



FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

December 9, 2020

Jennifer Shadle
Water Protection Division
Grants & SRF Section
61 Forsyth Street - 16th FL EPA
Atlanta, GA 30303

Dear Ms. Shadle:

Enclosed is the Florida Department of Environmental Protection's (DEP) final technical report for EPA grant I-00D30615-3. This report is provided in fulfillment of the Monitoring Initiative Funding of the 2016 National Wetlands Condition Assessment.

We appreciate the support EPA provides which enables us to continually build and maintain monitoring programs in Florida. In addition to reporting on the overall condition of state waters, the data generated from these programs is utilized for other agency initiatives, such as the development of means to address the impact of climate change and emerging contaminants on Florida's waters.

Please notify me if any further information is needed. I can be contacted at phone: (850) 245-8507; or by e-mail: james.silvanima@dep.state.fl.us. It is my pleasure to work with you.

Sincerely,

Jay Silvanima, Environmental Administrator
Watershed Monitoring Section

cc: Chris McArthur, EPA Region IV
Jese Madden, DEP
Nia Wellendorf, DEP
Carolyn Voyles, DEP
Alicia Hogue, DEP
Denise Miller, DEP

Final Technical Report for EPA I-00D30615-3 (WPC-15) December 2020

This final technical report is provided in fulfillment of the US Environmental Protection Agency (EPA) grant I-00D30615-3 for Monitoring Program Enhancements associated with the 2016 National Wetland Condition Assessment (NWCA).

Introduction

In April 2015, the Florida Department of Environmental Protection (DEP) submitted a proposal and workplan to the EPA to secure monitoring initiation funding (MIF) for water program enhancements as part of the 2016 National Wetland Condition Assessment (NWCA). The initial timeframe for the work was Oct. 1, 2015 through Sept. 30, 2017 with a total budget of \$160,000. During 2015 EPA required a 1% rescission, resulting in the award being reduced to \$158,951. Additionally, there was a no-cost extension to the grant to Sept. 30, 2020 in July 2015, and a change to the workplan in April 2016. Project tasks were: 1) Catalog of Florida Monitoring Programs (maintenance and enhancements), 2) Laboratory analyses (assessing presence of unregulated chemicals) and 3) Secure contractor to serve as chair of the Florida Water Resources Monitoring Council (FWRMC).

The proposal was designed to meet EPA Strategic Plan Goal 2: Clean and Safe Water, Objective 2.2, Protect Water Quality. Participation in the MIF enhances DEP's ability to assess the state's waters, report on overall condition, and to develop the sampling and analytical methods necessary for the determination of emerging contaminants (ECs) in Florida's freshwaters. A major element of EPA's effort under these objectives is to establish scientifically defensible assessments of the Nation's waters. Data collected and assessed under this project may be used to document progress toward the implementation of Goal 2.

Grant Award

In July 2015 the DEP was awarded EPA grant I-00D30615 in the amount of \$160,000. At DEP the grant was tracked as WPC15. There were three modifications to the original agreement. 1) In July 2015 the DEP requested and was granted a no-cost extension of the grant from Sept. 30, 2018 to Sept. 30, 2020. The reason for the extension was to continue to refine and populate the Water Catalog and to complete a contract for the analyses of emerging contaminants. 2) In August 2015 EPA required a 1% rescission, resulting in the award being reduced to \$158,951. 3) In April 2016 there was a change to workplan which included securing a contractor to serve as a consultant to chair, facilitate, and provide guidance to the Florida Water Resources Monitoring Council.

The amended MIF workplan included \$50,000 for Task 1 (Florida Catalog of Monitoring Programs Maintenance), \$68,951 for Task 2 (emerging contaminants laboratory analyses), and \$40,000 for Task 3 (secure chair for the FWRMC).

Summary

DEP utilized \$112,055.79 associated with this grant. \$46,895.21 of unused funding will need to be de-obligated.

Major Accomplishments include

- Further enhancement and refinement of the Florida Water Catalog database for ease of use and data submittal, and the alteration of the database so to incorporate the University of Florida's terrestrial database used by the Terra CAT web-based application.
- Contracted with SGS AXYS Analytical Laboratories Inc., and the United States Geological Survey, and the University of Florida for ECs laboratory analyses and consultation. Note – other funding sources were used for these contracts.
- Completed pilot study of ECs found in four Florida Rivers. Presented results at the Southeast Water Pollution Biologists Association meeting in St. Augustine, FL on Nov. 8th, 2018 and wrote and published a whitepaper '*Exploratory Study of Emerging Contaminants in Select Florida Rivers*' (http://publicfiles.dep.state.fl.us/DEAR/ESOC/ESOCpilot/Report/EC_Report_FINAL.pdf).

