

# PROPOSAL

## *Habitat Enhancement and Creation: Geotubes Technology and Solar PV Power on Salton Sea Playa, Torres Martinez Wetlands*

### **4.1. Applicant information:**

The Salton Sea is a saline lake in Southeastern California that serves environmental, agricultural and recreational purposes. The Salton Sea Authority is a joint powers agency comprised of Imperial Irrigation District, the Coachella Valley Water District, Imperial County, Riverside County and the Torres Martinez Tribe. The primary goal of the Authority is to lead and coordinate activities of federal, state and local agencies in the restoration of the Salton Sea.

## 4.2. General project description and benefits:

**Project name:** Habitat Enhancement and Creation: Geotubes Technology and Solar PV Power on Salton Sea Playa, Torres Martinez Wetlands

**Implementing Organization:** Salton Sea Authority

**Secondary Implementing Organization:** Torres Martinez Tribe of Desert Cahuilla Indians

**Proposed Start Date:** April 1, 2013

**Proposed End Date:** March 31, 2016

### Scope of Work:

(1) Plan and permit all project elements; (2) Implement habitat restoration and enhancement activities; (3) Construct new habitat; (4) Install, connect, and operate electric pumps, PV array, and additional plumbing; (5) develop and implement monitoring plans for all project elements with the USGS; (6) operate and maintain project; and (7) provide reports.

### Project Description:

This project will create and enhance species conservation-type habitat at the north end of the Salton Sea to complement and expand on the project that has been proposed by the State at the south end of the Sea. Target species will include pupfish, brown and white pelicans, breeding shorebirds, and piscivorous birds. The work will be on the same parcel of land as the existing Torres Martinez wetlands at the mouth of the Whitewater storm channel, and will complete habitat enhancements in existing ponds at that site. Furthermore, the project will bring restore the entire existing Torres Martinez wetland, which has been challenged with inadequate water provision and maintenance in the past 3 years due to funding constraints. The project will also create new habitat by the construction of a new pond cell using a technology new to Salton Sea restoration work for the construction of berms in wet and saturated soils. This technology utilizes Geotubes filled with dredged sediment for the construction of berms. This technology has been discussed for use at the Salton Sea, but has not yet been implemented. Finally, the project will construct a pilot scale solar project that will be used to provide power for the operation of the pumps that will supply water from the Whitewater Storm Channel to the habitat. This power supply will provide an element of demonstrable sustainability that will continue past the funded life of this project. An additional solar array will also be installed on playa soils and connected to the solar meter, to allow for evaluation of the sustainability of such development on the playa soils and environment.

### Project Objective:

Objectives are to *restore* 9 existing ponds at Torres Martinez wetlands, *enhance* 2 existing ponds, *create* 20 new acres of habitat using new berm technology (Geotubes), and develop photovoltaic (PV) capability to power reliable and sustainable water delivery to all ponds. Project will *monitor* all project elements with scientifically sound protocols developed with USGS; and will develop *future funding sources* to assure sustainability of the wetland complex, exploring options for expansion.

**Project Benefit:** Habitat creation and enhancement

### **4.3. General questions 1-5.**

1. Project Type: Select the project type from the dropdown list.

Habitat Enhancement/Creation

2. Project Description:

The project will meet goals of habitat enhancement and creation by enhancing 35 acres of existing wetland habitat, restoring 50 acres of wetland to habitat quality, and creating 20 acres of habitat at the Torres Martinez wetland site. Goals for new construction techniques and long-term maintenance will be met by developing new habitat with Geotubes construction, and providing water delivery with electric pumps powered by on-playa photovoltaic panels. Funding will be for permitting; habitat enhancement and restoration; construction; solar panel installation; and operation, maintenance and monitoring for three years, with plans written for on-going O and M. Appropriate management for the entire project is also part of the funding request; such management will assure the sustainability of the project and will involve the obligation to pursue funding for future development and project maintenance. The project will be developed in phases, with enhancement and restoration activities (for which permitting is complete), and permitting for new habitat and the solar array occurring immediately after funding; habitat construction and solar installation will follow the acquisition of permits. Monitoring using protocols developed in collaboration with the USGS will be for three years. Benefits include new and enhanced habitat for species including pupfish, fish-eating birds, and nesting shorebirds; development of information about important novel construction and power alternatives for use on the Salton Sea playa; and a responsibly and scientifically vetted monitoring strategy to evaluate success and project sustainability.

3. Applicant Contact Information: Please contact J. Andrew Schlange, Interim General Manager at 44-199 Monroe Street, Suite C, Indio, CA 92201, (760) 863-2696, or [jdawson@saltonseaca.gov](mailto:jdawson@saltonseaca.gov).

#### 4. Project Team Qualifications:

The project team for this work is exceptionally well qualified to perform this work, and includes individuals and entities with demonstrated success at developing this kind of project elsewhere in the immediate region of the Salton Sea.

**The Salton Sea Authority** (Authority) has a long history of managing research and implementation projects associated with the Salton Sea, ranging from a solar evaporation project (2000-2003) to water quality investigations (2005), and sediment evaluations (2006). The Authority has also worked to bring together the interests and commitment of a number of local agencies and organizations working for a solution to the environmental future of the Salton Sea. For this project, the Authority will serve as the CEQA Lead Agency, and will be a co-partner for project administration. The Authority will be responsible for project financial draw-downs for each month.

**The Torres Martinez Desert Cahuilla Indian Tribe** (Tribe) will engage in a collaborative relationship with the Authority as a co-partner for project administration, as the tribe is a voting member of the Authority. A Memorandum of Understanding (MOU) will be developed between the Authority and the Tribe at the inception of this project. One important value of this special relationship is that the Authority can act as the CEQA lead Agency for this specific project. The Tribe has a history of successful project completion for wetland habitat on the Salton Sea playa. The 85-acre wetland developed by the Tribe in 2005, and augmented and managed over the last seven years remains one of the most successful habitat projects associated with the Salton Sea. This project enjoyed collaboration with the USGS and the BOR, and these partners continue to support habitat development efforts by the Tribe.

