



APPLICATION FOR POLLUTION RECOVERY FUND ASSISTANCE

DATE OF APPLICATION: 7/26/2005

A. BASIC ASSISTANCE

1. Applicant: The legal name of the applicant/organization, the organizational unit and the complete mailing address of the applicant.

Name: Florida Center for Community Design and Research
Organization: University of South Florida
3650 Spectrum Blvd., Ste 185
Address: Tampa, FL 33612

2. Project Manager Information: Give name and title of the representative of the applicant who will be the Environmental Protection Commission's principle contact concerning this application

Name Shawn Landry
Title Interim Director
3650 Spectrum Blvd., Ste 185
Address Tampa, FL 33612
Phone Number (813) 974-4590
Project Title Pollution Monitoring Application Pilot Project
Project Time Start: April 3, 2006 End: November 21, 2006
Total Cost of Project \$ 56,000**
Total EPC share requested \$ 51,600

** Total cost of this project includes costs to support the maintenance of the server development platform used by these tasks. However, these costs will be covered by existing funding. In addition, significant project funding provided by Tampa Bay Estuary Program and Hillsborough County Public Works is leveraged in order to provide long-term maintenance of the final deliverables.

3. Assistance Type: **New or Renewal** (check one)

New - Award of funds for initial request within the project period.

Renewal - Award of funds for a project beyond the current project period.

4. Project Location: The specific location(s) of the project. (Attach Site Map)

The results of this project will assist pollution control activities throughout Hillsborough County and Tampa Bay.

5. Is the Project 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:

One of the primary benefits of this project will be to assist with pollution control activities related to Tampa Bay and freshwater resources within Hillsborough County classified as Impaired according to the State of Florida Impaired Waters Rule group one assessment and/or the EPA as part of the 1998 303(d) list of Impaired Waters.

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:

This effort is related primarily to pollution control activities associated with water resources. Please refer to the Project Narrative for a more complete answer to this question.

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

The existence of pollution within the waters of Tampa Bay and the surrounding freshwater resources varies spatially. Please refer to Project Narrative for a more complete answer to this question.

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

The proposed project will contribute toward alleviating pollution by helping to make the public more aware of pollution recovery efforts such as TMDL, NPDES and CCMP related efforts, and to improve the productivity of pollution management professionals by greatly reducing the time required to acquire and visualize critical water resources data.

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

Not specifically; this project serves all of Hillsborough County and Tampa Bay.

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?

Again, the expected benefits realized by this project will be to meet EPC goals of providing public access to information and benefit the pollution management community by providing visualization tools to use by professionals and the public as part of pollution recovery efforts.

12. Can this Project be divided into separate and independent parts, and if so,

a) what are they? If absolutely necessary, Task 2 can stand as a separate project and Tasks 1 and 3 together can stand as a separate project (see project scope).

b) how would the costs be allocated between them? _____
Task 2 cost is \$13,100. Tasks 1 and 3 cost is \$38,500.

c) would the applicant be willing to accept only partial funding? _____
Yes, if the partial funding is divided according to the above mentioned tasks.

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

How much and for what? \$4,400 plus ongoing maintenance

A total of \$4,400 will be provided by existing project funding to support the maintenance of the server development platform used by these tasks during this project. In addition, significant project funding provided by Tampa Bay Estuary Program and Hillsborough County Public Works is leveraged in order to provide long-term maintenance of the final deliverables (see Appendix B).

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

Existing project sponsors are unable to support the initial development of the deliverables proposed as part of this project. Alternative funding sources are not known, and unlikely to exist given that this project is designed to benefit specific pollution recovery efforts and data sharing associated with EPC

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

This project merits the expenditure of Pollution Recovery Funds primarily because the results of this effort will be available to all citizens and pollution management professionals within Hillsborough County and can be used as part of all future pollution recovery efforts. For example, future project restoration efforts will be able to use the tools and data produced by this project in order to monitor long-term success of the restoration. Furthermore, it is expected that EPC staff and CEAC members may use the tools developed as part of this project in order to target future Pollution Recovery Funds based on geographic areas in need of restoration, thus benefiting overall fund management.

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

No, private property values will not be directly enhanced.

B. ATTACHMENTS

The following pages contain the attachments required as part of this proposal.

**POLLUTION MONITORING APPLICATION PILOT PROJECT:
Providing Timely and User-friendly Access to EPC Water Quality data on the
Water Atlas to Serve Pollution Management Professionals**

PROJECT NARRATIVE

Map of Project Site

As explained in the project narrative, the results of this project will assist pollution control activities throughout Hillsborough County and Tampa Bay. Therefore, all lakes and rivers/streams located in Hillsborough County as well as all segments of Tampa Bay bordering the County will be included as part of this project.



Principal Investigator and Key Personnel

The following section includes abbreviated biographical information related to each of the key personnel included on this project. For additional reference, the full CV of the project manager is provided as an attachment.

