

APPLICATION FOR POLLUTION RECOVERY FUND ASSISTANCE

DATE OF APPLICATION: July 13, 2005

A. BASIC ASSISTANCE

1. Applicant:

Name: Knights Elementary School
Organization: School District of Hillsborough County
Address: 4815 North Keene Road Plant City, FL 33565

AUG 01 2005

ENV. PROT. COMM
OF FL.

2. Project Manager Information: Linda S. Bailey, Principal

Give name and title of the representative of the applicant who will be the Environmental Protection Commission's principle contact concerning this application

Name: Linda S. Bailey

Title: Principal

Address: 4815 North Keene Road Plant City, FL 33565

Phone Number: (813) 757-9333

Project Title: Knights P.R.E.S.E.R.V.E.

(Protecting and Rescuing Environmentally Sensitive Essential Resources in a Varied Ecosystem)

Project Time Start: June 2005 End: May 2008

Total Cost of Project \$98,291

Total EPC share requested \$59,091

3. Assistance Type: **New**

4. Project Location: Knights Elementary School

Address: 4815 North Keene Road Plant City, FL 33565

(See attached site map)

5. The project is for

*Restoration of a polluted area

*Mitigation of the effects of pollution

*Pollution control activity to prevent or minimize pollution

*Educational

6. Is the Project directed toward restoring an identified "polluted area" (a geographic area destroyed or altered by dredging or filling or contaminated by an emission or discharge), or toward terminating an identified pollution source?

Identify and explain:

The Project is directed toward restoring a two to three acre area of forested (swamp and hydric hammock) and non-forested (marsh) wetland partially located on the school site. We will establish an active, purposeful restoration of a three tiered forest which is being consumed by invasive species of flora, both native and exotic. In addition, initial water analysis data indicate possible interaction with pollutants (e.g. high sulfur, low dissolved oxygen levels – (see attachment #7) analysis report for

complete data). The project would provide long-term educational opportunities about how the components of an ecosystem work together, in conjunction with the challenges and opportunities of restoring that ecosystem.

7. Is the harm or potential harm to health, safety or welfare of the public or wildlife actual or potential? Does the project seek to alleviate actual or potential harm and what is the severity of the harm and the causal relationship between the "pollution" and the harm? Identify and explain:

There is an actual threat to wildlife. If the present trends continue, the invasion of the air potato and primrose willow, as well as other invasive species, will starve out beneficial native species necessary for a healthy habitat. It is estimated that currently, 20% of the area is being decimated by exotic and native invasives. Polluted water is also a real and imminent threat. As a result, indigenous fauna will experience a worsening of habitat conditions as food, shelter, and clean drinking water continue to be diminished.

8. How long has the pollution existed or how long before any harm will be evident?

It is unknown when invasive species insinuated themselves within the target area. However, harm is clearly evident, as the health of beneficial species is in decline; some water oaks are dead or dying; some red maples and loblolly bays have been completely enveloped by air potato vines. Water quality analysis also indicates an unhealthy system with elevated levels of sulfur and low levels of dissolved oxygen. Parking lot run-off maybe a contributor, a problem planting and restoring beneficial natives would help alleviate by acting as filters.

9. Identify and describe how the project proposes to alleviate the pollution (addressing technical, practical, and cost effective issues):

The project proposes to alleviate existing problems by first collecting data on water quality, flow, and flood levels through purchase and installation of monitoring equipment (e.g. bank pins, staff gauges, piezometers, and combination pH, conductivity, and dissolved oxygen meter); identifying, herbiciding, and removing invasive plants, and restoring native species.

Long-term data collection and analysis will continue over a three year period. Professional in-kind services will be provided by several companies (C.F. Industries, BCI, BRA). Donation of labor by school and community volunteers will also help offset costs.

10. Is the polluted area one which has previously been subject to commission enforcement and, if so, when and what was the result?

No, the polluted area has not been one which has previously been subject to commission enforcement. However, the targeted wetland has

stream outflow which ties into other streams and wetlands nearby, contributing to the aquifer system and the Hillsborough River watershed.

11. If no actual pollution exists and no prior commission enforcement action has occurred, does the project otherwise enhance pollution control activities within the County?
Pollution does exist (see item #10).

12. Can this Project be divided into separate and independent parts (yes), and if so, (a) what are they?

1. Purchase and install background monitoring equipment (e.g. bank pins, piezometers, staff gauges, and combination pH, conductivity, and dissolved oxygen meter)
2. Surveying data
3. Herbiciding/weed control and removal
4. Planting and restoring native species
5. Excavation/enhancement in depth of standing water areas
(Pending approval)
6. Installing access paths and learning stations (boardwalk, signage, outdoor classroom/staging area)
7. Long-term data collection and analysis
8. Educational expenditures

b) How would the costs be allocated between them? Since the project is a three-phase effort, to be conducted over a three-year period, funds could be allocated in a three-part manner: start-up (year one: 1-4); restoration (years one and two: 2-5); construction and maintenance (years two and three: 2-7). Steps 2, 7, and 8 would be on-going throughout the project, and would need funding through all three phases.

c) Would the applicant be willing to accept only partial funding? Yes.

13. Are other funding sources committed to the project? Yes.

How much and for what?

In-kind professional services will be provided by **CF Industries** (water quality analysis, assistance in identifying invasive plants, installation of monitoring equipment, training for use of frog call software, use of equipment for proposed deep water excavation). Water analysis has already begun – June 21, 2005, baseline data collected (attachment #7).

Estimated monetary equivalency: \$ 26,200

Mr. John Kiefer, PE, PWS, of **BCI Engineers and Scientists, Inc.** has developed an in-depth analysis of the existing ecological features of the targeted area, as well as a comprehensive plan for its restoration (See attachment 6-6a).

Estimated monetary equivalency: \$ 1,200

Biological Research Associates (BRA) will provide professional application of herbicide (Rodeo)

Estimated monetary equivalency: \$3,800

14. What other funding sources may be available and how much?

An application for a \$5000 Splash Mini-grant has been submitted to SWFWMD for primarily educational materials and supplies.

15. Why do you believe that this Project is of sufficient importance to justify the expenditure of Pollution Recovery Funds?

This project is of significant importance because it seeks to restore and preserve a wetland area. Because of explosive growth in our state and in Hillsborough and neighboring counties, in particular, the need to conserve water is of vital importance. We must protect even small wetland areas to ensure recharge of the aquifer system, maintain adequate quality watershed, and to help control flooding. The wetland targeted in this project is not extensive in size, but is still a precious and integral component of Florida's interior water system. But, perhaps the greatest reason to fund this project lies in the nature of its primary participants: children. By instilling a respect for the unique nature of Florida's environment through active, purposeful, hands-on learning, we can help create a generation of future decision-makers who will carry on the legacy of a paradise flowing with crystal clear springs, streams, and rivers.

16. Will the project enhance the value of private property, and if so, whose?

Although the majority of the targeted wetland in this project is located on property owned by the School Board of Hillsborough County, an indirect enhancement of adjoining properties and, indeed, any properties affected by the outflow stream system can be assumed by the improvement of water quality, maintenance of a flood control feature, and preservation of a wildlife habitat.

