

Florida Water Resources Monitoring Council (FWRMC)
Public Meeting of Monitoring Catalog Workgroup – August 9, 2012

Attendees:

Agency	Name
Florida Department of Environmental Protection (DEP)	Kate Muldoon
DEP	Stephanie Sunderman
Florida Department of Health (DOH)	Charlie Donahue
Florida Fish and Wildlife Conservation Commission (FWC)	Paul Carlson
St. Johns River Water Management District (SJRWMD)	Aiša Cerić
Southwest Florida Water Management District (SWFWMD)	Carol Kraft
South Florida Water Management District (SFWMD)	Brian Turcotte
Miami-Dade County Department of Regulatory and Economic Resources	Susan Markley

Introduction

Kate Muldoon (KM) welcomed everyone to the Monitoring Catalog Workgroup meeting and reviewed the agenda. Items to be discussed include developing a recommendation for how to proceed with the FWRMC Monitoring Catalog effort, and developing a timeline for the project and a list of metadata elements.

Review and Discussion of Progress to Date and Background Information

KM reviewed the background information, pre-proposals, and discussion points that arose during the May 2012 workgroup meeting and June 2012 Statewide FWRMC meeting. Representatives from the two universities that prepared pre-proposals (Jim Griffin from the University of South FL and Chris Mader from the University of Miami) were not in attendance, but KM indicated that they were available to call in if any questions arose that required their expertise.

- Over the past year, the Monitoring Catalog Workgroup has reviewed 18 web-based interactive catalogs and atlases, assessing three major criteria: user interface (ease of navigation, etc.), ability to search metadata for program / project level information, and availability for data providers to upload and update their own information.
- Review identified three existing efforts as potential collaborators for the Monitoring Catalog effort: Gulf of Mexico Alliance (GOMA) / South Atlantic Alliance (SAA) efforts, Water Atlas (University of South FL, USF), and DEP Map Direct.
- During May 2012, KM sent a preliminary statement of needs document to the three potential collaborators, inviting them to compose a pre-proposal that would aid the Workgroup in gathering information about several logistical items that would need to be addressed if the FWRMC were to pursue a collaborative project.
 - o Design and infrastructure of the collaborative project
 - o Portability / Server location for Monitoring Catalog's database
 - o Cost of development and maintenance
 - o Schedule for development and maintenance
 - o Availability of on-site assistance, or need to devote additional staff resources to monitoring station information QA, etc.
- Received two responses - from GOMA Catalog of Monitoring Programs (University of Miami, UM) and the Water Atlas (USF)
- During June 2012 FWRMC meeting, a summary of the pre-proposals was presented and discussed, but a more targeted discussion is still needed before the group can develop a recommendation. Issues addressed (partially or completely) included:
 - o Funding
 - o Ability to link to data providers' websites to access monitoring data
 - o Ease of data entry (necessity for online forms, options such as batch uploading spreadsheets or shapefiles, and linking directly to data available on other existing online data atlases).
 - o Need to specify how the data or metadata should be used. (More discussion is likely needed on this topic, but options include using data quality objectives to preclude misunderstanding.)
 - o Database structure (ability to have either drop-down menus or free-text, as appropriate).
- Action items from June 2012 FWRMC meeting
 - o FWRMC members prepare comments and questions, to be discussed at today's meeting, regarding next steps for Monitoring Catalog effort

- o Stephanie Sunderman (SS) sent out list of metadata fields from the GOMA Catalog of Monitoring Programs, as requested, to use as a starting point for developing a list of metadata elements for the FWRMC Monitoring Catalog.
- Funding is available for the FWRMC Monitoring Catalog effort, as it has been written into DEP's proposal for the EPA 106 supplemental grant.

KM asked if workgroup members have any specific questions about the background information or if members wanted to review any of the material as a group before beginning to develop a recommendation.

- Several members indicated that they did not need to revisit the statement of needs. Carol Kraft (CK) suggested developing a more detailed statement of needs, including a list of desired metadata elements, before moving forward in the process of contracting with one of the existing projects. KM clarified that the current statement of needs is so brief because it was developed for requesting pre-proposals. KM also clarified that if the group recommends collaborating with either the Water Atlas or the GOMA Catalog of Monitoring Programs, it is not required to go out for bid because DEP can contract directly with a university.
- Several members indicated that they had reviewed the background information provided and were prepared to discuss a recommendation, while several indicated that they would like to review the pre-proposals as a group.

Per the group's request, KM highlighted key points from both pre-proposals.

