
Existing Kahauiki Stream along Fort Shafter Flats

Client: **Sato & Associates, and USACE Honolulu District**

Services Provided:

- ✓ Detailed Hydraulic Study for Levee Design
- ✓ Detailed Hydrologic Study for Pump Design
- ✓ Scout Analysis for Bridge and Levee System
- ✓ Coordination with USACE and FEMA
- ✓ Preparation of Conditional Letter of Map Revision (CLOMR)

Project Objective

The U.S. Army Fort Shafter Flood Mitigation Project consists of the design and construction of a 1,700 linear foot levee wall, high capacity flood control pumps, and modified bridge opening to increase flow capacity. Fort Shafter is the oldest military base on Oahu and home to the headquarters of the U.S. Army Pacific Command and the U.S. Army Corps of Engineers (USACE), Pacific Ocean Division. The flood mitigation project is critical in protecting a 30 acre, highly used section of the Fort Shafter Flats area. The area has been plagued by routine floods, occurring in 1974, and recently in March 2006 and December 2003 when stream flow from Kahauiki Stream flowed over the left bank into the Flats area causing flood damage to warehouses and the motor pool areas.

The flood mitigation project will provide protection for the military installation for the 1% annual exceedance probability event (100 year storm), ensuring the protection of military assets and continued operation following storm events. The project includes the preparation of a Conditional Letter of Map Revision (CLOMR) for FEMA review and the preparation of a Letter of Map Revision (LOMR) upon the completion of the project to revise the Flood Insurance Rate Map (FIRM).

Geosyntec's Scope of Services

Geosyntec worked closely with the local engineering firm, Sato & Associates and the USACE to develop a hydraulic analysis of the Kahauiki Stream modifications, including the levee wall design and modified bridge opening. Along with the detailed hydraulic analysis, Geosyntec conducted a scour analysis and prepared GIS maps of the modified floodplain and floodway. Geosyntec conducted a detailed hydrologic analysis to determine the extent of residual flooding behind the levee system and sized a high capacity pump system to provided flood protection for the 1% annual exceedance storm event. The Geosyntec analysis and final pump control configuration and sizing resulted in a savings of over $500,000 in construction costs.

Notable Accomplishments

- Completed detail hydraulic analysis, supporting documents, and GIS maps of modified floodplain and floodway for CLOMR.
- Prepared detailed hydrologic analysis of site behind levee system to size flood control pumps and map residual flooding.
- Provided enhanced pump configuration design based on hydrologic analysis, reduced construction cost by over $500,000.
- Prepared scour analysis of modified reach for levee design and modified bridge opening.
- Maintained close coordination with USACE and engineer, prepared comprehensive analysis – on time & under budget.