-Piti Integrated Water Supply and Storage System project, constructed circa 1982, installed a new 6-inch diameter water line from the Asan Springs Site to a new water reservoir.

The system was eventually transferred to GWA and operated until 2004. The system was shut down due to bacterial contamination and inadequate chlorination to treat the water. A Notice of Violation and Compliance Order (NOV/CO) from GEPA was issued on January 28, 2004, which

decreed that the system would be closed until the contamination deficiency was corrected. Samples had identified the presence of total and fecal coliform bacteria at the distribution system, with the absence of the required chlorine residual. Although the potable water system has been shut down, water seeping from Asan Springs continues to be collected in the impoundment structure and drains through existing storm drainage piping in Asan, with discharge as stormwater to the Asan River and then to the Philippine Sea.

The GWA Project No. W11-003-BND was established for this rehabilitation project that was originally funded with a Department of Interior grant for the initial design for the rehabilitation of the Asan Springs Site. The grant was closed after partly being used for design, and the remainder of the project is being funded by the GWA's bond funds.

### **Rehabilitation Options**

The following options are being considered by the GWA: rehabilitation and restart of the existing system, upgrade of the existing system, closure of the existing system with installation of a new well and pumping system, and abandonment of the existing system with installation of a new well and pumping system accessing groundwater.

Rehabilitation and restart of the existing system would not provide adequate disinfection time prior to the first customer and would not address the NOV/CO.

The two options that include installation of a new well and pumping system to provide potable water for replacement of the former contribution from Asan Spring present the following concerns:

- The cost of identifying a location for the groundwater well system, acquiring land, developing the well system (wells, pumps, and piping), and connecting the well system to the existing distribution system.
- The disturbance of new ground (requiring ground clearing, drilling, and other construction activities), associated with a new recovery and distribution system.
- The overall operational and maintenance costs for the pumping systems required to provide the same reliability and level of service that the Asan Springs Site can provide.

Upgrade of the existing system to correct the deficiencies noted in the NOV/CO is a less expensive and more efficient option. It is described below.

### **Most Efficient Option**

The project would rehabilitate the existing impoundment structure by removing and replacing in-kind the plaster finish that was installed on the original exterior front face wall of the impoundment structure. The structural concrete deficiencies internal of the impoundment structure would be repaired by applying epoxy bonding materials. Additional modifications would be made to the roof structure. The modifications include sealing up unnecessary roof penetrations that were used for pumping operations and adding safety features such as a stainless-steel railing and manhole ladders to access the internal features of the structure.

These system improvements include abandoning and installing a new concrete electrical duct bank from the north side of Lot 7, Block 9 from an existing transformer to the project site. It is

anticipated that Lot 7 will have limited vegetation clearing for installation of the duct bank, however Lot 7 is anticipated to possibly have greater vegetation clearing in areas to accommodate staging and large vehicular access, such as concrete trucks.

These system improvements do not include installation of new water distribution piping to Asan. This modification of the system would connect to an existing water line located inside the project site, with no planned modifications to the line outside of the project site that serves Asan.

Due to the lack of as-built information on the original structure, it is currently unknown what original piping may still exist within the site, including underground. During construction some of these original pipes may be encountered, but it is assumed that they have all been abandoned in place. If further information reveals that these pipes were not properly abandoned, then field modifications would be made to properly abandon these pipes in place.

The following items would be removed during demolition activities:

- The 8-inch-diameter piping that supplies water to the water booster pump station building from the outlet structure
- The chlorine building structure and foundation
- The roof appurtenance at the water booster pump station
- The 8-inch-diameter water line and associated gate valves outside of the pump station building and exiting the project site
- The piping, valves, and concrete box adjacent to the chlorination building
- The water level appurtenance
- Three vents at the water booster pump station
- Asphalt and three concrete pads adjacent to the chlorination building and water booster pump station
- Concrete riprap adjacent to the chlorination building
- The gate and fence surrounding the Asan Springs Water Supply Facility
- An electrical handhole near the fence
- All dirt debris, rock rubble, pipe debris, fence debris, and other debris from the top of the concrete water storage reservoir roof
- All trees and roots that could impact the concrete water storage reservoir

An existing pipe and valve system is partially buried. It is assumed the pipe system could be connected to a floor drain system in the impoundment structure. If the components are not connected to the current system, the pipe will be plugged and all remaining pipes and valves removed.

### **Construction**

The following facilities would be constructed within essentially the same footprint as the existing Asan Springs Water Supply Facility:

- A new chlorination building
- Water lines connecting to the existing 8-inch-diameter water supply line
- Concrete pads adjacent to the existing water booster pump station
- Impoundment water line connecting to the existing pump station facility

- A new electrical duct bank and wiring within Lot 7, Block 9
- An 8-foot-high fence surrounding the facility with access gate off the existing access road and pedestrian gate with concrete stairs leading to the new facilities
- A concrete drainage swale (ditch) surrounding the upgradient limits of the facility, diverting drainage away from the reservoir, with rock riprap at each end of the swales
- Revegetate with grass, as necessary, all disturbed areas

### **Operations**

Once operational, the Asan Springs Water Supply Facility will be regularly monitored and maintained by the GWA. Maintenance activities for the facilities would occur entirely within the developed, fenced perimeter with the exception of vegetation maintenance activities. GWA will access the site daily to take water samples, check chlorination feed systems, and perform general maintenance activities. GWA will access the site at approximately weekly intervals to exchange empty chlorine gas cylinders with full chlorine gas cylinders. Exterior lighting for the facility will be provided through exterior lights attached to the chlorination and the pump buildings. A 20-foot-wide buffer around the concrete swale will be maintained as low grass through regular mowing. Mowing is expected to be required every month, at a minimum.

### **No Action**

If no action is taken, the Asan Springs water supply system would not be restored, and the community would continue to utilize the existing supply system. Water seeping from Asan Springs would continue to be collected in the impoundment structure and drain through existing storm drainage piping in the Village of Asan, with discharge as stormwater to the Asan River and then to the Philippine Sea. The village of Asan is not close to any existing source water location currently being used to deliver safe drinking water. Consequently, Asan customers would continue to have reduced reliability for any failure that may occur along the distribution system. GWA would continue to pay for and acquire potable water from the U.S. Navy to supplement any deficiencies that GWA may encounter with their existing distribution system. The purchase cost of U.S. Navy-supplied water is higher than it currently costs GWA to pump and deliver water, ultimately leading towards rate increases to the customers to cover those additional costs.

### **How to Provide Input**

The public is invited to learn more about this project and provide input which will be used to evaluate issues and concerns to be further addressed in the environmental review process.

Online: <https://parkplanning.nps.gov/AsanSprings>

Mail: Attn: Asan Springs  
National Park Service  
135 Murray Boulevard, Suite 100  
Hagåtña, Guam 96910

Email: [AsanSprings@nps.gov](mailto:AsanSprings@nps.gov)

The NPS will accept input until April 30, 2022. If you include an address, phone number, e-mail, or other personal identifying information, you should be aware that your entire input – including personal information – may be made publicly available at any time. You may ask us to withhold your personal information from public review, but we cannot guarantee we will be able to do so.