1) KM summarized additional information from the Water Atlas pre-proposal:

- List of several key personnel that would be working on the project
- Cost estimate of ~\$47,547 for design, development and implementation during the first year, with an annual maintenance cost of ~\$25,000 per year. Cost estimate includes 25% USF indirect.
- Proposed schedule is for 6 months of development (starting in October 2012), and 6 months of testing.
- Product would be designed on database criteria and metadata quality objectives, provided by the FWRMC.
- Product would allow public viewing and downloading of information (in a variety of formats), be searchable by spatial and attribute queries (including by waterbody / resource), and have search results viewed online as data tables and map layers.
- All records for sites will be associated to waterbodies through a normalized database, and a new tool will be developed to assist data providers with site matching.
- Data entry will be secured and online forms will be designed to allow direct or map-based entry of information. USF staff will perform quality assurance activities on incoming data.
- Effort will collaborate with existing Water Atlas project, utilizing existing databases and applications.
- Need to clarify if FWRMC Monitoring Catalog would be part of the existing Water Atlas website(s), or an entirely separate website.

Brian Turcotte (BT) expressed concern that one of the features included in the Water Atlas pre-proposal, associating sites to waterbodies, may take much longer than anticipated.

2) KM summarized additional information from the GOMA Catalog of Monitoring Programs Pre-Proposal:

- Effort will use functionality that has been developed for the GOMA Catalog of Monitoring Programs, which will be released later this summer, but additional functionality can be added to meet specific needs of the FWRMC that can be identified using a gap analysis.
- Website layout would be re-done for the FWRMC effort, to distinguish it from the GOMA effort.
- Cost estimate of ~\$60,339 for development and implementation during the first year, with an annual maintenance cost between \$23,000 and \$25,000 per year. Estimate included cost of acquiring a server for \$4,000.
- Support would be provided during the initial loading of data into the Catalog.

BT asked what the cost of the GOMA Catalog of Monitoring Programs was. KM indicated that the initial GOMA project contract was for \$50,000. KM added that the contract was supposed to be for a shorter amount of time, but there were delays in getting the contract started and the timeline has gotten stretched out longer than anticipated. An amendment in preparation for the GOMA project's contract will add \$15,000 to complete additional features and refinements that have been devised during development process.

BT indicated that the list of metadata elements included in the GOMA Catalog of Monitoring Programs seemed fairly easy to meet, although they may need to be refined before use for another project.

Discussion / Comparison of Pre-proposals to Inform Recommendation Development

Aiša Cerić (AC) indicated that she would recommend pursuing the project with the USF Water Atlas team. The cost is a bit cheaper, and the project will benefit from their established QA processes and existing connections to other data sources. AC expressed some concern about the maintenance cost, as the group will need to ensure that funding is maintained beyond the first few years, and that the cost of maintenance doesn't exceed available funding. KM indicated that funding is will be available for maintenance through DEP's proposal for the EPA 106 supplemental grant. Additionally, DEP is considering contracting with the USF Water Atlas team for an application to view statewide water conditions, which may have some overlapping interest and funding for the FWRMC Catalog.

Paul Carlson (PC) indicated that he would recommend pursuing the project with the USF Water Atlas, as the current Water Atlas is a solid product to build upon.

Susan Markley (SM) abstained from making a recommendation.

BT indicated that he would like to get additional information before making a recommendation. Since the GOMA project has not been publicly released yet, members who have not participated in GOMA may not be familiar enough with the GOMA project. Obtaining more information on the GOMA project would help to inform decision making.

Charlie Donahue (CD) asked what the anticipated release date is for the GOMA project. KM indicated that the anticipated release date is 8/31, and indicated that SS has been involved with the testing process. CD suggested that the workgroup visit the GOMA Catalog's website before making a final decision about it. CK agreed that the group should see the final GOMA Catalog product before making a final recommendation. The Water Atlas has a great, established product, but the GOMA catalog seems promising as the current needs of the FWRMC and the GOMA Catalog seem very closely aligned. **KM and SS indicated that they would send out the link to the GOMA Catalog of Monitoring Programs, as soon it is released.** PC suggested that SS also prepare a comparison of the Water Atlas and the GOMA Catalog of Monitoring Programs, since she has had more time to work with the GOMA Catalog during the testing phase. **SS indicated that she would prepare the comparison of the two current projects, and distribute it with the link to the publicly released GOMA catalog.**

KM and the workgroup participants concluded that the final recommendation should be deferred until the next meeting because several members of the workgroup have requested more information on the GOMA Catalog of Monitoring Programs.

The group agreed to meet again, in late September, to try to develop a recommendation before the next Statewide FWRMC meeting on October 9, 2012. SS will send out a poll for the date of the next meeting with the summary from today's meeting.

Preliminary Discussion of Metadata Elements to be Included in FWRMC Catalog Effort

KM reviewed the list of metadata elements included in the GOMA Catalog of Monitoring Programs, as a starting point for discussion of how the group will develop the list of metadata elements for the FWRMC Catalog.

