

State of Florida
Water Resources Monitoring

**Monitoring-Coordination
Action Plan**

Prepared by
Florida Water Resources Monitoring Council
for
Florida Department of Environmental Protection

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FLORIDA WATER RESOURCES MONITORING COUNCIL

The Florida Water Resources Monitoring Council (FWRMC) was created in late 2006 by Colleen Castille, then Secretary of the Florida Dept. of Environmental Protection. The heads of key state monitoring agencies were asked to name members to represent their agency's monitoring interests. Additionally, Florida Local Environmental Resource Agencies (FLERA), an association of County resource agencies, was invited to provide a member.

The Council is chaired and staffed by FDEP (in non-voting positions) and consists of members from:

Florida Dept. of Agriculture and Consumer Services

Florida Dept. of Environmental Protection

Florida Dept. of Health

Florida Fish and Wildlife Conservation Commission

Florida Local Environmental Resource Agencies (FLERA)

Northwest Florida Water Management District

South Florida Water Management District

Southwest Florida Water Management District

St. Johns River Water Management District

Suwannee River Water Management District

Members

Chris Brooks

Florida Dept. of Agriculture and Consumer Services

Robert Brown (present)/ Kevin Carter (past)

Representing FLERA (Florida Local Environmental Resource Agencies)

Carlos Herd

Suwannee River Water Management District

Graham Lewis

Northwest Florida Water Management District

Linda Lindstrom

South Florida Water Management District

Henry Norris

Florida Fish and Wildlife Conservation Commission

Mark Rials

Southwest Florida Water Management District

Steve Richter

St. Johns River Water Management District

Gail Sloane

Florida Dept. of Environmental Protection

Bob Vincent

Florida Dept. of Health

Member Alternates

Kal Knickerbocker

Florida Dept. of Agriculture and Consumer Services

Robert Brown (past)

Manatee County

Megan Wetherington

Suwannee River Water Management District

Duncan Cairns

Northwest Florida Water Management District

Nenad Iricanin

South Florida Water Management District

Paul Carlson

Florida Fish and Wildlife Conservation Commission

Roberta Starks

Southwest Florida Water Management District

Aiša Cerić

St. Johns River Water Management District

Kate Muldoon

Florida Dept. of Environmental Protection

Patti Anderson

Florida Dept. of Health

Ellen McCarron, Chair

Florida Dept. of Environmental Protection

Steve Wolfe, Staff Liaison

Florida Dept. of Environmental Protection

INTRODUCTION

This Florida Water Resources Monitoring-Coordination Action Plan lays out a strategy for coordinating existing monitoring programs to create a statewide integrated water-resource monitoring system and to provide guidance for incorporating new programs.

BACKGROUND

The Florida Water Resources Monitoring Council (FWRMC) was established as a DEP advisory council. It makes recommendations to DEP on improving water resource monitoring and coordination of surface and ground water monitoring in Florida to help address water resource management issues.

The Council is presently charged to:

- 1. Develop water resource metadata standards for adoption by state agencies.**
- 2. Support development of a replacement for STORET for sharing Water Quality data.**
- 3. Coordinate Florida's ongoing fresh water monitoring with coastal and marine monitoring networks.**
- 4. Coordinate Florida's state monitoring efforts with local and federal monitoring programs.**

Charge 1 has been carried out in collaboration with the Florida Oceans and Coastal Council. The Oceans Council's "Integrated Data Management" initiative includes a section on metadata standards. The draft standards—presently being finalized by FDEP—were created using a strategy designed by the Monitoring Council and from information collected at workshops carried out with the assistance of the Monitoring Council and funded by the Oceans Council.

Charge 2 awaits efforts by FDEP to develop a STORET replacement. The Monitoring Council is kept apprised of these efforts until their efforts are needed.

Charges 3 and 4 are being addressed in this Action Plan. It lays out the Council's understanding of what is necessary to provide the foundation for coordinating Florida's monitoring efforts for water resources, and what framework is desirable to ensure exchange of, and access to, reliable monitoring information. The parts of this Plan include aspects of water monitoring at all levels and pertinent to all monitoring. This Action Plan provides guidance on implementation of its various steps.

