



## Applications of LiDAR Data for Inarajan Watershed Management



Funded by:  
US Geological Survey, Water Institute Program

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**Funding: \$25,171**

Guam, an unincorporated U.S. territory in the western Pacific, is the largest (about 541.3 km<sup>2</sup>) and southernmost island in the Mariana Islands. The population of Guam has gradually increased since WWII and currently stands at around 180,000. Because of military buildup activities, an estimated 40,400 active military personnel and dependents are expected by 2014. With more population to stream to Guam in the next few years and beyond, more solid wastes will be generated.

On February 11, 2004, the Government of Guam (Guam Department of Public Works and Guam Environmental Protection Agency) entered into a Consent Decree (Civil Case No. 02-00022) with the United States of America (U.S. Environmental Protection Agency with the U.S. Department of Justice) in U.S. District Court, Territory of Guam. The Consent Decree is a settlement agreement to resolve issues related to the unauthorized discharge of pollutants from the Ordot Dump to the Lonfit River. The historical and continuing discharge of pollutants to the Lonfit River is a violation of the Clean Water Act (CWA). The Consent Decree aims to resolve civil penalties and to establish a schedule for construction of a Municipal Solid Waste Landfill Facility (MSWLF) and closure of the Ordot Dump.

As part of the Consent Decree, Guam is required to site and must design, construct, and operate a landfill that is fully compliant with Guam Solid Waste Disposal Rules and Regulations. As part of the agreement, the landfill must be in operation on September 23, 2007, or earlier. Within the constraints

of the Consent Decree and in accordance with the 2000 Integrated Solid Waste Management Plan (ISWMP), the Government engaged in a site screening and site selection process. Based on the selection process, an area in Layon, Dandan, Inarajan, was selected for the future landfill site.

This research proposal focuses on applications of LiDAR data collected in early 2007 for Inarajan Watershed management. Raw LiDAR data will be used to obtain watershed characteristics for Inarajan Watershed. In this project, GIS and related technologies such as remote sensing and global positioning system (GPS) will be used to collect, digitize, organize, model and analyze data on watershed characteristics. GPS can be used for data ground-truthing, remote sensing can be used to collect data for hard-to-reach areas and to update GIS database, while GIS, enhanced by remote sensing and GPS capabilities, will be the core tool for this project. The overall objective of the project aims to obtain watershed characteristics from LiDAR data for the Inarajan Watershed.

The main objectives of this project are listed as follows:

1. Preprocess the raw LiDAR data collected in early 2007;
2. Find and remove noises from the LiDAR data if they exist;

Obtain watershed characteristics for the Inarajan Watershed.