**AMEC Environment & Infrastructure, Inc. (AMEC)** has staff members who have been closely involved with habitat development and monitoring projects at the Salton Sea for over 12 years. Virtually every habitat project in the region (The Torres Martinez wetland, the Alamo River shallow habitat project, the created marsh at the Dos Palmas ACEC, the managed marsh at the IID) was planned, implemented, and monitored with the participation of AMEC staff. AMEC has also developed the wetland inventory for the Torres Martinez lands, as well as the Environmental Resources Management Plan for the Tribe. These staff members will be available for the habitat design and implementation tasks, and AMEC will perform the necessary planning, permitting, and monitoring as well. AMEC's local biologists are based in San Diego and Riverside, California. They hold permits for virtually every sensitive wildlife species in the region, and enjoy excellent relationships with State and Federal resource agencies. AMEC's aquatics division handles water and sediment monitoring for a variety of public and private clients in the area, and has enjoyed a continuous and successful practice in the region for over 25 years.

**SoCal Dredging, Inc** was formed in 2006 with the purchase of the company's first dredge, an IMS5012HP star wheel drive suction dredge capable of pumping 3800 gallons per minute of sediment slurry over a distance of one mile. In 2012,

with the purchase of a Dino 6 cable drive suction dredge, SoCal Dredging added a capability to perform environmentally sensitive projects in small streams and ponds and sequester contaminated sediments in Geotubes with the injection of polymers into the slurry. The Dino 6 performed admirably on five reverse osmosis ponds in Phoenix, pumping 34,000 cubic yards of crystalline sediment into 14 Geotubes, 60 feet in circumference and 110 feet long. The project was completed on schedule and on budget. A project is soon to begin in Newport Beach, CA on Big Canyon Golf Course with the removal of 4,000 cubic yards of sediment contaminated with Selenium. This project will determine the capability of Geotubes to sequester contaminants in the sediments without re-introducing them to the water body. A similar project in Marina Del Rey has been completed by the Army corps of Engineers with great success. Contaminated sediments were separated from the dredge spoil and transported off site while the majority of the sediment was suitable for beach replenishment.

SoCal Dredging is under contract to the City of San Diego to remove sediments from Sorrento Creek which is immediately upstream from sensitive coastal wetland habitat. The Dino 6 is perfectly matched to the flow capabilities of a 1,000 gallon per minute HydroCyclone centrifugal dewatering system which will be used to separate sediment particles down to 34 microns. The return water to Sorrento Creek must meet strict turbidity requirements prior to returning to the Creek. A series of Geotubes and a flocculent injection system will "polish" the return water to meet the standards.

**Doug Whitfield Construction** has been involved with habitat development at all stages for the Torres Martinez wetlands, as well as on private hunting clubs in the playa margins, for over 8 years. His experience in handling the challenges or earthwork in the variety of conditions encountered on the Salton Sea playa is invaluable in assuring the success of this project.

**Reno Contracting** will develop the solar portion of the project. Reno Contracting, headquartered in San Diego, is a large commercial contractor with a division specializing in solar PV design and construction. Over the last two years, Reno Contracting has put into service over 14 MW of commercial scale, distributed generation, solar PV projects. In addition to a variety of solar PV grid-tied projects, Reno has extensive experience in designing and building complex hybrid solar projects incorporating various resources such as wind, generator and battery systems for clients like the National Park Service, Army Corps of Engineers and NAVFAC. A majority of hybrid systems are located in remote locations making logistics that much more difficult which we have been able to overcome due to effective planning and efficient execution.

The **USGS** will be an important collaborator for this project. USGS staff based in San Diego and elsewhere will work with the monitoring team at AMEC and the Torres Martinez to develop a monitoring strategy that will bear scientific scrutiny to fully disclose the physical, chemical, and biological conditions of the created and enhanced/restored habitats. They will collaborate on water, sediment, and ecological/biological sampling protocols, and will specify QA/QC methods for assuring high quality data. A QAPP is already in place for the Torres Martinez wetlands, and it will be modified as required to incorporate the new areas.

**The Project Administrator** for this work will be the Executive Director of the Salton Sea Authority. As the Authority is currently recruiting for this position, a resume is not available. The qualifications sought by the Authority for its Executive Director, however, include strong project management experience with programs of this kind.

Key staff members include Ms. Debi Livesay of the Torres Martinez Tribe, Ms. Carla Scheidlinger of AMEC, and Mr. Robert Macomber of Macomber Dredging

**Ms. Debi Livesay** will be the Project Manager for this project. She is experienced in wetland development, has been the Water Resources Manager for the Tribe since 2001, and operates an 85 acre wetland that she developed for the Torres Martinez Desert Cahuilla Indian Tribe. She has a strong background in construction and water projects and has worked on various projects on the Colorado River at Lake Havasu for the Chemehuevi Tribe restoring native willow populations and removing salt cedar, monitoring and testing on all projects.

Ms. Livesay developed the non-profit foundation Desert Cahuilla Wetland (Temal Pa'lekish), and works as the on-site manager in charge of day-to-day operations for the wetlands on Torres Martinez lands at this site. It is her responsibility to make sure that funding is found to continue this project and to insure that economic stability through various other projects and funding can be found into perpetuity through non wasting endowments ("7 generations" concept). She is developing a Safe Harbor Agreement for the wetlands with the US Fish and Wildlife Service for the endangered species.

Additional goals of the Desert Cahuilla Wetland Temal Pa'lekish spearheaded by Ms. Livesay are to establish algae farming for biofuels, solar farms and carbon sequestration in the wetlands. Mitigation Banking will be developed as the group works with the US Army Corps of Engineers to write the banking document as an additional means of long term support. This is a challenge since there is no agency that has worked with a tribe prior to this time to develop a mitigation bank that is tribally owned.

