

## Brackish Groundwater National Desalination Research Facility

500 Lavelle Road, Alamogordo, New Mexico

<http://www.usbr.gov/research/AWT/BGNDRF/>

### Introduction

The Brackish Groundwater National Desalination Research Facility (BGNDRF) is a federal facility that operates under the United States Department of Interior, Bureau of Reclamation (Reclamation) in Alamogordo, NM. Established by act of Congress, the facility works to carry out two overarching goals identified in the 2008 National Research Council's report on Desalination:

- 1) understand the environmental impacts of desalination and develop approaches to minimize these impacts relative to other water supply alternatives, and
- 2) develop approaches to lower the financial costs of desalination so that it is an attractive option relative to other alternatives in locations where traditional sources of water are inadequate.

This unique facility focuses its research on brackish groundwater desalination including, small-scale rural water systems, renewable energy integration, concentrate management, and oil and gas produced waters.

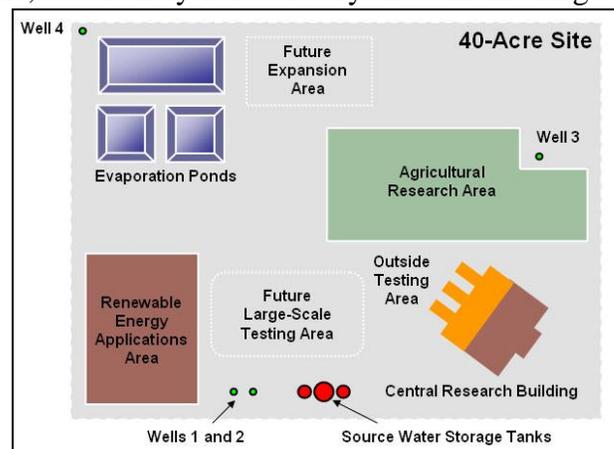
### Mission

The mission of BGNDRF is to conduct research for the development of cost-effective, robust desalination and alternative energy technologies that produce sustainable new supplies of water and power for municipal, industrial, agricultural, and environmental purposes. The facility is dedicated to bridging the gap between science and engineering and to speed the transfer of supply enhancing technologies to users. The facility serves as a proving ground and center for public education on water and energy.

### The Facility

The facility includes a Central Research Building located on a 40-acre site. The office space includes a conference room for 30 people, four offices for researchers, water analysis laboratory and a monitoring room associated with indoor test bays.

Testing areas include 6 indoor test bays (13'x 35') and 3 outside test pads (20'x 60'). The test bays and test pads are each equipped with dedicated power (120, 240, 480 V), data ports, source water, an Potable Water TBDd service water. The indoor test bays are also equipped with instrument air. Source water test flows of 30 gpm (113 L/min) are available at each test bay and 60 gpm (227 L/min) for each test pad. One large-scale outdoor testing area (80'x100', 24.4m x 30.5m) is a gravel pad with a source water test flow capability of up to 100 kgal/day (375 m<sup>3</sup>/day). Other features of the test facility are depicted on the Facility Diagram.



### Source water and storage:

- Low TDS well (1,000 – 1,200 mg/L) at 40 °C from the well, a cooling tower is available
- Mid TDS wells (3,450 – 6,400 mg/L) at 21 °C
- High TDS ( $\geq 10,000$  mg/L) can be imported to the site
- Desalted well water available to prepare custom water chemistries
- Storage capacity: 1 tank @ 100 kgal; 2 tanks @ 50 kgal; all tanks have 3 fill connections – 1 for Low TDS with or without cooling tower, 1 shared for all Mid TDS sources, and 1 connection for trucked-in water.

## **Services and Supplies**

Researchers may bring their own test equipment, supplies, and personnel for testing and monitoring services. BGNDRF staff will perform power and water supply connections. BGNDRF is available upon request for testing 24 hours per day, 7 days per week. There is no limit on duration of testing; however inactive equipment must be removed upon request.

Additional services from Reclamation Water Treatment Research and Engineering Team are available for a fee. The team consists of scientists, chemical and environmental engineers with extensive experience in process development, design, construction and testing. Examples of services:

- Process equipment design and construction
- Test plan development and implementation
- Quality control, monitoring, data acquisition, and report preparation
- Process and equipment troubleshooting
- Environmental Technology Validation (ETV) Testing in conjunction with NSF International

Though there is flexibility in testing services, there are four general levels of testing service available:

- 1) Client has a fully developed process and equipment and desires to verify performance. The Client supplies technical staff to monitor and operate the system. In this case, BGNDRF staff will connect equipment to water and power, maintain water supply, and assist with minor adjustments when requested. Client pays space rental fee, water and power usage fees, and staff time for technicians.
- 2) Client has fully developed process and equipment but needs assistance in verifying performance. Client can hire Reclamation staff to develop a test plan, perform testing, analyze data, and/or report on results. Client pays for space rental, staff time, and water and power usage charges.
- 3) Client has fully developed process and equipment and wants certification for potable use or for other claims concerning a technology with NSF International and EPA oversight. Client supplies equipment and claim to be certified. Reclamation works with NSF International and EPA to develop an approved test plan, and serves as the testing organization in the certification process. Client pays space rental, water and power usage charges, staff time, and NSF International and EPA fees for oversight. Reclamation prepares the test report for NSF International for review and determination of success.
- 4) Client may pursue establishing research agreements such as Cooperative Research and Development Agreement (CRADA) and Facility Use Agreement with Reclamation to conduct tests, joint research, and/or commercialization. A CRADA provides the Client the first right to negotiate an exclusive license to invention and provide confidentiality for information generated

under a CRADA for up to 5 years. The Client provides resources (funds, personnel, equipment, or materials) for Reclamation experts to work with the client to evolve an idea into a marketable product. Reclamation can provide similar resources except for funds. Reclamation will enter into a CRADA when the objective relates to its mission in water and power deliveries. Client may also pursue establishing a Facility Use Agreement with Reclamation that allows the Client to use Reclamation’s specialized facilities, equipment, technical expertise, and other resources to conduct tests or research.