Shawn Landry (Project Manager)

Florida Center for Community Design and Research
School of Architecture and Community Design, University of South Florida
3650 Spectrum Blvd., Ste 185, Tampa, FL 33612
Tel: (813) 974-4590 Email: landry@arch.usf.edu

Education

Bachelor of Science: Plant Biology, University of New Hampshire, Durham, NH (1992)
Master of Science: Botany, University of South Florida, Tampa, FL (1996)
Master of Science: Management Information Systems, University of South Florida, Tampa, FL
(Completion Date: December 2005)

Professional Experience

Associate in Research/Director: University of South Florida, Florida Center for Community Design and Research (1998-).

Research Associate: Florida Center for Community Design and Research (1995-1998)

Research Associate: Institute for Systematic Botany, University of South Florida (1995-1997)

Scientific Associate: Marie Selby Botanical Gardens, Sarasota, FL (1994-1996)

Background

Mr. Shawn Landry is an Associate in Research Faculty and Interim Director of the Florida Center for Community Design and Research at the University of South Florida. Mr. Landry's work focuses on modeling and mapping the urban environment and using information technology to assist citizens and local governments in making informed decisions related to water resource management. His technical expertise includes GPS-based data collection techniques, GIS and time-series data integration techniques, interactive website design and implementation, and database design and administration. During the past three years, Mr. Landry has successfully managed over one million dollars in sponsored research projects. Recent projects include several Watershed Atlas Projects (www.wateratlas.org), the Hillsborough County NPDES Stormwater Management System, and the Tampa Urban Ecological Analysis, to name a few. He has presented papers related to these projects at more than 11 state and national conferences during the past three years.

Ron Chandler (Faculty)

Florida Center for Community Design and Research
School of Architecture and Community Design, University of South Florida
3650 Spectrum Blvd., Ste 185, Tampa, FL 33612
Tel: (813) 974-4269 Email: chandler@arch.usf.edu

Education

BS Aquatic Biology/Wildlife Science, Stephen F. Austin State University, Nacogdoches, TX. 1979.

MS Limnology/ Fisheries, Southwest Texas State University, San Marcos, TX. 1984.

Professional Experience

Assistant in Research: University of South Florida, Tampa, FL August 2004 to present.

Adjunct Professor of Biology: Santa Fe College, Gainesville, FL, August 2003 to May 2004.

Limnologist/Application Scientist: Applied Environmental Science, Gainesville, FL, January 2003 to present.

Limnologist/Application Scientist: YSI Environmental, Inc., Yellow Springs, OH January 2000 – January 2003.

Data Management and Research, Inc., Gainesville, FL July, 1999- January 2000. Environmental Scientist.

Limnologist/Hydrologist: HydroScience Water Resources Consultants Ltd. Inc., Lakeland, FL, July, 1998 – July, 1999.

Limnologist/Application Specialist: AMJ Equipment Corporation, Environmental Services Division, Lakeland, FL 1994-1997.

Limnologist/Application Specialist: Hydrolab Corporation, Austin, TX 1989-1994.

Limnologist: Lower Colorado River Authority (LCRA), Austin, TX 1982-1989.

Background

Mr. Chandler has 25 years experience in design, implementation and maintenance of environmental studies and monitoring programs for reservoirs, lakes, streams, wetlands, coastal marine systems, wastewater treatment facilities, power plants and aquaculture facilities. This work has included the selection, implementation and maintenance of manual as well as automated monitoring technology necessary for the measurement of physicochemical and biological parameters; development of manual and automated sampling regimes and stations; remote data acquisition station design, installation, start up and maintenance; data analysis, and interpretation, and report writing.

Rich Hammond (GIS Coordinator)

Florida Center for Community Design and Research
School of Architecture and Community Design, University of South Florida
3650 Spectrum Blvd., Ste 185, Tampa, FL 33612
Tel: (813) 974-6405 Email: hammond@arch.usf.edu

Education

MA in Urban and Social Geography. University of South Florida, Tampa, FL. 2001
BA in Environmental Studies. Binghamton University, State University of New York. 1996.

Professional Experience

GIS Analyst: University of South Florida, Florida Center for Community Design and Research (2001-).
GIS Technician: Florida Center for Community Design and Research (1999-2001)

Background

Mr. Hammond has significant expertise in Urban Planning and Geography with a technical specialization in Geographic Information Software. Since 1999, Mr. Hammond has led GIS and GPS mapping efforts as part of multiple projects and has developed significant expertise in GIS software, such as ArcINFO, ArcGIS, ArcSDE and ArcIMS. Mr. Hammond assisted with the development of several novel rapid survey techniques, including a rapid bathymetric mapping technique utilizing GPS and a low-cost depth finder to map the bottom of lakes and then process these data using GIS to create 3-dimension models of the lake bottom as well as bathymetric contour maps for the public. In addition, he has developed several GIS data management protocols and application development processes related to water resource issues and data management for multi-agency water resource related data.