B. ATTACHMENTS

All applicants must submit responses to the following as attachments corresponding to the indicated numbers:

1. Please provide a detailed map of the project site.
2. Principal Investigator and Key Personnel - Present a biographical sketch of the principal Investigator incorporating the following information: Name, Address, Phone Number, Education, Background and other qualifying experience for the project.
3. Project Narrative - Please provide a narrative statement describing the project that includes the following:

- a) Objectives of this Project - Describe the principal and subordinate environmental objectives of the project. Pinpoint any relevant physical, economic, social, financial, institutional or other problems requiring solution.
- b) Results and/or Benefits Expected - Identify specific environmental results and/or benefits to be derived from the project. Include all primary and secondary benefits accruing to the grantee, to the pollution served, and in general, to the public and environment.
- c) General Project Information - Discuss the criteria that will be used to evaluate the results and successes of the project as well its relationship to other work planned, anticipated or underway.

4. Scope of Work – Provide a detailed scope of work for the proposed project. List in chronological order a schedule of accomplishments, progress, or milestones that are anticipated over the length of the project.

5. Budget Information – Please itemize expenditures necessary to perform project using the following format:

BUDGET CATEGORIES

PRF Funds Federal Applicant State Other

a. Personnel

1.

2.

b. Administrative

c. Materials

d. Contractual

e. Construction

f. Other

g. Total Direct

Charges

(Sum of a. to f.)

\$

C. SUBMITTAL OF APPLICATION

Please submit a total of five (5) applications (one original and four (4) copies / one of which can be in electronic format as a CD) to:

Environmental Protection Commission of Hillsborough County

Environmental Resources Management Division

Attn: Tom Ash / Pollution Recovery Fund

3629 Queen Palm Dr., Tampa, Florida 33619

Completed applications must be received at the above address by 5:00pm (EDT), August 1, 2005.

Late applications and email applications will not be considered.

www.epchc.org

E-Mail: epcinfo@epchc.org

AN AFFIRMATIVE ACTION – EQUAL OPPORTUNITY EMPLOYER

PRF APPLICATION PROCESS

Instructions

The Hillsborough County Environmental Protection Act (Chapter 84-446, Laws of Florida) has created a pollution recovery fund which is to be supervised and used by the commission to restore polluted areas of the county, as defined by the commission, to the condition they were in before pollution occurred, to mitigate the effects of pollution, or to otherwise enhance pollution control activities within the county.

Application Forms must be submitted on or before the August 1, 2005 deadline.

- There will be a newspaper advertisement, and possibly press releases, specifying the deadline for submitting applications.
- Application forms and instructions can be obtained from Tom Ash, phone 813-272-5960x1011 or from our website at: www.epchc.org
- Except under special circumstances, applications submitted earlier than the deadline will be held until the next processing period, and then processed with the others.

Following the deadline, applications will be distributed to staff appropriate to the project for review and recommendation to the Executive Director.

- Staff may contact the applicant upon beginning review, and if a meeting to discuss details is requested or advisable, will schedule it.
- Staff will meet with the Executive Director to discuss all applications in the group and to prioritize and determine recommendations.

A summary of the Executive Director's recommendations will be forwarded to CEAC along with copies of all applications.

- Staff will send a copy of the Executive Director's recommendations to each applicant along with a notice of the meeting date at which CEAC will discuss the applications and its recommendations to the EPC Board.
- Applicants are invited to attend the CEAC meeting and make a brief presentation in support of their project.

Staff and CEAC recommendations will be presented to the Commission for decision.

- The EPC meeting will likely be the second meeting following the CEAC meeting so that the information can be properly placed on the agenda.
- The Applicant may attend the EPC meeting and request to speak.

If the project is approved, the applicant must sign a contract before monies will be available.

- EPC Legal will draft the contract with standard terms and conditions, and provide it to the applicant for review and execution.
- EPC Legal will arrange for execution of the contract by the EPC Chair after it is executed by the applicant, and will then forward final copies to the Applicant's Project Director and the EPC Administrative Contact.
- The EPC Administrative Contact will be responsible for ensuring the applicant's compliance with the contract.

The screenshot displays a web-based parcel query system interface. On the left is a sidebar with a 'Size' selector, a thumbnail map, navigation icons (pan, zoom, home, refresh, help), and a list of layers: owner, address, folio, pin, sec-twp-rge, legend, and buffer. The 'Layers' section is currently set to 'Aerials + Parcels'. The main area shows an aerial photograph with a parcel boundary overlaid in black. The parcel is shaded with a light blue diagonal pattern. Text labels 'WOODS BLVD' and 'KEENE RD' are visible on the map. Below the map, the following information is displayed: 'FOLIO: 0806110000 PIN: U-01-28-21-ZZZ-000003-40660.0 ACREAGE 17.51' (where '17.51' is circled in red), and a date range '5/13/2005 6:29:03 AM - 5/13/2005 6:29:05 AM'. A scale bar at the bottom right indicates 0 to 103 feet. The footer text reads 'Copyright 2002. Hillsborough County Property Appraiser.'

Hillsborough County Property Appraiser
Parcel Query System



FOLIO: 0806110000 PIN: U-01-28-21-ZZZ-000003-40660.0 **ACREAGE: 17.51**

Map created on 5/13/2005 6:27:41 AM

FOLIO: 0806110000
 PIN NUMBER: U-01-28-21-ZZZ-000003-40660.0

OWNER 1: SCHOOL BOARD OF HILLSBOROUGH COUNTY **Attachment 1b**

ADDRESS: 4815 KEEN RD
 UNINCORPORATED

LEGAL DESC: LESS RD RW
 DOR CODE: 8300

VALUE SUMMARY:

BUILDING VALUE:	\$5,085,355
EXTRA FEATURE VALUE:	\$18,750
LAND VALUE (MARKET):	\$210,357
LAND VALUE (AGRI.):	\$0
JUST (MARKET) VALUE:	\$5,315,462
ASSESSED VALUE (A10):	\$5,315,462

Attachment 1c



Query System

<http://propmap3.hcpafl.org/map/map.asp?cmd=REFRESH&lcmd..>

Attachment 1d

Size:



+

−

Hand icon

↻

⊕

⊖

⊞

⊟

⊠

owner

address

folio

pin

sec-twp-rge

legend

buffer

Layers:

Aerials + Parcels



FOLIO: 0806110000 PIN: U-01-28-21-ZZZ-000003-40660 0 ACREAGE
17 51
5/13/2005 8:32:28 AM - 5/13/2005 8:32:29 AM

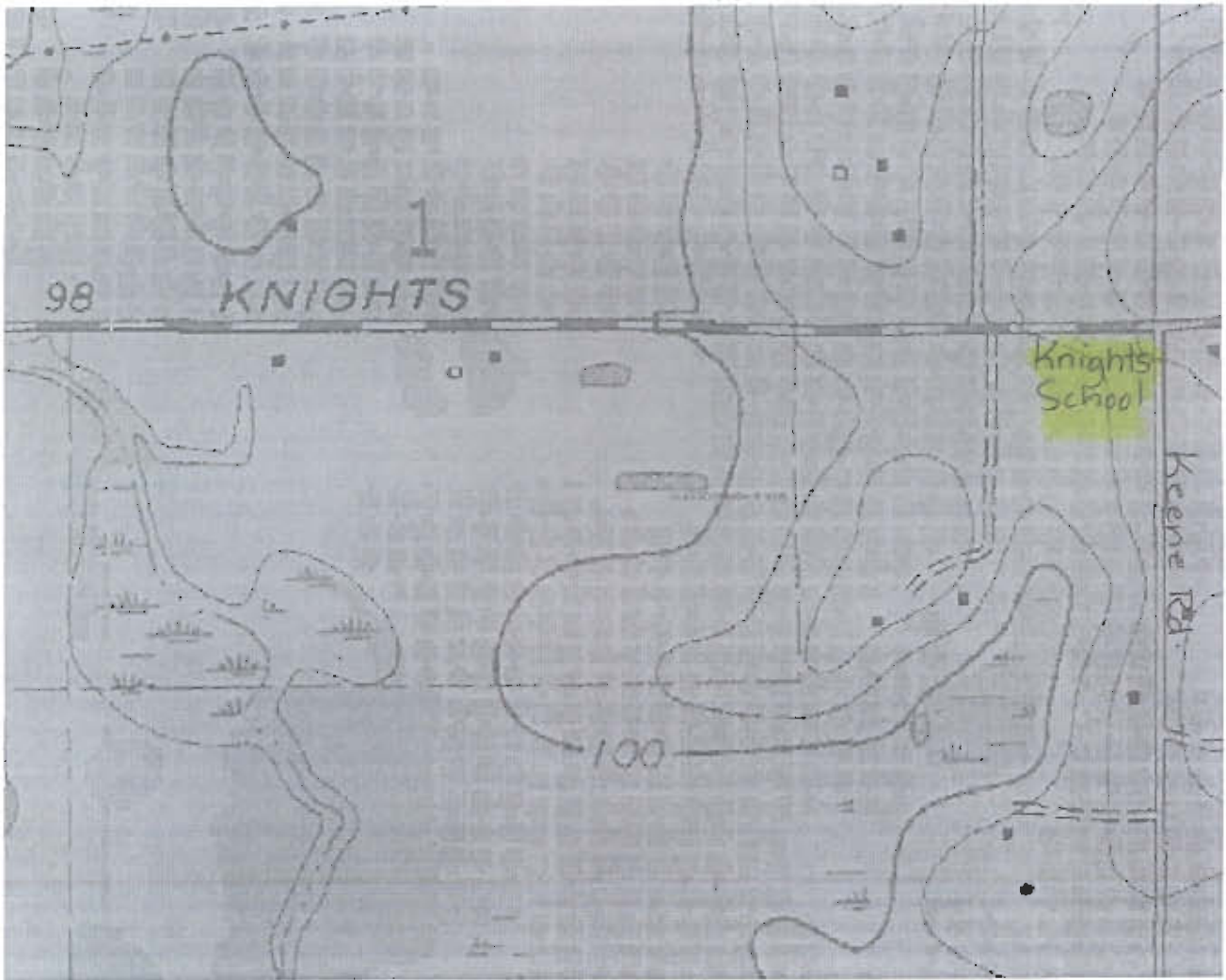
0  52 ft

Copyright 2002. Hillsborough County Property Appraiser

Viewer

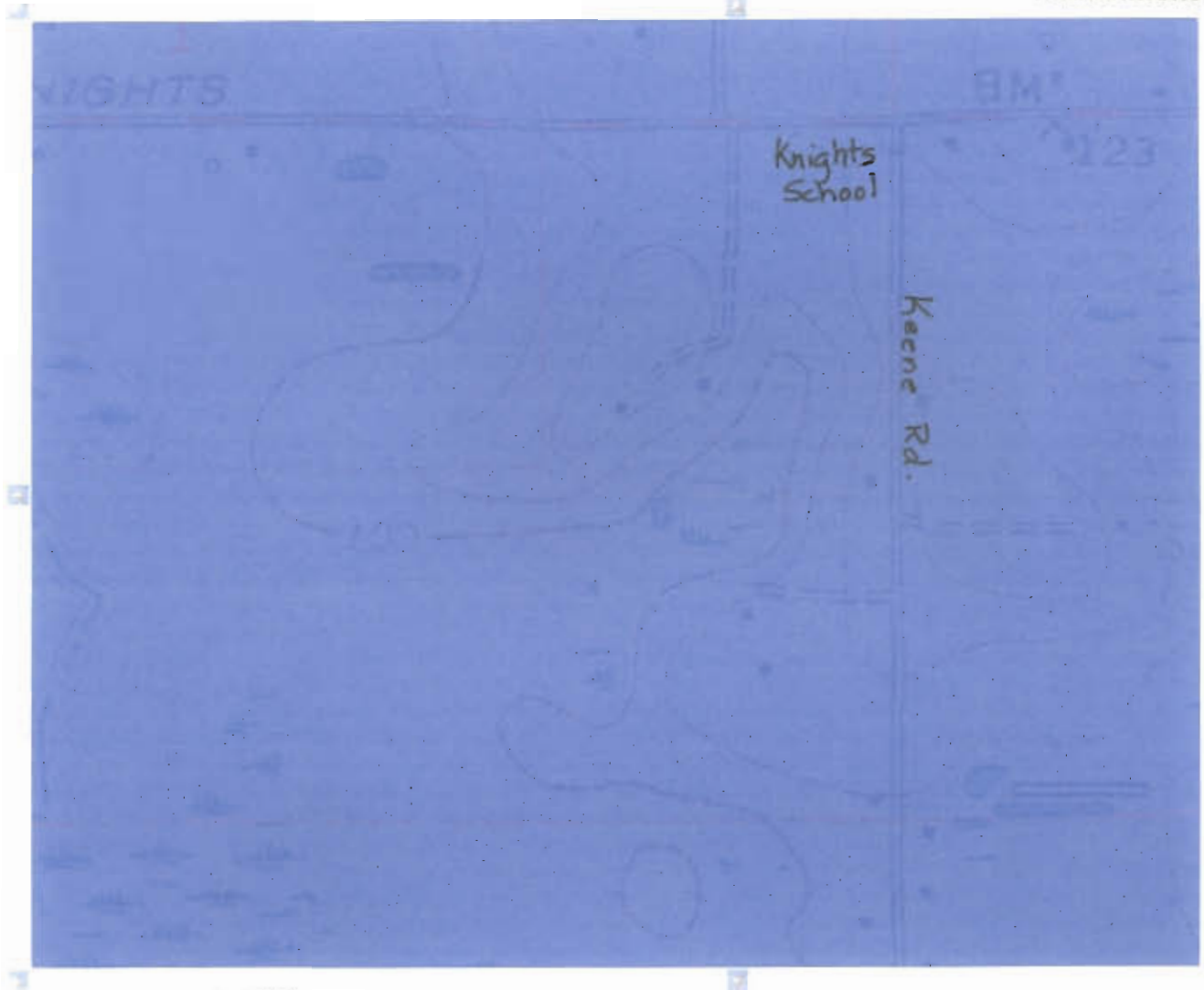
<http://www6.swfwmd.state.fl.us/mapviewer/viewer.aspx?MapSvc=1>