**Ms. Carla Scheidlinger** will manage the permitting and monitoring for the project, and will be a liaison with the USGS for protocol development. She is an experienced Project Manager and Restoration Ecologist has been involved in Salton Sea restoration work for over 12 years. She was involved in permitting, design, implementation, evaluation, and reporting of the Salton Sea Solar Salt Pond project for the Salton Sea Authority in 2000-2003, presenting the results of the study to the Technical Advisory Committee and others. She also managed the sediment study conducted for the Salton Sea Authority in 2004, which evaluated the sediments that would be exposed were the Salton Sea to decline in level by 25 feet. Included in this evaluation was a selenium assessment of the potentially exposed sediments. Ms. Scheidlinger also was involved in the permitting, design, implementation, management, and reporting for the shallow habitat project implemented near the mouth of the Alamo River for Bureau of Reclamation. This 100-acre project included tests of infrastructure construction methods, habitat evaluation for wading birds, and control of a salinity gradient. In addition, Ms. Scheidlinger was the Project Manager for a 17-acre created marsh implemented by the Coachella Valley Water District for the benefit of the

California black rail. Ms. Scheidlinger, with AMEC, handled the permitting and design for this project, as well as the planting plan, implementation of planting and seeding, monitoring, and maintenance of this highly successful project. Finally, Ms. Scheidlinger managed the implementation of the water management and planting of the Imperial Irrigation District's 365-acre Managed Marsh. Under her direction, several of the marsh cells were modified for effective water delivery for a mosaic of habitats in the marsh, and over 40,000 container plants were installed by two Conservation Corps crews over a 7-week period.

**Mr. Robert Macomber** is the owner of SoCal Dredging. Macomber's long and varied career stretches over 44 years starting in 1968 upon graduation from University of Massachusetts, Amherst with a BS in Industrial Engineering. His experience includes the fields of Machine Tool Design Engineering, Documentary Photography, General Aviation, Aerial Photography, Remote Sensing Applications Research, Coastal Ecology and Wetlands Mapping, Aerial Mapping Photography, Photogrammetric Engineering and GPS Surveying, GIS, and most recently, Hydrographic Survey and Commercial Dredging. He received a NASA scholarship to the University Of Michigan School Of Natural Resources Remote Sensing Graduate Program with emphasis in Coastal Ecology. His Master's Thesis Research utilized ERTS Satellite Imagery to detect changes in land use in the Coastal Wetlands of New Jersey. Over some 30 years, his company included nine aircraft, one float plane, three photogrammetric mapping cameras, one panoramic camera, four GPS navigation systems, three softcopy photogrammetric mapping systems, CAD and GIS software, 3D city mapping software, and hydrographic mapping software. Mr. Macomber accumulated more than 8,000 hours as pilot in command of mapping aircraft, and many years experience in photo interpretation in numerous mapping applications.

5. Related Experience: Describe your experience with completing this type of project or similar projects within the scheduled timeframe and within the allowable budget. Provide a description of recently completed or ongoing projects that support your team's ability to perform the proposed work
- Torres Martinez Wetlands. This 100-acre project was developed by the Torres Martinez Tribe, with AMEC staff (at the time with Agrarian Research), and Mr. Doug Whitfield. The project, funded by the US EPA, involved permitting with the USACOE, the EPA, and the Coachella Valley Water District, design, construction, well drilling, and the development of a detailed operation and management plan. After the initial 85-acre construction of 7 primary water treatment cells, one final water treatment cell, and a habitat cell, two additional cells were developed for habitat for wading shorebirds. Water for the project is pumped from the Whitewater Storm Channel, and is distributed throughout the project with pipes and valves. Construction was in shoreline and playa sediments, in conditions that ranged from dry to almost saturated. This work was completed (including permitting) in 10 months and with a budget of about \$680,000.
  - Shallow Habitat at the Alamo River. This 100-acre wetland was developed to test the habitat value of shallow ponds exhibiting a range of salinity levels from 20 ppt to over 100 ppt; and to test the viability of construction methods in saturated sediments. The four cells were constructed near the mouth of the Alamo River with water pumped from the Alamo River and from the Morton Bay area of the Salton Sea. AMEC staff (with Agrarian Research at the time) was involved with permitting with Imperial County and the Imperial Irrigation District, design, infrastructure and salinity monitoring, adaptive management, and reporting for this project. Collaboration with the USGS on habitat suitability studies produced valuable information on the value of this kind of habitat for wildlife. The construction was completed in 2 months, and the operation and management continued for 3 years. The cost of the project (exclusive of USGS monitoring) was \$550,000.
  - Created Marsh at Dos Palmas ACEC. This 17-acre wetland was developed for the Coachella Valley Water District for the benefit of the California black rail and the Yuma clapper rail. AMEC staff completed the design and permitting for the project, including site suitability analyses; and developed a water management plan for soil reclamation to assure planting conditions with reduced soil and water salinity. When reclamation was complete, AMEC implemented the planting plan that they had written, which included greenhouse transplants, locally harvested material from the Torres Martinez wetland, and seeding. AMEC continued the monitoring and maintenance of this site for two years. Permitting was completed in 12 months, construction took 3 months, and planting was performed in phases over a 10-month period.
  - Managed Marsh at Imperial Irrigation District. AMEC staff was involved in the design, site modification, planting, and maintenance of this 365-acre managed marsh for the Imperial Irrigation District, constructed on fallowed agricultural land. Post-construction site modifications allowed for the efficient delivery of water to a larger mosaic of habitats than had been contemplated in the original design, and planting of marsh, riparian, mesquite bosque, and upland vegetation was very successful as a result. The site modifications were made with the assistance of local farming specialists, and these modifications and the planting of the entire site was completed in only 7 weeks. AMEC's costs for this project were \$650,000.

- SoCal Dredging is beginning a project in Newport Beach, CA on Big Canyon Golf Course with the removal of 4,000 cubic yards of sediment contaminated with Selenium. This project will determine the capability of Geotubes to sequester contaminants in the sediments without re-introducing them to the water body. A similar project in Marina Del Rey has been completed by the Army corps of Engineers with great success. Contaminated sediments were separated from the dredge spoil and transported off site while the majority of the sediment was suitable for beach replenishment.
- SoCal Dredging is under contract to the City of San Diego to remove sediments from Sorrento Creek which is immediately upstream from sensitive coastal wetland habitat. The Dino 6 is perfectly matched to the flow capabilities of a 1,000 gallon per minute HydroCyclone centrifugal dewatering system which will be used to separate sediment particles down to 34 microns. The return water to Sorrento Creek must meet strict turbidity requirements prior to returning to the Creek. A series of Geotubes and a flocculent injection system will "polish" the return water to meet the standards.
- Solar projects: Reno Contracting, headquartered in San Diego, is a large commercial contractor with a division specializing in solar PV design and construction. Over the last two years, Reno Contracting has put into service over 14 MW of commercial scale, distributed generation, solar PV projects. In addition to a variety of solar PV grid-tied projects, Reno has extensive experience in designing and building complex hybrid solar projects incorporating various resources such as wind, generator and battery systems for clients like the National Park Service, Army Corps of Engineers and NAVFAC. A majority of hybrid systems are located in remote locations making logistics that much more difficult which we have been able to overcome due to effective planning and efficient execution.