Kevin Kerrigan (Application Programmer)

Florida Center for Community Design and Research
School of Architecture and Community Design, University of South Florida
3650 Spectrum Blvd., Ste 185, Tampa, FL 33612
Tel: (813) 974-1304 Email: kerrigan@arch.usf.edu

Education

Bachelor of Science: Computer Science/Computer Information Systems, University of South Florida, Tampa, FL (2004)

Professional Experience

Web Programming Developer: University of South Florida, Florida Center for Community Design and Research (1999-).
Assistant Programmer: Suncoast Media Group, Port Charlotte, FL (1997-1999)

Background

Mr. Kevin Kerrigan is a Web Programming Developer at the Florida Center for Community Design and Research at the University of South Florida. Mr. Kerrigan has developed significant expertise programming web-based applications using languages such as VB, XHTML, Cold Fusion, JavaScript, .NET and a number of applications for ArcIMS using ASP. As a leader of our programming team, Mr. Kerrigan has developed quality assurance protocols and programming standards for use by all staff and he manages a team of student programmers as part of the Water Atlas Program. In addition, Mr. Kerrigan is familiar with and has demonstrated expertise in the ArcObjects programming language.

Joanna Parichkova (Database Programmer)

Florida Center for Community Design and Research
School of Architecture and Community Design, University of South Florida
3650 Spectrum Blvd., Ste 185, Tampa, FL 33612
Tel: (813) 974-9524 Email: parichkova@arch.usf.edu

Education

Masters of Business Administration, University of South Florida, Tampa, FL (2004)
B.S. in Computer Science: University of South Florida, Tampa, FL (2001)

Professional Experience

Web Program Coordinator: University of South Florida, Florida Center for Community Design and Research (2003-).
Database Manager: Florida Center for Community Design and Research (2000-2003)

Background

Mrs. Parichkova manages the Web Development Team at the Florida Center. She possesses significant expertise in database programming, including: SQL Server database administration, Stored Procedure programming, DTS, t-sql programming, as well as Oracle 9i pl-sql programming and procedure development. Mrs. Parichkova's significant database programming expertise has been demonstrated by several projects, including the successful migration of the Water Atlas data warehouse for Oracle 9i and the programming of automated data transfer and load procedures using such tools as VB and DTS for the scheduled extraction and parsing of near-realtime data from USGS, SWFWMD, and several local government agencies. In addition, she manages students and professional staff to develop standard operating procedures for the management of all Water Atlas related websites.

Lee Smith (Application Programmer)

Florida Center for Community Design and Research
School of Architecture and Community Design, University of South Florida
3650 Spectrum Blvd., Ste 185, Tampa, FL 33612
Tel: (813) 974-1043 Email: smith@arch.usf.edu

Education

Bachelor of Fine Arts, Mississippi State University, MS (1995)

Professional Experience

Web Application Programmer / Graphic Designer: University of South Florida, Florida Center for Community Design and Research (2004-).
Web Designer/Graphic Artist: Venture Technologies, Ridgeland, MS (2000-2004).
Web Developer: Cruisenet, Jackson, MS (1999-2000).
Web Developer/Marketing Director: Suntech Systems, Jackson, MS (1997-1999).

Background

Mr. Smith has nearly 10 years of web development experience with a specialization in graphic design. His experience includes the development of complete web solutions for business clients and graphic design for both print and electronic media. His programming expertise includes XHTML programming for the development of web applications that meet federal standards for accessibility (Section 508). In addition, his focus is on creating websites with a high level of usability for the public. Mr. Smith leads all graphic design and prototyping efforts at the Florida Center and has participated in the development of three major new projects (Tampa Bay Estuary Atlas, Hillsborough County Community Atlas, and Journey to Work) since joining the research center in 2004.

Project Narrative

Objectives

Hillsborough County and the Tampa Bay area continue to face a number of challenges related to the pollution of our surface water resources. Several major efforts focus on pollution management and restoration, including: Total Maximum Daily Loads (TMDL) and the Impaired Waters Rule (IWR), National Pollution Discharge Elimination System (NPDES), and the Tampa Bay Estuary Program's *Comprehensive Conservation and Management Plan for Tampa Bay* (CCMP). These efforts require the cooperation, education and involvement of local, state and federal government agencies, businesses and citizens to successfully achieve pollution reduction goals. For a collaborative approach to pollution recovery efforts it is essential that stakeholders have equal access to timely, accurate, and relevant monitoring data. Timely data can help stakeholders quickly identify the location of potential problems, and track the results of restoration activities and pollution recovery efforts. The objectives of this project are to enhance collaborative water resource management and pollution recovery efforts by developing and making available new data access and visualization tools on the very successful Water Atlas website. As envisioned, these tools will provide the public, water resource and pollution recovery professionals with timely information necessary to monitor and become more aware of pollution recovery efforts related to TMDLs, IWR and the CCMP.

Benefits Expected

The primary benefits of the proposed project will be to enhance the environment by helping to make the public more aware of pollution recovery efforts such as TMDL, NPDES and CCMP related efforts, and to improve the productivity of pollution management professionals by greatly reducing the time required to acquire and visualize critical water resource data. The project will automate the labor-intensive techniques currently used by EPC staff to create water pollution contour maps and make this tool available to the public in a timely manner. Furthermore, as part of this project, automated systems will be established to ensure public access to quality-assured EPC data while simultaneously reducing EPC staff time to manually fill data requests. By reducing the time required to fill data requests and providing access to water quality reports, EPC staff time could be used to meet other important priorities related to pollution recovery efforts. Overall, the expected benefits realized by this project will be to meet EPC goals of providing public access to information and benefit the pollution management community by providing visualization tools for use by professionals and the public as part of pollution recovery efforts.

