John Bunker Sands Wetland Center
Research Proposal Application

Background Information

The East Fork Wetland Project was funded and constructed by the North Texas Municipal Water District (NTMWD) and designed by Alan Plummer and Associates Incorporated. The East Fork Wetland Project was built on the Seagoville-Rosewood Ranch in Kaufman County. The project site is about 25 miles southeast of Dallas, Texas. This project is a unique and cutting edge process that begins each day as NTMWD measures the inflow of water that is flowing to reservoirs in the East Fork of the Trinity River from various sources. Once the inflow is measured, NTMWD determines the percentage of the inflows that can be diverted to the wetland for removal of sediment and nutrients. Environmental flows are maintained in the East Fork of the Trinity River to sustain a steady supply of water for the environment and downstream users. The daily percentage of water is then diverted from the East Fork of the Trinity River into a 1,840 acre man made wetland where the water is cleansed by nature, through phytoremediation. After 7 to 10 days in the wetland, a pump station then transports the cleansed water underground through a 43 mile pipeline north to Lavon Lake for storage, blending, treatment, disinfection, and delivery for municipal water supply. The East Fork Wetland has increased the diversity of waterfowl and wildlife along the East Fork of the Trinity River corridor.

The John Bunker Sands Wetland Center opened in October of 2010 to educate the public and provide research opportunities in the areas of water quality and supply, wildlife management and wetland systems. Research conducted at the wetland will focus on the details of this general mission.

Thank you for your interest in performing research at the John Bunker Sands Wetland Center. Proposals can be submitted on an ongoing basis throughout the year. Once received, the Advisory Committee will review submitted proposals and make recommendations to the Board of Directors. Principal Investigators will be contacted within 90 days of submission regarding the disposition of their proposal.

Research proposals are encouraged in the following areas:

Wetland Research

1. Which specific processes would optimize removal of phosphorous and inform nutrient management decisions at the East Fork Wetland?
2. How do changes in flow regimes (e.g., new main stem water supply, drought) influence water quality treatment performance of the East Fork Wetland?
3. How can wetland management decisions be optimized to avoid impacts by invasive species (e.g., carp, nutria) on water quality treatment performance of the East Fork Wetland?
4. Compared to equivalent reaches of river systems (e.g., East Fork of the Trinity), what economic values are derived from ecosystem services (e.g., water quality, habitat, carbon sequestration) of the East Fork Wetland?
5. How can surrogate indicators (e.g., TOC fingerprinting) provide diagnostic information for water quality treatment performance of the East Fork Wetland, including application to trace organic chemicals?
6. Does the East Fork Wetland provide important carbon sequestration benefits in a rapidly urbanizing region?
7. What habitat improvements to the East Fork Wetland and surrounding areas would increase wildlife benefits (e.g., bald eagles, small mammals) while optimizing water supply objectives?
8. How does temporal and spatial variability in macrophyte structure (e.g., lotus expansion) influence ecosystem services and water supply objectives at the East Fork Wetland?
9. What opportunities exist for elemental recovery and recycling (e.g., phosphorus, endangered elements) without influencing water quality treatment performance of the East Fork Wetland?

10. What is the rate of bioaccumulation of heavy metals in the East Fork Wetland, and what remediation might be required in the future?
11. Other topics deemed by the Center Director and Board of Directors to be within the mission of the John Bunker Sands Wetland Center.

Education Research

1. Are the Wetland Center educational programs providing a measurable benefit for the students performance for specific TEKS objectives and STARR testing?
2. What are some methods to measure the effectiveness of the educational programs of the Wetland Center utilizing partnerships with universities?
3. How can the effects on conservation behavior and attitudes of students be measured?
4. How are science and math abilities improved for local school children by education programs at the Wetland Center?
5. What is the effectiveness of education programs on water conservation literacy to the 13 member cities, 30 customers, general public, and elected officials?
6. Other topics deemed by the Center Director and Board of Directors to be within the mission of the John Bunker Sands Wetland Center.