## **4.4 specific questions**

**6: specify type:**

***Habitat Creation and Enhancement***

## **7: Goals and Objectives:**

### Goals:

1. Provide habitat at the north portion of the Salton Sea for targeted species that is complementary to the species habitat conservation area being developed by the state at the south end of the Sea.
2. Expand knowledge about cost-effective construction methods suitable for SHC type projects.
3. Expand knowledge about the sustainability of PV technology on the playa soils and conditions
4. Construct, enhance, and maintain a habitat complex project that is sustainable and has on-going operational capability
5. Provide management for the project such that on-going sustainability in the form of continued funding and/or project support can be generated.

### Objectives:

1. Complete the habitat enhancements in the three existing habitat cells of the Torres Martinez wetland site, and provide those habitat cells with a reliable water supply.
2. Restore the existing Torres Martinez wetland cells to a condition that will return them to their high value habitat condition.
3. Construct a new habitat cell adjacent to the existing cells using Geotubes technology, and develop it as habitat suitable for target species including pupfish, California black rail, and fish-eating birds.
4. Install sufficient photovoltaic panels to power the pumps for this project such that sufficient water can be provided to all cells during all times of the year.
5. Monitor the habitat quality, Geotubes construction, and photovoltaic array with USGS-approved protocols to determine the quality and long-term sustainability of these project components.
6. Develop future funding sources to assure the on-going sustainability of the wetland complex, and explore options for its expansion.

## 8- Proposed Project

This project will:

- enhance and restore species conservation-type habitat at the north end of the Salton Sea in existing ponds at the Torres Martinez Desert Cahuilla Wetland Temal Pa'lekish site
- create new habitat adjacent to the existing Torres Martinez wetland cells by the construction of a new pond cell using a Geotubes, a technology new to Salton Sea restoration work for the construction of berms in wet and saturated soils
- construct a pilot scale PV solar project that will be used to provide power for the operation of the pumps that will supply water from the Whitewater Storm Channel to the enhanced and created habitat. This power supply will provide an element of demonstrable sustainability that will continue past the funded life of this project.
- provide on-going management and future-oriented activity to manage the wetland complex efficiently, and to develop funding and support opportunities for long-term sustainability.

The work will proceed on lands owned by the Tribe on the same parcel of land as the existing Torres Martinez wetlands site at the mouth of the Whitewater storm channel. The project will complete habitat enhancements and restoration in existing ponds at that site. Target species for the existing and new ponds will include pupfish, brown and white pelicans, breeding shorebirds, and piscivorous birds. Habitat enhancements will be introduced into two existing ponds. Such enhancements will include rock structures, provision for fish habitat, island surface improvements to enhance nesting success, and roosting and nesting structures. Habitat restoration will take place in existing ponds 1, 2, 3, and 4, and will include the removal of salt cedar, additional vegetation management, and the renewed provision of water to these habitat cells to restore them to their previous high-quality habitat condition. Other enhancement and restoration activities may include the development of a stand of palo verde and mesquite trees along the berms of the existing ponds, planting seeds and container plants on the berms using drip irrigation during the plant establishment phase. Fish habitat will be developed in Ponds 1, 2, and 3, and improved in Pond 4. Structures to facilitate bird nesting will be installed in Ponds 2, 3, and 4. Pilings and rocks will be installed in Pond 4 as originally planned. Aeration Pond 4 will be provided as well, using a sustainable technology to assure good water quality in the deepest areas. Details of enhancements and restoration activities will be developed with the Work Plan and Monitoring Plan, in collaboration with the USGS, to assure that the best use can be made of project funds for the benefit of target species.

The new pond, about 20 acres in size, will also incorporate habitat quality characteristics, as well as the new berm construction technique using Geotubes. A pilot scale photovoltaic (PV) solar array will be installed to provide electric power to a new set of pumps that will deliver water to the existing and new pond cells.

Monitoring is an important part of the project, and monitoring plans and protocols will be developed in collaboration with USGS scientists based in San Diego and elsewhere. These protocols will be implemented to study all aspects of project development for the duration of the project. The project will include provision for evaluating the quality of the created and enhanced/restored habitats, including water and sediment quality, and biological utilization by target species and other wildlife. The Geotubes and solar PV technologies will also be fully

evaluated for performance, ability to sequester selenium in the dredged sediments, and for suitability for future use in the Salton Sea playa environment.

Finally, the project management by Torres Martinez site manager Debi Livesay will include activities targeted for the development of future funding and project support, such that the created and enhanced wetland is assured of a sustainable future past the limit of funding for this project.

## **9 - Site Conditions and Maps**

Current conditions of the site is of a vegetation composed primarily of upland playa sandy desert scrub on sandy soils with clay lenses. There are with Great Blue Heron nests situated in the area throughout, occupying snag habitat. All snags will be left in place and not removed. No other biologically significant habitat is present, and no endangered species have been found. Cultural resource issues are anticipated to be non-existent or minimal. A map showing the proposed location for the project elements is shown in Attachment 7.

## **10- Approach**

The purpose of this project is to not only enhance, restore, and create new habitat for the benefit of targeted wildlife species at the Salton Sea, but also to explore and evaluate novel methods of construction and power sources that could be utilized economically for large-scale implementation of habitat development strategies at the Salton Sea. In order to accomplish these goals efficiently, the project will be constructed in close association with an existing highly successful habitat project implemented in 2005 by the Torres Martinez at the margin of the Salton Sea. This is the location where habitat creation will be actually be implemented at a large scale under the Salton Sea Restoration project. Our approach for this project is to keep each project element small, and to develop them at the pilot scale. Considerable effort is expended on the development of scientifically valid monitoring plans and protocols in collaboration with the USGS, and on the implementation of those protocols, so that the benefits and challenges associated with the habitat enhancements, new created habitat, and the novel strategies implemented may be identified and quantified.