It is the intent of the Monitoring Council to coordinate efforts where appropriate with the Integrated Data Management program of the Florida Oceans and Coastal Council.

This plan contains Action Steps for three Issues and Support Steps for two Issues:

Action Issue I: Improve knowledge of monitoring activities

Action Issue II: Increase Consistency of Monitoring Strategies and Data Comparability

Action Issue III: Improve Coordination among Monitoring Entities

Support Issue 1: Coordinate Stewardship among Local, State, and Federal Monitoring Programs

Support Issue 2: Increase Funding For Monitoring

[Note: some monitoring entities have expressed concern that care be taken in the implementation of this Action Plan to prevent increases in participant effort where possible. That is the intent of the Monitoring Council and will be a significant factor in designing the implementation steps to accomplish the Actions in this plan.]

Water Resources Monitoring Action Plan

ACTION ISSUE I: IMPROVE KNOWLEDGE OF MONITORING ACTIVITIES

Understanding existing water-resource monitoring is a fundamental necessity to reducing costs of existing monitoring and improving monitoring in the most cost-effective manner.

Information needed includes:

- a) where monitoring is currently underway;
- b) who is responsible for the monitoring;
- c) why the monitoring is performed;
- d) what information is collected; and,
- e) methods by which information is collected and analyzed.

We cannot coordinate existing monitoring without this information. The monitoring community needs this information to guide them to readily accessible data that are current and relevant. Easy access to the information is a necessary benefit of participating in building the catalog, and that access provides the means through which coordination and cooperation are achieved.

The coordination and cooperation that result allow us to promote efficiency, best use of resources, and to increase the knowledge base of monitoring activities.

LONG-TERM GOAL: Inventory and characterize existing and legacy water resources monitoring activities throughout Florida and adjacent lands and waters and provide accessibility to the information through an online catalog¹.

ACTION ITEM I-1: Create and populate a comprehensive digital catalog of existing and legacy water-resources monitoring activities. [Charges 2, 3, 4]

36-MONTH OUTCOME: A water resources monitoring catalog will have been established and a coordinated effort will be underway to populate it with monitoring information.

A. Create catalog

TASK 1: Define content, structure, and functional requirements for the catalog.

TASK 2: Identify and evaluate existing monitoring inventories or catalogs that meet defined requirements to help determine the best design for the Florida Water Monitoring Resources catalog.

TASK 3: Design and build the comprehensive catalog.

B. Populate catalog

TASK 1: identify and acquire information on all monitoring activities. Harvest information from existing sources where possible (e.g., Water Atlas & STORET)

TASK 2: Enter monitoring activity information into the catalog.

ACTION ITEM I-2: Make the catalog accessible. [Charges 2, 3, 4]

36-MONTH OUTCOME: A generally-accessible Website that provides access to the water monitoring activities catalog.

TASK 1: Design and build a website. (Note: this is platform and software independent to assure general accessibility).

TASK 2: Find an entity to host the website.

TASK 3: Market the website to promote public awareness

ACTION ITEM I-3: Continually maintain the catalog (data and design²). [Charges 2, 3, 4]

36-MONTH OUTCOME: A fully-funded process to maintain and support the website and online catalog that includes a quality assurance (QA) plan will be in place.

TASK 1: Establish a funding mechanism for long term maintenance.

TASK 2: Develop a QA Plan.

TASK 3: Develop a Standard Operating Procedure (SOP) for maintaining and updating the Catalog (data and design).

TASK 4: Assign dedicated resources to accomplish the above (staff/contractor).

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ACTION ISSUE II: IMPROVE COORDINATION AMONG MONITORING ENTITIES

Using the previously discussed information to improve coordination among the many agencies and entities performing water resource monitoring in and around Florida will provide the greatest opportunity to provide resource managers and decision makers with the information they need to better manage and preserve Florida's natural resources.

Improved coordination among the monitoring programs can improve monitoring practices, create potential cost savings, increase efficiency in allocating resources, expand the benefits of the monitoring activities, and provide for integration between freshwater and saltwater monitoring.