Attachment 1e

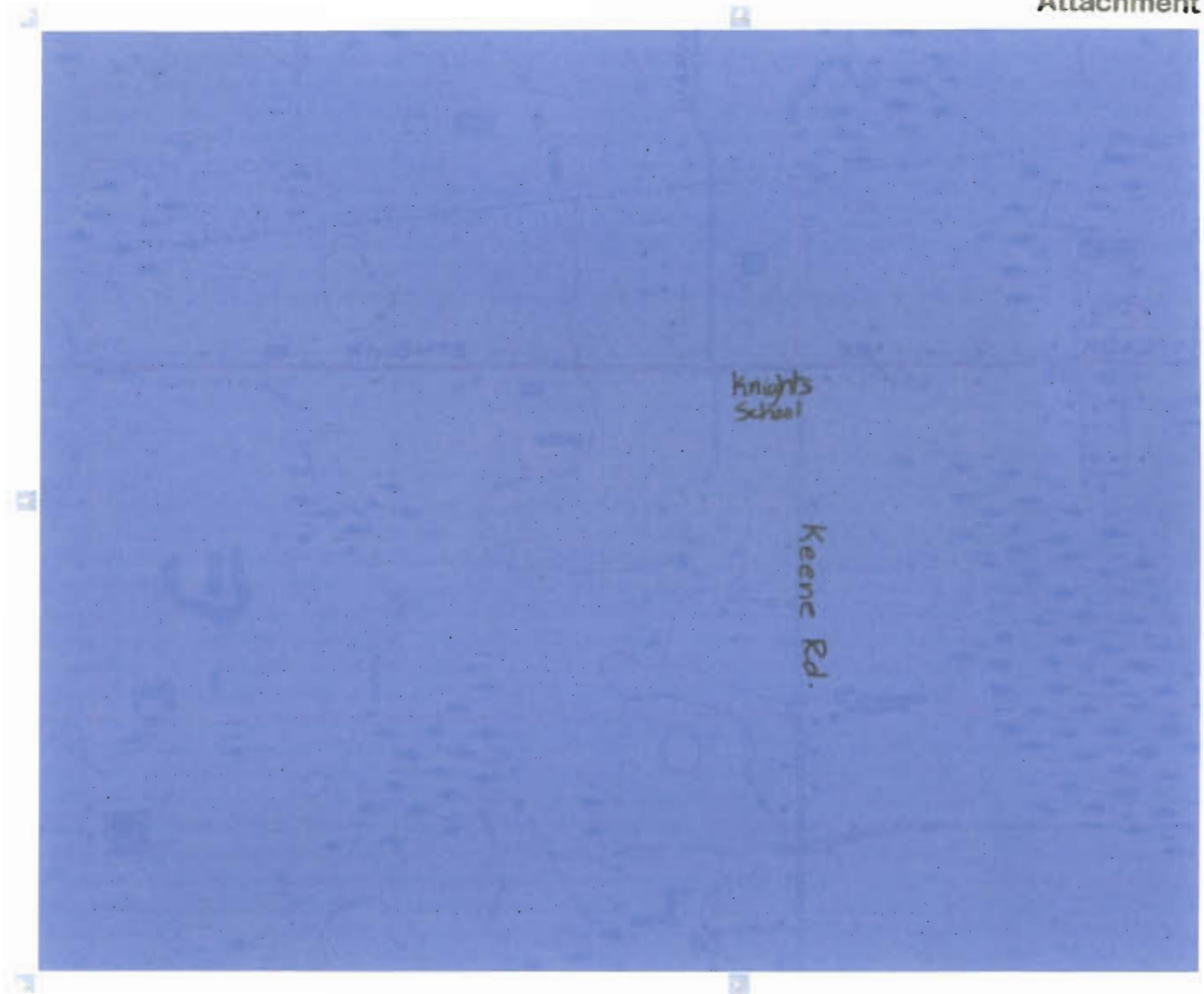


X: 205416.4173 Y: 2106282.2212

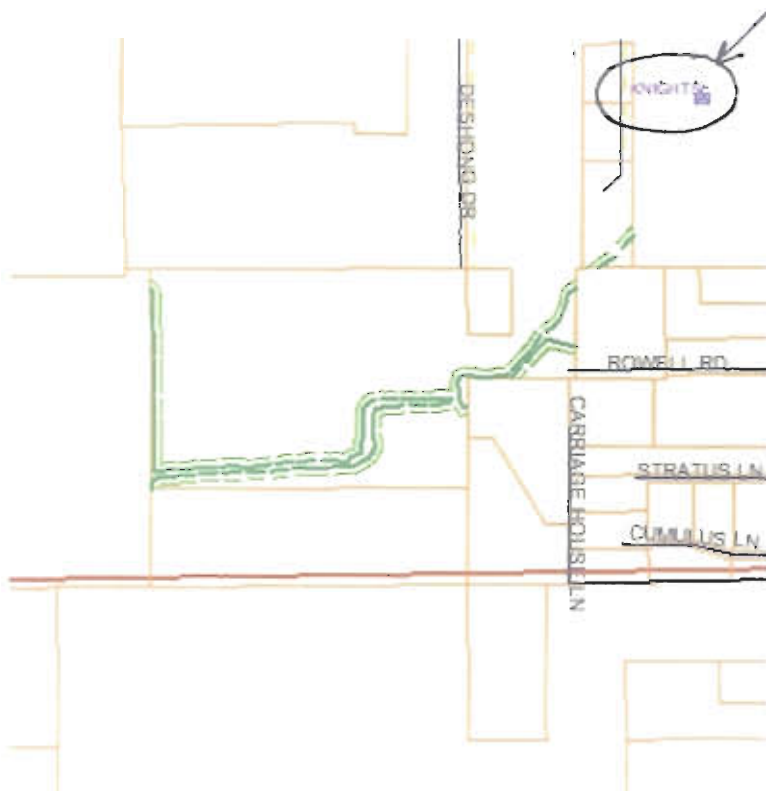
Attachment 1f



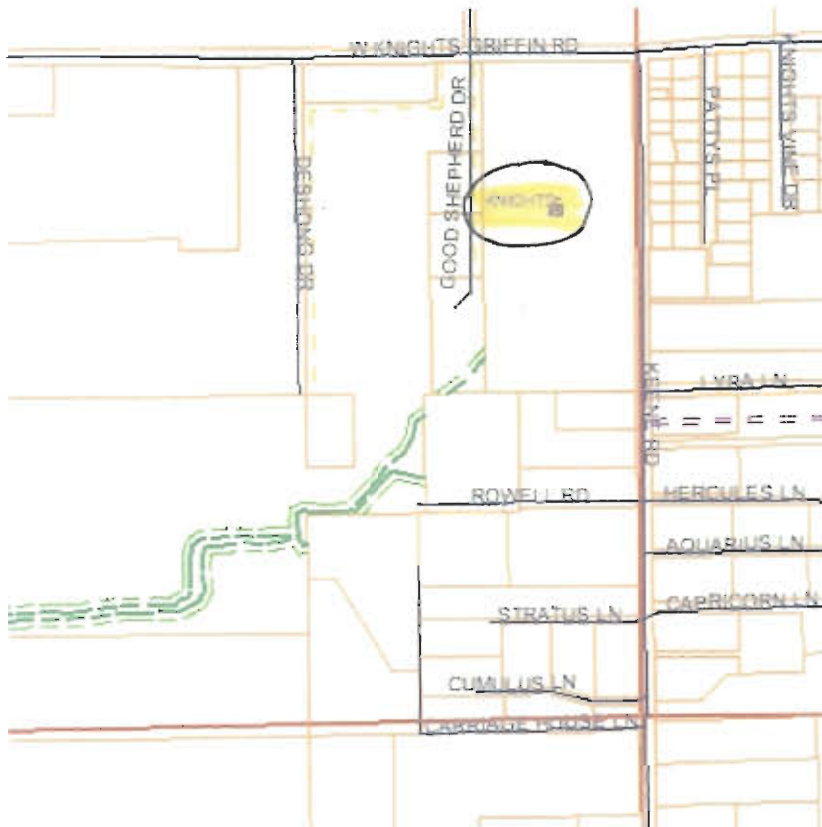
Attachment 1g



Attachment 1H