The habitat enhancements will be implemented into two existing ponds on the Torres Martinez wetland site. The habitat restoration will take place in the remaining existing pond at the Torres Martinez wetland site. The created habitat, using the novel Geotubes construction technique, will be constructed adjacent to those ponds, and is expected to share a berm with one pond, thus minimizing construction costs. The PV array will be installed at a pilot scale, with provision made to power electric pumps using grid power for backup as necessary. This will be the first opportunity to study the performance of PV in the challenging environment of the Salton Sea playa.

The project will be developed in phases, with some components developed simultaneously. The phases are summarized in Section 14 below, and in the schedule shown as Attachment 6. The project elements were described in Section 8 above.

All requirements for Tribal permitting will be observed during the planning and implementation of this project. In addition, all tribal rules and requirements will be honored as part of the collaborative agreement to be developed with the Authority for implementation of this project. Such rules and requirements include, but are not limited to, TERO, Tribal building permits, provision of cultural monitors, etc.).

## 11- Benefits

The project has several important benefits, and is highly responsive to the criteria for funding identified in the RFP for the FAP. Here in a single location and with a single project, habitat creation, enhancement, and restoration are proposed; along with a new technology, a proof of concept for photovoltaic, and a responsible monitoring and evaluation process. The work will be conducted by a known entity which has demonstrated the ability to develop a substantial fully functioning wetland project in the past, with a high degree of cost effectiveness.

The partnerships engaged in this project make it an ideal candidate for developing habitat on the ground as well as providing the opportunity to explore the costs and issues associated with new technologies.

The habitat enhancement and restoration portions of the project are "shovel ready" and will not require additional permitting, as the habitat cells have already been constructed. New work will be done under a Categorical Exemption. The remaining project elements will require minimum permitting, as they will be developed on newly exposed playa with few environmental considerations.

*Newly created habitat* will be developed on the ground, and existing habitat will be *enhanced* and *restored*, with the entire project given a measure of definable *sustainability*. The project will include provision for evaluating the quality of the created, enhanced, and restored habitat, and will utilize at a pilot scale two technologies that have been presented in the past for testing on the playa surface: Geotubes construction for habitat cell berms, and solar photovoltaic panels for project energy.

The project will be sustainable, as it will utilize power that will be generated by the project elements themselves.

Finally, the on-going participation of the Torres Martinez project manager, Debi Livesay, assures that over the project's 3-year life, additional funding sources will be explored and developed so that the habitats developed will be sustainable and functional into the future.

Details of the benefits are below.

### Partners and Collaborators

1. Salton Sea Authority and its member agencies. This proposal is developed as collaboration between the Authority and the Tribe. The Tribe is a member agency of the Authority. The project therefore is implemented by a Joint Powers Authority that represents a variety of local entities and interests, and includes the Tribe as a Co-Partner.
2. Desert Cahuilla Wetland Temal Pa'lekish is a local non-profit agency that has been managing the Tribe's wetlands for over 3 years. Its Board includes representatives of local agencies and private interests, and is well positioned to manage and improve the wetlands projects.
3. USGS. The support and involvement of this important agency, which has staffed the Salton Sea Science Office for over a decade, will bring unassailable scientific rigor to this project. The USGS has no vested interest in the outcome of the work, as it does not benefit in any way from publications, patents, or any other outcomes of the project. It simply assures that the data generated will withstand peer reviewed scientific scrutiny.

### **Permitting simplified**

1. The Salton Sea Authority will serve as Lead Agency to conduct CEQA. This allows for the Tribe to use its exceptionally well-positioned lands for the project.
2. The existing ponds have already undergone CEQA, and any additional work can be conducted there under a Categorical Exemption.
3. The new pond and the solar array will be positioned on playa lands with few if any permitting requirements; a Negative Declaration is anticipated.
4. Any NEPA requirements will be met with the cooperation of the BIA, US Fish and Wildlife Service, and the US Army Corps of Engineers. Such permits could include a dredging permit, and the inclusion of the project under the existing wetlands Safe Harbor Agreement.

### **High Variety of Deliverables**

1. Habitat: Enhancement, restoration, and creation of habitat will all be accomplished under this project.
2. Solar pilot project: The capabilities of PV panels to perform and remain functional under the harsh physical conditions of the playa will be evaluated for the first time.
3. Novel infrastructure implementation and evaluation: Geotubes have been used to very good effect for other similar applications in other parts of the country, and have great promise for the development of species habitat in the Salton Sea. This project will develop structurally sound berms using an “in the wet” construction technique, and will evaluate the sustainability of those berms over time.

### **Funding cost-share Opportunities**

1. The Tribe is pursuing a Bureau of Indian Affairs (BIA) 638 Water Resources grant that would quantify water resources available to the Tribe for continued work for wetland projects on its land. If funded, this grant would substantially assist in developing strategies for the long-term sustainability of this, and future, wetland projects. The work is proposed to be completed in collaboration with the USGS office based in San Diego, CA. A release and confidentiality agreement for the use of data generated by this project will be required.
2. The Tribe has current US EPA 319(h) and CWA 106 grants that total \$180,000 that support on-the-ground staff that will be used for the Operation and Maintenance of this project; costs for these staff persons are therefore NOT included in this proposal, and are shown as a non-state match.
3. The Salton Sea Authority receives funding from its member agencies annually in the amount of \$240,000 which pays for in-kind personnel salaries and will use these funds to support this grant as necessary.

## 12- Operation and Maintenance:

Operation and maintenance will be continued by the Torres Martinez Desert Cahuilla Wetland Temal Pa'lekish personnel, as it has been since 2005.