Coordinating sampling and assessing data comparability will allow data collected by freshwater programs to be more useful to saltwater programs. This coordination will also help to develop methods for monitoring status and trends across the transition zone.

Integration of freshwater, estuarine, and coastal monitoring depends, in large part, on the intended use of the data. Because the Florida Impaired Waters Program is one of the principal clients for monitoring data, it might provide a framework for integrating monitoring programs. Other potential users of monitoring data should be identified early in the process to determine their data needs.

LONG-TERM GOAL: Develop collaborations and partnerships to coordinate and optimize monitoring of Florida's water resources.

ACTION ITEM II-1: Create and activate coordination-oversight organization [Charge 3 & 4]

36-MONTH OUTCOME: An organization charged with coordination and oversight of Action Plan implementation is active. This organization is composed of appropriate stakeholders.

TASK 1: Determine operational responsibilities for organization.

TASK 2: Identify and recruit appropriate stakeholders for participation.

TASK 3: Coordinate with National Water Quality Monitoring Council.

ACTION ITEM II-2: Implement communication among entities monitoring water resources in and adjacent to Florida. [Charge 4]

36-MONTH OUTCOME: An established communication process with participation from government, academia, non-governmental organizations (NGOs), and private entities.

TASK 1: Design and implement an effective communication process.

TASK 2: Create buy-in and build collaboration.

ACTION ITEM II-3: Establish or enhance state, regional and study/event-specific coordination among monitoring groups. [Charge 3 & 4]

36-MONTH OUTCOME: Report based on the water resources monitoring catalog identifying duplications and gaps in monitoring activities. Regularly scheduled workshops or conferences that share best practices and improve coordination, including coordination between fresh and saltwater monitoring programs.

TASK 1: Analyze water resources monitoring catalog to identify duplications, overlap, or gaps in data gathering.

TASK 2: Hold planning workshops or take part in already existing workshops (e.g. the RAMP [Regional Ambient Monitoring Program] in southwest Florida) to promote the creation of or enhance state, regional, and subject-specific (i.e. freshwater/saltwater) approaches for coordination.

TASK 3: Involve regulatory agencies (e.g. to consider regulatory ramifications of potential monitoring changes).

TASK 4: Identify or develop methods to improve coordination of freshwater and coastal resource monitoring.

TASK 5: Provide guidance to agencies and organizations in developing monitoring networks.

ACTION ITEM II-4: Identify or develop methods to improve integration of freshwater and coastal resource monitoring. [Charge 3]

36-MONTH OUTCOME: A review of chemical, physical, and biological indicators or parameters characterizing the status and trends of estuarine resources to support the integration of freshwater and coastal monitoring activities.

TASK 1: Identify methods/tools to measure surface and ground water interactions in the coastal zone.

TASK 2: Evaluate peer reviewed techniques adopted by minimum flows and levels projects for efficacy.

TASK 3: Identify methods/ tools used to measure fresh and salt water parameters and evaluate for compatibility and comparability.

TASK 4: Identify those methods that have common factors that can be related to both fresh/salt water condition, or that can be determined to have measurable effects that can be meaningfully linked through fresh/salt transition.

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TASK 5: Synchronize timing of sampling between freshwater and saltwater programs.

TASK 6: Identify linked factors between salt and fresh waters and design monitoring for status and trends across the transition areas.

ACTION ITEM II-5: Create and sustain collaborations and partnerships among monitoring entities. [Charge 4]

36-MONTH OUTCOME: An increased level of collaboration among monitoring entities.

TASK 1: Identify relevant organizations and encourage appropriate agreements among monitoring entities.

TASK 2: Assist in sustaining collaborations and partnerships.

ACTION ISSUE III: INCREASE DATA COMPARABILITY³ AND CONSISTENCY⁴ OF MONITORING STRATEGIES

The benefits of increasing the consistency of monitoring are many. It provides resource managers with additional tools to assess the status and trends of all water resources to better support management decisions. It helps turn promising research methods and instrumentation into routine monitoring tools for fresh, brackish, and marine surface water and for ground water. It supports the integration of freshwater and coastal (salt) water resource management efforts, which are typically carried out independently of each other.