General Project Information

The EPC staff have been conducting ambient water quality monitoring related to pollution recovery and management efforts in Hillsborough County and Tampa Bay for over thirty years. The results of this monitoring program are summarized as part of the

Surface Water Quality report generated by EPC staff every three years. In addition, these data are made available to anyone by request. The importance of providing access to these data can be exemplified in an examination of the major pollution prevention and management programs that have relied on these data. For example, water quality monitoring data were used extensively during the development of the Tampa Bay Estuary Program's CCMP, as part of Hillsborough County NDPEs Annual Report, and as part of the TMDL Program administered by the Florida Department of Environmental Protection.

Despite the importance of water quality monitoring to pollution management professionals and scientists, limited resources exist to provide public access to this information. In the past, many agencies produced printed reports infrequently with a limited circulation due to the cost of printing and distributing them. Furthermore, under this system the public rarely had timely access to water resource monitoring information in a form that they could understand. In an effort to solve this problem, the University of South Florida in conjunction with Hillsborough County, the Tampa Bay Estuary Program, and other governmental agencies throughout Florida have developed the Water Atlas (www.wateratlas.org). The Water Atlas is a web-based resource designed to help communities make informed decisions by providing up-to-date information on our vital water resources. As part of the Water Atlas project, data from multiple agencies are presented along with significant educational information related to pollution management activities such as TMDLs.

The Water Atlas projects in Hillsborough County and Tampa Bay are supported by the Hillsborough County Public Works Department, the Tampa Bay Estuary Program and the United States Geological Survey. These organizations contribute to the maintenance of the Water Atlas website to ensure that the public, scientists and pollution management professionals have access to timely information. During the past six years, EPC staff have periodically provided a data export of ambient water quality monitoring data for inclusion as part of the Water Atlas. Unfortunately, due to the time commitments on the part of EPC staff to respond to requests for data, there is frequently an extended lag time between the time when monitoring samples are collected and when resultant data are made available. One of the goals of this project will be to assist EPC staff by creating automated data management tools to expedite the transfer of water quality data between EPC and the Water Atlas, thus providing timely public access to EPC data while also reducing staff time requirements.

In addition to the ambient water monitoring data collected by EPC, data from additional monitoring efforts are invaluable as part of pollution management efforts. For example, the Hillsborough Independent Monitoring Program (HIMP) is designed to detect and quantify environmental changes that may occur as a result of new regional water supply projects that are being implemented in Hillsborough County by Tampa Bay Water. Currently, data from this project is not readily accessible to the public. A second goal of this project will be to develop the automated tools to provide access to additional EPC data such as from the HIMP program.

Included as part of the *Surface Water Quality* report produced every three years, EPC staff create distribution maps showing the spatial variation in water quality within Tampa Bay. These contour maps provide an easy to understand visualization tool showing the spatial representation of water quality within areas of Tampa Bay (see *Appendix A: Sample Water Pollution Contour Map*). These contour maps clearly demonstrate that pollution within Tampa Bay varies greatly by spatial location.

Visualization tools such as these maps are powerful tools that can assist with pollution restoration efforts by graphically illustrating areas with a greater need for restoration and by making the public more aware of the need. For example, the map in Appendix A shows that the ten year average chlorophyll "a" concentration in the Hillsborough Bay portion of Tampa Bay are higher than most other areas. According to the Florida Department of Environmental Protection TMDL Program, Florida's 2002 update to the 303(d) List of Impaired Waters shows that portions of Hillsborough Bay are considered impaired (e.g. polluted) for chlorophyll (<http://www.dep.state.fl.us/water/tmdl/>). The distribution map of chlorophyll "a" reinforces this classification as "impaired" and can help demonstrate to the public that this classification is appropriate. Because the current procedures to develop contour maps are extremely time-consuming and require significant technical skills, very few pollution management professions are capable of using them as a part of their management efforts. A third goal of this project will be to develop a user-friendly interface that would allow pollution management professionals and the public to generate maps on-demand for specific time periods using EPC data as well as water quality monitoring data from numerous other agencies. Furthermore, while the existing maps are created primarily for Tampa Bay, the proposed tool will be capable of generating contour maps for freshwater resources such as the major tributaries or large lakes in Hillsborough County. These map visualization tools will be provided online as part of the Water Atlas.

In summary, the objectives of this project are three-fold:

1. Provide more timely and user-friendly web-based access to ambient water quality monitoring data collected by the Environmental Protection Commission of Hillsborough County (EPC).
2. Provide timely and user-friendly web-based access to surface water data from additional monitoring programs such as HIMP.
3. Develop a data visualization tool that can be used by pollution management professionals, scientists and the public to examine water quality trends and the geographic areas where water pollution problems exist. and to monitor the success of restoration projects aimed to reduce water pollution.