Community Outreach Research

1. What measurable benefits does the East Fork Wetland bring to neighboring communities in increasing the interest in science and water conservation?
2. How can we evaluate public programs to measure their choices and decisions impacting water conservation and the environment?
3. Other topics deemed by the Center Director and Board of Directors to be within the mission of the John Bunker Sands Wetland Center.

Proposals should be submitted electronically to:

Dr. Bryan W. Brooks
Co-Chair, Advisory Committee
John Bunker Sands Wetlands Center
E: Bryan_Brooks@Baylor.edu

and

Mr. John DeFillipo
Director
John Bunker Sands Wetland Center
E: jdefillipo@wetlandcenter.com

For more information, please contact Dr. Brooks bryan_brooks@baylor.edu and/or Mr. John DeFillipo jdefillipo@wetlandcenter.com

I. Project Demographics

Principal Investigator(s):

Project Title:

Project Period:

Name of Organization (e.g., college):

Email:

Phone:

Non-technical Abstract: Please provide an abstract free of topic- or discipline-specific jargon and understandable to readers not familiar with the topic. Please do not exceed the remaining space provided on this page.

II. Project Narrative (not to exceed 10 pages)

1. Background and Rationale

2. Specific Objectives

3. Potential Significance

4. Plan of Work (procedures and methods, specific facilities necessary to complete the proposed study)

5. Project Timeline

6. Source of Funding for Proposed Studies (provide evidence of support, letters of support as attachments)

7. Plans for Publication/Dissemination of Project Results

8. Educational and Extension Components

9. Animal Use, Human Subjects, Hazardous Materials (provide approved IACUC / IRB protocols, state wildlife sampling permit, list of hazardous materials as attachments)

III. References (not to exceed 2 pages): Please include sufficient bibliographic references to demonstrate familiarity with scholarship in the field and to document the integration of prior research into the narrative portion of the proposal, supplying citations where appropriate.

<u>IV. Biographical Sketch (not to exceed two pages)</u>: In the following space, please include relevant biographical information in lieu of a complete curriculum vita for each proposed investigator. Please be sure to address, at a minimum, subheadings numbered 1 through 5 below.

1. Degrees:
(e.g., Univ. of Wisconsin; Madison, WI; Chemistry; Ph.D.; 1994)

2. Professional Appointments: (please provide in reverse chronological order)
(e.g., 08/2000 – present; Professor; Department; University)

3. Major Research Interests:

4. Five Most Recent Publications:

5. Other Publications Relevant to This Proposal:

6. Other Information Relevant to this Proposal (optional):

V. Review Process

The figure below depicts the process by which potential research projects are reviewed and approved at the John Bunker Sands Wetland Center and East Fork Wetlands Project.

Step 1. Research pre-proposal is submitted to the Research Subcommittee Chair and the Director of the John Bunker Sands Wetland Center.

Step 2. Research pre-proposals are reviewed by the Research Subcommittee of the Advisory Board for relevance to the mission of the Wetland Center and identified research priorities (see above for areas in which research is encouraged). If a potential for a full proposal is identified the research sub-committee will ask the investigators to submit a full proposal. If the pre-proposal originates from the home institution of a Research Subcommittee member, they are recused from reviewing this proposal.

Step 3. Research proposals are submitted to the Research Subcommittee Chair and the Director of the John Bunker Sands Wetland Center.

Step 4. Research proposals are reviewed by the Research Subcommittee of the Advisory Board for relevance to the mission of the Wetland Center and identified research priorities (see above for areas in which research is encouraged). If a proposal originates from the home institution of a Research Subcommittee member, they are recused from reviewing this proposal.

Step 5. If relevant, revisons are requested, if relevant, and a revised proposal is resubmitted by the investigators.

Step 6. Pending successful review of the proposal or revised proposal by the Research Subcommittee, the proposal is recommended by the Research Subcommittee the to Advisory Board for recommendation to the Board of Directors.

Step 7. The Board of Directors reviews and approves the proposal, consults with the Advisory Board and Director, and / or requests a revised proposal.

Step 8. The investigator(s) signs an agreement with the Wetlands Center.

Step 9. The proposal is then routed by a university or college for submission to a potential funding agency, or is initiated if support is secured.