- There are 5 levels of metadata information in the GOMA Catalog's database.
 - o Organization level attributes.
 - o Program level attributes - each program record is linked to an organization (and all of its associated attributes).
 - o Project level attributes - each project record is linked to a program (and all of its associated attributes.)
 - o Station level attributes (completed for each monitoring station / site) - each station record is linked to a project (and all of its associated attributes.)
 - o Observation parameter level attributes (completed for each observed parameter at each station) - each station record is linked to its observation parameters (and their associated attributes).
- Discussion of organization, program, and project level attributes (listed in table below, * indicates that attribute is optional to include in the GOMA Catalog of Monitoring Programs database). KM asked if these were the types of attributes that the group would like to include in the FWRMC Catalog.

Organization Level Attribute	Description
organization name	Name/title of the entity responsible for sampling program
organization type	Category describing the structure of the organization. (values list = federal government, state government, county government, city government, academic, non-profit, private corporation)
description	Text description of the organization.
website*	Web address where information can be obtained about the organization.

Program Level Attribute	Description
program name	A subdivision of an organization that performed the collection or sampling effort. (smaller organizations without subdivisions may enter organization name).
program status	The operational state of the program. (values list = active, inactive).
description	Text description of the program.
program manager name	Individual(s) or position in the organization/agency/etc. that will be able to provide direction regarding monitoring efforts conducted by the program.
program manager email	Email address for program manager
program manager phone*	Phone number for program manager
program manager address*	Mailing address for program manager
program manager fax*	Fax number for program manager
program website*	Web address where information can be obtained about monitoring efforts conducted by the program.
Project Level Attribute	Description
project name	Name of the study that includes a monitoring plan and that creates the data set(s).
description	Text description of the project.
project status	The operational state of the project. (value list = active, inactive).
project manager name	Individual or position in the organization/agency/etc. that will be able to provide direction regarding the design of the project.
project manager email	Email address for project manager
project manager phone	Phone number for project manager
project manager fax*	Fax number for project manager
project website*	Web address where information can be obtained about the project design.
project methodology	Strategy to meet the goals and objectives of the study (value list = deterministic, probabilistic)
project boundary*	Geographic coordinates for polygon representing the maximum area where a project's stations may be located.
data distributor name	Individual or position in the organization/agency/etc. that will be able to provide direction regarding data acquisition.
data distributor address	Mailing Address for data distributor.
data distributor email	Email address for data distributor.
data distributor phone	Phone number for data distributor.
limitations to data usage	Cautionary guidance to facilitate secondary use of the data (free text, e.g. not for navigational use)
availability	Limitations for obtaining all or part of the data. (value list= publically available, conditionally available, not available/restricted)
link to website with data*	Web address where project data may be viewed or downloaded.
purpose category	Reason for which data was collected. (value list= regulatory, event specific, experimental, seasonal monitoring, baseline, trend monitoring, benchmark)
purpose text*	Narrative describing why study was conducted.
data quality objective	Conveys if documented data quality objectives are available.
proprietary restrictions	Restrictions and legal prerequisites for using the dataset after access is granted. (value list= yes, no)
proprietary restriction type	Text description of proprietary restrictions, if applicable.
start date	Start date/time of data collection for project.
end date	End date/time of data collection for project. Projects that have no specific end date are indicated as "ongoing"

- o CK indicated that the current list seemed good, but suggested making more of the fields optional, to provide more flexibility.
- o SM indicated that these higher level attributes may not be very useful because names of organizations, programs, and projects, along with the contact information for managers is changing multiple times per year and will quickly become obsolete. However, outdated information may still be useful to point the user to the correct agency to contact. Project objectives may also be difficult to define, as the same monitoring data may be used to meet multiple objectives.
- Discussion of station and observation parameter level attributes (listed in table below, * indicates that attribute is optional to include in the GOMA Catalog of Monitoring Programs database). KM asked if these were the types of attributes that the group would like to include in the FWRMC Catalog.