## Disclosure and Confidentiality

Disclosure and confidentiality of data are at the discretion of the clients of the facility. The client owns the intellectual property contained in their project with the exception of work involving CRADAs that involve intellectual property developed jointly between a Reclamation employee and the client.

## Fees

The current fee schedule is below. Staff time cost is set by the Bureau of Reclamation Technical Service Center. It covers salary, benefits, and overhead. Space rental is negotiable. Power and water are metered at each test bay.

Certification testing is coordinated with NSF International. Fees for NSF oversight are approximately \$100,000 to cover test plan review, audit of test procedures, review of data and report by NSF and the Environmental Protection Agency (EPA), and publication of the report. Reclamation’s staff time for test plan preparation, implementation, and reporting, and laboratory analysis fees are in addition to NSF charges.

<b>2012 Fee Schedule (subject to change)</b>	<b>Price</b>	<b>Unit</b>
Level 3 Engineer/Scientist	976	\$/Staff Day
Level 2 Engineer/Scientist	800	\$/ Staff Day
Level 1 Technicians	592	\$/ Staff Day
Interior Bay Rental	250	\$/week
Exterior Bay Rental	400	\$/week
Power	0.15	\$/kWhr
Water RO Permeate (Set up fees vary) +	10	\$/kgal
On-site groundwater	2	\$/kgal
Imported (Depends on source)		TBD
ETV Testing Coordination with NSF International	~\$100,000	Per report
Potable Water	TBD	

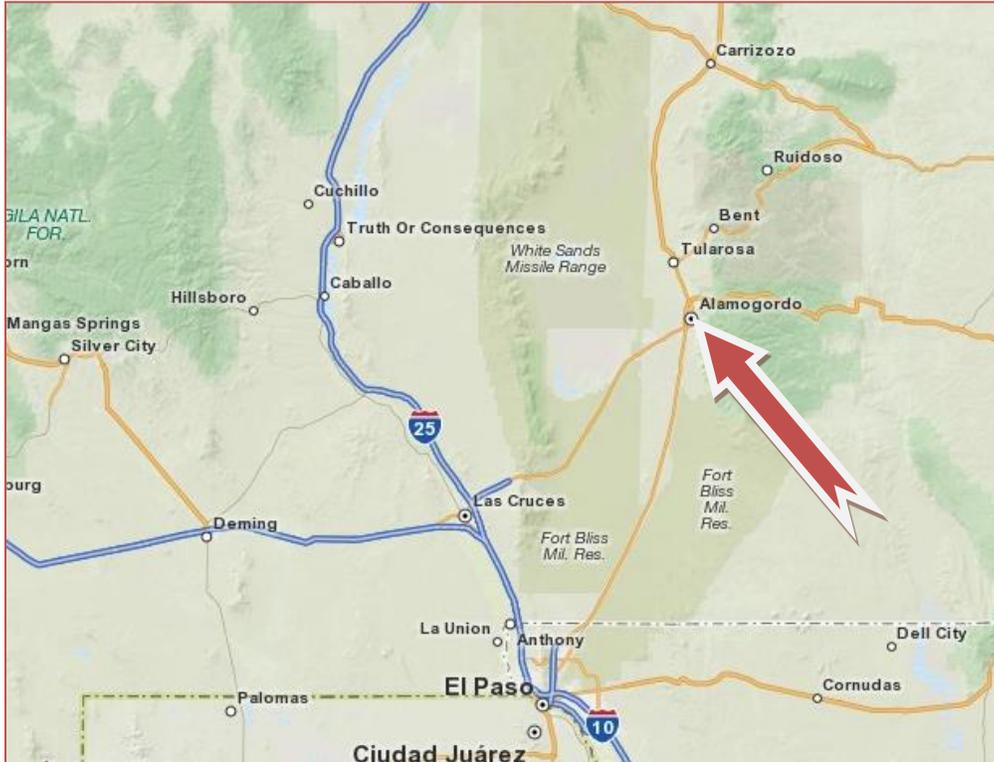
Water quality analysis available for staff time charge: conductivity, pH, ORP, Temperature, Colorimetric analyses, Particle counts, Turbidity, Silt Density Index

## Getting Started

Potential candidates are invited to begin with a tour of BGNDRF. Contact Randy Shaw, Facility Manager to schedule a tour. The next step is to work with Mr. Shaw to develop a facility use agreement that fits your needs.

## Location and Lodging

BGNDRF is approximately 1.5 hours north of El Paso International Airport (ELP) and 3.5 hours south of Albuquerque International Sunport (ABQ). Recommended lodging within one mile of the Facility are the Holiday Inn Express, Hampton Inn, Fairfield Inn & Suites, Comfort Inn and Suites, and Best Western Desert Air Hotel. For maps and more information on the area see the Chamber of Commerce website: <http://www.alamogordo.com/>.



## Contact Information

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