Usual operation and maintenance, funded by the US EPA grants, includes the following activities:

- Daily operation of the pump for 8 to 10 hours on 3 to 4 days a week.
- Daily readings of staff water levels logged and recorded.
- Daily maintenance on the pumps and pipes and other equipment as necessary.
- Daily surveillance of animals and other wildlife.
- Weekly beach inspections for dead birds and fish.
- Monthly inspections of bird watching platforms.
- Quarterly water quality monitoring.
- Annual reporting of all water quality data to US EPA.
- Annual heavy cleaning of all cells and ponds to remove debris and brush.
- Annual planting of new vegetation as necessary.
- Annual replacement of habitat features as necessary.
- Seasonal heavy patrols for illegal hunters and other trespassing.
- 24 hour security of all buildings and wetland properties.

Lessons Learned from the operation and maintenance the past 7 years have been:

- Don't use diesel as your main source of power. Alternative energy is imperative for the day to day operation of the project. Pond 3 is seldom wet during late spring to mid-fall months due to insufficient pumping capability; Pond 4 has never been wet for the same reason. *This project will implement solar PV as well as supplemental electric power for the sustainable provision of power to pumps sufficient to deliver water to all ponds in all seasons.*
- Don't completely take down all ponds or cells in the same year. Staging of operation and maintenance of ponds is necessary. There is a small window of opportunity each season. *This project will also allow for scheduling of maintenance in appropriate seasons.*
- Maintenance activities during the past year included work using in-house staff, as well as Doug Whitfield Construction and the California Conservation Corps to remove salt cedar from the habitat ponds, as has been done to some degree each year previously. This year, the work was more extensive, as it was because we did a five-year cleanout. When the work was completed in June 2012, nesting was observed by the USFWS to have had begun early on the Desert Cahuilla Wetland Temal Pa'lekish. The wetland was therefore left dry for the balance of the nesting season; water delivery will begin to selected ponds in October 2012. *This project will assure that maintenance and monitoring is done in such a way as to both protect species nesting in the habitat as well as to maintain the on-going functionality of all habitat ponds.*

Operation and Maintenance will be conducted under the direction of Ms. Debi Livesay, Project Manager

### **13- Monitoring**

The monitoring program for this project will be carried out for the three-year period of the project. All monitoring plans and protocols will be developed in collaboration with the USGS to assure that the most important habitat parameters will be monitoring using methods that conform to best scientific practice.

Monitoring will be conducted in the existing ponds of the Torres Martinez wetland where habitat enhancement and restoration activities are proposed. Annual monitoring will include physical, chemical, and biological properties of the ponds. Monitoring is anticipated to include evaluation of water quality and sediment quality, as well as of biological and ecological characteristics of the ponds, including an inventory of avian species present and species nesting in each pond, as well as an evaluation of the nature of the utilization of the habitat and of the enhancement features (islands, snags, nesting towers, etc.). A monitoring plan will be written during the first year of the project, and will be implemented for three years.

Monitoring will also be conducted in the new Geotubes pond. This monitoring will be conducted for the same parameters as identified for the enhanced ponds.

Monitoring will be done quarterly for the performance of the Geotubes berm. The tube will be evaluated for breakage, seepage, sloughing of its cap, and of the condition of the material capping it. In addition, monitoring will be done for the ability of the Geotubes to sequester selenium from the dredged sediments. Sediment quality of the material filling the Geotubes will be evaluated, as well as the quality of the water that seeps from the tubes as they dewater. A monitoring plan will be written during the first year of the project, and will be implemented for three years.

The proposed PV array will also be monitored for performance and sustainability. This monitoring will be conducted under the direction of the USGS, and the monitoring plan will be developed in consultation with the USGS. The purpose of the monitoring will be to determine the long-term sustainability of photovoltaic panels installed on the edge of the Salton Sea playa, and to evaluate their cost effectiveness and efficiency in supplying power to restoration projects on the playa.

## 14- Phasing

The project will be phased such that it can be implemented efficiently and quickly. The phased approach was referred to in the Approach section of this proposal, and is described in more detail below.

### Phase 1:

#### Project element 1: habitat enhancement and restoration

1. Develop and implement an MOU with the Torres Martinez Tribe of Desert Cahuilla Indians, and develop disclosure and confidentiality agreements with the BIA if the water study project is funded.
2. Complete design for, and implement on the ground, habitat enhancements and restoration activities in existing wetland cells
3. Replace diesel pumps with electric pumps for water supply
4. Update and improve water supply infrastructure

#### Project element 2: habitat creation with Geotubes

1. Conduct permitting for new habitat cell
2. Develop construction-ready drawings for new habitat cell

#### Project element 3: solar photovoltaic

1. Develop installation specifications
2. Finalize wiring and assure adequacy of existing wiring and panels for delivery of power to pumps

### Phase 2:

1. Project element 1:
  1. Deliver water to enhanced and restored cells
  2. Develop O&M manual for these cells
  3. Develop monitoring plans and protocols for these cells
2. Project element 2:
  1. Construct new cell using Geotubes (dredging, installing, capping, water delivery infrastructure)
  2. Develop infrastructure monitoring and evaluation plans and protocols
  3. Install water delivery and metering infrastructure
  4. Deliver water to cell in two phases: utilization and maintenance.
3. Project element 3:
  1. Install photovoltaic panels
  2. Wire, meter, and test panels
  3. Power pumps using solar energy to complete elements 1 and 2 for water delivery

### Phase 3:

1. Project element 1:
  1. Operate, maintain, and monitor for 3 years (or funded life of project)
2. Project element 2:

1. Develop O&M plans
2. Operate, maintain, and monitor for 3 years
3. Project element 3:
  1. Develop O&M and AM plans
  2. Operate, maintain, and monitor for 3 years

## **15- Available water**

The Desert Cahuilla Wetland Temal Pa'lekish is currently using only reuse water that is delivered to the Salton Sea via the White Water River Storm Channel. There is no contest to the use of this water, since the Tribe and the Temal Pa'lekish Wetland have an agreement with the Coachella Valley Water District to use this outfall of water as necessary. This is the water that will be used at the same site for this project.

## **16- Adjacent Properties**

Properties that are adjacent to the project site include the following:

- 2 private duck clubs (several parcels)
- Imperial Irrigation District lands (2 parcels)
- Bureau of Reclamation lands (1 parcel)

These properties have enjoyed an amicable relationship with the Torres Martinez Wetlands for the past 6 years. The proposed new development on this site is compatible with the existing wetlands, and no controversy or conflict is anticipated.