Station Level Attribute	Description
station name	Project-specific name of the sampling location.
description	Text description of the sampling location.
ID*	Identification number of sampling station, used to reference external database. (e.g. USGS gauging station ID)
key words*	Set of keywords to help in free-text search. Should include subject(s) covered by a project data set(s) and general description of the geographic/political region where the data was collected.
station status	The operational state of the station. (value list= active, inactive).
geometry type	The geometry type of the station location. (value list= point, line, polygon)
location	The geographic coordinates of the station.
start date*	Start date/time of data collection at station, if different from owning project
end date*	End date/time of data collection at station, if different from owning project
station webpage (link)*	Web address where monitoring data is displayed for the station.
Observation Parameter Level Attribute	Description
observation medium	Environment medium that is the source of the sample/measurement or observation. e.g. Air, Water
observation category	The specific classes of parameters measured, studied, etc. at a station. (value list= Chemistry, Chemistry-Metals / Single Elements, Chemistry-Toxins, Chemistry-Nutrients, Hydrology, Physical, Biological, etc.)
observation type	The specific names of parameters measured, studied, etc. at a station. (value list= temperature, pH, flow, nitrate, orthophosphate, mercury, total coliform, biomass, etc.)
Method	Documented reference method or SOP used for field analysis or measurement. (value list = "Nitrite Nitrogen by Spectrophotometry - (USEPA 354.1)", etc.)
Frequency	The time interval between sampling events. [values = one-time sampling event, at least once per year (annually), at least twice per year, at least 4 times per year (quarterly), at least 6 times per year, at least 12 times per year (monthly), at least weekly, at least daily, at least hourly]
start date*	Start date/time of data collection for observation, if different from owning station
end date*	End date/time of data collection for observation, if different from owning station
depth*	Depth of sample collection

- o BT indicated that frequency may be that most difficult attribute to complete because it cannot be harvested directly from the database of results, and would instead be stored with the project planning information. However, frequency should still be a required field because it is very useful information that many users have requested.
- o SM indicated that parameters measured at one station are often collected at different depths or frequencies, and expressed concern that having a very large number of observation parameter entries may be difficult to enter, manage, or interpret.
- o BT suggested developing a different naming system for observation parameters and their associated attributes.
- o BT suggested that it may be difficult to document frequency for parameters that have been monitored at different frequencies throughout time. It may be easier to provide a count of the observations collected within a given time period, or to only provide the most recent frequency. KM clarified that the GOMA catalog was designed with the intention that the frequency recorded would correspond to the associated start and end dates, and another entry with different start and end dates would be required if the frequency changed. SM

indicated that the level of effort that KM described to document program changes may be too high for data providers. KM agreed, and indicated that tools, such as bulk edit and bulk upload from shapefile and CSV file are being developed to reduce the effort required from data providers.

- o BT indicated that it may be difficult to document changes in method over time, and that the Catalog may need a more flexible system to do so. Previous efforts at SFWMD to document this very detailed information were ultimately unsuccessful because the amount of records associated with each station became too large to properly manage and search.
- o BT suggested that the group will need to determine the level of detail that it wishes to target with the FWRMC catalog effort, and then align the associated business processes (e.g. frequency will be updated manually, once per year). It is important to ensure that the information presented in the final FWRMC product is accurate. If there is a portion that doesn't work properly, users will lose confidence in the entire product.
- o KM and BT suggested that keeping the contact persons' information and website(s) up to date may be the most important because users will be able to use that information to find any other information about a project, including information not included in the Catalog.
- o CD asked if the GOMA Catalog of Monitoring Programs will be connected to the GOMA effort where a centralized system is being used to collect all participants' data and consolidate it onto a single server, instead of having to keep track of the links to data provider's servers. KM indicated that the Harte Research Institute has an effort underway to create a data portal for all GOMA data, but there is not a current plan to require Catalog data providers to participate in the data portal. CD added that if many FWRMC catalog data providers are participating in the data portal effort, and have converted their information to a centralized format, it would be helpful to align the Catalog metadata requirements with those of the data portal.
- o CD also indicated that the metadata requirements may differ based on the project chosen to collaborate with the FWRMC Catalog effort. The GOMA Catalog of Monitoring Programs appears to have a stricter, centralized format, while the Water Atlas appears to give data providers several options for how their information will be summarized. KM agreed, and indicated that the collaborative project must be selected before any decisions can be made regarding the structure of the metadata elements.

Timeline for Proceeding with FWRMC Catalog Effort

KM indicated that the next steps will be to look at the publicly released GOMA Catalog in September, hold another Workgroup webinar meeting in late September to develop a recommendation regarding the proposed collaborative projects, and present the recommendation to the statewide FWRMC at the October 9th meeting.

CD asked who the target users of the FWRMC Catalog are. KM indicated that there have been several requests for this information from agencies to help with planning and coordinated efforts. Additional users may be researchers looking for data on a specific issue or in a specific area. SM added that the Catalog's information can also be helpful for modeling efforts where modelers aren't collecting their own data.

CD indicated that the group may need to consider how the cost to data providers will differ between the two projects (Water Atlas and GOMA Catalog of Monitoring Programs), and if the target audience for both projects will be the same. KM clarified that reformatting of the metadata information would likely be needed for both projects, but reformatting of the actual data is beyond the scope of the Catalog effort. SM added that the FWRMC Catalog may be able to be structured differently than the GOMA Catalog of Monitoring Programs if the primary goal is just to get everything in the same place. However, it may be necessary to leave out a lot of the metadata's details to make it easier to manage, as it is important to encourage data providers to participate by minimizing the amount of time and resources required.