There is a gap in our understanding of how to assess the health of the biological communities in the transition from fresh to salt. Better integration is needed since the condition of coastal water resources is heavily dependent on freshwater inputs. Actions to address this issue will provide resource managers with tools to better integrate the monitoring and management of freshwater and coastal systems.

Additionally, good data-quality objectives⁵ help ensure data quality and can provide scientifically and legally defensible data on which to base monitoring conclusions.

Finally, it increases use and value of data by improving data comparability among programs thereby reducing overall costs of collecting information. For example, identification of organisms at the same taxonomic levels or analysis of water samples using comparable methods will allow disparate data sets to be combined in multiple ways, thus supporting many different research and management needs...the whole becomes greater than the sum of the parts.

LONG-TERM GOAL: To promote sound methods for design and implementation of monitoring practices in both freshwater and saltwater systems to meet program goals while maximizing data sharing and comparability.

ACTION ITEM III-1: Agree on a core set of monitoring variables to support assessment of status and trends of Florida's water resources. [Charges 1, 3, 4]

36-MONTH OUTCOME: a) The establishment of a core set of agreed-upon monitoring variables. b) Adoption of Integrated Data Management⁶ water resource monitoring metadata⁷ standards. c) A report on Status and Trends.

TASK 1: Develop general and discipline-specific metadata standards that are accepted by participating entities (already in development as part of the ongoing Integrated Data Management initiative).

TASK 2: Identify the variables needed to develop appropriate status and trends information to help address Florida's water-resource management issues.

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ACTION ITEM III-2: Support development and implementation of new, emerging, and enhanced technologies, indicators, and methods to improve monitoring. [Charges 3, 4]

36-MONTH OUTCOME: Statewide monitoring entities will have initiated a coordinated effort to incorporate new technologies, indicators, and methods to improve water resource monitoring.

TASK 1: Locate funding to assist monitoring entities in acquiring new tools, learning new methodologies, etc. to improve monitoring efforts;

TASK 2: Conduct literature search on new, emerging, and enhanced technologies, indicators and methods for monitoring;

TASK 3: Report on new and emerging technologies;

ACTION ITEM III-3: Seek out, validate, standardize, and promote research methods for adoption in the monitoring arena. [Charges 3, 4]

36-MONTH OUTCOME: a) A quarterly working group or Technical Advisory Committee (TAC) that researches and evaluates technologies, indicators, and methods appropriate for adoption by monitoring entities. b) Funds have been identified to validate promising research methods.

TASK 1: Create a committee that will evaluate promising technologies, indicators, and methods.

TASK 2: Conduct a literature search of recent research methods to develop a list for consideration for funding

TASK 3: Publish information on website, hold workshops and promote developed methods.

TASK 4: Fund transition from research techniques to methods that are useful to resource managers.

ACTION ITEM III-4: Recommend that monitoring programs develop or adopt data-quality objectives to address their management needs. [Charge 4]

36-MONTH OUTCOME: a) Documentation describing potential data quality objectives has been completed and workshops held to provide guidance in developing definitive data quality objectives. b) Increased number of programs in state have data quality objectives.

TASK 1: Form group to research data quality objectives, develop guidance document and run workshops devoted to adopting the objectives.

TASK 2: Identify monitoring programs that have adopted or improved data quality objectives as a result of these efforts.

ACTION ITEM III-5: Encourage organizations to adopt standardized and complementary monitoring designs. [Charge 4]

36-MONTH OUTCOME: a) Florida agencies have adopted standardized and complementary monitoring designs; b) Funding to support workshops and to foster standardized and complementary monitoring design among smaller monitoring entities has been identified.

TASK 1: Initiate intra-and inter agency review of monitoring to facilitate coordination.

TASK 2: Designate dedicated staff for efforts, if available.

MONITORING COORDINATION SUPPORT

The coordination of monitoring described in this Action Plan can best be carried out by enlisting the stewardship existing among monitoring programs and will likely require a focused effort to secure support from monitoring entities and for operational funding. This section contains an approach identified by the Monitoring Council for accomplishing these goals.