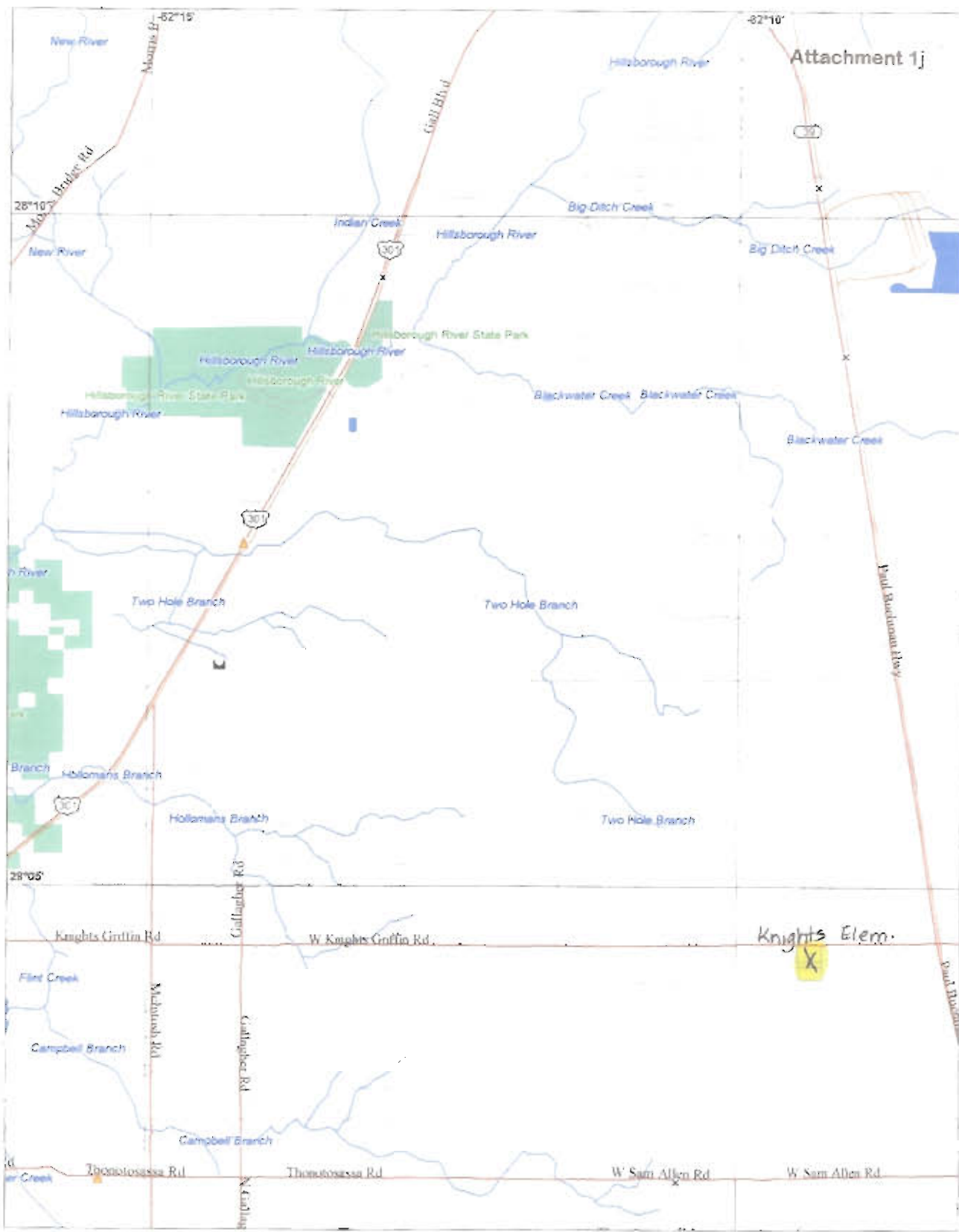


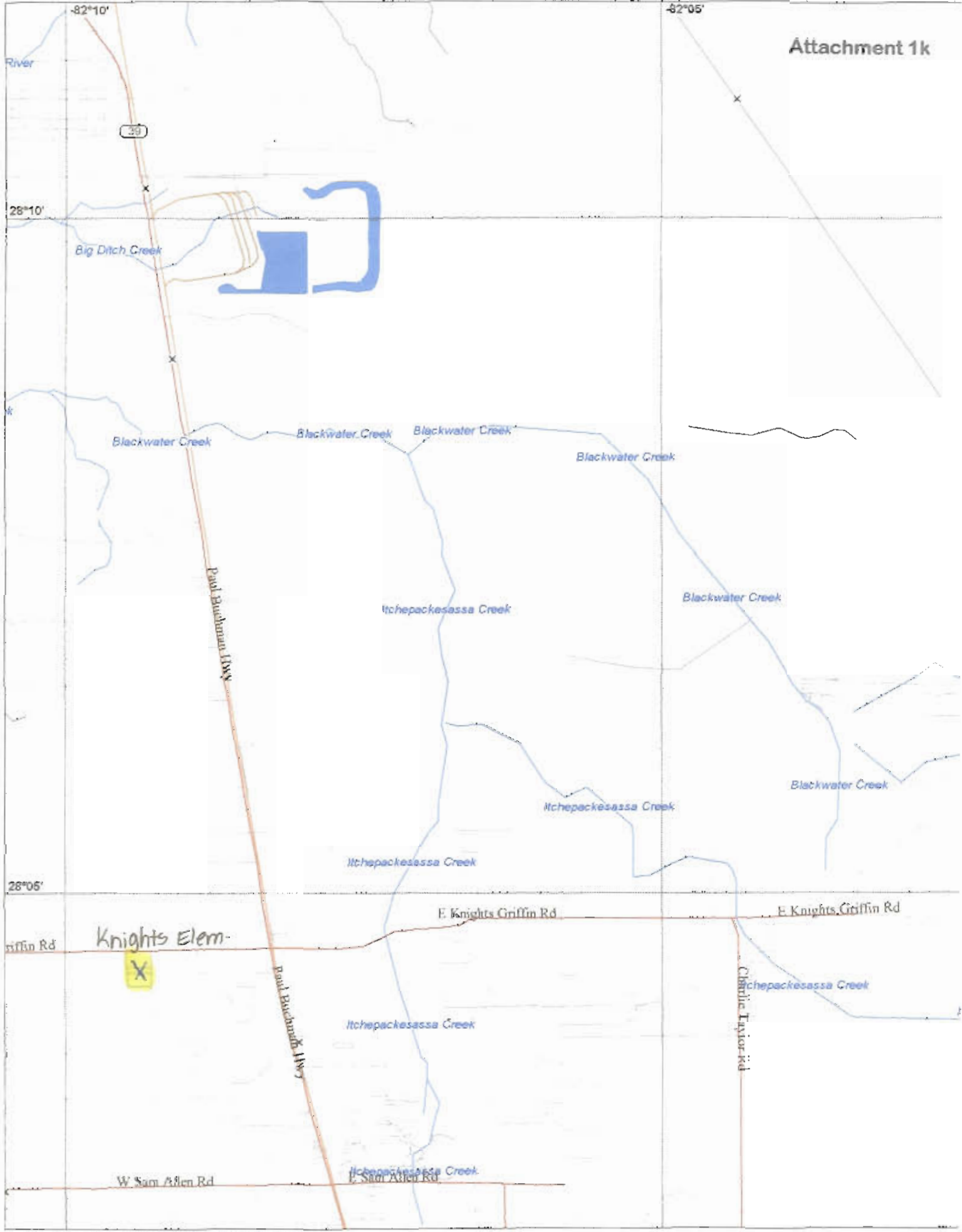
Hillsborough County Property Appraiser Parcel Query System



Map created on 6/22/2005 5:39:42 PM

0 311 ft





Principal Investigator and Key Personnel:

