

RECLAMATION

Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

NOTICE OF INTENT TO AWARD

This Funding Announcement is not a request for applications. This announcement is to provide public notice of the Bureau of Reclamation's intention to fund the following project activities without full and open competition.

ABSTRACT	
Funding Announcement	R16-NOI-DO-006
Project Title	Reverse Osmosis Concentrate Management through Halophyte Farming
Recipient	Arizona Board of Regents, University of Arizona
Principal Investigator / Program Manager	Dr. Joanne Gallaher
Anticipated Federal Amount	\$75,000.00
Cost Share	NONE
Total Anticipated Award Amount	\$75,000.00
New Award or Continuation?	Continuation
Anticipated Period of Performance	January 2016 through June 2016
Award Instrument	Cooperative Agreement
Statutory Authority	Public Law 111-11, Sec. 9509
CFDA # and Title	15.506 Water Desalination Research and Development Program
Single Source Justification Criteria Cited	Continuation
Reclamation Point of Contact	Janeen Koza

OVERVIEW

The costs of concentrate management of a conventional Reverse Osmosis (RO) facility are up to 50% of the capital requirements and operation expenses. These costs are primarily associated with mitigating the environmental impacts of the concentrate. Research to validate the viability of halophyte farming for concentrate management - including addressing ground water

protection and long-term crop production efficacy – is necessary to analyze the feasibility are necessary. - are part of the proposed research. The purpose of this project is to collect additional data to analyze the feasibility of growing *Atriplex* sp. seedlings for farming, revegetation and restoration projects. This project will also afford the opportunity to advance the state of knowledge in reducing the environmental impacts of OM concentrates, including the recovery and use of salts or other materials contained in the reject stream, salinity modeling, and toxicity analysis of the concentrate discharges into the environment. The project will all analyze the carbon sequestration potential of halophyte farming as compared to other CM options.

RECIPIENT INVOLVEMENT

The Recipient shall be responsible for carrying out the Scope of Work in accordance with the terms and conditions stated herein. The Recipient shall adhere to Federal, state, and local laws, regulations, and codes, as applicable, and shall obtain all required approvals and permits. If applicable, the Recipient shall also coordinate and obtain approvals from site owners and operators. The Scope of Work will include the following tasks:

- Task 1 - Work with Bureau and Brackish Groundwater National Desalination Research Facility (BGNDRF) management on field infrastructure planning that will support short and long-term research program.
- Task 2 - Operate and maintain agriculture field site infrastructure and Concentrate Irrigation Delivery System construction (power, water supply, filtration, storage, and control system) including interface with initial field research system requirement and Data Acquisition and Intelligent Control system (DAIC).
- Task 3 - Agriculture field preparation, installation of research infrastructure including data acquisition ports, irrigation sub systems and DAIC monitoring and control interface.
- Task 4 - Greenhouse propagation of *Atriplex /entiformis* and *A. canescens* seeding for field planting. Initial estimate of seedlings needed is 1200-1600 (based on 20 rows of 60 plants each per acre).
- Task 5 - Planting, system maintenance, automated irrigation system, and data acquisition with DAIC and manual with neutron probe from soil moisture and validation of sensors, and field performance measures.
- Task 6 - Crop performance, field production monitoring, nutrient content analysis, and evaluation of potential for use as a commodity crop supplement for dairy and feed lot industry and for landscape restoration and re-vegetation.
- Task 7 - Develop mass balance model addressing the fate and transport of all components applied to the field. The initial model to be constructed based on experimental plan, field site conditions, water source and chemistry, irrigation rate, soil type, climate and extrapolating funding from previous research to estimate field performance and map subsurface moisture and salinity migration.

Task 8- Revision/refinement of Mass balance, fate/transport model based on research plot monitoring data including soil moisture and salinity at depth, plant productivity including usable biomass (animal feed), chaff (leaf drop), and total carbon storage. Characteristics of soil moisture management by plant in the vadose zone and fate of salinity from concentrate within and below the root zone.

Task 9- Quarterly and initial reports, publication of results in peer reviewed journals and presentation of findings a technical and scientific meetings.

RECLAMATION INVOLVEMENT

Substantial involvement on the part Reclamation is anticipated for the successful completion of the objectives to be funded by this award. In particular, Reclamation will be responsible for the following:

Reclamation staff and other employees at the Brackish Groundwater National Desalination Research Facility will be directly involved in the development of required infrastructure for the project as well as assist in the management of the equipment and perform required maintenance.

SINGLE-SOURCE JUSTIFICATION

DEPARTMENT OF THE INTERIOR SINGLE SOURCE POLICY REQUIREMENTS
Department of the Interior Policy (505 DM 2) requires a written justification which explains why competition is not practicable for each single-source award. The justification must address one or more of the following criteria as well as discussion of the program legislative history, unique capabilities of the proposed recipient, and cost-sharing contribution offered by the proposed recipient, as applicable.
In order for an assistance award to be made without competition, the award must satisfy one or more of the following criteria: (1) Unsolicited Proposal – The proposed award is the result of an unsolicited assistance application which represents a unique or innovative idea, method, or approach which is not the subject of a current or planned contract or assistance award, but which is deemed advantageous to the program objectives; (2) Continuation – The activity to be funded is necessary to the satisfactory completion of, or is a continuation of an activity presently being funded, and for which competition would have a significant adverse effect on the continuity or completion of the activity;

- (3) Legislative intent – The language in the applicable authorizing legislation or legislative history clearly indicates Congress' intent to restrict the award to a particular recipient of purpose;
- (4) Unique Qualifications – The applicant is uniquely qualified to perform the activity based upon a variety of demonstrable factors such as location, property ownership, voluntary support capacity, cost-sharing ability if applicable, technical expertise, or other such unique qualifications;
- (5) Emergencies – Program/award where there is insufficient time available (due to a compelling and unusual urgency, or substantial danger to health or safety) for adequate competitive procedures to be followed.

Single Source Justification Description:

Reclamation did not solicit full and open competition for this award based the following criteria:

(4) CONTINUATION

The proposed project is the continuation of a two-year agricultural research pilot study performed by the Recipient at the BGNDRF under cooperative agreement R13AC80023. Due to difficulties in infrastructure preparation and seedling germination that were beyond the Recipient's control, data was only collected for one full growing season rather than the intended two seasons. Competition to continue this project could result in the loss of crop plantings which would significantly delay the collection and analysis of the data and publication of the results.

STATUTORY AUTHORITY

Public Law 111-11, Section 9509, Research Agreement Authority

The Secretary may enter into contracts, grants, and cooperative agreements, for periods not to exceed 5 years, to carry out research within the Bureau of Reclamation.