SUPPORT ISSUE I: PROMOTE AND COORDINATE STEWARDSHIP AMONG LOCAL, STATE, AND FEDERAL MONITORING PROGRAMS

Numerous stewardship organizations and programs exist across Florida. Increasing coordination among these groups will improve education of policy makers, stakeholders and the public, increasing support by these constituencies. Coordinating the stewardship efforts will help develop synergies that improve support of assessment and restoration activities, reduce duplication, fill gaps, and help establish common resource management goals and targets.

LONG-TERM GOAL: Increase, improve and maintain stewardship of Florida's marine and fresh water resources through a collaborative effort.

SUPPORT ITEM 1: Promote existing and create additional stewards of Florida's water resources through outreach and educational opportunities. [Charge 4]

36-MONTH OUTCOME: Educated policy makers, stakeholders and the public who are actively supporting coordinated monitoring in Florida.

TASK 1: Identify processes, mechanisms and other initiatives (e.g., Florida Oceans and Coastal Council, Century Commission) to promote stewardship of Florida water resources through education and outreach.

TASK 2: Engage government and non-government organizations in implementing the FWRMC Action Plan.

SUPPORT ISSUE II: PROVIDE FUNDING FOR ACTION PLAN IMPLEMENTATION

Implementing some of the recommendations in this Action Plan can be accomplished by existing programs using existing funds. However, some recommendations will require additional funding during planning and initial implementation phases. To realize long-term cost savings, and environmental and public health benefits, the Action Plan requires dedicated funding for implementation.

LONG-TERM GOAL: Ensure that adequate funding is provided to implement the Action Plan.

36-MONTH OUTCOME: Funding is in place to implement the Action Plan.

SUPPORT ITEM 1: Identify costs to implement this Action Plan. [Charges 1, 2, 3, 4]

TASK 1: Define the projects and attendant costs.

TASK 2: Define operational costs for the Council.

SUPPORT ITEM 2: Prioritize projects. [Charges 1, 2, 3, 4]

36-MONTH OUTCOME: An implementation plan is established and is subject to annual review.

TASK 1: Prioritize Action Items, using cost benefit analysis as one factor.

TASK 2: Develop projects

TASK 3: Create a funding-allocation strategy

TASK 4: Develop a budget to implement the Action Plan.

SUPPORT ITEM 3: Develop a budget to carry out the Action Plan. [Charges 1, 2, 3, 4]

36-MONTH OUTCOME: Adequate funding for the next 36 months and beyond results in a “groundswell” of initiatives, which, in turn, sets the stage to secure additional implementation funding.

TASK 1: Review, approve, and use funding allocation created for Task 3 above (Create a funding-allocation strategy).

SUPPORT ITEM 4: Pursue funding options [Charges 1, 2, 3, 4]

36-MONTH OUTCOME: The FWRMC and its efforts are funded through annual line-items of the Legislature, grants from federal agencies and NGOs, and/or in-kind matches from other monitoring entities.

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TASK 1: Investigate and pursue options for funding implementation of the Action Plan.

- Grants
- Private funds
- Legislative budget requests
- Internal budget sources
- In-kind sources
- Intergovernmental agreements
- Other funding mechanisms

GLOSSARY OF KEY TERMS

- ¹ Catalog: an inventory of monitoring activities, not data.
- ² Design refers to interface, operating system compatibility, and other aspects of staying abreast of changing technology.
- ³ Data Comparability: ability to compare results from multiple systems by knowing the quality of the data.
- ⁴ Consistency of Monitoring Strategies: using the same or compatible monitoring designs to maintain results comparability.
- ⁵ Data-quality objectives: a set of qualitative and quantitative statements derived from a systematic planning process that clarify the purpose of the study, define the most appropriate type of information to collect, determine the most appropriate conditions from which to collect that information, and specify tolerable levels of potential decision errors. (as defined in FDEP Quality Assurance Rule, promulgated 12/3/08).
- ⁶ Integrated Data Management (IDM) is a program of the Florida Oceans and Coastal Council to improve data assessment and access.
- ⁷ Water resource monitoring metadata: information describing the monitoring program and physical system. For instance, who conducts the monitoring, where samples or measurements are taken, what parameters are measured, etc.