J. Harold Falls, CF Industries Incorporated

1. Job title and job description for CF Industries
Chief Chemist – Lab Manager for Quality Control of Products and Environmental Services at the CFII Plant City Phosphate Complex since 1988. I have been employed for the past 34 years with CF Industries, Inc.
2. What companies did you work with in the past? Texas Gulf Sulphur, Farmers Chemical Cooperation
3. What issues are currently on your radar screen? Issues on my radar are as follows: Continue involvement with improvements in the teaching of science in the elementary & middle schools. Education is a key issue in feeding the world and the Fertilizer Industry should aggressively be stating its position on how to achieve this goal.
4. Have you ever been on a TFI (The Fertilizer Institute in Washington DC.) committee? If so which, and for how long? I have been serving on the TFI Professional Committee for the past 16 years. Chairman from 1999 to 2002. Continuing to serve.
5. When you were on that committee (s) what issues did you work on? Served as a liaison for TFI on the Labeling, Laboratory Services and Magruder Committees of AAPFCO (Association of American Plant Food Control Officials.). Analytical methods – the Laboratory Services Committee is currently writing a laboratory procedure manual for standard operating practices and the Magruder Committee – reviewing different analytical methods for consistent results in fertilizers, and studying the differences in digestion procedures for trace elements. Continue to serve on these committees
6. What industry awards have you won? Hero of the Industry/Chemist of the Year 2003 by the AFPC (Association of Fertilizer and Phosphate Chemists). On February 28th at the forty-ninth annual Phosphate Night received the Volunteer of

the Year award from the Propeller Club of the United States, Port of Tampa, Florida.

7. Member of the AFPC (Association of Fertilizer and Phosphate Chemist) for the past 22 years and past President from 1988 to 1990. Currently serving as Chairperson on the Methods Committee, Check Sample Committee and Liaison for the AFPC (Association of Fertilizer and Phosphate Chemist). Methods Committee published two Method Manuals for the Phosphate Industry and currently working on publishing an update for 2005. In the past have written articles on analytical methods for the *Journal of AOAC International*, *Fertilizer Research* and currently writing an article for the 2nd Edition of Encyclopedia of Analytical Science about the current best analytical methods for analyzing fertilizer materials.
8. What activities are you or CF Industries involved in, in your community? For example, corporate good will actions, donating to a foundation. CFII sponsors a DAY of CARING in the community for United Way for many years and has been an industry leader in giving to United Way. CFII has sponsored the following projects: painting buildings, constructed a platform to unload materials for James Ranch, landscaping for the YMCA and many other projects for the United Way. I have serving on the Youth Steering Community of United Way of Hillsborough County for the past 12 years. Participated in the construction of a Butterfly Garden for the Chester Taylor Elementary School in Zephyrhills sponsored by CFII. CFII has encouraged my participation in our local schools for the past 12 years performing a chemistry magic show for many thousands of children and adults. During the chemistry show I can tell the students "Why phosphate is important to them and the world." Recently was asked to perform chemistry magic show for the Zephyrhills Rotary Club. CFII encourage my participation in Operation Chemistry for the past 12 years. Each summer a workshop is held for 6,7 and 8 grade science teachers to teach and train science teachers how to teach chemistry in these grade levels. The class is hands-on experimentation. The American Chemical Society and the National Science Foundation sponsored the original program. Have served as a

local science judge for local, county and state science fairs for the past 12 years. Served as a scientific advisory for Hillsborough County review of new science books for the 6, 7 and 8th Grades.

9. Personally, do you do anything to give back to your community? For example soup kitchen, boys and girls sports coach, visit local schools. For nine years I volunteered to teach high school chemistry at a local private school (Steppin' Stone School). Two nights a week for two-hour sessions were used in teaching. At the school I volunteered to cook on occasion for the approximately 40 students and staff and currently cooking from time to time. For this I was nominated two times for the JC Penney Golden Rule Award and was awarded the award in 2000. Was nominated for the first Tampa Bay Buccaneers Community Quarterback Award and was in the top ten semi-finalists. Both of these awards gave \$1000 each to Stepping Stone Farm. (2) Currently serving on the CEAC (Citizen Environmental Advisory Committee) representing and appointed by the City of Plant City to advise the Hillsborough County Commissioners on environmental matters in the County. Serving for 4 years on the Committee.
10. Place of birth, and spent childhood? Born and raised in Chase City, Virginia, a small rural community in southern-central Virginia
11. What High School and College/ University did you attend? Attended Bluestone High School in Skipwith, Virginia and graduated in 1961. Attend Campbell College in Buies Creek, North Carolina and graduated with a BS in Chemistry in 1965. (Also had the equivalent of a math degree, but only one degree awarded.) . Campbell is now a University.

Elizabeth Wertschnig Davidson, Chief Reclamation/Restoration

CF Industries Inc., P.O. Box Drawer L, Plant City, FL 33564 (813) 364-5640

Beth is responsible for all restoration aspects regarding CF Industries Inc.' 1,900 acre restoration project in Northeastern Hillsborough County. Beginning in 1997 with a \$5 million budget, CF has restored 500 acres of uplands and constructed 140 acres of wetlands. Prior to her work with CF Industries, Beth was employed by The Nature Conservancy in Florida and California (1992-1997), where she worked on upland grassland systems and riparian systems. Beth is a 1991 graduate of the University of Wisconsin-Madison with a degree in Zoology. She is a past board representative for Florida to the Society for Ecological Restoration.

John H. Kiefer, BCI Engineering (863) 667-2220 Ext. 293

John kiefer is a graduate of the University of Florida with an undergraduate degree and Masters degree in Environmental Engineering. He currently works as an engineer in environmental engineering for BCI in Lakeland, FL. He is also finalizing his PhD at the University of Florida. John's specialty is in hydro-ecology. He is licensed as a Professional Engineer and Certified Professional wetland scientist with Society for Wetland Scientists. John has fifteen years experience working with wetlands, lakes, rivers, and ecosystems.

Stefan N. Kazaras, Environmental, Health, and Safety Auditor

CF Industries Inc. P.O. Box 1849, Bartow FL 33831-1849

Stefan is currently responsible for governmental and community affairs in the central Florida region for CF Industries Inc. Prior to that, he was responsible for environmental and wildlife permitting at both the CF Hardee Mining Complex and CF Plant City Fertilizer Manufacturing facility. Stefan is an active board member for the following organizations: Hillsborough County Ag-Economic Development Council, SWFWMD Industrial Advisory Committee, Mulberry Chamber of Commerce and Ducks Unlimited. He has a bachelors of Science degree in Geology with an emphasis in hydro-geology and has been employed by CF Industries Inc for nine years.

a) Objectives of this project:

Knights P.R.E.S.E.R.V.E. is a project designed to study, restore, and preserve a two- to three-acre wetland area consisting primarily of a swamp and hydric hammock (forested areas), and a marsh (unforested) located on the property of Knights Elementary School in northeastern Hillsborough County. The project has four main objectives: 1) to rescue a valuable wetland from devastation by invasive exotic and native plant species; 2) to clean up polluted water in the marsh and forest; 3) to restore the area to a natural, healthy condition, and 4) to educate elementary aged students about the importance of water conservation in Florida and how to care for and protect a wetland.

Participants will identify and study native and non-native species (flora and fauna), remove invasive plant species, and actively restore disturbed areas by replanting beneficial native species. Extensive observations (including nocturnal observations achieved through the use of video cameras set up at sites within the area) will help determine the presence of indigenous and introduced animal species. Students, teachers, parents, and other interested community members will be trained in the identification of frog calls – a good indication of the health of an ecosystem.

