

# THE NORTHERN GUAM LENS AQUIFER: TECHNICAL RESOURCES

## 2017 WERI PROFESSIONAL WORKSHOP September 11<sup>th</sup> and 18<sup>th</sup>, 2017, WERI Room 105

**Purpose.** These workshops provide Guam’s engineering, technical, and managerial professionals with understanding and the ability to apply WERI’s primary tools related to the Northern Guam Lens Aquifer (NGLA):

1. *The NGLA Database* (WERI Technical Report #141)
2. *The NGLA Map* (WERI Technical Report #142), and
3. *NGLA Salinity Studies* (WERI Technical Reports #98 and #143).

Specifically, the workshops explain how these tools can be used to promote successful groundwater exploration and aquifer management, including optimal well placement, design, and operation.

### **11 September, Session #1: The Northern Guam Lens Aquifer Database and Aquifer Map.**

WERI maintains a comprehensive aquifer database containing hydrogeological, engineering, and management data. Hydrogeological data include drilling logs of all boreholes for which records have been found, and depths to the bottom of the water-bearing formation wherever such depths have been documented. Engineering and management data include locations, construction, and pump-test records for all wells for which records have been located. The database is continually updated, and is currently being expanded to include the salinity histories of historical and current production and monitoring wells. This database, along with a user’s manual, WERI Technical Report #141, and a map of the aquifer, WERI Technical Report #142, have been developed for use by the professional community. The workshop explains how to navigate and apply these tools.

Time	Topic	Instructors
08:00 AM	Sign-in, coffee and donuts, WERI room 105	
08:30 AM	Welcome and overview of materials to be covered	Jenson (WERI Director)
08:45 AM	Review of aquifer basics: concepts and terms	Habana, Jenson
09:00 AM	Database: History of its development and overview of TR #141	Habana, Jenson
09:15 AM	Database: Introduction and guided tour of the on-line database	Habana, Jenson, Kim
10:00 AM	Break	
10:30 AM	Aquifer map: History of its development and overview of TR #142	Habana, Jenson
10:45 AM	Aquifer map: Organization and content of the map	Habana, Jenson, Kim
11:30 AM	Working lunch/Q&A session: Aquifer map   NGLA virtual tour	Habana, Jenson, Kim
12:15 PM	Nitrogen baseline data in NGLA	Rouse, Habana, Jenson
01:00 PM	Q&A session: all topics	Habana, Jenson, Kim
01:30 PM	End of session, distribute feedback forms	Habana, Kim, Jenson

**18 September, Session #2: Salinity, Nitrogen, Modeling Results.**

In 2013, WERI published its second comprehensive study, WERI Technical Report #143, of the historical patterns and trends of salinity in the production and monitoring wells installed in the aquifer. Technical Report #143 examines historical trends from 1973 through 2010 and focuses on geological and meteorological factors that contribute to groundwater salinity. The first comprehensive report, WERI Technical Report #98, examined trends from 1973 through 1995, and focused on how well-design and operational factors—particularly, well depth and pumping rates—affect the incidence of salinity. The results of these two studies are being incorporated into the database. This workshop session also describes ongoing studies of salinity and nitrogen analyses, hydrologic modeling of groundwater production capacity, and what the implications might be for sustainable management of the NGLA. Related topics will include the current state of understanding of aquifer recharge, the effects of drought and recovery, and work underway at WERI to better define sustainable yields for the aquifer.

<b>Time</b>	<b>Topic</b>	<b>Instructors</b>
08:00 AM	Sign-in, coffee and donuts, WERI room 105	
08:30 AM	Welcome and overview of materials to be covered	Jenson (WERI Director)
08:45 AM	Review of salinity basics: concepts and terms	Habana, Lander, Jenson
09:00 AM	Rainfall patterns the aquifer	Lander, Jenson, Habana
09:45 AM	Break	
10:15 AM	Latest salinity analyses: updates of TRs 98 and 143	Dougher, Miller, Habana
11:00 AM	Recharge and modeling studies by USGS-WERI	Habana, Superales, Jenson
11:30 PM	Related tools and resources: WERI & GHS website	Kim, Habana, Jenson
12:00 PM	Working lunch/Q&A session: Salinity, Nitrogen, Modeling	Habana, Jenson, Lander
12:45 PM	The One-Guam Aquifer Monitoring Program	Jenson, Habana, Kim
01:00 PM	Q&A session: all topics	Habana, Jenson, Lander
01:30 PM	End of workshop, distribute feedback forms	Jenson, Habana, Lander