This project will leverage the funding, infrastructure and success of the existing Hillsborough County Watershed Atlas (www.hillsborough.wateratlas.org) and the Tampa Bay Estuary Atlas (www.tampabay.wateratlas.org) by integrating the work products into the existing Atlas websites. Furthermore, the funding to maintain the proposed enhancements to the website is currently planned for in existing funds. Although these two project sponsors maintain these existing Water Atlas websites, funding does not exist to either develop the automated procedures necessary to

provide public access to EPC data nor to develop the contour map visualization tools. Therefore, EPC Pollution Recovery Funds (PRF) are requested to support the initial development of the proposed automated data management and map visualization tools. After development and integration of the tools into the Water Atlas, the existing project sponsors have agreed to support the maintenance of the tools so that pollution management professionals and the public will reap long-term benefits without requiring additional PRF funding.

Scope of Work

In order to successfully meet the objectives of this project, the University will work closely with EPC staff as well as an advisory group of local pollution management professionals. This same approach has been used successfully by the University as part of the implementation of Water Atlas projects (www.waterstlas.org) throughout the State of Florida. The following section describes the specific tasks that will be necessary to complete the proposed project.

Task 1: Project Setup and Planning Workshop

The goals of this task will be to establish an advisory group and host a project planning workshop. The University will work with EPC staff to establish an advisory group for the project that will be composed of pollution management professionals from the Tampa Bay region. It is expected that this advisory group will be composed of 10-15 members, including EPC staff, select members of the Tampa Bay Estuary Program Technical Advisory Committee and domain experts from Hillsborough County, City of Tampa and the Southwest Florida Water Management District.

After the establishment of the advisory group, the University will host a project kick-off meeting and planning workshop. The purpose of the workshop will be to introduce advisory group members to the project goals, review the conceptual specifications of the final website, and discuss specific questions regarding the development of the data visualization tool. For example, the envisioned data visualization tool may need to process data differently for lakes, rivers and the estuary. The advisory group will be asked to provide their expert opinion regarding the appropriate technique to use with the treatment of the data. Prior to the workshop, the University will discuss the project informally with advisory group members and attempt to identify all important questions that will need to be addressed by the project. In addition, University staff will create Conceptual Specifications for the Data Visualization Tool for discussion at the workshop. After the workshop, the University will work with EPC staff to finalize the Conceptual Specifications which will guide the remainder of the project work efforts.

Table 1. Estimated project schedule for Task 1.

ID	Task Name	Duration	Start	Finish	Work
2	TASK 1: PROJECT SETUP AND PLANNING WORKSHOP	60.5 days	Mon 4/3/06	Mon 6/26/06	179 hrs
3	Process contract and notice to proceed	1 wk	Mon 4/3/06	Fri 4/7/06	2 hrs
4	Project Kick-off Meeting with EPC	1 wk	Mon 4/10/06	Fri 4/14/06	15 hrs
5	Test Water Quality Contour Map Methods	3 wks	Mon 4/17/06	Fri 5/5/06	21 hrs
6	Establish Advisory Group and Schedule Workshop	1 wk	Mon 4/17/06	Fri 4/21/06	3 hrs
7	Develop Conceptual Specifications for Pollution Monitoring Tools	1 wk	Mon 4/24/06	Fri 4/28/06	18 hrs
8	Research and Compile List of issues to address	2.5 wks	Mon 5/1/06	Wed 5/17/06	32 hrs
9	Prepare Agenda for Workshop	2 days	Wed 5/17/06	Fri 5/19/06	2 hrs
10	Develop Materials for Workshop	2 wks	Fri 5/19/06	Fri 6/2/06	24 hrs
11	Review Materials with EPC Staff	1 wk	Fri 6/2/06	Fri 6/9/06	6 hrs
12	Host Planning Workshop with Advisory Group	1 day	Fri 6/9/06	Mon 6/12/06	28 hrs
13	Finalize Conceptual Specifications for Pollution Monitoring Tools	2 wks	Mon 6/12/06	Mon 6/26/06	28 hrs

Task 2: Provide Access to EPC Water Pollution Monitoring Data

The goals of this task will be to develop automated data transfer tools to provide access to EPC water pollution monitoring data. The Water Atlas projects (Hillsborough County and Tampa Bay) currently provide access to water monitoring data from multiple agencies, including access to a limited amount of EPC data. Whenever feasible, the University has worked with data provider agencies to develop automated tools to ensure timely transfer of data without requiring additional work efforts on the part of agency staff. For example, the Watershed Atlas provides access to daily SWFWMD data without requiring involvement from District staff.

The University will work with EPC staff to identify the tools and formats used to manage EPC pollution monitoring data and then assist with the development of quality assured techniques to import these data into the Atlas in order to provide access to the public. University staff will program data extraction and transformation tools based upon the needs of the existing EPC data management software. For example, EPC lab data are currently managed within Microsoft Access. The University could develop a push-button program to extract updated data from the Access database and automatically send it to the University where a separate program will upload the data to the Watershed Atlas. These data extraction and transformation tools will be programmed with the involvement of EPC staff based on their needs in order to decrease staff time required to provide access to EPC data. Data from the following monitoring programs will be included in this task: Ambient Water Quality Monitoring Program, HIMP synoptic surveys, HIMP movable continuous monitoring, and HIMP fixed continuous monitoring. In addition, laboratory data analyzed by EPC but collected by Hillsborough County staff will be included as part of this effort; in part to justify for the financial match provided by the existing Hillsborough County Watershed Atlas project.