Participants will also study physical processes at work within the area: fluctuating water levels in an ephemeral pond; the effects of fluvial geomorphology in a low-order head-cutting stream using bank pins, staff gauges, and piezometers; testing and studying water quality using water test kits such as combination meters for analyzing pH, conductivity, dissolved oxygen, and turbidity.

b) Results and/or benefits expected:

We expect to return a disturbed and declining wetland to full health. By eradicating air potato vines, primrose willow, and other invading species of plants, and replanting beneficial species, the forested swamp and non-forested marsh will be able to once again function as a viable habitat for wildlife. By planting upland trees and/or native grasses between the marsh and the forest, a “wildlife bridge” will be established between the two habitats, encouraging a more diverse wildlife population.

Restoration of plants beneficial to each of the parts of the wetland area will reestablish a natural filtration system for the water, whether isolated (in the marsh) or connected to other streams and water systems (outflow from the swamp). It is also expected that water will be conserved, as native species tend to use less water than exotics. By planting riparian tree species (e.g. cypress), it is expected that erosion along the banks of

the head-cutting stream feeding into the swamp will be reduced or eliminated.

Although the benefits of repairing this damaged wetland will begin to be evident very quickly (within the three year time frame of the actual project), the greatest benefit will be in the education of the 750+ students (each year) regarding the vital function wetlands play within the larger surface and groundwater systems of Florida. As young minds are introduced to the intrigue of observing and restoring nature, lifelong interests and future careers in the care of those natural systems will be instilled and encouraged. Because we will involve parents and other community members, the effects will be far-reaching, eventually benefiting all of us who live in a state so dependent on the conservation of its water.

c) General Project Information:

The Knights P.R.E.S.E.R.V.E. project is an ambitious and extremely important endeavor. It will restore the targeted wetland area to a condition in which it is able to play a beneficial and intended role in the conservation of water within its watershed region. It will also serve to function as a sanctuary for wildlife struggling to find favorable habitats in an area being rapidly developed for housing and business. Best of all, it will teach a generation of children the importance of caring for nature and all of its elements if they are to live quality lives, and they will learn specific ways to achieve that goal.

The success of the project will be evaluated in several ways. Actual water quality, levels, flow, and fluvial geomorphology, will be monitored, measured, and compared with baseline data (see attachment 7). Ongoing observations and data collection regarding wildlife sightings and habits will be recorded, charted, and graphed in science journals to track trends. Ongoing assessment of successful restoration of native plant species, as well as eradication of invasives, will ensure that a healthy ecosystem will continue to evolve. Students will create Webbe Books (a computer assisted book-writing program) about the "Preserve" to share with the community to be displayed at Bruton Memorial Public Library in Plant City. Interest surveys and academic assessments will be administered to measure attitudes and knowledge gains. We will also coordinate our efforts with the School District to model environmentally favorable uses of and alternatives to retention ponds. Findings will be reported to the District.

ATTACHMENT 4

SCOPE OF WORK

The project is **designed** in three phases. Each phase is planned to be one year in duration, to run concurrently with school years 2005-2006, 2006-2007, and 2007-2008.

Phase one will begin in August, 2005, and continue through May, 2006. Background work has already begun (water samples, identifying invasives, etc.) Accomplishments planned for phase one include (but will not be limited to):

- 1) Collection and analysis of data (water quality, levels, periods of duration; plant and animal species present; attitude and academic assessment surveys).
- 2) Purchasing/installing monitoring equipment (bank pins, piezometers, staff gauges, combination meters, video cameras).
- 3) Purchasing equipment and materials for students (microscopes, lab supplies, still cameras, computer software).
- 4) **Begin** field trips to Crystal Springs Preserve and CF Industries.
- 5) **Begin** herbicide applications and removal of invasive plant species (e.g. air potatoes).
- 6) **Begin** restoration of native flora.
- 7) Students will complete books, and projects to summarize findings and reflect on effectiveness of progress made toward restoration impact on water quality as well as, any changes in wildlife present.
- 8) Reports will be presented to parents and community at a school wide celebration.
- 9) Plans for phase two will be reviewed and adjusted as necessary.

Phase two will begin in August, 2006 and continue through May, 2007. Accomplishments planned for phase two include (but will not be limited to):

- 1) Continue on-going data collection and analysis (water quality, levels, and periods of duration; plant and animal species present; attitude and academic assessment surveys).
- 2) Purchasing additional equipment and replacing consumable materials and supplies for students.
- 3) Evaluate the overall health of the targeted ecological areas; reapplication of herbicide as necessary; continue to plant beneficial species in all areas.
- 4) Pending approval, plans for excavation to enhance a deepwater area will begin. All efforts to minimize any disturbance of area will be exercised.
- 5) Field trips to Crystal Springs Preserve and other ecological sites will continue throughout this phase.

- 6) Plans for implementation of an outdoor education classroom will begin.
- 7) Second annual celebration to share information with parents and community.

Phase three will begin in August, 2007 and continue through May, 2008. Accomplishments planned for phase three include (but will not be limited to):

- 1) All on-going activities will continue.
- 2) Construction of an open-air outdoor classroom area, including running water, sink, workstation tables, etc.
- 3) Construction of access pathways (foot-paths and boardwalk) including learning stations at strategic points, such as use of dip nets, collection of water samples, plant and animal identification and comparison, evaluation of water levels and flow, etc.
- 4) Continuation of replenishing consumable student materials as well as enhancing inventory of tools and equipment, especially for outdoor classroom area.
- 5) Emphasis will be on comparing initial findings to data collected at the end of this phase to determine success of the project.
- 6) Third annual celebration to share information with parents and community.
- 7) Plans will be made to continue the project indefinitely to ensure that positive effects on the students and the environment will be carried into the future.

ATTACHMENT 5

BUDGET CATAGORIES

	PRF Funds	Federal	Applicant	State	Other
a. Personnel	\$5,745		\$31,200		
b. Administrative					
c. Material	\$17,346			\$5,000*	
d. Contractual					
e. Construction	\$36,000				
f. Other (manual removal plant debris & exotics)			\$3,000		
g. Total Direct Charges (Sum of a. to f.)	\$59,091		\$34,200	\$5,000*	

*SWFWMD Splash Grant applied for.



MEMORANDUM

DATE: June 16, 2005

TO: Stefan Kataras, CF Industries, Inc.