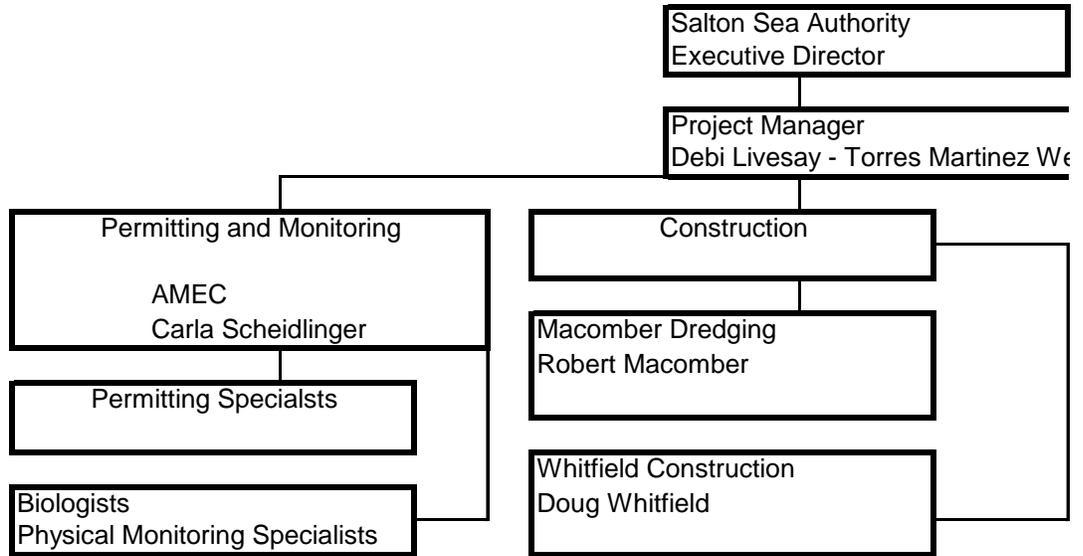
## **17- Sustainability and Climate Change**

The consensus among climate projections for the next 90 years is that the Great Basin and Mojave Desert will warm and that annual precipitation will remain near historical values in the north and decrease in the south. This scenario points to an increased need for irrigation for crops in the southern portion of the region and indicates that irrigation efficiency will become increasingly important. For the Tribe and the Salton Sea, this translates into a prediction that the level of the Salton Sea will fall (which is already assured if the water transfer is implemented), with the result that Tribal lands now under the Salton Sea will become exposed. Such exposed sediments will probably result in dust emissions, which the Tribe will be responsible for controlling.

This project will help to address the issue of air quality associated with emissions from a desiccating playa. If wetland cells can be developed in areas using Geotubes technology before the playa surface dries and becomes emissive, air quality will be improved.

In addition, it can be anticipated that the cost of imported water will increase. Quantification of water rights for the Tribe will be of great value in assuring that the Tribe is able to develop the water that they will need for future development or use. Groundwater resources have been poorly understood in the playa environment, and the Tribe is pursuing a Bureau of Indian Affairs (BIA) grant with the USGS to explore and quantify groundwater resources that could be available in the future for wetland habitat development. This project will allow the Tribe to anticipate how reduced water supplies for wetland development caused by climate change could be made up with groundwater resources. This approach allows for greater assurance of on-going sustainability of the project.

This approach is consistent with the goals, objectives, and proposed implementations regarding climate change that are articulated in the Tribe's Environmental Resources Management Plan (ERMP) developed in 2011.



etlands

Solar Installation  
Reno Contracting  
Eric Scheidlinger

Salton Sea FAP schedule

2013

|  | April | May | June | July | Aug | Sept |
|--|-------|-----|------|------|-----|------|
| Activity                                 |       |     |      |      |     |      |
| Site Assessment and preliminary planning |       |     |      |      |     |      |
| Preliminary design                       |       |     |      |      |     |      |
| Permitting                               |       |     |      |      |     |      |
| Final design                             |       |     |      |      |     |      |
| Implement enhancements                   |       |     |      |      |     |      |
| Install new pumps and piping             |       |     |      |      |     |      |
| Connect back-up energy source            |       |     |      |      |     |      |
| Construct geotube pond                   |       |     |      |      |     |      |
| Construct PV solar array                 |       |     |      |      |     |      |
| Deliver water to enhanced ponds          |       |     |      |      |     |      |
| Deliver water to geotube pond            |       |     |      |      |     |      |
| Monitoring plans                         |       |     |      |      |     |      |
| Draft                                    |       |     |      |      |     |      |
| Final                                    |       |     |      |      |     |      |
| Monitoring: physical                     |       |     |      |      |     |      |
| Monitoring: biological/utilization       |       |     |      |      |     |      |
| Monitoring: geotube                      |       |     |      |      |     |      |
| O&M                                      |       |     |      |      |     |      |
| Final reports                            |       |     |      |      |     |      |
| Draft                                    |       |     |      |      |     |      |
| Final                                    |       |     |      |      |     |      |







September 6, 2012

Honorable Marion Ashley, President  
BOARD OF DIRECTORS, SALTON SEA AUTHORITY  
44-199 Monroe Street, Suite C  
Indio, California 92201

Re: Letter of Commitment in Support of the Habitat Creation and Enhancement Proposal  
submitted by Desert Cahuilla Wetlands

Consideration of Torres Martinez Request to Salton Sea Authority to Submit a Grant  
Proposal under the Salton Sea Financial Assistance Plan on their Behalf  
RESOLUTION NO. 12-01

Dear Mr. Ashley,

Citizens United for Resources and the Environment (“CURE”) is in full support of the referenced project. CURE is a non-profit organization which focuses on promoting environmental awareness and fostering environmental justice.

In 2002, the Tribal Council of the Torrez Martinez Desert Cahuilla Tribe decided to take a proactive approach to the transfer of water away from the Salton Sea caused by the Quantification Settlement Agreement between the State of California and four water agencies (the “QSA”). In a decade, the Desert Cahuilla Wetlands has evolved into a unique pilot project that is leading the way forward, by demonstrating potentially scalable solutions to the larger, long-range problem of mitigating the impacts of the Sea’s decline.