Outcomes/Outputs by Task

1 - Florida Catalog of Monitoring Programs Maintenance (<https://water-cat.usf.edu/>)

2017 Milestones

- The University of South Florida Performed website maintenance and support activities which included the following
 - The development version of the Water-CAT website is running on a single codebase and hitting a single, database on USF development web/database servers. The public-facing portion of this combined database is being tested. USF also is updating the administrative portion of the combined codebase to support Water-CAT projects and stations.
 - Designed data provider notification emails, with links, identifying provider-specific data that need review.

2019 Milestones

Expended \$15,350 in 2019 to the University of South Florida for maintenance and upgrades to the Water Catalog.

- The Florida Water Resources Monitoring Council provided three training events to members of the council. Each of the events were video recorded and are available for others to view via the web. They are found on the main web page for the Council, <https://floridadep.gov/dear/watershed-monitoring-section/content/fwrmc>.
 - Making the Most of Water-Cat, Jan Allen USF Water Institute Feb. 27, 2019 (<https://www.youtube.com/watch?v=vAGRyroAPU0>)

- Big Data Management Systems or Continuous Monitoring, Darlene Velez, Suwanee River Water Management District Mar 22, 2019.
(<https://www.youtube.com/watch?v=AhUFjW7GgnE>)
- How to Use WIN, Thomas Adams Florida Dept. Environmental Protection June 20, 2019.
(<https://www.youtube.com/watch?v=YGAzb6cKDDI>)

2020 Milestones

Expended \$23,935 in 2020 to the University of South Florida for maintenance and upgrades to the Water Catalog.

- Currently there are 136 organizations which have provided metadata to the catalog.
- Work to create new means to harvest data for incorporation into the catalog and for updating existing information within it. Including the following.
 - Compilation and incorporation of metadata for DEP water quality projects by harvesting data directly for the DEP Enterprise Database Watershed Information Network.
 - Compiled metadata for the Southwest Florida Water Management District's Regional Observation and Monitoring Program.
 - Work with the South Florida Water Management District to programmatically update SFWMD stations from the available REST service: <https://geo-sfwmd.hub.arcgis.com/datasets/environmental-monitoring-stations>.
- The web development team is designing code that will export agency metadata to a fillable PDF form

2 - Emerging Contaminants (ECs) Laboratory Analyses

2015 Milestones

DEP's Water Quality Assessment Program (WQAP) initiated three sole-source contracts for required ECs laboratory analyses. The WQAP initiated contract development with AXYS Analytical Laboratories, Inc. in British Columbia for water chemistry analyses, the United States Geological Survey (USGS) laboratory for yeast assay analyses, and with the University of Florida (UF) for analyses of whole water samples from passive sampling devices known as Semipermeable Membrane Devices and Polar Organic Compound Integrated Samplers for estrogen and androgen assays.

2016 Milestones

A study plan was developed for a pilot study. The pilot was designed to test the effectiveness of sample collection devices and analytical methods. The expected outcome from this study is to: 1) Build a foundation of knowledge to drive future studies, 2) Calculate cost efficiency in future studies.

The pilot consisted of the placement of passive sampling devices at four (4) Trend Network river sites¹. The four sites are river sites, each with a 15-year history of regular monthly sampling by Department staff for the suite of standard water quality analytes (e.g., nutrients, major ions). These sites include: the Apalachicola, Ochlockonee, Alafia, and Northern Withlacoochee Rivers.

2017 Milestones

DEP's Water Quality Assessment Program executed contracts with SGS AXYS Analytical Laboratories, Inc., British Columbia, Canada for water chemistry analyses, the United States Geological Survey (USGS) laboratory for whole water and yeast assay analyses, and the University of Florida (UF), Gainesville, FL, for analyses of whole water grab and passive sampling device samples. The passive sampling devices employed were Semipermeable Membrane Devices (SPMDs) and the Polar Organic Compound Integrated Samplers (POCIS).

The EC pilot sampling consisted of the collection of whole water grab and passive samples, at the four Trend Network river sites. For quality assurance and control the study included field blanks for whole water, and for the passive sampling devices taken from one of the sites.

The passive sampling devices were deployed in March 2017 and retrieved a month later in April along with grab samples for each laboratory (DEP, USGS, SGS AXYS, and UF) and the single set of field blanks. The passive sampling devices were shipped to the SGS AXYS lab for elution. SGS AXYS provided four aliquots of elutriates for each device. One was shipped to the United States Geological Survey facility in Leetown, West Virginia (conducting SOS Chromotest and the BLYES test), another to the University of Florida Center for Environmental and Human Toxicity (conducting the mammalian cell line testing), another to the DEP Lab for EC compound analyses, and the final aliquot was retained and analyzed for EC compounds by SGS AXYS. In addition, whole water grab samples were sent to each of the four labs for analyses. Results were received from SGS AXYS and DEP and summarized.