FROM: John Kiefer, PE, PWS

SUBJECT: Ecological Restoration Concepts at Knights Elementary School

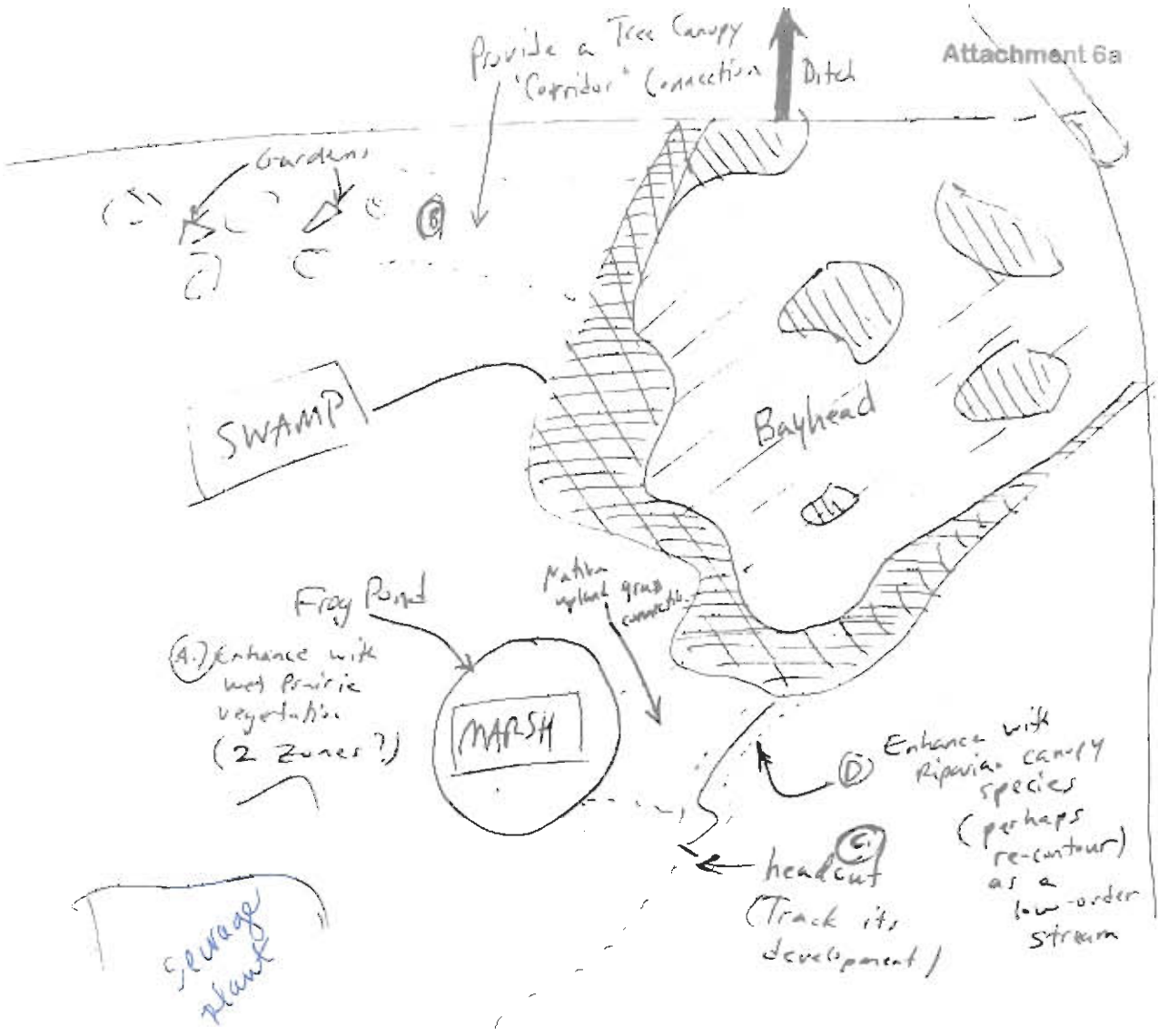
I examined the wetland resources on the school's property June 3, 2005 along with various staff members from CF Industries and Knight Elementary. The wetlands consist of two main types, 1) forested (swamp) and 2) non-forested (marsh). The swamp consists of a mosaic of disturbed and relatively intact habitat patches. The intact patches are bayhead swamps and these dominate the core of the wetland. Bayheads are shallow, groundwater fed swamps growing on thick organic soils. They offer a three-tiered or layered structure with tall trees, medium-height shrubs, and a thick carpet of ferns as a lower vegetation layer. Bayheads offer educational opportunity to discuss habitat structure, soils, and groundwater-surface water interactions. For example, with respect to habitat structure, different species of birds specialize in using either trees, shrubs, or groundcover habitats while other species are habitat generalists using all three. Patches of the bayhead are heavily disturbed, probably by historic clearing activities especially around the edge. These areas lack the three-tiered structure of a natural bayhead and are dominated by weedy and exotic species. The disturbed portions represent an excellent opportunity to control the weeds and establish an active, purposeful restoration of a three-tiered forest. Soils and hydrology appear to be reasonably intact to support planted vegetation once the weeds are fully eliminated. The restoration project would provide long-term educational opportunities of how the pieces of an ecosystem fit together and the challenges and opportunities of creating a forest. Boardwalks could be established across both disturbed and intact portions of the bayhead to facilitate access for observation, interaction with the site, and lectures.

The marsh is located in a very small, easily accessible, shallow depression within about 30 feet of the bayhead. Frogs and aquatic insects were observed in the wet depression. The site is dominated by low-growing weeds that are periodically mowed. Preliminary observations and interviews with school staff suggest that this depression is ephemeral flooded, but at sufficient duration to promote wetland vegetation and allow for breeding frogs and tadpole development. This area could be enhanced by eliminating the weeds and replacing them with wet prairie plants. Wet prairies are dominated by a diverse assemblage of wetland species tolerant of routine dry conditions. This wet area probably receives most of its water from runoff and direct precipitation in direct contrast to the groundwater-fed bayhead. The bayhead is drained by a surface water connection to downstream water bodies, while the ephemeral marsh is isolated. This isolation allows for the breeding of

certain frog species in absence of fish predation that could not occur if this wetland were connected to a source of larger fish. Some of these frog species include tree frogs. The adult tree frogs live in the bayhead and they lay eggs in the marsh which is the habitat their tadpoles require. The marsh represents an excellent opportunity to explore ecological diversity and its restoration and also adds the fun element of being able to easily collect and observe aquatic life. The proximity of the bayhead and marsh to one another illustrates the power of having different types of habitat located together (especially from the perspective of a tree frog).

Other minor, but interesting, elements could be added to the plan to enhance its educational potential. For example, upland trees and/or native grasses could be planted between the marsh and bayhead to form cover for a "wildlife bridge" between the two habitats. A portion of that corridor could be kept as bare mud so nocturnal wildlife activity and use of the "bridge" could literally be "tracked" by observing footprints left by small animals in the night. Casts could be made and another educational tool employed. A small drainage ditch feeding into the bayhead is eroding. This open channel could be stabilized by wetland riparian tree species (e.g. cypress) and the effects of tree roots on stream banks could be discussed.

Overall, this site presents ample opportunity for observation of nature and restoration of nature. With patches of intact and disturbed habitat and two major different types of wetlands, this area packs in a surprisingly high degree of educational opportunity for its size and convenient location to the school. Some of the restoration work would necessarily be conducted by professionals, especially initial weed control activities and boardwalk construction. However, subsequent work such as tree planting, weed maintenance, and various measurements could be conducted by students and parent volunteers as part of the curriculum.






(A) Enhance with wet prairie vegetation (2 zones?)

(D) Enhance with riparian canopy species (perhaps re-cutout) as a low-order stream

(E) headcut (Track its development)

Key

-  Heavy weeds (eliminate & plant natives)
-  Intact core
-  Moderately Disturbed



Attachment 7

Two water samples were taken at Knights Elementary School on June 21, 2005 to study the water quality entering and exiting a tract of land under review for improving an impacted wetland area. CF Industries, Inc, Plant City Phosphate Complex collected and analyzed the water.

Analyses:

Analyses	Incoming Water to Wetland	Outfall of Wetland
pH	6.75	6.44
Conductivity, umhos	253	646
P, ppm	0.35	0.58
Total Nitrogen, ppm	-	10.0
Nitrate Nitrogen, ppm	-	0.03
Ammonia Nitrogen, ppm	0.1	4.0
Turbidity, jtu's	1.15	56.1
Temperature, C	24.6	24.1
Dissolved Oxygen, ppm	5.20	1.02
Total Suspended Solids, ppm		
Total Dissolved Solids, ppm		
Calcium, ppm	40.3	46.8
Iron, ppm	0.01	0.8
Magnesium, ppm	2.1	10.5
Total Sulfur, ppm	0.6	24.9
Silica, ppm	0.3	5.4
Aluminum, ppm	0.05	0.17
Fluoride, ppm	0.1	0.2