CURE is currently partnering with the Wetlands on the Desert Environmental Empowerment Campaign (“DEEC”), a proposal submitted to the California Air Quality Management District under the AB 1318 Mitigation Fees Fund. The scope of work includes improvements which will enhance and expand the Wetlands. This will directly improve air quality in designated environmental justice (“EJ”) areas. Reductions of PM2.5 and PM-10 will be achieved through tangible physical steps, the results of which will be measured against baseline data.

Honorable Marion Ashley, President  
September 6, 2012  
Page 2

The scope of work proposed in the subject Habitat Creation and Enhancement Proposal is consistent with, and dovetails nicely into the work plan detailed in the DEEC. CURE is prepared to assist The Desert Cahuilla Wetlands and its management as-needed in support of this most worthy request.

Sincerely,

MALISSA HATHAWAY McKEITH  
President



Desert Cahuilla Wetlands (Temal Pa'lekish)  
PO Box 1160  
Thermal, California 92274  
(760) 578-6574

Rodney Bonner, President  
Katie Barrows, Vice President  
Mary Belardo, Treasurer  
Elena Morreo, Secretary  
Diana Chihuahua, Board Member  
Joseph Mirelez, Board Member  
Art Lopez, Board Member  
Stella Mendoza, Board Member  
Paul Quill, Board Member  
Franz De Klaus, Board Member  
John Gamlin, Board Member

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A federal tribally operated nonprofit 501(3) (c) organization of the Torres Martinez  
Desert Cahuilla Indians

August 31, 2012

Mr. Andy Schlange, Director  
Salton Sea Authority  
44-199 Monroe Street, Suite C  
Indio, CA 92201

Dear Mr. Schlange,

Today the Desert Cahuilla Wetland Board had a meeting and decided to support the proposal by the Salton Sea Authority on behalf of the Torres Martinez Tribe being put forth before the State of California for the FAP proposal.

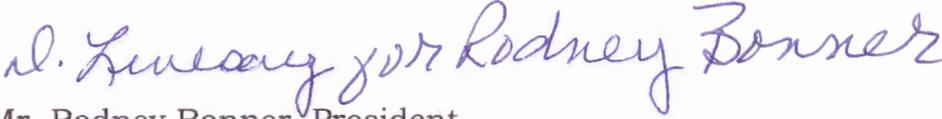
We support the Salton Sea Authority and the Torres Martinez Tribe in assisting the wetland with regard to the development of 20 acres of additional habitat by geotube and selenium sequestration. Additionally we support habitat restoration and reinvention, solar to support the project and remove the diesel from the project and additional habitat restoration.

We feel this is a great cooperation between the State of California, the Salton Sea Authority and the Torres Martinez Tribe.

We appreciate the assistance from the State of California for increased habitat ponds and habitat restoration on the north end of the Salton Sea.

Sincerely,

The Desert Cahuilla Wetland Board of Directors,

A handwritten signature in blue ink that reads "Rodney Bonner". The signature is written in a cursive style with a large initial "R".

Mr. Rodney Bonner, President

C: Desert Cahuilla Wetland Board  
Torres Martinez Tribe

## **SALTON SEA AUTHORITY RESOLUTION 12-01**

### **RESOLUTION OF THE BOARD OF DIRECTORS OF THE SALTON SEA AUTHORITY APPROVING THE APPLICATION FOR FUNDS FOR THE JOINT POWERS AUTHORITY FROM THE SALTON SEA RESTORATION FUND FOR A PILOT STUDY TO CREATE ADDITIONAL HABITAT USING GEOTUBES AND SOLAR POWER PUMPS.**

#### **(STATE SALTON SEA FINANCIAL ASSISTANCE PLAN)**

**WHEREAS**, the Legislature has established the Salton Sea Restoration Fund and, through contracts is providing assistance to further the objective of the Salton Sea Restoration; and

**WHEREAS**, the Salton Sea Authority is a Joint Powers Agency formed under the laws of the State of California by a joint agreement dated 1993 and is the Regional Agency for identifying and implementing corrective measures to preserve the beneficial uses of the Sea; and

**WHEREAS**, the Torres Martinez Indian Reservation is a member of the Salton Sea Authority; and

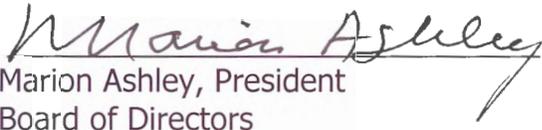
**WHEREAS**, the Salton Sea Authority intends to file an application for Financial Assistance for the Torres Martinez Desert Cahuilla Wetland (Temal Pa'lekish), a pilot study to create additional habitats using Geotubes and Solar Power Pumps, on behalf of its member the Torres Martinez Indian Reservation; and

**NOW, THEREFORE, BE IT RESOLVED THAT THE GOVERNING BODY OF THE BOARD OF DIRECTORS OF THE SALTON SEA AUTHORITY HEREBY:**

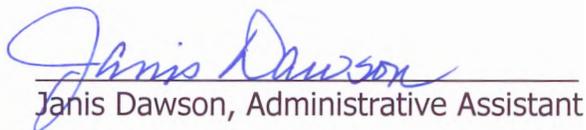
1. Approve the filing of an application for funding from the Salton Sea Restoration Fund; and
2. Certifies that the Salton Sea Authority will comply with all federal, state and local environmental, public health and other appropriate laws, and regulations applicable to the project and will obtain all appropriate permits applicable to the project; and

3. Agrees to operate and maintain the project and further commits to the terms and conditions specified in the agreement; and
4. Appoints the General Manager, as representative of the Salton Sea Authority to conduct negotiations, execute and submit all documents, including, but not limited to, applications, agreements, amendments, payment requests, reports and other documents which may be necessary for the completion of the proposed object.

APPROVED AND ADOPTED THE 6<sup>TH</sup> day of September, 2012. I hereby certify that the foregoing Resolution 12-01 was adopted by the Board of Directors of the Salton Sea Authority.

  
Marion Ashley, President  
Board of Directors

ATTESTED:

  
Janis Dawson, Administrative Assistant