After the development of all data transfer tools, the University will upload all current and historic EPC data to the existing Atlas projects where these data will be accessible to the public and pollution management professionals.

Table 2. Estimated project schedule for Task 2.

ID	Task Name	Duration	Start	Finish	Work
14	TASK 2: PROVIDE ACCESS TO EPC WATER MONITORING DATA	60 days	Mon 4/17/06	Fri 7/7/06	274 hrs
15	Task Planning Meeting with EPC	1 wk	Mon 4/17/06	Fri 4/21/06	9 hrs
16	Review Details of EPC Data Management Tools	2 wks	Mon 4/24/06	Fri 5/5/06	19 hrs
17	Work with EPC to Develop Data Export Tools	1 mon	Mon 5/8/06	Fri 6/2/06	46 hrs
18	Develop Protocol for Sample Station Updates	1 wk	Mon 5/8/06	Fri 5/12/06	16 hrs
19	Develop Water Atlas Data Import Tools	2 wks	Mon 6/5/06	Fri 6/16/06	52 hrs
20	Import Current and Historic Data	3 wks	Mon 6/19/06	Fri 7/7/06	76 hrs
21	Task Management and Expertise	12 wks	Mon 4/17/06	Fri 7/7/06	56 hrs

Task 3: Development of the Web-base Data Visualization Tool

The goals of this task will be to develop a web-based interface and automated application to provide on-demand access to water pollution contour maps to pollution management professionals and the public. The final format for the water pollution contour maps will resemble the example provided in Appendix A: Sample Water Pollution Contour Map. These maps are currently produced by EPC staff using the desktop geographic information systems (GIS) software ESRI ArcGIS with the Spatial Analyst module. Currently, the production of each map is a labor-intensive process that requires GIS training and access to the relatively expensive ArcGIS software. Despite the labor-intensive steps required to create the maps, the process follows a linear sequence of events that could be automated using the ESRI ArcObjects software components. The automation of the steps required to create a pollution contour map would utilize ArcObjects to create a web-interface and back-end application to allow non-GIS users the ability to generate a new map on-demand, such as when new data are available on the Atlas. The final map could be provided for download and included for display on the existing Water Atlas online GIS map navigator (<http://map.wateratlas.usf.edu/website/hillsv2>).

Based upon the Conceptual Specifications developed during Task One, the University will develop a prototype web interface for the purpose of finalizing the specifications and testing usability. After the prototype has been finalized, staff will develop the ArcObjects software components programming specifications for the implementation of the data visualization tool as well as the water quality and GIS database queries to extract data for use within the new application. After the application has been programmed and thoroughly alpha and beta tested at the University, the Advisory Group will be asked to beta test the data visualization tool. Once tested and finalized, the application will be integrated into the Water Atlas and launched for use by the public.

Table 3. Estimated project schedule for Task 3.

ID	Task Name	Duration	Start	Finish	Work
22	TASK 3: DEVELOP WEB-BASED DATA VISUALIZATION TOOL	105 days	Mon 6/26/06	Mon 11/20/06	602 hrs
23	Review Conceptual Specifications	0.5 days	Mon 6/26/06	Mon 6/26/06	16 hrs
24	Develop Prototype Web Interface	1.67 wks	Tue 6/27/06	Fri 7/7/06	40 hrs
25	Determine Specific ArcObjects Programming Techniques	3 wks	Tue 6/27/06	Mon 7/17/06	60 hrs
26	Outline Programming Specifications	2 days	Tue 7/18/06	Wed 7/19/06	6 hrs
27	Develop Atlas database queries for data access	1 wk	Thu 7/20/06	Tue 8/1/06	32 hrs
28	Program Data Visualization Tool	1 mon	Wed 8/2/06	Tue 9/19/06	200 hrs
29	Conduct Alpha Testing	1 wk	Wed 9/20/06	Tue 9/26/06	20 hrs
30	Conduct Beta Testing at USF	1 day	Wed 9/27/06	Wed 9/27/06	20 hrs
31	Conduct Beta Testing with Advisory Group	2 wks	Thu 9/28/06	Wed 10/11/06	8 hrs
32	Finalize Data Visualization Tool	2.25 wks	Thu 10/12/06	Tue 10/31/06	50 hrs
33	Integrate visualization tool into Atlas	1 wk	Tue 10/31/06	Fri 11/10/06	32 hrs
34	Develop Online User Guide and Training Materials	1 wk	Fri 11/10/06	Fri 11/17/06	28 hrs
35	Launch Final Application	0.75 days	Fri 11/17/06	Mon 11/20/06	18 hrs
36	Task Management and Expertise	20 wks	Mon 6/26/06	Mon 11/13/06	72 hrs

After the launch of the pollution monitoring application as part of the Hillsborough County Water Atlas and Tampa Bay Estuary Atlas websites, the tools will be maintained and available for use by the public in perpetuity. Existing project sponsors have agreed to support the maintenance of the tools as evidenced in the attached letters of support. Maintenance includes ensuring that EPC data are uploaded to the Water Atlas and that the contour mapping tools are maintained and accessible.