Expended \$65,090 in 2017 to Analytical Laboratories, Inc., British Columbia, Canada for water chemistry analyses.

2018 Milestones

All lab analyses for this grant were completed in 2017. Summary results were presented at the Southeast Water Pollution Biologists Association in St. Augustine, FL on November 8th, 2018.

2019 Milestones

Further summarized results and wrote and published a whitepaper '***Exploratory Study of Emerging Contaminants in Select Florida Rivers***' (http://publicfiles.dep.state.fl.us/DEAR/ESOC/ESOCpilot/Report/EC_Report_FINAL.pdf). Due to delays in the initiation of this study analytical services were not funded through this grant and \$56,927.36 will be returned to the US EPA.

3 - Secure Chair for the Florida Water Resources Monitoring Council (FWRMC)

2019 Milestones

Expended \$1,786.16 in 2019 to the Balmoral Group for facilitation services associated with the Florida Water Resources Monitoring Council.

- The FWRMC provided three training events to members of the council. Each of the events were video recorded and are available for others to view via the web.
 - Making the Most of Water-Cat, Jan Allen USF Water Institute Feb. 27, 2019 (<https://www.youtube.com/watch?v=vAGRyroAPU0>)
 - Big Data Management Systems or Continuous Monitoring, Darlene Velez, Suwanee River Water Management District Mar 22, 2019. (<https://www.youtube.com/watch?v=AhUFjW7GgnE>)
 - How to Use WIN, Thomas Adams Florida Dept. Environmental Protection June 20, 2019. (<https://www.youtube.com/watch?v=YGAzb6cKDDI>)
- FWRMC Planning Meeting (webinar) Nov. 5th, 2019 – Purposes: 1) to develop the 2020 Workplan (draft pending), 2) to educate council members on two DEP programs. Included two DEP presentations (videos):
 - Florida Resilient Coastlines Program: Achieving Coastal Resilience Together, Whitney Gray (<https://www.youtube.com/watch?v=8n9fxtjZa5E>)
 - Florida Geological Survey Overview, Jon Arthur (<https://www.youtube.com/watch?v=J3vBN2F4w9E>)
- All five webinar videos posted on the Council’s web site, <https://floridadep.gov/dear/watershed-monitoring-section/content/fwrmc>.

2020 Milestones

Expended \$5,894.63 in 2020 to the Balmoral Group for facilitation services associated with the Florida Water Resources Monitoring Council.

- The FWRMC provided a virtual training event to members of the council on September 22nd, 2020 concerning new United States Geological Survey (USGS) water quality monitoring tools.
 - Scott Prinos (USGS) presented the “Hydrologic Analyses Package and Mapper Website”. Part of this effort also highlights information on an R package that can be used on its own to provide some of the same analyses and presentations of data from other sources.
 - Matt Petkewich (USGS) presented the “Coastal Salinity Index (CSI)”, a new salinity monitoring tool, that was developed to help users monitor and identify salinity regime and extreme events (e.g., flood and drought) in coastal and estuarine surface water bodies. The CSI project team has expanded the CSI network by increasing the number and spatial coverage of monitoring sites to include real-time stations along the East and Gulf of Mexico coasts.
 - The event was video recorded and is available for others to view via the web here <https://youtu.be/QbwJYqLqmYo>.
- The Council met virtually on Oct 21st, 2020 to review the outcomes of the 2020 Work Plan and solicit input on the 2021 workplan. A draft 2021 workplan was developed and is currently under review by the members. The following are included in the draft Work Plan.
 - New Action Item - Reconvene Continuous Monitoring Workgroup
 - Expected outcomes:

- A group of people (inside and outside Water Council members/alternates) that regularly meet in order to ensure lessons learned about continuous monitoring are shared widely with all who might benefit.
- Reach consensus regarding assignment of data quality and appropriate uses of continuous monitoring data based on QA/QC activities performed, data adjustments performed, and reliability of methods to accurately measure environmental parameters.
- Improved understanding of continuous monitoring practices.
- Coordination Initiatives
 - Climate Change and Water Quality
 - Expected outcome - Identification of web-accessible information on climate data sources (observed and projected) and statistical approaches for analyzing potential climate effects on water quality.
 - HABs – Who’s Involved, How to Learn More
 - Expected outcome - Web-accessible information describing HAB response, monitoring, and coordination activities by member agencies and identifying sources of HAB information.