



Impact of Stormwater Discharges and WWII on the Mercury Status of Fish from the Southern Section of Saipan Lagoon



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On July 15, 1944, several thousand US troops stormed the southern beaches of Saipan Lagoon to liberate Saipan from the hands of the Japanese who took control of the island shortly after WWI. Japanese defenses positioned along the coast were heavily shelled prior to the US invasion, as were US troops in the lagoon during the assault. While this historic battle unquestionably marked the turning point of WWII, it left behind a legacy of chronic environmental mercury contamination that still exists to this day. The first hint of a potential mercury problem in this area emerged in 2007 when an independent research team reported frequent and occasionally high mercury detections in stormwater discharged into the upper section of the southern half of the lagoon (Environ Inc. 2007). These findings were especially noteworthy because mercury is rarely encountered in urban runoff (USEPA 1983). At about the same time, WERI researchers noted unusual mercury distribution patterns in sediments throughout the southern half of the lagoon (both upper and lower sections) that suggested inputs washed into the lagoon from land-based sources were superimposed upon a scattering of mercury contamination emanating from within the lagoon itself (Denton *et al.* in press). Since mercury was used extensively in WWII (as mercury switches in projectiles and rockets, and as the primary explosive, mercury fulminate, in primers and detonators of artillery shells and percussion caps of bullets) it was postulated that pockets of mercury contamination associated with exploding WWII ordnance and lost ammunition had been created along the coastal belt and in the lagoon.

The full impact of this contamination on fisheries within the southern half of Saipan

Lagoon has only partially been addressed and is the subject upon which this proposal is predicated.

In 2010, WERI examined mercury levels in fish from approximately the same stretch of coastline as that visited earlier by the Environet team. The study focused on two fish types with restricted foraging ranges: snapper (*Lethrinus* spp.) and soldier fish (*Myripristis* spp.). The results of the investigation revealed a marked and irrefutable southerly increase in mercury concentrations in both fish types.

The project described herein therefore proposes to extend the fish sampling survey from its previous southern endpoint, adjacent to Chalan Monsignor Guerrero Road, to Agingan Point at the southern end of the lagoon – a distance of approximately four km. The survey will focus on the same two fish types as before and divide the sampling area into ~500 m shoreline blocks, or zones, that extend the same distance offshore, where possible. The assistance of local personnel and other government agencies in procuring samples will be obtained where necessary. The primary objectives of the study are to: a) identify the impact of mercury enriched stormwater discharges in the study area on mercury levels in the edible tissue of two resident fish types; b) evaluate potential health risks associated with unrestricted consumption of fish from within the impacted area; c) provide additional data that will assist with the identification and delineation of areas of contaminant enrichment within Saipan Lagoon, and d) enhance ongoing marine water quality monitoring, management and mitigation strategies for Saipan's coastal waters.