Budget Information

The following budget information is provided based upon the estimated personnel efforts required of this project. Work efforts include all tasks illustrated as part of the project schedule tables (Tables 1, 2 and 3) of the narrative. These work efforts are estimated based upon experience with previous projects and thus a high degree of confidence is placed on the total project cost.

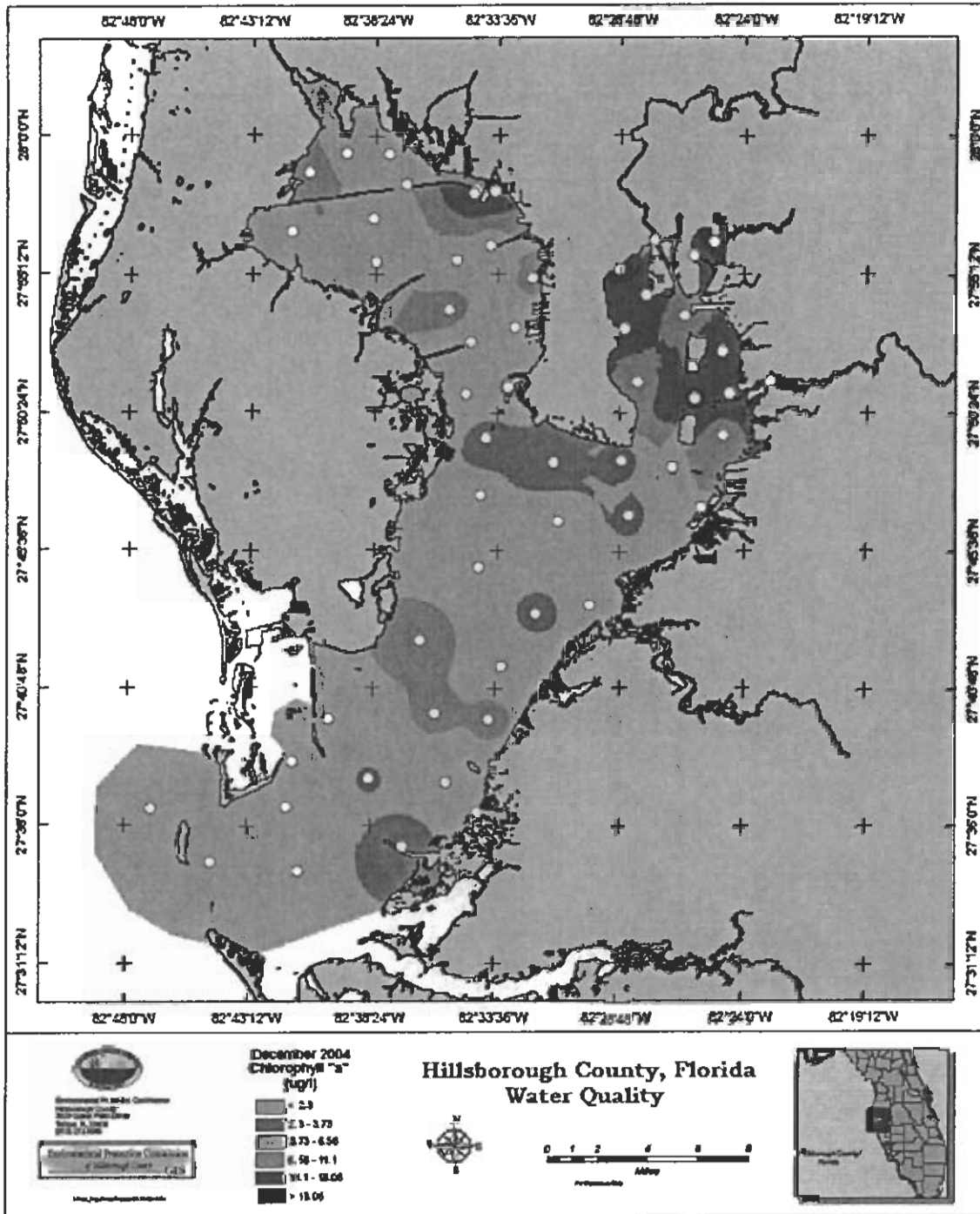
	PRF Funds (\$)	Applicant
a. Personnel		
1. Shawn Landry (Project Manager)	\$ 6,400	
2. Ron Chandler (Faculty)	\$ 2,000	
3. Rich Hammond (GIS Coordinator)	\$ 6,500	
4. Kevin Kerrigan (Application Programmer)	\$ 6,800	
5. Joanna Parichkova (Database Programmer)	\$ 4,000	
6. Lee Smith (Application Programmer)	\$ 2,200	
7. Student/OPS	\$ 6,000	
b. Administrative *	\$ 9,100	
c. Materials *	\$ 0	
d. Contractual *	\$ 0	
e. Construction *	\$ 0	
f. Other *	\$ 0	
g. Total Direct Charges (Sum of a. to f.)	\$ 43,000	
h. Indirect Charges***	\$ 8,600	
j. Total Project Cost	\$ 51,600	**

* All printing, office supplies, postage, travel, computer hardware and software usage, facilities, lease and utilities, telephones and training are included as part of administrative costs. All administrative costs are prorated based upon the number of hours allocated for specific project personnel.

** Existing project sponsors have agreed to support the maintenance of the tool as evidenced in the attached letters of support (see Appendix B). Maintenance includes ensuring that EPC data are uploaded to the Water Atlas and that the contour mapping tools are maintained and accessible. Existing sponsors contribute over \$100,000 annually to maintain the Tampa Bay Estuary Atlas and the Hillsborough County Watershed Atlas.

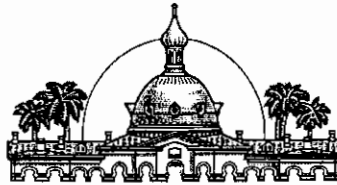
*** Indirect charges are calculated based upon the University of South Florida mandated rate of 20% indirect costs for County government agencies.

Appendix A: Sample Water Pollution Contour Map



Appendix B: Letters of Support

The attached letters of support demonstrate the commitment from the Tampa Bay Estuary Program and Hillsborough County Public Works to maintain the products of this project as part of existing Water Atlas support.



Hillsborough County
Florida

Office of the County Administrator
Patricia G. Bean

July 20, 2005

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Mr. Shawn Landry
Interim Director
Florida Center for Community Design + Research
School of Architecture and Community Design
University of South Florida
3650 Spectrum Blvd. Ste. 185
Tampa, FL 33612-9453

Dear Mr. Landry,

This is to express our strong support for your proposed project entitled: *Pollution Monitoring Application Pilot Project*. We support any tool which will help provide better access to and analysis of environmental data. The Environmental Protection Commission of Hillsborough County has a long term ambient water quality monitoring database that is invaluable in assessing trends, or changes in water quality. Ready access to this data as it is generated would be extremely valuable. Currently there may be a considerable lag time between when a sample is taken and when the results are readily available to the public. Additionally, the ability to readily analyze/visualize water quality/environmental data spatially would be a tremendous asset in assessing day to day water quality complaints from citizens or the longer term and more complex issues such as dealing with Total Maximum Daily Loads (TMDLs). The ability to "see" spatial variability in a water quality parameter can help to narrow the search for sources of water quality impairments. As a participant in the Tampa Bay Estuary Program's Nitrogen Management Consortium, we in Hillsborough County are committed to meeting our nitrogen load reduction goals and believe that the products from this project will greatly assist us in that effort.

The Hillsborough County Lake Atlas which has grown and improved to become the Hillsborough County Water Atlas has been a huge success in centralizing data and making it readily available. This has become a tool which we use on a daily basis to view and analyze environmental data. We would welcome the addition of new data and new tools to analyze that data. Since the usefulness and functionality of the Water Atlas continues to grow and is crucial to such continuing efforts as annual reporting for our National Pollutant Discharge

Elimination System Permit, and management of our watersheds and water resources, I foresee Hillsborough County Stormwater Management Section maintaining this database and tool for the foreseeable future.

Sincerely,

Frank Deese for C. Ho

Chin-Feng Ho, PhD. P.E.
Interim Section Manager
Stormwater Management Section

cc: Jack Merriam, Environmental Manager, Stormwater Management Section
Carlos Fernandes, PhD., Chief Environmental Scientist, Stormwater
Management Section



July 7, 2005

Mr. Shawn Landry, Interim Director
Florida Center for Community Design + Research
School of Architecture and Community Design
University of South Florida
3650 Spectrum Blvd, Suite 185
Tampa, FL 33612-9453

Shawn
Dear Mr. Landry:

The Tampa Bay Estuary Program strongly supports your proposal to Hillsborough County's Pollution Recovery Fund program for the project entitled "POLLUTION MONITORING APPLICATION PILOT PROJECT: Providing Timely and User-friendly Access to EPC Water Quality data on the Water Atlas to Serve Pollution Management Professionals." The development of a tool to distribute timely and user-friendly web-based access to water resource monitoring data collected by the Environmental Protection Commission of Hillsborough County, coupled with a data visualization tool that can be used to examine the geographic areas where water pollution problems exist would be widely used by scientists, managers and the public. The EPCHC contour maps depicting water quality over time are currently of great use to TBEP staff in support of the CCMP, as well as resource managers throughout the Tampa Bay area. Having these maps updated as data are available via the Water Atlas would provide almost real-time access to critical monitoring data and geographic information.

The Tampa Bay Estuary Program and the US Geological Survey have committed to providing regular maintenance and updating of the Estuary Atlas. The Atlas is designed to make science and watershed management understandable to all stakeholders and is particularly intended to serve the needs and interests of the general public, as well as bay managers and scientists. The inclusion of the proposed visualization tool, depicting baywide water quality in easily-understood contour maps, would be an excellent addition to the Estuary Atlas that will be maintained as part of the TBEP/USGS commitment.

You and your team have a strong and proven track record in providing excellent technical products which are easily interpreted by many audiences. The Water Atlas series provides a true benefit to the Tampa Bay community, and the addition of EPC's water quality data presented as contour maps would be a strong addition to the Atlas series.

Sincerely,

Holly Greening, Senior Scientist

T A M P A B A Y E S T U A R Y P R O G R A M

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